

1

Triage and Initial Assessment of the Emergency Patient

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Introduction

One of the most important skills for the emergency and critical care veterinary nurse is the ability to triage patients quickly and appropriately. Failure to triage a case appropriately may mean the difference between life or death for the patient.

Myth Versus Reality: When Do Emergencies Strike?

Spend any time in a veterinary emergency room and you will quickly learn that many veterinary professionals have an inherent level of superstition. Phases of the moon, date of the month, sign of the zodiac, and numerous other events have been suggested to increase emergency room caseload. One veterinary study found a significant increase in emergencies for dogs and cats on fuller moon days (waxing gibbous to waning gibbous), compared with all other days (Wells et al. 2007). However, other veterinary and human research studies have failed to find an association with phases of the moon and emergency room caseload (Drobatz et al. 2009, McAlees and Anderson 2007, Schuld et al. 2011). Additionally, research in human and animals has not found a consistent link between emergency room visits, surgical blood loss, and occurrence of cardiac arrest with zodiac signs or Friday 13th (Drobatz et al. 2009, Lo et al. 2012, Schuld et al. 2011).

We do recognize, however, that weekend afternoons and midweek evenings are the busiest days and times of the week in most veterinary emergency rooms (Drobatz et al. 2009). A significant increase in caseload has also been identified for most holidays (except Easter Day and Thanksgiving Day), with Memorial Day being the busiest. National sporting events, such as national football league games, may also influence veterinary emergency room caseload (Rozanski et al. 2009).

Triage

The term *triage* comes from the French word *trier* that means “to sort” and was first used in World War I to sort and classify wounded soldiers based on the severity of their wounds. Human emergency departments started using organized triage systems in the 1960s and 1970s when hospitals began to see more patients than they had available resources for. In veterinary medicine, triage serves a similar function: to sort animals presenting to the emergency room based upon medical severity, with the needs of the sickest being addressed first.

Telephone Triage

Often, a veterinary nurse’s initial interaction with a case may involve talking to a pet owner over the phone. Clients will often call veterinary hospitals with concerns about their pet. These conversations should be brief so as not to waste valuable time in an emergency and monopolize hospital staff. Because the triage nurse cannot directly evaluate a patient over the phone, nurses who handle telephone calls must have clinical experience, excellent listening and communication skills, and a strong sense of intuition.

A telephone triage log of calls to the hospital should be kept. Because it is a legal document, the log should be stored for several years, depending on state law. It is important to note that several court cases have occurred involving a pet owner and a veterinary hospital because of advice that was given over the phone. Remember that the recommendations you offer to the client can have legal ramifications, and it is important that you document the conversation to protect both yourself and the hospital.

Ideally, an organized telephone triage system should be in place and all employees should follow the system. Each veterinary nurse should ask the same initial questions of each client in order to ensure that each call is

handled in a thorough manner. Initial questions that should be asked of each client may include the following:

- Obtain the client's name, location, and telephone number.
- Obtain the patient's name, age, sex, breed, and approximate weight.
- What is the current chief complaint and duration?
- Has the pet been seen by another veterinarian for this problem and is the medical record (including laboratory tests, radiographs, etc.) available?

After the initial information is gathered, specific questions may vary depending on what the presenting complaint is. Other questions that may be useful to ask include the following:

- Does your pet have pertinent past medical history?
- Is your pet currently on medication?
- Is your pet breathing normally?
- What is the color of your pet's gums?
- How is your pet's activity level?
- How is your pet's appetite?
- Has there been any coughing?
- Is there observed vomiting, retching, or diarrhea?
- Is the pet able to urinate? Is there straining to urinate?
- Could the pet have ingested any toxins or prescription or illicit drugs? If so, how much could have been ingested and when could the ingestion have occurred?
- How many and how long have the seizures been?

Each hospital may have a different policy on what advice can or cannot be given to clients over the phone. Sometimes, advice is given in consultation with an attending veterinarian, depending on the individual hospital.

Often, treatment recommendations cannot and should not be made without directly assessing the pet. In general, all owners should be offered the option to present their pet to the hospital regardless of how insignificant a problem may first appear. Pet owners are generally inexperienced in medical care and their judgment cannot be trusted. For example, a pet owner calls the veterinary hospital and reports that his dog was just hit by a car. "He seems fine" reports the owner. In reality, this patient may have substantial internal injuries. This client should be advised to bring their pet to the emergency service as soon as possible! For legal purposes, it is also important that the telephone triage log or pre-existing medical record, if one is available, reflects this recommendation. Any medical treatment suggested to clients over the phone must also be documented in full.

Once you have offered the client the option of having their pet evaluated, you should provide detailed information on where the hospital is located. Ultimately, it will be the individual pet owner's choice as to whether they



Figure 1.1 Cases brought to the emergency room, such as this dog hit by a car, must be triaged and examined quickly to address immediate life threats. Courtesy of Dr. Christopher Norkus.

seek veterinary care. Additional information about how to safely transport their pet to the clinic can also be given.

Telephone triage is also beneficial because it allows the medical team to prepare for the arrival of the potential patient to the hospital and to organize resources. For example, an owner calls the hospital to report that their Great Dane is collapsed after unproductive retching and that they are 10 minutes away. This gives the emergency room ample time to prepare for the case so that staff, intravenous fluids, intravenous catheters, oxygen, and crash cart supplies are readied prior to the patient's arrival (Figure 1.1).

