



## IMPORTANCE OF TRIAGE IN VETERINARY ER

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## DOGS HIT-BY-CARS

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## TRUE EMERGENCY TRACHEAL RUPTURE

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# THE



# CAMPUS

*we could be heroes!*

## THIN, FRAGILE LINE BETWEEN DEATH AND LIFE! LET'S TALK ABOUT TRAUMA...

### The Importance of Triage in Veterinary Emergency

Article by Miruna Beda

Let's say it's your first time ever being on night duty and you have a diabetic patient in the reception with what is presumed to be a hyperglycemic crisis when the phone rings. At the other end you hear an erratic person crying about their cat falling from 5th floor; at the same time you hear a hospitalized patient's IV pump beeping because of a supposed occlusion. Aside from the imminent mental crisis you'll be in (it's fine, everyone goes through it their first time), what else will you do? Surely, you will try to apply the principles of triage, one of the most important skills veterinary staff can have. Whether you've been in the situation described above or not, it won't hurt to freshen up your memory and maybe even learn something new, so read along!

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# THE CAMPUS

*we could be heroes!*

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## welcome back to the campus

After a long and lazy summer vacation we are back to our beloved campus.

People have ideas in their lives, but only few become reality. The idea of this journal was supported by our Rector and the Dean. After we had the approval, together with a bunch of students from Romanian, English, and French sections, "The Campus" finally came to life last December and in a very short time it became famous and popular.

This was an amazing success. With our university's power and support, The Campus issues were printed in **Ex Terra Aurum - USAMV Bucharest** and were also published on the USAMV and FMVB web pages in pdf version. As I mentioned already, in a short period of time The Campus became loved by many future veterinarians. There were days when even cat and dog owners were reading the articles in the waiting room. The impact was huge.

But fame can be dangerous sometimes. If you feel euphoric and drunk by the victory, you will be lost... For this reason our student editors kept on working hard to provide students with interesting topics, and share the joy of learning in another way. If you learn to be humble enough, fame and victory can only be the results of your hard work. Nothing more than that. The important thing is: nobody can take away the joy of doing something worth it.

And this was the short summary of our last two semesters.

For 2022-2023, we decided to change "**The Game Plan**". As we were publishing monthly, starting with this issue we will publish The Campus once every two months. In this way you will receive more subjects, analyzed more in depth.

The next big change is that in each issue we plan to have guest authors (board certified doctors, speakers, masters). In this issue the first of our guest authors is **Dr. Luis H Tello** who you already know from April. Last April he came to our faculty with Dr. Sergi Serrano, held courses about veterinary emergency and also talked with students during the event "**Talking With The Legends**", accompanied by another legendary veterinary surgeon, Prof. Dr. Theresa Fossum. **Amy Newfield**, who is the unique board certified veterinary technician in USA is our next guest author for this issue. Amy is giving courses to veterinarian doctors in many countries. **Dr. Andrei Căloiu**, is our third guest author. He is a veterinarian doctor in Romania and the president of SRVO (Romanian Veterinary Orthopedics Society). He also prepared a surprise for you. At the end of his article you will find a test with three questions. One student will have the chance to win a book from MSD. Just follow the simple instructions.

Last but not least, our university psychologist **Dr. Alina Chiracu** will be with us starting from this issue. As a very well-known psychologist, she will share many subjects with us via The Campus.

As I mentioned in the beginning, this journal was and still is a journey. Three students from the English section, **Mathilde Breton**, **Chloe Loir** and **Yann Daniel** accompanied us in the first part of The Campus journey. They shared many good articles with us. But as they started their last year, they asked to resign and this is life. Even if it's hard to say goodbye, we understand them because last year is the most challenging year for students because they have to hold their bachelor thesis. So we wanted to tell them here as well, once more, thank you for the good job they did. We wish some years later they would share some great articles as veterinary doctors with us and we wish them and all other last year students success.

Well, what can I write for the junior students of our faculty? Just enjoy the journey...

