

Triage

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TRIAGE is the art of rapidly determining whether a life-threatening clinical problem exists. The word triage is derived from the French verb *trie*, which literally means “to sort.”¹ There is little room for error; delaying treatment for a patient due to inadequate evaluation can result in decompensation or death.

If immediate intervention is required, the patient should be moved to the “ready area” and the owner assured that someone will be with them right away. To accelerate treatment, permission for initial intervention (eg, intravenous catheter placement, fluid administration, endotracheal intubation, oxygen supplementation) should be obtained from the owner at this time.

continues

STEP BY STEP TRIAGE

Safety First

The first step in assessment is to observe the patient for signs indicating possible risks to veterinary staff:



- Fractious, growling, or poorly restrained dogs should not be fully approached until the handler has a muzzle on the pet. Fractious cats should be taken to a secure area and restrained by a trained person with protective gloves.
- If hemorrhage is observed from the patient's nose, then a plastic or wire cage muzzle should be applied; NOT a tight, wrap-around muzzle that may jeopardize the animal's airway.
- If blood on an animal is suspected to be human, gloves and protective eyewear should be worn. Unvaccinated animals presenting with unusual neurologic signs should be handled only by personnel wearing protective gowns, gloves, and eyewear in case the animal is infected with rabies.
- Animals having difficulty breathing should receive oxygen during the assessment to avoid decompensation and prevent injury to veterinary staff should the patient become frantic due to hypoxia.

ABC = airway, breathing & bleeding, circulation & consciousness; AVPUP = alert, voice, pain, unresponsive, pupils; CRT = capillary refill time

Primary Survey

The initial stage of triage is called the *primary survey*.^{2,3} This includes obtaining pertinent historical facts and performing rapid assessment of the ABCs:

AIRWAY

**BREATHING &
BLEEDING**

**CIRCULATION &
CONSCIOUSNESS**



Whether the assessment occurs in the treatment room or waiting room, the animal is removed from any carrier or towel and quickly examined for abnormalities involving airway, breathing, bleeding, circulation, and consciousness. Important physical parameters to assess at triage and what they indicate are listed in the Table, page 18.

1

History

The primary complaint, time of onset, and past pertinent medical conditions should be obtained from the owner. Historical complaints that should motivate the veterinary team to



anticipate life-threatening physical problems include:

- Not breathing, labored breathing, or airway foreign body
- Profuse bleeding
- Abdominal distension, prolapsed organs, or dystocia
- Inability to urinate
- Seizures, collapse, altered consciousness, or unconsciousness
- Heat stroke, severe cold exposure, or burns
- Potential toxicities or snakebite
- Trauma—hit by car, dog fight, falling from height, gunshot wound(s), stab wound(s).