Hospital Triage

Every patient that presents to the emergency room should be triaged by an experienced veterinary nurse within approximately one minute of its arrival. In some hospitals, reception staff are responsible for requesting that a triage be performed over a public announcement (PA) system or by activating a triage bell or alarm. In some hospitals, different codes or different alarms may be used depending on the perceived urgency of the triage. For example, a page for "ER nurse is needed for a triage" might reflect a routine triage while "ER nurse is needed for a triage STAT" may reflect an urgent case. While this technique may be useful for obviously unstable patients, it likely misses the urgency of many less obvious cases. This may be in part because many reception staff have limited medical training and expertise. Therefore, it is important to attend to every triage on the assumption that the patient is unstable and in need of immediate care rather than allowing a potentially critical animal to wait and decline in health.

Table 1.1 Commonly utilized three-, four-, and five-tier triage systems that have been extrapolated from human emergency departments and can be utilized in veterinary medicine.

	Wait/reassessment time	Condition examples
Three-level system		
Resuscitative	Immediately	Cardiac arrest
Emergent	10–45 minutes	Hit by car
Routine	30 minutes–2 hours	Abscess
Four-level system		
Resuscitative	Immediately	Active seizures
Emergent	5–15 minutes	Recent toxin ingestion
Urgent	15–45 minutes	Proptosis
Routine	1–2 hours	Lameness
Five-level system		
Resuscitation	Immediately	Severe respiratory distress
Emergent	5–15 minutes	Urinary obstruction
Urgent	15–45 minutes	Vomiting and diarrhea
Semi-urgent	1–2 hours	Minor laceration
Routine	4 hours	Suture removal

When an emergency veterinary nurse is performing a triage, it is important to be able to quickly assess each patient and determine their category of urgency. All formal triage systems break down categories into three-, four-, or five-tier systems. While there is no standard triaging system in veterinary medicine, most human medicine triage systems can be applied. In most human emergency departments in the United States, a triage acuity system is used to determine which patient can safely wait before being evaluated and which patient needs to be addressed immediately (Table 1.1).

In 2001, the Emergency Nurses Association of the United States was surveyed to ask what type of triage acuity scale was used by each human hospital (Hansen 2005). An overwhelming 69% of human emergency departments used a three-level scale (Hansen 2005). Only two years later, another study found that only 47% of emergency departments were using a three-level triage system, while there was an increase to 20% for those that used four-level and 20% that used five-level systems (Hansen 2005). The general consensus would be an apparent trend toward the four- and five-tier systems in human hospitals. Whichever system is used, one thing is certain: the system should be organized and everyone at the clinic should use it.

Sometimes, clients become upset or even irate when other clients' pets are seen before their own. It is imperative that clients are informed of how emergency departments function to avoid confusion and ease frustration. Whenever possible, clients should be given an approximate

wait time and informed that if a more critical pet comes in, their wait time may be extended. Clients should be notified if wait times have changed. This task is often the responsibility of the reception staff or triage veterinary nurse. It is important to remember that many clients are simply worried about their pet and that its health could be declining. Regular communication can go a long way to ease a client's concerns and make them feel reassured that their pet's needs will be met. It is also important to instruct a client waiting with their pet to notify staff if they believe their pet's status has changed. Being able to keep all clients in a waiting room happy is a skill that can take years to master.

Primary Assessment and Patient History

The *primary assessment* will determine if the animal is having a true emergency and needs immediate treatment or if it is stable enough to wait to be seen. If the patient is deemed stable during the primary assessment, a more thorough secondary assessment will occur at a later time. In many busy emergency rooms, the primary assessment may only include visual observation of the patient, the collection of vital signs (pulse, temperature, respiratory rate/effort, level of consciousness), patient weight, and an owner history interview (chief complaint and duration, current medications, and information from the referring veterinarian) (Table 1.2). Other specific questions may include appetite, diet, reproductive status, administration of heartworm and flea/tick prevention medications,

Table 1.2 The editor's proposed normal ranges for canine and feline vital signs.

Vital sign	Canine normal	Feline normal
Heart rate	60–120bpm	160–220bpm
Respiratory rate	20–40bpm	20–40bpm
Mucous membrane color	Pink, moist	Pink, moist
Capillary refill time	<2 seconds	<2 seconds
Temperature	100–102.9°F	100–102.9°F

the presence of vomiting, diarrhea, polyuria, and polydipsia, potential exposure to toxins, prescription medications, and illicit substances, vaccine status, feline immunodeficiency virus (FIV) and feline leukemia virus (FELV) testing status, and recent travel history. The more thorough secondary assessment, which generally includes a full physical exam, is often performed by the attending veterinarian seeing the case at a later time. In other hospitals, the owner history interview may be conducted at the time of the secondary assessment.

Occasionally, circumstances prevent an emergency veterinary nurse from initially performing a triage or obtaining the owner history interview. An example of when an owner history interview might not occur is if the pet's owner is not the one presenting the pet to the hospital. An example of when a triage and vital signs might be deferred would be any pet that is considered a level 1 triage acuity, also known as "resuscitative." Examples of this would be cardiac or respiratory arrest, active seizures, severe blunt trauma, unresponsiveness, collapse, anaphylaxis, uncontrolled hemorrhage, severe head trauma, open chest/abdominal wound, and any type of shock. In these cases, the patient typically bypasses triage and goes directly to a treatment room with waiting staff. Owners of these pets should be informed of the "why," "what," and "how much" in a clear and concise manner.

- Why does their pet need immediate emergent treatment?
- What treatment will be initiated?
- What is the estimated cost for these services?