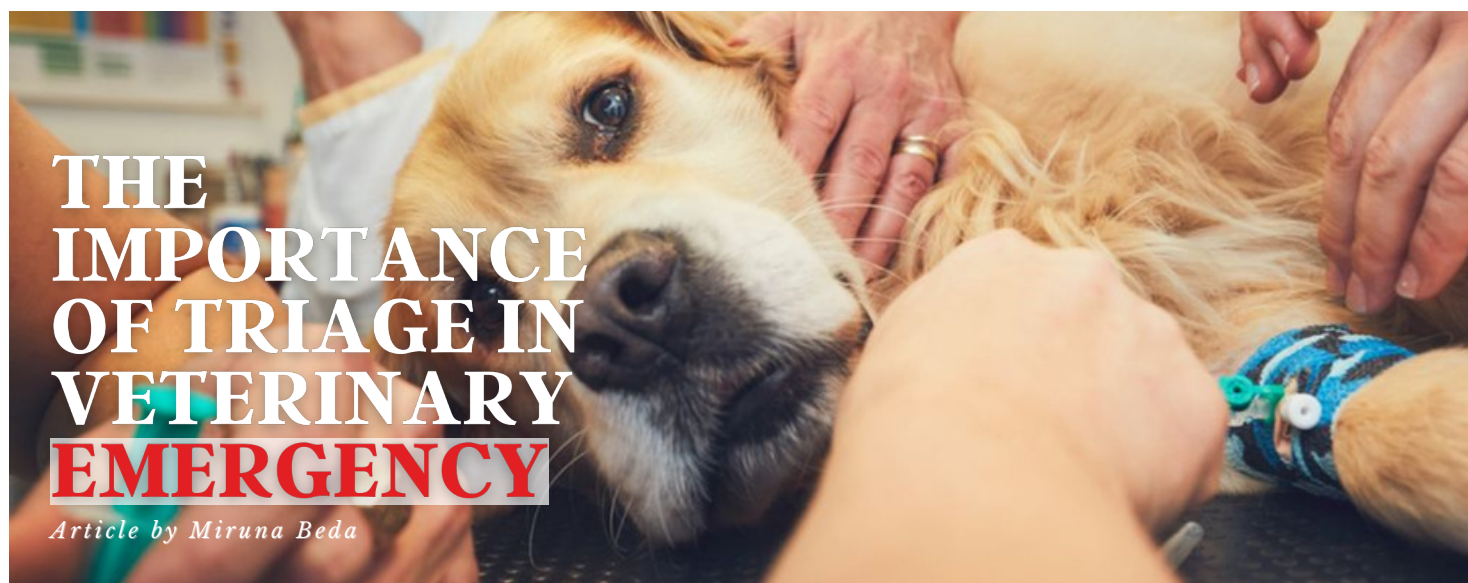
On behalf of Scientific Committee and the authors

General Coordinator  
Şef lucrari Univ. Dr. Seralp Uzun

*Dr. Seralp Uzun*



From left to right: Yann Daniel, Chloe Loir and Mathilde Breton.



continuing from the cover page

Triage is in fact a French word that means “to sort” and it became a vital part of treatment during World War 1. But why is it so crucial? It’s because **it dictates how patients are prioritized in an emergency setting**. Patients with more life-threatening conditions will be treated first, followed by more stable patients, these conditions being established by assessing **the three major body systems**: respiratory, cardiovascular and neurological. The aim of triage is to provide a quick evaluation of the patient based on their physical parameters, to guarantee that life threatening signs are identified early and to ensure the best treatment and outcome. Without triage and by simply obeying the rule of “first come, first served” many patients can potentially die!

There are many different triage scoring systems, but pretty much all are divided by body system: respiratory, circulatory, neurological, obstetrical, gastrointestinal, urogenital and generalized, with different grades of severity requiring different waiting times. As it may seem confusing, just know that the first three basically represent the Upper Royal Court of body systems and if scoring systems are too much, you can always just do a RAP (assess Respiration, Alertness and Perfusion)!

Below I took the liberty to include 2 tables, one that shows base versus emergency situation values in cats and dogs and another showcasing a more complex triage system called the animal trauma triage system (ATT).

Canine Normal	Canine Emergency Finding	Feline Normal	Feline Emergency Finding
Heart Rate: <30#: 100-140 bpm 30-50#: 80-120 bpm >50#: 60-80 bpm	Heart Rate: For any size dog: >160 bpm <60 bpm	Heart Rate: 170-200bpm	Heart Rate: <160 bpm >240 bpm
Respiration Rate: 20-40 bpm	Respiration Rate: >50 bpm or any effort	Respiration Rate: 20-40 bpm	Respiration Rate: >50 bpm or any effort
Mucous Membrane: pink	Any color other than pink	Mucous Membrane: pink	Any color other than pink
Capillary Refill: <2 seconds	Capillary Refill: <1 sec, >3 sec	Capillary Refill: <2 seconds	Capillary Refill: <1 sec, >3 sec
Temperature: 100-102.5°F	Temperature: <99°F, >106°F	Temperature: 100-102.5°F	Temperature: <99°F, >106°F

Table 1- Normal and emergency findings of vitals in cats and dogs. Courtesy of [vetgirlontherun.com](http://vetgirlontherun.com)

If scoring systems are beyond you, the quickest and simplest option you have is to calculate the **shock index score**: this uses the patient's heart rate divided by the blood pressure, and can pick up on patients in compensatory shock that have a seemingly normal heart rate and blood pressure.

One thing to note (and that is highly encouraged for pet owners to do) is that preferably the first triage is done over the phone to assess how quickly the animal needs to be seen. It is absolutely vital that if you're in charge of answering the calls, you know how to ask clear, concise questions where possible.