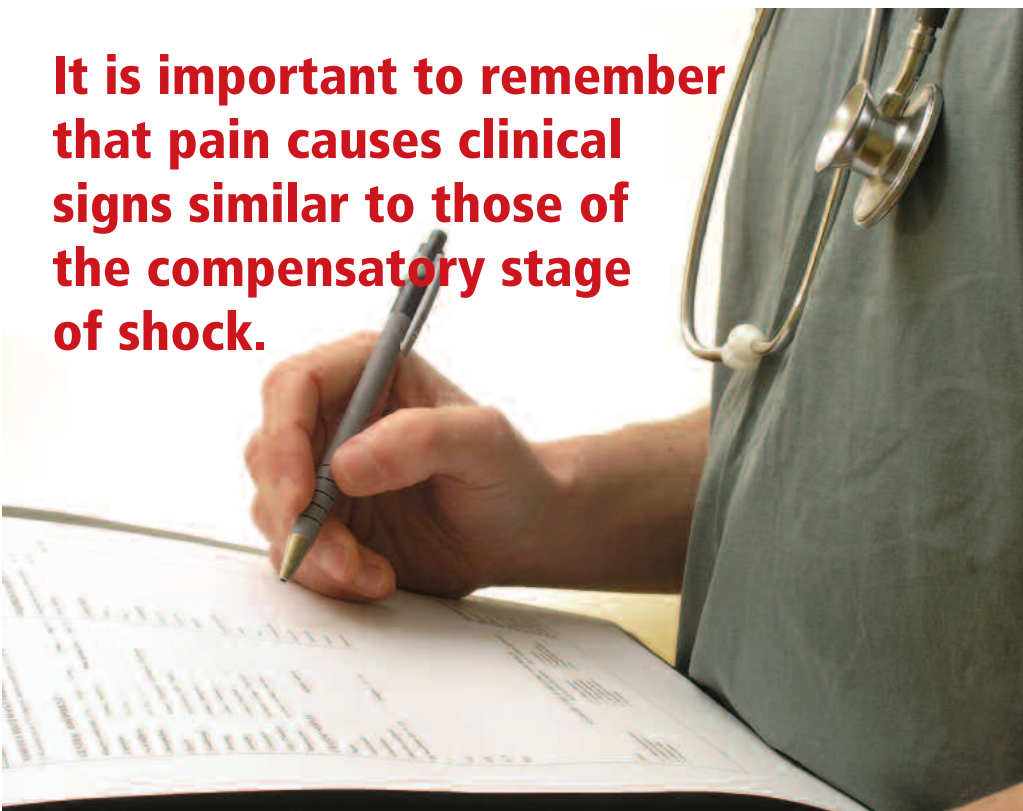
2

Airway

Complete airway obstruction is a catastrophic problem—the patient is moved to the top of the triage list for rapid resuscitation. This includes establishing a patent airway by relieving airway obstruction, oxygen supplementation, intubation and ventilation as needed, and restoration of circulation as quickly as possible.

Partial airway obstruction is suspected when the patient has loud, noisy breathing that is easily heard without the aid of a stethoscope. Inspiratory stridor suggests upper airway partial obstruction; expiratory stridor suggests intrathoracic tracheal partial obstruction. The severity of obstruction will determine where on the triage priority list the animal is placed: partial airway obstruction can be mild (such as in “normal” brachycephalic breed dogs), putting the pet lower on the list, or life-threatening (cyanosis, increased effort to breathe).

It is important to remember that pain causes clinical signs similar to those of the compensatory stage of shock.



pulses. This stage is common in dogs but rarely seen in cats.

The middle stage or early decompensatory stage of shock—where peripheral perfusion is minimized in order to provide more blood and oxygenation to core circulation—results in tachycardia (dogs), prolonged CRT, pale mucous membranes, and weak or absent peripheral pulses. As shock progresses to the preterminal stage or late decompensatory



stage, the heart rate is slow to normal and there is no evidence of peripheral perfusion (white

mucous membranes, absent CRT, no peripheral pulses, and cold extremities).

All forms of shock warrant triage for further assessment and resuscitation, with the middle stage or preterminal stages warranting aggressive therapeutic intervention. It is important to remember that pain causes clinical signs similar to those of the compensatory stage of shock.

3 Breathing

Signs of respiratory compromise, in order from mild to severe to catastrophic include: increased breathing rate, change in breathing pattern, assuming a postural position for relief, open-mouth breathing, and cyanosis. Careful observation of breathing patterns helps identify whether pathology is due to diseases of the lung parenchyma, pleural space, large airway, or small airway.

Prioritizing patients with breathing abnormalities depends upon degree of hypoxia (ie, life-threatening respiratory hypoxia causes physical signs of cyanosis) and the patient's effort to breathe. Rapid respiratory rate, abdominal movement, flared nostrils, lips drawn back, abducted elbows, and open-mouth breathing demonstrate increased effort. Patients with any of these signs should be moved to the top of the priority list; resuscitation is initiated with oxygen support and relief of the underlying problem.

4 Bleeding

A quick assessment of the entire body surface (including skin, gums, nostrils, and rectal/anal areas) is made to identify ongoing hemorrhage or past bleeding. Significant



findings consist of fresh blood, dried blood, petechiae, ecchymosis, and swellings with bruising. Evidence of ongoing hemorrhage necessitates immediate hemostasis. When bleeding is found, careful assessment of the circulatory system is warranted.

5 Circulation

Abnormal circulation results in tissue hypoxia. Examination of mucous membrane color, capillary refill time (CRT), and peripheral pulse quality provides an assessment of peripheral perfusion. In the initial shock process, the body compensates by increasing the sympathetic output, resulting in increased heart rate, heart contractility, and mild peripheral vasoconstriction. Clinical signs include tachycardia, rapid CRT, bright pink mucous membranes, and bounding peripheral

6 Consciousness

Human medicine uses the acronym AVPUP when assessing level of consciousness.

- Patient is **A**lert
- Responsive to **V**oice
- Responsive only to **P**ain
- **U**nresponsive; and **P**upils are checked for symmetry and reactivity.⁴

When a patient is unconscious; having seizures, uncontrolled tremors, or myoclonus; or has uncontrolled hyperexcitability, it is moved up the triage list and moved to the ready area for further evaluation and therapeutic intervention as indicated for stabilization.