Many times, owners will not wish to proceed with resuscitative treatment due to cost, age, prognosis, or another underlying illness of the pet. The following depicts an example of a conversation with a client who has a pet presenting for a level 1 triage acuity:

Hello. My name is Amanda and I am a certified veterinary nurse caring for Skipper today. I would like to ask your permission for us to attempt emergency stabilization on Skipper. He is in a critical

condition at this time and could worsen at any point. We would like to place an intravenous catheter, give him oxygen, intravenous fluids, and pain medication in an attempt to get him more stable. This initial treatment is expected to cost between \$500–700. Do you consent to these charges and authorize us to begin treatment immediately?

Many veterinary hospitals will also have the client sign an "initial stabilization estimate" which authorizes the hospital to start emergency treatment and documents that the client has also agreed to be financially responsible for such charges regardless of outcome. In these settings, a full owner history interview can be performed once initial care on the pet is started.

If the patient is not in need of immediate resuscitative measures and can wait, a primary assessment and complete owner history interview should be performed at this time. It is important to remember that even if the presenting animal is the 20th one you've triaged that day, the pet is unique and is special to the owner and how you interact with that patient will reflect positively or negatively on both your hospital and your profession.

The owner history interview and primary assessment should always begin with you introducing yourself and telling the client your title so they know who is handling their pet's care. Before actually handling the animal, you should ask the owner's reason for bringing their pet to the hospital. This is known as the *chief complaint*. This is important so as not to put yourself or your patient at risk and to ensure that the owner's concerns are being addressed from the start of their visit. Often, the reason a client brings a pet to the emergency room (e.g. coughing) is not the patient's actual problem (e.g. heart failure). Additionally, before handling a pet, you should politely inquire if the animal is friendly. This question should prompt the client to tell you if the pet is aggressive or not but clients sometimes withhold this information or fail to realize that their pet is scared or in pain and could become aggressive. Therefore, veterinary nurses should always survey the scene (e.g. a down dog in a car in the back of the parking lot) and observe a patient's demeanor (e.g. growling) as well as potential dangers (e.g. smell of alcohol on the client's breath) before proceeding. If necessary, obtain additional staff or equipment (e.g. muzzle, gurney, etc.) to perform the triage safely for you and your patient. Only when the situation appears safe should you proceed. In human emergency medical services, there is a great mantra to remind us of this which states, "*Save yourself, save your partner, then save your patient.*"

While speaking to the client, you should begin observing the patient. Is the patient limping? Do you smell diarrhea? Does the patient's abdomen look distended? It is important to use all your senses including sight,

smell, hearing, touch, and intuition as you proceed with the triage. Each triage should be done in a consistent, clear, and conscious manner. The technique you develop for performing the primary assessment should be the same for each patient. While it is often “easier” to jump right to the area of complaint (e.g. an obvious fracture), you must not forget to examine the rest of the patient or else you may miss valuable concerns (e.g. respiratory distress). If you have done your triage appropriately, including observing the patient, obtaining vital signs, and completing an owner history interview, you will have briefly assessed the three major body systems – cardiovascular, respiratory, and central nervous systems – and be able to comment on patient stability.

Secondary Assessment

When time allows, a more detailed *secondary assessment* of the patient is performed by the attending veterinarian or nurse. This is also the time when a more detailed client interview can be performed if information is needed. In more unstable patients, the secondary assessment is often performed concurrently as treatment of the emergent patient is already under way. For example, a patient was deemed unstable on presentation and owners have authorized initial stabilization efforts. Vital signs were obtained and now the attending veterinarian assesses the patient in more detail as an intravenous catheter is placed and oxygen is being administered.

Physical Examination

If you are called upon to perform a full physical exam, you should start with the patient’s head and examine the eyes, oral cavity, nose, and ears. Dental disease should be noted and mucous membrane color and capillary refill time (CRT) should be obtained. Normal mucous membrane color should be pale pink to pink. Abnormal mucous membrane colors include pale, muddy, gray, white, yellow, red, blue, purple, and brown (Figures 1.2, 1.3, and 1.4). Pale, muddy, gray, and white mucous membranes are commonly caused by poor peripheral perfusion, including vasoconstriction from shock or anemia. Red mucous membranes can occur with carbon monoxide toxicity or states of vasodilation, including sepsis, fever, or anaphylaxis. Yellow mucous membranes are caused by hyperbilirubinemia and may suggest hemolysis, liver disease, bile duct obstruction, or feline sepsis. Blue or purple mucous membranes are the result of hypoxemia. Brown mucous membranes occur with methemoglobinemia, for example as seen with acetaminophen toxicity in cats. Any change in mucous membrane color is a potential



Figure 1.2 A dog with pale mucous membranes. Common causes include anemia and vasoconstriction. Courtesy of Dr Christopher Norkus.



Figure 1.3 Hyperemic (red) mucous membranes may suggest a state of vasodilation such as would be seen with sepsis, systemic inflammatory response syndrome (SIRS), or anaphylaxis. Courtesy of Dr Christopher Norkus.

life-threatening emergency and should prompt more rapid evaluation.

Capillary refill time should always be under 2 seconds. During states of poor peripheral perfusion, you may see an increase in CRT greater than 2 seconds. In some conditions that include vasodilation such as fever, sepsis, and anaphylaxis, CRT may be rapid and <1 second.