It goes without saying that **the calls should be logged**, along with owner details, patient signs and advice given. The owner should be advised **how to transport the patient safely**, for example if potential fracture sites should be immobilized and be instructed on how to make a temporary cloth muzzle if they have a dog, since pain can make them aggressive and uncooperative (this should be done only if there are no chest injuries and the dog doesn't belong to a brachycephalic breed). Treatment advice should be given if deemed appropriate, such as cooling a potential hyper thermic patient before going in a hot car. It's also **recommended that the owner brings any medical files** if they've done investigations before, as well as medication if the pet is currently under treatment.

**These are some of the situations that are deemed immediate emergencies:** *collapse, respiratory distress, seizures (that take more than 5 minutes), toxin ingestion, serious physical trauma (such as car accidents, falling out of windows, etc.), inability to urinate (especially in male cats), high temperature (above 40-41°C) and moderate to severe pain.*

After the owner decides to come, staff members should be made aware, so that appropriate equipment can be set up in advance.

If the owner inadvertently omits stating key information when describing the case, they should be asked the following, no matter if it's over the phone or they've already arrived at the establishment.

- What are the current signs?
- Is there any known/suspected toxin ingestion? (If the toxin is known, the patient will need to be seen as soon as possible)
- How long ago did the patient start showing signs? Are they progressing gradually or rapidly? (rapid deterioration indicates an acute disease and that requires seeing more urgently)
- Medical history and if the patient is currently under any medication
- Is the animal able to breathe easily? Is there any noise? Open mouth (if cat?)
- Is it acting normally? Is it conscious, responsive, walking normally?
- Has the animal been through any recent trauma From this information the patient can be deemed an emergency requiring urgent medical attention, or non-urgent requiring a routine appointment.



Picture 1- Dr. Radu Jercau checking the vitals of a cat with blunt trauma. 5th and 6th year vet. med. students in the clinical rotation are helping. From left to right: Dr. Radu Jercau checking the mucus membranes (MM) and capillary refill time (CRT) Vet.Med.Stu. Popescu Elizabeth (keeping the oxygen mask), Vet.Med.Stu. Isarescu Andreea writing the vitals on the file.

## Perfusion

As indicated above to assess the respiratory status, you can check the mucous membrane's color to also evaluate perfusion. If it's deficient, the mucous membrane can present itself in a muddy pink, icteric, brick red or pale grey color.

Any change may be correlated to life threatening conditions so further investigations are necessary. Capillary refill time should always be under 2 seconds, an increase to 3 seconds or greater can be indicative of cardiovascular collapse. Measure the heart rate, is the patient tachycardic or bradycardic? One of the key indicators in the early stage of shock is an elevated heart rate.

## Airways

Any change in breathing should be considered an emergency at first, as owners often mistake labored breathing for "panting" and shallow breathing for "sniffing". Stepping back and simply watching the patient for a bit is important in order to assess the proper degree of respiratory distress.

If the patient is having difficulty, oxygen therapy is recommended, so that investigations can swiftly begin after it's stabilized. You can also tell if the respiratory system is functioning properly by taking a look at the mucous membrane and determining if it's cyanotic or not or by using a pulse-oximetry machine, although it's not always accurate. That's because the device stops measuring or provides erroneous data if the patient is moving, if it's in contact with fur or if the mucous membrane's color differs from the normal, pink color.

If the upper airways are obstructed anesthesia and intubation are immediately required! If intubation fails, tracheostomy will be mandatory.



Picture 2- From left to right: Dr. Radu Jercau after checked breathing pattern quickly auscultating the lung sounds with stethoscope. Vet.Med.Stu. Popescu Elizabeth (keeping the oxygen mask), Vet.Med.Stu. Iordan Andrea (perparing the extension tube for IV fluids. Vet.Med.Stu. Isarescu Andreea writing the vitals on the file.

Auscultation is decisive in order to determine arrhythmias, murmurs and lung sounds, such as crackles, wheezes and dullness. If during the physical exam a heart arrhythmia is perceived, the patient should have an electrocardiogram (ECG) performed. Not all arrhythmias are deadly but it's better if you deem any change from normal a life threatening danger at first.

Another thing to consider is if the animal is in severe pain; if so, analgesia should be quickly administered upon arrival. **The analgesic should be short acting, but potent**, such as fentanyl.

Don't forget to check the temperature! A patient with a temperature under 37 and over 41°C should be admitted immediately. Active cooling is done by pouring cold (not freezing) water over the patient while active warming can be done by means of warmed water bottles, heating pads and incubators.

### Alertness

Upon coming in the veterinary establishment, the level of consciousness should be assessed. Alert is considered when the animal is responsive and showcases a normal behavior. Depressed means that the animal is awake but dull and uninterested in its surroundings. Delirious is the state in which the animal's perception is altered; it's awake but its response to stimulus is inappropriate.

Last, but not least, there is stuporous, characterized by a sleeping state interrupted only by strong stimulus and comatose or deep unconsciousness, uninterrupted no matter how strong the stimulus is. You should also observe if the animal is able to walk and has a normal gait. If the pet is actively going through a seizure, emergency treatment is needed; rectal diazepam is recommended until intravenous access is gained.