7 Pain

Once the ABCs have been assessed, the pet is observed for any evidence of severe pain. The presence of pain moves the patient up the triage list and indicates that further assessment is required. Analgesics should be provided as soon as it is determined that the patient can tolerate medication.

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Table. Triage: Physical Parameters to Evaluate

Parameter	Abnormality & Interpretation
Airway	No air passage: Total obstruction or respiratory arrest Loud sounds: Partial airway obstruction Inspiratory stridor: Pharyngeal/laryngeal obstruction Expiratory stridor: Intrathoracic tracheal obstruction
Breathing pattern	Loud sounds: Upper airway obstruction Dysynchronous: Pleural space disease Synchronous: Parenchymal origin Expiratory push: Small airway origin
External hemorrhage	Pulsing blood: Arterial Slow-oozing blood: Venous
Capillary refill time	< 1 second: Hyperdynamic state or peripheral vasodilation > 2 seconds: Poor peripheral constriction
Mucous membrane color	White: Anemia, severe shock Blue: Cyanosis Brown: Methemoglobinemia Petechiation: Thrombocytopenia Brick red: Hyperdynamic shock Yellow: Icterus
Pulse intensity	Weak femoral: Poor peripheral perfusion Bounding femoral: Hyperdynamic perfusion
Heart rate	Dog: > 200 bpm: Poor coronary diastolic filling < 60 bpm: Impaired cardiac output Cat: > 250 bpm: Poor coronary diastolic filling < 150 bpm: Impaired cardiac output
Level of consciousness	Uncontrolled hyperexcitability: Phase of unconsciousness, consider toxins Seizures, stupor, coma: Increased intracranial pressure
Wound or fracture	Open, unstable: Bacterial invasion, nerve & muscle damage

ABC = airway, breathing & bleeding, circulation & consciousness; bpm = beats per minute; CRT = capillary refill time; EENT = eyes, ears, nose, throat

Secondary Survey

After initial triage and resuscitation, a secondary survey is performed. This reassessment of vital signs (ABCs) and thorough physical examination is not complete until all catastrophic problems involving the ABCs are addressed. The mnemonic “**A CRASH PLAN**” can aid in the secondary survey.^{2,3,5}

- A Airway & breathing** (nose, mouth, trachea, thoracic inlet, all lung fields)
- C Cardiovascular** (mucous membranes, CRT, toe temperature, central/peripheral pulses, heart tones)
- R Respiratory** (breathing effort, chest & abdominal movement, percussion)
- A Abdomen** (wounds, bruises of inguinal/retroperitoneal region; visualize, listen, & percuss)
- S Spine** (wounds, bruises, pain; palpate entire spine & note general movement)
- H Head & EENT** (nose, face, skull, jaw, teeth, eyes, ears, tongue, pharynx)
- P Pelvis** (ilial wings, tuber ischium, greater trochanters, rectal area, genitals)
- L Legs** (distal to proximal; check movement, feeling, function, joints, skin)
- A Arteries & veins** (clip neck and examine jugular vein filling, check pulses)
- N Nerves** (assess level of consciousness, cranial nerves, spinal function, peripheral nerves)

Taking rectal temperature is avoided in animals with bradycardia or severe mental depression to avoid vasovagal-induced cardiac arrest or near arrest. Arterial blood pressure (taken by oscillometrics or Doppler) and pulse oximetry data are also considered part of triage vital signs in some hospitals.

At this stage of triage, any abnormalities that are found that can result in total or partial disability or that are suggestive of impending decompensation move the animal up the triage list, falling just behind patients with severe or catastrophic changes in their ABCs.

Triage Classification

In human medicine, a triage classification system has been developed to standardize the process of triage. This system provides a means for medical staff to rapidly and sequentially

triage many patients at one time, such as in a disaster setting (see Box).^{2,3} In all situations, a detailed triage protocol should be developed and followed by the entire veterinary staff.

Example of Triage Classification



- Class I patients (catastrophic):**
 Must receive treatment immediately (traumatic respiratory or cardiorespiratory arrest/failure or airway obstruction, also unconsciousness); catastrophic patient may be described as "dying before your eyes"
- Class II patients (very severe, critical):**
 Need attention within minutes to an hour (multiple injuries, shock, or bleeding; adequate airway function)
- Class III patients (serious, urgent):**
 Action within a few hours (severe open fractures, severe open wounds or burns, penetrating wounds to abdomen without active bleeding, blunt trauma; no shock or altered state of consciousness)
- Class IV patients (less serious but still pressing):**
 Require action within 24 hours; does not apply to most trauma patients

See Aids & Resources, back page, for references, contacts, and appendices.
 Article archived on www.cliniciansbrief.com

Baytril® (enrofloxacin)

Antibacterial Tablets For Dogs and Cats and
 Antibacterial Injectable Solution 2.27% for Dogs Only

BRIEF SUMMARY:
 Before using Baytril Tablets (for dogs and cats) or Baytril 2.27% Injectable (for dogs only), please consult their respective product inserts, a combined summary of which follows:

DESCRIPTION:
BAYTRIL INJECTABLE:
 Each mL of injectable solution contains: enrofloxacin 22.7 mg, n-butyl alcohol 30 mg, potassium hydroxide for pH adjustment and water for injection, q.s.