Other details within the head such as pupil size and symmetry, discharge, petechia of the gums, and bleeding should be evaluated (Figure 1.5). The submandibular lymph nodes should be palpated. As you proceed caudally, the forelimbs should be examined for any obvious injuries or asymmetry. The superficial cervical and axillary lymph nodes should be palpated. In cats, the



Figure 1.4 Icteric (jaundiced) mucous membranes correspond to hyperbilirubinemia and may suggest hemolysis, liver disease, bile duct obstruction, or feline sepsis. Courtesy of Dr Christopher Norkus.



Figure 1.5 Pale mucous membranes and mucosal petechiae are present in this patient. Petechiae are suggestive of a primary hemostatic disorder such as thrombocytopenia or thrombocytopathy. Courtesy of Dr Christopher Norkus.

absence of a thyroid nodule or “slip” should be confirmed. During examination, cervical skin turgor should be assessed and may give clues to dehydration.

Cardiovascular System

Next, the heart should be auscultated on both sides of the chest for murmurs and arrhythmia. The most common conditions that can cause a change in cardiovascular status of pets presenting to the emergency room include hypovolemia, anemia, sepsis, and primary cardiac dysfunction. There are numerous potential heart arrhythmias that can occur in the ill pet and while some

may not be life-threatening, until the patient receives further diagnostics, all arrhythmias should be considered potentially life-threatening. If during the physical exam a heart arrhythmia is auscultated, the patient should have an electrocardiogram (ECG) performed. An ECG strip should be performed for five minutes, and a strip should be recorded for the attending veterinarian and placed in the patient’s record. If the nurse is not well versed in interpreting heart arrhythmias, a veterinarian should be consulted to ensure that the patient is stable and can wait to be seen.

Difficulty hearing heart sounds may suggest patient obesity but can also indicate “muffled” heart sounds consistent with pericardial or pleural effusion. A femoral or distal pulse should be palpated at the same time. It is important to note that the heart rate and palpated pulse rate are the same. If they are not the same, this *pulse deficit* suggests a cardiac arrhythmia, such as ventricular premature contractions. The subjective strength and quality of the pulse should also be noted. Pulse strength or *pulse pressure* can subjectively be used to evaluate the difference between systolic and diastolic blood pressures and is a non-invasive assessment of cardiac stroke volume. Normal pulses are ones that can be felt with mild pressure on the artery. Pulses are said to be “*weak*” or “*thready*” when the pulse becomes difficult to feel or is obliterated easily with slight pressure. A “*water hammer*” or “*bounding*” pulse describes a pulse that is forceful and rapidly increasing and subsequently collapsing. This type of pulse abnormality is common with increased stroke volume and decreased peripheral vascular resistance such as fever, sepsis, anemia, and patent ductus arteriosus (PDA). Another pulse abnormality is *pulsus paradoxus* that occurs when the pulse volume appears to decrease during inspiration and become normal during expiration. Although this abnormality can be difficult to detect in small animals, it can be a subtle clue to pericardial effusion and tamponade. *Pulsus alternans* occurs as alternating small- and large-volume pulses most commonly observed with left ventricular heart failure.

The patient’s heart rate may be either increased or decreased. Common causes for bradycardia include athleticism, increased intracranial pressure (Cushing’s reflex), electrolyte abnormalities (e.g. hyperkalemia), bradyarrhythmia, medication (opioids, alpha-2 agonists, etc.), and shock in cats (often concurrent with hypothermia and hypotension). The term *relative bradycardia* can also be used for heart rates that are not actually bradycardic but appear too slow for the patient’s current medication condition. One of the key indicators in the early stages of shock (i.e. compensatory shock) is an elevated heart rate. Other common causes for tachycardia besides shock include anemia, arrhythmia, hypoxemia, hypercapnia, need to urinate, excitement or anxiety, and

pain. It is important to note that tachycardia is considered a poor and unreliable indication of pain in both humans and animals.

The overall patient status must be assessed while considering the patient's heart rate. A good example of this is a 2-year-old Labrador retriever who has high energy. On presentation, he appears very bright and alert. His owners describe hematochezia. His physical exam is within normal limits, except that he has bounding pulses and a heart rate of 200 bpm. Despite the patient being hyper, he is likely in compensatory shock and intravenous fluid therapy is indicated. Treatment should be initiated relatively soon.

Respiratory System

To assess the pulmonary system, auscultation of the lungs should be performed at both sides of the chest in different fields, and the respiratory pattern as well as respiratory effort should be noted. Any change in an animal's breathing should prompt more urgent evaluation. Owners often mistake labored breathing as "panting" or shallow breathing as "sniffing." When performing a physical exam, it is important to step back and simply examine how the patient is breathing. Your sight will be the most important tool in determining if the patient is having difficulty breathing or not.

When observing a patient's breathing, there should not be an abdominal component when a patient is breathing normally. If there is abdominal effort, it should be noted if the chest and abdomen are moving together (synchronous) or opposite (asynchronous). Expiratory time and effort can also yield information. The normal inspiration to expiration ratio (I:E) is 1:2, meaning a patient exhales for twice as long as it inhales when breathing normally. Generally, increased expiration time can be a sign of lung pathology or an intrathoracic problem, while an increased inspiration time can point to upper airway pathology (e.g. airway obstruction) or extrathoracic problem. Synchronous breathing is generally a sign that the abnormality is inside the lungs, while asynchronous breathing usually points to pleural space pathology.