Picture 3- From left to right: Dr. Radu Jercau checking the pulse quality (poor or normal) and pulse rate (PR) Vet.Med.Stu. Popescu Elizabeth (keeping the oxygen mask), Vet.Med.Stu. Iordan Andrea (perparing the IV catheters, and other materials that will be needed) Vet.Med.Stu. Isarescu Andreea writing the vitals on the file.

A normal healthy animal is normally anxious at the vet, so any level of depression and quietness should be put under question mark.

*All in all, while I may sound a bit like a broken record, I hope this article managed to show just of how much importance triage is in day to day veterinary practice.*

*Everyone needs to be trained in how to do this effectively, as triage truly saves lives! All veterinary staff should be taught how to assess the three major body systems to determine if a patient has a life threatening condition and to ensure all patients receive the best treatment as quickly as possible.*

### Resources:

- How to triage by Elizabeth Covey- UK-VET-The VeterinaryNurse(<https://www.theveterinarynurse.com/review/article/how-to-triage>)
- How to triage the veterinary patient|VETgirl Veterinary Continuing Education Blog By Justine Lee(<https://vetgirlontherun.com/how-to-triage-the-veterinary-patient-vetgirl-veterinary-continuing-education-blog/>)
- Triage: Why Your Pet May Not Be Seen Right Away-ETHOS VETERINARY HEALTH(<https://www.ethosvet.com/blog-post/triage-why-your-pet-may-not-be-seen-right-away/>)
- Emergency Care for Dogs and Cats By Andrew Linklater , DVM, DACVECC, BluePearl Specialty + Emergency Pet Hospital(<https://www.msdivetmanual.com/special-pet-topics/emergencies/emergency-care-for-dogs-and-cats>)
- ATT score, Journal of Veterinary Emergency and Critical Care. 2007;4(2):77-83

## ANIMAL TRAUMA TRIAGE SCORE (ATT)

Perfusion	
MM pink/moist, CRT 2 sec, T $\geq$ 100F, strong or bounding femoral pulse quality	0
MM hyperemic <b>or</b> pale pink, MM tacky, T $\geq$ 100F, CRT 0–2 sec, fair femoral pulses	1
MM very pale pink & tacky, CRT 2–3 sec, T < 100F, detectable but poor pulses	2
MM gray/blue/white, CRT > 3 sec, T < 100F, non-palpable femoral pulses	3
Cardiac	
HR canine: 60–140 bpm feline: 120–200 bpm, normal sinus rhythm	0
HR canine: 140–180 bpm feline: 200–260 bpm, NSR or VPC < 20/min	1
HR canine: > 180 bpm feline: > 260 bpm, consistent arrhythmia	2
HR canine: < 60 bpm feline: $\leq$ 120 bpm, erratic arrhythmia	3
Respiratory	
Regular resp rate with no stridor, no abdominal component to resp	0
Mild inc resp rate and eff, $\pm$ abd comp, mild upper airway sounds	1
Mod inc resp rate and effort, some abd comp, elbow abduct, mod inc upper airway	2
Marked resp effort <b>or</b> gasping/agonal resp, little/no air passage	3
Eye/Muscle/Integument	
Abrasion/laceration - none or partial thickness. Eye: no fluorescein uptake.	0
Abrasion/laceration - full thickness. <b>No</b> deep tissue involved. Eye - corneal lac not perf.	1
Abrasion/laceration - full thickness, deep tissue involved, art/nerve/muscle intact. Eye: corneal perforation, punctured globe or proptosis.	2
Penetration of abdomen/thorax. Abrasion/laceration full thickness, deep tissue invol, artery/nerve/muscle compromised.	3
Skeletal	
Wt bearing 3 or 4 limbs. No palpable fx/jt laxity.	0
Closed limb fx/rib fx or any mandibular fx. Single jt laxity/lux (including SI). Pelvic fx with unilateral intact SI -ilium-acetabulum. Single limb open/closed fx at or below carpus/tarsus.	1
Multiple grade 1 conditions, single long bone open fx above carpus/tarsus with cortical bone preserved. Non-mandibular skull fx.	2
Vertebral body fx/luxation except coccygeal, multiple long bone open fx above tarsus/carpus, single long bone open fx above tarsus/carpus with loss of cortical bone.	3
Neurologic	
Central: consciousness: alert to sl dull, interest in surrounding. Periph: normal spinal reflexes; purposeful movement and nociception in all limbs.	0
Central: dull/depressed/withdrawn. Periph: abn spinal reflexes with purposeful movement and nociception intact in all 4 limbs.	1
Central: unconscious, responds to noxious stimuli. Periph: absent purposeful movement with intact nociception in 2 or more limbs <b>or</b> nociception absent in 1 limb, decr anal or tail tone.	2
Central: nonresponsive to all stimuli, refractory seizures. Periph: absent nociception in 2 or more limbs, absent tail or perianal nociception.	3

Score 0–3 (3 = most severe) for each of the above 6 categories. Add all scores together for total ATT Score.