BAYTRIL TABLETS:
 Tablets are available in three sizes (22.7, 68.0 and 136.0 mg enrofloxacin).

CAUTION:
 Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian.
 Federal law prohibits the extralabel use of this drug in food-producing animals.

INDICATIONS:
 Baytril® (brand of enrofloxacin) Antibacterial Tablets (dogs & cats) and Injectable Solution 2.27% (dogs only) are indicated for the management of diseases associated with bacteria susceptible to enrofloxacin.

CONTRAINDICATIONS:
 Enrofloxacin is contraindicated in dogs and cats known to be hypersensitive to quinolones.
Dogs: Based on the studies discussed under the section on Animal Safety Summary, the use of enrofloxacin is contraindicated in small and medium breeds of dogs during the rapid growth phase (between 2 and 8 months of age). The safe use of enrofloxacin has not been established in large and giant breeds during the rapid growth phase. Large breeds may be in this phase for up to one year of age and the giant breeds for up to 18 months. In clinical field trials utilizing a daily oral dose of 5.0 mg/kg, there were no reports of lameness or joint problems in any breed. However, controlled studies with histological examination of the articular cartilage have not been conducted in the large or giant breeds.

ADVERSE REACTIONS:
BAYTRIL TABLETS:
Dogs: Two of the 270 (0.7%) dogs treated with Baytril® (brand of enrofloxacin) Tablets at 5.0 mg/kg per day in the clinical field studies exhibited side effects, which were apparently drug-related. These two cases of vomiting were self-limiting.
Cats: No drug-related side effects were reported in 124 cats treated with Baytril® (brand of enrofloxacin) Tablets at 5.0 mg/kg per day for 10 days in clinical field studies.

Post-Approval Experience: The following adverse experiences, although rare, are based on voluntary post-approval adverse drug experience reporting. The categories of reactions are listed in decreasing order of frequency by body system.

Dogs:
 Gastrointestinal: anorexia, diarrhea, vomiting, elevated liver enzymes
 Neurologic: ataxia, seizures
 Behavioral: depression, lethargy, nervousness

Cats:
 Ocular: Mydriasis, retinal degeneration (retinal atrophy, attenuated retinal vessels, and hyperreflective tapeta have been reported), loss of vision. Mydriasis may be an indication of impending or existing retinal changes.
 Gastrointestinal: vomiting, anorexia, elevated liver enzymes, diarrhea
 Neurologic: ataxia, seizures
 Behavioral: depression, lethargy, vocalization, aggression

BAYTRIL INJECTABLE (Dogs Only):
 No drug-related side effects were reported in 122 clinical cases treated with Baytril® (enrofloxacin) Injectable Solution followed by Baytril® Tablets at 5.0 mg/kg per day.
 For medical emergencies or to report adverse reactions, call 1-800-422-9874.

ANIMAL SAFETY SUMMARY:
BAYTRIL TABLETS and INJECTABLE:

Dogs: Adult dogs receiving enrofloxacin orally at a daily dosage rate of 52 mg/kg for 13 weeks had only isolated incidences of vomiting and inappetence. Adult dogs receiving the tablet formulation for 30 consecutive days at a daily treatment of 25 mg/kg did not exhibit significant clinical signs nor were there effects upon the clinical chemistry, hematological or histological parameters. Daily doses of 125 mg/kg for up to 11 days induced vomiting, inappetence, depression, difficult locomotion and death while adult dogs receiving 50 mg/kg/day for 14 days had clinical signs of vomiting and inappetence. Adult dogs dosed intramuscularly for three treatments at 12.5 mg/kg followed by 57 oral treatments at 12.5 mg/kg, all at 12 hour intervals, did not exhibit either significant clinical signs or effects upon the clinical chemistry, hematological or histological parameters.