Patients with pleural space disease will often present with a *restrictive breathing pattern* consisting of short shallow rapid breaths. *Kussmaul breathing* is a slower, very deep breathing pattern that can be seen with conditions that cause severe metabolic acidosis such as diabetic ketoacidosis and kidney disease. Respiratory *stridor* is an abnormal, high-pitched sound produced by turbulent airflow through the upper airway and is consistent with partial upper airway obstruction. Respiratory *ster-tor* is an abnormal, low-pitched sound produced lower in the airway and is also consistent with partial airway obstruction.

Mucous membrane cyanosis always requires immediate intervention. Severely anemic patients may mask the "blue" color of cyanosis because at least 5 g/dL of hemoglobin is required in order for patients to physically show the color blue. This is also true in patients that are extremely icteric or in severe shock. If the patient is severely white or jaundiced, this may mask the cyanosis.

If you have any doubt over whether a patient is oxygenating well, oxygen supplementation should be given. Pulse oximetry may also be used to quickly help document hypoxemia and is a fast and easy tool to use. A pulse oximetry machine non-invasively measures the oxygen saturation of hemoglobin (SpO₂). Normally, animals should have a range of oxygen saturation above 95% on room air. Numerous factors, including patient movement, poor perfusion, hair, tissue pigmentation, severe anemia, and vasoconstriction, can cause the pulse oximeter to produce inaccurate readings. Patients with an SpO₂ reading at or below 93% require oxygen supplementation. If there is any question about the degree of respiratory dysfunction, the patient should be given oxygen supplementation until treatment and diagnostics can begin.

Examination of the Abdomen

Following evaluation of the thorax, the abdomen should be examined and gently palpated. Obvious intra-abdominal masses or pain, lacerations, wounds, bruising, ecchymosis, ectoparasites, and external masses (e.g. mammary tumors) should all be noted. All male cats presenting to the emergency room should have their bladder palpated to rule out urethral obstruction, regardless of chief complaint. Next, the tail should be lifted and the rectum examined. The popliteal and inguinal lymph nodes should also be palpated. If not previously obtained, a rectal temperature should be taken. It is a common misconception of veterinary nurses and veterinarians that axillary temperature can be useful if a rectal temperature cannot be obtained. However, prospective evidence-based research has shown that while there is a vague correlation between rectal and axillary temperature in dogs and cats, there is a large gradient between the two measurements that makes clinical interpretation unreliable (Goic et al. 2014).

The hindlegs should be examined and felt in a similar manner to the forelimbs. You should observe the patient's walking and its mannerisms when you are not touching it.

Central Nervous System

During your examination thus far, the patient's level of consciousness (LOC) should have become obvious (Table 1.3). If not, it should be further assessed. Special

Table 1.3 One proposed scale for determining levels of consciousness in dogs and cats.

Level of consciousness	Clinical signs
Normal	Normal demeanor and interaction with environment
Lethargic	Mildly depressed demeanor and interaction with environment; patient is aroused with little difficulty
Obtunded	Moderate to severely depressed demeanor and interaction with environment; patient is aroused with more difficulty than lethargy
Stuporous	The patient responds only to vigorous or painful stimulus
Comatose	The patient does not respond to any stimuli

attention should be paid to whether the patient appears mentally appropriate. This includes altered behavior, depression, head pressing, circling, and ataxia. Patients with altered level of consciousness should be considered potentially unstable and their evaluation by a veterinarian expedited.

Several scales have been used in human and veterinary medicine to classify level of consciousness. The two main categories used to classify LOC are *responsiveness* and *unresponsiveness*. Taken from human emergency medicine, the acronym AVPU is sometimes used. Patients are responsive and alert (A), responsive only to verbal commands (V), responsive only to painful stimulus (P), or unresponsive (U) to external stimulus. More commonly in veterinary medicine, patients are said to be *lethargic* if they have a mild depressed level of consciousness or alertness; this patient can be aroused with little difficulty. Patients which are more depressed and cannot be fully aroused are considered *obtunded*. *Stuporous* patients only respond to vigorous stimulus such as pain. A common way to test this is pinching of a toe. Lastly, *coma* is a state of unarousable unresponsiveness.

When a patient presents to the clinic, it is important to simply observe initially to see how mentally appropriate it is. You should observe the animal and ask yourself the following questions:

- Does the animal know where it is?
- Can it visually focus on its surroundings?
- Is the pet walking normally or is it ataxic?
- Are the pupils the same size and responsive to light?
- Is there seizure activity?
- Does the animal respond to painful stimuli?

It is important to note the patient's level of consciousness upon presentation. The patient's overall prognosis worsens as the LOC declines.

Lastly, while the patient is standing, you should check for conscious proprioception (CP) deficits. With the pet in a standing position, take a paw and flex it so that the dorsal aspect of the paw is touching the ground. The animal should be able to recognize that it is not standing on the pad of its foot and quickly "flip" its foot to the correct position. Consistent CP deficits can indicate a neurological deficit.

Complete History

As part of the secondary assessment, a more detailed complete history is obtained from the owners if questions about the case remain. If a complete history was previously obtained, this step does not need to be repeated.

During this interview, is it important to again remind clients of who you are and what treatment may have already been started on their pet. It may also be of benefit to disclose what costs a client has incurred as part of the pet's care. For example, if a client previously authorized \$500–700 of initial stabilization efforts and that total has been reached, it is important for the client to be informed of this. It may help to confirm aspects of the pet's signalment (e.g. is Fluffy really spayed because it appears she has a pyometra?), history, and the owner's chief complaint as to why the pet was brought to the emergency room. It may be beneficial to question the owner more specifically about progression of the complaint, such as "Are things improving, getting worse, or staying the same?" Additionally, it may be useful to determine possible interventions the owner provided (e.g. We understand that Maxwell is receiving prednisone but have you been giving him aspirin too?). Sometimes if toxicosis from marijuana or other illicit substance is strongly suspected, it may be of benefit to ask owners specifically about these substances. It is important, however, to do this in a non-confrontational and non-judgmental way so that clients can feel that disclosing such information is solely for the benefit of their pet. Lastly, it may be useful to contact previous veterinarians who are familiar with the case to obtain medical records and diagnostic images, and to discuss specifics about the case that are not initially clear.