"Each point increase in the ATT score resulted in a 2.3–2.6 times decreased likelihood of survival.

*Journal of Veterinary Emergency and Critical Care. 2007;4(2):77–83*



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# WAITING FOR YOU IN PORTO



# THE BLUE CAT EMERGENCY

Article by Dr. Luis H. Tello  
MV, MS, DVM, CCOS



## meet the AUTHOR

Dr. Luis Tello graduated with Honors at the University of Chile in 1987. He began his faculty career in the Radiology and Nuclear Medicine Department, but soon after moves to the Small Animal Medicine Department.

He got his MSc degree in Animal Pathology and move to USA for a fellowship at the University of Florida.

He received training on Emergency and Critical Care in the Center Hospital for ER & Trauma in Santiago, Chile, and at the Universities of Florida, Washington State, Virginia- Maryland and UC-Davis.

He was the Chairman of the Small Animal Medicine Residence Program and was the Director of the three Teaching Hospitals of the College of Veterinary Medicine until 2006.

Later in 2015, he moves to a new position as the Chief of Staff for one of the Health and Education Hospital of Hannah the Pet Society in Tigard, Oregon, where he was the Chief Medical Officer until August 2019.

In 2020, after working as Relief ER Doctor for 13 hospitals in the Portland, Oregon and Vancouver, Washington, he took over the Manager DVM position for the National Veterinary Associates at the Tigard Animal Hospital.

Luis launched in March 2010 his 1st book: "Trauma in Companion Animals" and in 2015 his second book: "Management of Emergency by Trauma in Small Animals". September 2019 he published his 3rd Book: "The cat hit by a Car" Also, he published numerous articles and proceedings in journals and magazines all over the world.

He had lectured in international congresses and meetings all over the world and has lectured in Congresses, Meetings and Continuing Education Programs in more than 49 countries.

Luis also has received multiple recognitions and awards during his career.

His areas of Interest are Internal and Emergency medicine, Trauma, Sepsis, CPR and Burns in Small Animals.

*Thoracic disease in the cat can present as one of a multitude of disorders. Many of the problems are treatable pending a definitive diagnosis while others are classified as non-treatable. It is important for the practitioner to accurately identify the exact disease process in order to implement what might end up to be life saving treatment. On the other hand, the early recognition of a non-treatable disease in a dyspneic patient can avoid protracted suffering to the cat and excess expense to the client.*

Dyspnea and tachypnea are the most characteristic signs of feline pulmonary and pleural diseases. Although coughing is a sign frequently associated with tracheal and bronchial disorders, the clinician should be aware that most feline pulmonary and pleural disorders are not associated with coughing. Because the dyspneic cat is often in critical status, the primary clinical objective is to expediently diagnose the cause and simultaneously provide supportive treatment.

The etiologies of respiratory embarrassment can involve lesions anywhere along the respiratory tract, the pleural space, or the heart. Therefore, it behooves the clinician to obtain a complete history and perform a detailed physical examination in order to accurately localize the primary lesion. Emergency situations might initially require an abbreviated history and physical followed by a more detailed study following the patient's stabilization.

The diagnosis of most thoracic diseases in the cat usually requires the use of diagnostic aids. Depending on the problem at hand, such tests might include: **hemograms, serum biochemistry determinations, cytology and culture of respiratory secretions, serology, electrocardiography, tissue biopsy, and thoracic radiography.** To avoid compounding the stress to the dyspneic cat, certain diagnostic procedures might have to await the clinical response to symptomatic emergency therapy in order to avoid iatrogenic complications.

The criteria for classifying thoracic disease will vary amongst the internist, radiologist and pathologist. Since chest radiography is one of the most informative diagnostic tools, this manuscript will discuss the feline pulmonary and pleural diseases on the basis of radiographic abnormalities. Because of space constraints, only the most common abnormalities will be discussed.

## 1. ALVEOLAR ABNORMALITIES

Radiographically alveolar signs consist of fluffy, ill-defined, cotton candy type of infiltrates associated with the presence of air bronchograms and/or air alveolograms. This pattern may be localized or disseminated depending on the etiology and the duration of disease. The most common causes of an alveolar pattern abnormality in the cat include pulmonary edema of cardiogenic origin, non-cardiogenic pulmonary edema associated with electrical shock and toxic irritants, pneumonia (bacterial, hypersensitivity, mycotic, protozoan), and pulmonary hemorrhage (coagulopathies, trauma), and atelectasis. These disorders are outlined in *Table 1*.

## 2. INTERSTITIAL DISEASES

Interstitial diseases primarily involve the supportive tissues of the lung leaving the air spaces grossly uninvolved. Sometimes the underlying diseases allow the accumulation of fluid and/or cells to eventually reduce the air content of the lung tissue by reducing the size of the alveoli or by compressing the air spaces. Interstitial patterns are characterized as increases in pulmonary background density associated with changes in the interstitial structures which cannot be individually recognized; or they can appear as more distinct nodular, linear, or reticular type patterns. Air bronchograms are not associated with interstitial diseases except when certain disorders extend beyond the interstitium to also involve the alveoli. Examples and descriptions of feline interstitial diseases are provided in *Table 2*.