Oral treatment of 15 to 28 week old growing puppies with daily dosage rates of 25 mg/kg has induced abnormal carriage of the carpal joint and weakness in the hindquarters. Significant improvement of clinical signs is observed following drug withdrawal. Microscopic studies have identified lesions of the articular cartilage following 30 day treatments at either 5, 15 or 25 mg/kg in this age group. Clinical signs of difficult ambulation or associated cartilage lesions have not been observed in 25 to 34 week old puppies following daily treatments of 25 mg/kg for 30 consecutive days nor in 2 week old puppies with the same treatment schedule.

Tests indicated no effect on circulating microfilariae or adult heartworms (*Dirofilaria immitis*) when dogs were treated at a daily dosage rate of 15 mg/kg for 30 days. No effect on cholinesterase values was observed.

No adverse effects were observed on reproductive parameters when male dogs received 10 consecutive daily treatments of 15 mg/kg/day at 3 intervals (20, 45 and 14 days) prior to breeding or when female dogs received 10 consecutive daily treatments of 15 mg/kg/day at 3 intervals: between 30 and 0 days prior to breeding, early pregnancy (between 10th & 30th days), late pregnancy (between 40th & 60th days), and during lactation (the first 28 days).

BAYTRIL TABLETS:
Cats: Cats in age ranges of 3 to 4 months and 7 to 10 months received daily treatments of 25 mg/kg for 30 consecutive days with no adverse effects upon the clinical chemistry, hematological or histological parameters. In cats 7-10 months of age treated daily for 30 consecutive days, 2 of 4 receiving 5 mg/kg, 3 of 4 receiving 15 mg/kg, 2 of 4 receiving 25 mg/kg and 1 of 4 nontreated controls experienced occasional vomiting. Five to 7 month old cats had no side effects with daily treatments of 15 mg/kg for 30 days, but 2 of 4 animals had articular cartilage lesions when administered 25 mg/kg per day for 30 days.

Doses of 125 mg/kg for 5 consecutive days to adult cats induced vomiting, depression, incoordination and death while those receiving 50 mg/kg for 6 days had clinical signs of vomiting, inappetence, incoordination and convulsions, but they returned to normal.

Enrofloxacin was administered to thirty-two (8 per group), six- to eight-month-old cats at doses of 0, 5, 20, and 50 mg/kg of body weight once a day for 21 consecutive days. There were no adverse effects observed in cats that received 5 mg/kg body weight of enrofloxacin. The administration of enrofloxacin at 20 mg/kg body weight or greater caused salivation, vomiting, and depression. Additionally, dosing at 20 mg/kg body weight or greater resulted in mild to severe fundic lesions on ophthalmologic examination (change in color of the fundus, central or generalized retinal degeneration, abnormal electroretinograms (including blindness), and diffuse light microscopic changes in the retina).

DRUG INTERACTIONS:
 Compounds that contain metal cations (e.g., aluminum, calcium, iron, magnesium) may reduce the absorption of some quinolone-class drugs from the intestinal tract. Concomitant therapy with other drugs that are metabolized in the liver may reduce the clearance rates of the quinolone and the other drug.

BAYTRIL TABLETS and INJECTABLE:
Dogs: Enrofloxacin was administered to dogs at a daily dosage rate of 10 mg/kg concurrently with a wide variety of other health products including anthelmintics (praziquantel, febantel, sodium disphenol), insecticides (fenthion, pyrethrins), heartworm preventatives (diethylcarbamazote) and other antibiotics (ampicillin, gentamicin sulfate, penicillin, clindamycin). No incompatibilities with other drugs are known at this time.

BAYTRIL TABLETS:
Cats: Enrofloxacin was administered at a daily dosage rate of 5 mg/kg concurrently with anthelmintics (praziquantel, febantel), an insecticide (propoxur) and another antibacterial (ampicillin). No incompatibilities with other drugs are known at this time.

WARNINGS:
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PRECAUTIONS:
BAYTRIL TABLETS and INJECTABLE:
 Quinolone-class drugs should be used with caution in animals with known or suspected Central Nervous System (CNS) disorders. In such animals, quinolones have, in rare instances, been associated with CNS stimulation which may lead to convulsive seizures.

Quinolone-class drugs have been associated with cartilage erosions in weight-bearing joints and other forms of arthropathy in immature animals of various species.

The use of fluoroquinolones in cats has been reported to adversely affect the retina. Such products should be used with caution in cats.

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Baytril Tablets: U.S. Patent No. 4,670,444 [NADA # 140-441] Approved by FDA October, 2004
 Baytril Injectable 2.27%: U.S. Patent No. 4,670,444 [NADA # 140-913] Approved by FDA December, 2003

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