Unique Triage

The central nervous, cardiovascular, and respiratory systems are the primary systems to initially evaluate during triage because they determine whether the condition is a rapidly life-threatening emergency or not. However, there are some other systems that may not cause life-threatening emergencies but will certainly threaten the

animal's quality of life (Figure 1.6). In general, any patient that could be upsetting to other clients in the waiting room (e.g. one that has bleeding, an eye proptosis, frequent smelly diarrhea, etc.) should have their visit expedited or at least be separated from other clients. If the patient could further injure itself, its care should be expedited (Figure 1.7).



Figure 1.6 Marrow bones stuck on the lower jaw are a common example of a unique oral emergency. Courtesy of Dr Thomas Walker.



Figure 1.7 This cat had its lip punctured by a fishing hook. Not only would this case be upsetting for other clients to see, the situation could be made worse if the patient was not treated quickly. Courtesy of Dr Christopher Norkus.

Reproductive System

Whenever a pregnant patient presents to the emergency service, consideration should also be given to her fetuses. While the female herself may be stable, there could be a reproductive emergency that jeopardizes the health of the unborn neonates. The following questions should be asked of the client presenting with a pregnant patient:

- When was your pet bred and when is the expected due date?
- Have you noticed any vaginal discharge? If so, what color was it? Is there foul odor?
- How long has the mother been having contractions?
- How long in between puppies/kittens has it been?
- Have you seen a puppy or kitten coming out? How long has it been there?
- Have you taken the patient's rectal temperature and if so, have you noticed changes?
- Has the pregnancy been confirmed by radiographs or ultrasound?
- Has the pet been pregnant before and if so, were there pregnancy complications?

Ideally, whenever a reproductive emergency presents to the hospital, all recently born puppies and kittens should also be brought to the hospital for evaluation and to be reintroduced with their mother as soon as her care is finished. Once removed from the mother, the newborns should be kept in a warm and clean environment. In this way, the focus can be given only to the mother. Even if the owners state how many puppies or kittens the mother is expecting, abdominal radiographs should still be considered to confirm the accuracy of this number and fetus viability. The radiograph will also be able to show if there is a fetus stuck in the birth canal.

If dystocia is suspected, drugs may be administered to help increase the strength and frequency of contractions or the pet may need to undergo a cesarean section. If a natural birth is going to be attempted, it is generally better to allow the pet to be with its owner in a quiet exam room away from traffic and other pets. Animals will be reluctant to deliver in places where they are not comfortable, so making them as comfortable as possible is important. Reproductive emergencies are often time-consuming and utilize much staff time.

The reader is directed to Chapter 15 for further discussion on specific reproductive emergencies.

Ocular Emergencies

While they may not be life-threatening, ocular emergencies are often stressful to pet owners and pets alike. It is imperative that these clients are told to come to the hospital immediately.

Upon arrival, the pet should be triaged in a similar manner to all other pets. All patients presenting for ocular emergencies should have an Elizabethan collar placed to avoid further injury to the eye. Depending on the nature of the eye problem, the pet may need immediate attention. In some cases, this may be analgesia or it may be because ocular emergencies can be visually upsetting to other clients. An example of this is if a patient's eye is proptosed. While this is not life-threatening, it is often painful for the pet and very upsetting to the pet owner and other clients at the hospital. Often, administering pain medications to the pet may allow you to perform a better ocular exam.

The reader is directed to Chapter 16 for further discussion on specific ocular emergencies.

Toxin Exposure

Patients that have known or suspected toxin exposure should be triaged like any other patient but rapid intervention, including initial decontamination as indicated, should be expedited. Time may be of the essence to limit toxin absorption. In some cases, this may include a patient being evaluated by a veterinarian in the treatment area without the owner, inducing emesis or bathing the patient, and then having the patient go back to wait with the owner until a veterinarian can fully attend to the case.

Some toxin exposure cases can deteriorate quickly and it is important for the emergency veterinary nurse to have a solid working knowledge of toxins, the signs they cause in pets, anticipated treatment, and progression. In many cases, the owner may have already contacted an animal poison control center and have a case reference number or treatment instructions for the attending veterinarian to refer to. If this is not available, the emergency veterinary nurse may be responsible for contacting an animal poison control center for treatment recommendations.

The reader is directed to Chapter 17 for further discussion.

Neonates

Neonates are very delicate. Approximately 11–34% of kittens and puppies will die within the first 12 weeks of their life (Fortney 2004). When a client calls with a medical emergency involving a neonate, it is important that instruction be given to the client on how to appropriately transport the neonate to the hospital. Ideally, the sick neonate should be brought in separately from other pets; this is to minimize the risk of disease transmission and stress to the rest of the litter. The mother will generally become very stressed as well and may stop feeding the rest of the litter if brought to the hospital.

It is imperative that anyone transporting neonates be instructed on how to keep them warm during transport through the use of hot water bottles and warm blankets. Thermoregulation is a severe problem in neonates because of their lack of insulating fat (Fortney 2004). Shivering reflex and peripheral vasoconstriction responses are not fully developed for at least one week (Fortney 2004).