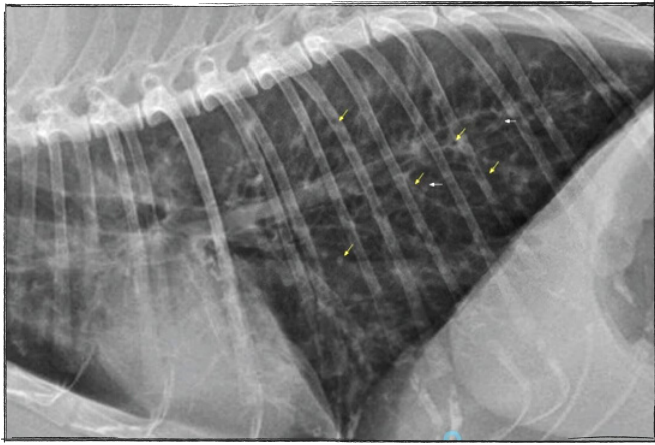
## 3. BRONCHIAL DISEASE

In the cat, bronchial disease is well typified in the "**feline bronchial asthma syndrome**." Thoracic radiography reveals characteristic accentuation of the bronchovascular markings. The bronchial wall thickening is caused by bronchial mucosal cell hyperplasia, thickening of the smooth muscular layer, and peribronchiolar cellular infiltrates consisting of eosinophils and mononuclear cells. On the radiograph, the thickened bronchi appear as "*doughnuts*."

The exact cause of feline bronchial asthma is unknown, although a hypersensitivity is suspected due to the histopathologic changes and the good response to glucocorticoid drugs. The history denotes paroxysms of a dry hacking cough alternating with periods of normalcy. Usually there is no traceable allergen in the history. With time the cough worsens and exercise intolerance occurs. The cat then presents in acute respiratory distress.

Disease	Predisposing or Direct Cause	Other Diagnostic Findings	Treatment Principles	Prognosis
Bacterial pneumonia	1. Viral respiratory infection 2. Aspiration 3. Primary/idiopathic	- Fever - Leukocytosis - Radiographic lobar involvement; ventral common - Tracheal wash cytology: WBC's, bacteria	1. Maintain hydration with parenteral fluids 2. Provide O <sub>2</sub> 3. Antibiotics 4. Bronchodilating drugs	Fair to guarded
Chemical pneumonitis	1. Smoke inhalation 2. Aspiration of oral or gastric secretions	- History & physical findings obvious with smoke inhalation - Aspiration commonly occurs with altered consciousness or iatrogenic - Bacterial pneumonia commonly complicates	1. Assure patent upper airway 2. Broad spectrum antibiotics 3. Bronchodilating drugs	Fair to guarded
Cardiogenic pulmonary edema	1. Cardiomyopathy 2. Hyperthyroid-induced myocardial hypertrophy 3. Congenital 4. Acquired valvular disorders	- Characteristic auscultable findings: murmurs, gallop rhythm, arrhythmias - Radiographic cardiomegaly with pleural effusion or alveolar infiltrate - EKG & echocardiographic changes	1. Provide O <sub>2</sub> 2. Furosemide 3. Specific cardiac drugs depending on exact pathology	Guarded to grave
Noncardiogenic (neurogenic) pulmonary edema	1. Electrocution 2. Post seizure	- Electrocution: acute onset, oral burn, dorsocaudal radiographic pulmonary alveolar infiltrate - Post seizure	1. Furosemide 2. Provide O <sub>2</sub> cage 3. Avoid dehydration	Guarded to good

Table 1: Characteristics of some disorders causing pulmonary alveolar infiltrates in cats (Schaer 2013)



Picture 1: Numerous ring shadows/donuts (yellow arrows) and tram lines (white arrows), 5 years old cat R<sub>x</sub>

The pertinent physical examination findings vary with the stage of disease. The respiratory pattern ranges from normal to overt dyspnea. Lung sounds are normal or harsh. Sometimes moist crackles can be auscultated. A cough may or may not be present at the time of examination.

Characteristic diagnostic findings include radiographically thickened bronchi and occasionally eosinophilia on the hemogram. Transtracheal wash cytology reveals many eosinophils without signs of infection.

**Treatment** consists of intravenous glucocorticoids and intramuscular aminophylline during times of crises. In extreme states 1/2-3/4 cc of epinephrine (diluted to 1:10,000) can be given IM. In less urgent circumstances, oral prednisolone can be given for a 1-2-week period. Where oral prednisolone cannot be given, the author has found success with the use of Depo-Medrol (UpJohn Company, Kalamazoo, MI) at a dose of 10-20 mg given IM. Repeated treatment depends on the frequency of relapse.

**The prognosis** is usually excellent, but the owner should be warned of future relapses. Chronic recurring disease will predispose to chronic bronchitis or fibrosis and require the long-term use of bronchodilating drugs.

Disease	Cause	Helpful Ancillary Clinical Findings	Treatment	Prognosis
Interstitial edema	(1) Cardiomyopathy, & other causes of congestive heart failure  (2) Noncardiogenic 1. hypoalbuminemia 2. IV fluid overload 3. electrocution 4. viral infections 5. toxic inhalants	Gallop rhythm, echo- & electrocardiographic abnormalities, cardiomegaly  History of exposure to toxic inhalants, viral infections, iatrogenic fluid overload, electric cords	(1) Diuretics, O <sub>2</sub> , specific cardiac drugs such as digoxin or propranolol depending on type of cardiac pathology  (2) Diuretics, O <sub>2</sub> , removal of insulting agent, theophylline	(1) Guarded to grave  (2) Good to poor depending on associated cause
Interstitial pneumonia	Viral respiratory disease	Fever, nasal discharge, sneezing, conjunctivitis, oral ulcerations, history of exposure to infected cats, viral isolation	Supportive: maintain hydration & nutrition, antibiotics for 2E bacterial complications	Good to fair
Granulomatous disease	Systemic mycoses, toxoplasmosis, irritating inhalants, immune-mediated disease	Knowledge of geographic origin where mycotic disease prevails; dietary & environmental history; presence of other coexisting organ abnormalities; serology; tissue biopsy	Toxoplasmosis-pyrimethamine & sulfadiazine; clindamycin Histoplasmosis & blastomycosis - Amphotericin B Immune mediated disease - immunosuppressants	Fair to grave
Pulmonary fibrosis	Healing phase of several disease processes; sometimes idiopathic; old age change	History of prior pulmonary inflammatory disease; normal hematologic & cytologic test results; sometimes history reveals chronic coughing; absence of other physical abnormalities	Bronchodilating drugs such as theophylline or aminophylline; occasional short-term use of glucocorticoids	Fair to poor
Metastatic lung neoplasia	Extrapulmonary source of malignant neoplasia, i.e. mammary adenocarcinoma	Coughing is rare; location of primary source of neoplasia via physical exam, radiography, or surgery; tissue biopsy with histopathologic confirmation; needle aspiration cytology	Chemotherapy; surgical removal of primary tumor if indicated	Usually grave
Primary lung neoplasia	Example; bronchogenic carcinoma	Physical exam might reveal muffled chest sounds on the involved side; radiography strongly suspicious; neoplastic cells on needle aspirate or surgical biopsy specimens; cough is rare unless there is bronchial impingement	Chemotherapy, surgical removal	Usually grave
Lung worms	Aleurostrongylosis	Mixed pattern on radiographs; findings of larval forms on fresh fecal smears & Behrman technique; coughing a common associated finding; eosinophilia on hemogram	(a) Levamisole - 20 to 30 mg/kg once every other day for five treatments (b) Fenbendazole 50 mg/kg/day x 3 d	Good
Lung fluke	<i>Paragonimus kellicotti</i>	Radiographs: solid or cavitated, circumscribed densities usually in caudal lobes; coughing common, fluke eggs on fecal, eosinophilia	(a) Albendazole - 50 mg/kg/day minimum of 14 days (b) Fenbendazole 50 mg/kg/day x 10 d (c) Praziquantel 25 mg/kg Q 8 h x 2 d	Good to fair
Heartworms	<i>Dirofilaria immitis</i>	Diffuse interstitial infiltrate; pulmonary artery enlargement; $\nabla$ right heart enlargement; eosinophilia	Author does <u>not</u> recommend thiacetarsamide treatment; treat symptomatically with glucocorticoids & for heart failure (if present)	Guarded

Table 2: Characteristics of selected feline interstitial lung diseases.

## 4. PLEURAL EFFUSION

Pleural effusion denotes a collection of fluid in the pleural space. Grossly the liquid is characterized as blood, chyle, pus or when nondistinctive, as plain effusions.

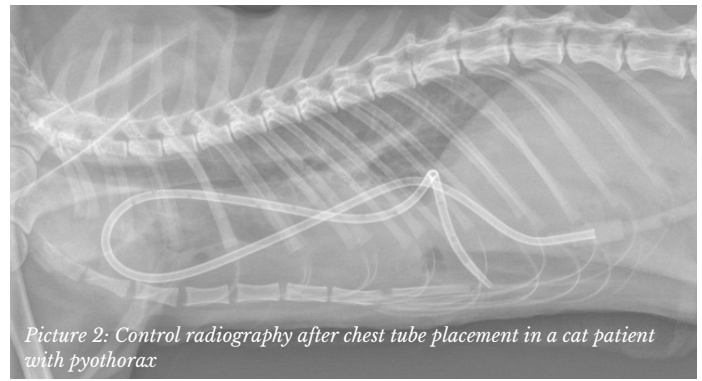
It might be broadly classified as a transudate or an exudate; the former having a lower specific gravity and protein content than the latter.