Upon entering the hospital, the neonate should be immediately addressed and placed into a warm environment. The owner should not be expected to be responsible for warming the neonate once in the hospital. A normal neonatal temperature is between 98°F and 100°F. Rarely is overheating a problem but electric blankets and heat lamps should be avoided because of the high risk of burns and overheating associated with them. Neonates must always be able to escape from the external warming source to prevent burns.

Dehydration and hypoglycemia are both great concerns for neonates. Even mild vomiting or diarrhea is considered an emergency in neonates because of how quickly they can become dehydrated. Hypoglycemia is particularly common in toy breed neonates (Fortney 2004). This is because neonates have an increased demand for glucose due to their low-fat reserve (Fortney 2004). They also have poor liver and muscle glycogen reserves (Fortney 2004). A normal blood glucose is 90–140 mg/dL. Because hypoglycemia is so common, any neonate that presents to a veterinary clinic with signs of illness should immediately have a blood glucose performed.

Wildlife

Each state has its own regulations and laws pertaining to the handling of wildlife. It is important that each hospital becomes familiar with these. No matter where you are located, you will, at some point, have someone bring wildlife into your veterinary hospital for treatment. Unless it is an endangered species, most state laws will allow for examination and assessment for rehabilitation, stabilization, or euthanasia. If the animal is deemed too sick or injured to be rehabilitated, then euthanasia should be performed unless it is an endangered species. Details regarding endangered species can be found on the United States Fish and Wildlife Service website (www.ecos.fws.gov).

It is important that each hospital becomes familiar with what wildlife is endangered in their region because it is illegal to euthanize without notifying the state first. These animals are generally treated no matter how severe the injury in order to preserve the species. If it is thought that the animal can be treated and rehabilitated, then the hospital may opt to start initial treatment and transport

the animal to a facility with a wildlife rehabilitator at a later time. Unless the veterinary hospital has a licensed wildlife rehabilitator on staff, it is not recommended that a small animal hospital care for wildlife and in some cases doing so may be illegal. Wildlife requires different housing and care from other animals, and only experienced individuals should care for them.

When a good samaritan brings in an injured wild animal, it is important to gather information just as you would for a regular client. This is important because if the veterinary hospital thinks the animal may potentially be a carrier of rabies, then the good samaritan may need to follow up with postexposure prophylaxis at a hospital. The state may also need to be notified of the exposure. It should also be recorded where and when the animal was found.

The good samaritan should not be made to wait in the waiting room. Once all information has been obtained, the person can leave and the animal should be treated. It is important to remember that it is a wild animal, and gloves, masks, and other restraint devices should be used for handling.

Exotic Animals

It is important to learn the normal behavior and physical exam findings for the exotic animals you may see at your practice. Most exotic pets are prey species, and being handled by a stranger could cause them to think you are a predator (Fordham 2007). They may either “fight or freeze” and their behavior could easily worsen their condition. It is important to know that any exotic animal showing any signs of illness, no matter how slight, is likely very sick. It is thought that prey species do not show signs of illness until they are very sick because in the wild, any sign of illness would likely mean being eaten by a predator (Fordham 2007).

The first step to triaging an exotic animal is to simply observe it in its own cage (Fordham 2007). It is recommended that clients bring the pet in its normal habitat. Generally, cages are small enough to be transported. If it is too large to be transported, the client should put the animal in something that most closely resembles its normal habitat. This will help to reduce stress and allow you to observe the animal in its normal environment. Remember that some exotic animals (e.g. ectotherms) require a constant heat source so you may need to provide one once the pet has arrived at the clinic.

You should observe the animal for breathing difficulties, nasal discharge, level of activity (most exotic animals are very active, with the exception of reptiles), and alertness. If there is any fecal matter in the cage, it should be examined to determine whether it is normal. Any change in fecal matter likely indicates there is a problem. Changes to fecal material include becoming smaller, watery, the presence

of blood, changes in color, or being excessively dry. If the pet appears healthy and happy, it can likely wait with its owner in a quiet exam room with the lights dimmed.

Owners should be asked about the husbandry of the exotic pet, including what items are found within the pet’s cage, what type of bedding is used, where the cage is kept, what lighting the pet receives, what the cage is made out of, and what else, if anything, lives in the cage. They should also be asked what the pet eats and how much water it receives. Lastly, they should be asked about their own observations of the pet’s fecal matter, urination, and overall activity.

Further information about special species and avian cases can be found in Chapter 19.

Mass Casualty Incidents and Disaster Triage

Usually in veterinary medicine, we find ourselves triaging one pet at a time. Sometimes, several patients present simultaneously and the emergency room can become chaotic. Even worse is when man-made or natural disaster strikes and it becomes necessary to triage dozens or even hundreds of animals in a short period of time.

The definition of a disaster is when community resources become overwhelmed, leading to an inability to function normally. This can be caused by something as widespread as a hurricane or earthquake or as focal as a house fire (Figure 1.8). You may have advance notice of the disaster or you may have no notice. During a disaster, patients must be triaged in a way that will benefit the most animals, with less emphasis on the individual. Tough choices may need to be made. Picture a truck full of 50 pet store puppies losing air conditioning on a summer day when it is 95°F outside. As an emergency room nurse, you do not always get a choice whether you want to be part of the disaster or not (Figure 1.9).

When triaging animals during a disaster, it is important to try and forget about the disaster itself. If you are thinking about that, you are not completely focused on your patient. Also, if you are overwhelmed by the situation, you may assume all injuries and diseases are related to the disaster. Pre-existing illnesses may be present in several patients or animals may start to acquire new illnesses that are not related to the disaster. For example, the cat that came in for hypothermia also may have pyelonephritis. You should not assume the poor hair coat and emaciation of the cat are solely disaster related. It is important to always perform a complete triage and history to ensure that each patient is treated separately from the disaster. Stable patients should be transferred to a hospital that is not affected by the disaster so that long-term care can be given to them.



Figure 1.8 A home destroyed by natural disaster which could easily contain several pets. Courtesy of Amy Newfield.



Figure 1.9 Cages set up within a veterinary medical staging unit to receive patients during a natural disaster. Courtesy of Amy Newfield.

Having an organized approach will help ensure that the most patients possible are triaged appropriately. A method must be designed for dealing with numerous patients at once. While there is no method designed for multiple simultaneous triages in veterinary medicine, there are two human methods that can be used for efficient triage during a disaster.

- Simple Triage and Rapid Treatment (START)
- Secondary Assessment of Victim Endpoint (SAVE)

Both methods were developed for triaging human casualties during war, and are widely accepted in the veterinary community for dealing with non-human patients.

START

With the START method, each animal is quickly assessed for respiration, alertness, and perfusion status, also known as the RAP status. Using this system, animals are

Color	Type of Injury
Red	Critical—The patient must receive simple life-saving procedures to ensure survival.
Yellow	The patient should survive as long as simple care is given within a few hours.
Green	Minor injuries—The patient can wait for treatment and still survive.
Black	Dead or dying—The patient's injuries are very severe, and the patient is unlikely to survive regardless of the treatment received.

Figure 1.10 START color code system for triaging patients during mass casualty incidents or disaster.

color-coded into red, yellow, green, or black groups and then moved to their color-coded treatment areas (Figure 1.10). Animals should be marked with the appropriate color. Owners can be given cards for their animals, and unowned animals can be marked with identification bands. The date, time, name of the person who triaged, initial problem, and color should all be listed. As a baseline, animals that are walking are considered green. These are animals that have minimal injuries and are considered stable enough to wait for medical treatment.

Having every staff member in the clinic become familiar with the color-coded system will help decrease confusion if and when disaster strikes. Using the START method, animals can be quickly assessed and brought to appropriate treatment areas to receive the treatment they need. Areas should be set up and staffed to deal with a particular color-coded animal. Animals may need to be reassessed as time passes. Reassessment times should be agreed upon so that animals will not be forgotten. An animal's status may change, and it may be given a different color code depending on the current condition.

SAVE

The SAVE method is much faster than the START method and works well when resources and personnel are limited, by focusing them on patients which have the best chance of survival.

In the SAVE method, patients are divided into three categories: those which will die regardless of treatment (group 1), those which will survive regardless of

treatment or non-treatment (group 2), and those which will benefit if medical intervention occurs immediately (group 3). Only those in groups 2 and 3 are given care. As tough as it is, group 1 can either be humanely euthanized if time allows or left to die on their own. Remember, the goal is to save animals. Time and resources should be given only to those that have a chance of survival. Group 2 is put on “hold” while group 3 is treated. After group 3 has been dealt with, group 2 can be reassessed and treated.

This method is fast and efficient because it allows for all resources to focus on only one group. Placing an animal in one of the groups is a judgment call and can be difficult at times. Decisions must be made quickly to save as many patients as possible.

Tactical and Working Canines

Tactical and working canines are broadly classified into two groups: operational K9s (OpK9s) and military working dogs (MWDs). Operational K9s are non-military dogs used in federal and local law enforcement or in search and rescue (SAR) missions. Military working dogs work under military-guided battlefield doctrine. Both groups work in potentially high-threat environments and are at risk for line-of-duty injuries and death. Unfortunately, in 2015 the K9 Officer Down Memorial Page (www.odmp.org/k9) reported 26 deaths and there are likely additional line-of-duty injuries and deaths not recorded by the page.

In recent years, the military has implemented Tactical Combat Casualty Care (TCCC) principles for use in dogs. In 2010, the Committee for Tactical Emergency Casualty Care was formed with the goal of modifying military TCCC principles learned from the battlefield into a set of best practice recommendations for civilian operational K9s. These new principles became known as Tactical Emergency Casualty Care (TECC) and are available on the C-TECC website (www.c-tecc.org). In general, veterinary-specific out-of-hospital emergency medical services are not readily available for small animals although this is beginning to change. In the March 2016 edition of the *Journal of Veterinary Emergency and Critical Care*, the Veterinary Committee on Trauma (VetCOT) Prehospital Subcommittee published its best practice recommendations for prehospital care to be used by both paramedical and non-paramedical personnel

primarily operating in non-tactical environments. They are available for free online (<http://onlinelibrary.wiley.com/doi/10.1111/vec.12455/pdf>).

Several groups are working in conjunction to improve prehospital care of tactical and working dogs. This includes petitioning state veterinary and emergency medical service regulatory agencies to adapt their veterinary practice acts and statutory laws to legally allow human emergency medical providers to administer emergency aid to injured OpK9s. Some large veterinary and emergency and critical care facilities are also now recognized as medical command centers to direct prehospital care for tactical and working canines. This subject is expanding rapidly and the veterinary emergency and critical care nurse must stay abreast of both national and regional developments so that they can be an active voice within the dialogue and ultimately help to provide care to these special patients.

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