Cause	Associated Physical Findings	Associated Clinical Findings	Fluid Type and Characteristics	Treatment	Prognosis
Congestive cardiomyopathy	- Dyspnea - Muffled chest sounds - Sometimes heart murmurs - Cardiac gallop rhythm - Rarely ascites - Occasionally aortic thromboembolism	(1) Characteristic electrocardiographic abnormalities (2) Oftentimes mild BUN elevations & moderate liver serum enzyme elevations (3) Radiographically generalized cardiomegaly with pulmonary interstitial or alveolar pattern along with pleural effusion	(1) Obstructive effusion (2) Serous, pseudochylous, or serosanguineous (3) Modified transudate (4) Cytology: initially mainly RBC's & lymphocytes with smaller numbers of neutrophils, macrophages, & mesothelial cells	(1) Removal of fluid by thoracocentesis (2) O <sub>2</sub> (3) Diuretics (4) Digoxin (5) Taurine 500 mg bid	Guarded to grave
Lymphosarcoma	- Dyspnea - Muffled chest sounds (sometimes mainly anteriorly) - Noncompressible anterior thorax - Sometimes fever - Occasionally other organ involvement	(1) Sometimes anemia (2) Rarely lymphocytosis with anaplasia (3) (+) FeLV (4) Radiographically: anterior mediastinal mass causing tracheal elevation & posterior displacement of the heart (5) Ocular fundoscopic changes occasionally (6) Neoplastic lymphocytes on aspirate cytology of the mass (7) Rarely hypercalcemia	(1) Obstructive effusion (2) Serous or serosanguineous (3) Modified transudate or exudate (4) Cytology: anaplastic lymphocytes with mixture of RBC, mesothelial cells, macrophages & neutrophils	(1) Thoracocentesis (2) Chemotherapy	Guarded to grave
Pyothorax	- Dyspnea - Fever - Sometimes dehydration - Muffled chest sounds	(1) Leukocytosis with left shift (2) Radiographically: no cardiomegaly or thoracic masses; pleural thickening (3) Bacterial growth on culture	(1) Septic inflammatory (2) Purulent or sanguinopurulent (3) Pure exudate (4) Cytology: many neutrophils containing bacteria, free bacteria, toxic neutrophils, mononuclear cells	(1) Thoracocentesis (2) Thoracic lavage (3) Antibiotics	- Good to poor - Lung abscess & chronic pleuritis are possible sequela
Infectious feline peritonitis – "wet-form"	- Dyspnea - Fever - Muffled chest sounds - Occasionally corneal precipitates or fibrinous uveitis - Occasionally bilateral "lumpy" renomegaly	(1) Mature neutrophilia (2) Hyperglobulinemia with polyclonal gammopathy (3) IFP titer undependable & nonspecific	(1) Pyogranulomatous (2) Straw-colored, viscous, rarely chylous (3) Cytology: moderate numbers of neutrophils, RBC, plasma cells, macrophages, lymphocytes, granular background	(1) Thoracocentesis (2) Supportive	Grave
Intravenous fluid overload	Sudden onset of dyspnea in cats being Rx with IV fluids; muffled chest sounds; occasionally edema	(1) Possible occult cardiomyopathy made apparent with fluid overload (2) Possible coexisting anemia or hypoalbuminemia predisposing to fluid overload (3) Sometimes purely iatrogenic from over zealous treatment	(1) Pure transudate (2) Clear (3) Almost acellular on cytology	(1) Thoracocentesis (2) Judicious use of diuretics (3) Give plasma or whole blood transfusion for hypoalbuminemia & anemia respectively	Good if no serious underlying cause is present
Acute trauma or bleeding disorders	- Dyspnea - Variable muffled chest sounds - Other signs of trauma or sites of hemorrhage	(1) Trauma-variable (2) Coagulopathy - abnormal bleeding test parameters; ie, prolonged PT, PTT, low platelet count (2) Radiographs in trauma often denote fractured ribs & pulmonary contusion pattern	(1) Blood red; defibrinated (2) RBC & WBC proportions similar to blood	Trauma-depending on injury; usually conservative rest in the absence of other serious problems. Coagulopathy - (a) whole blood transfusion if severe (b) cryoprecipitates (c) vitamin K <sub>1</sub> for warfarin intox.	Usually good
True chylothorax	- Dyspnea - Muffled chest sounds	(1) Possible history of prior chest trauma (2) Occasional lymphopenia (3) Other causes include heart failure, heart worms, neoplasia	(1) Milky white (2) Cytology: normal lymphocytes, small # of RBC, smudge cells (3) Orange staining chylomicrons with Sudan III (4) Elevated triglycerides	Surgical ligation of thoracic duct & anomalous lymphatics	Fair to guarded
Thoracic carcinomas or sarcomas	- Dyspnea - Muffled chest sounds - Possible location of extra-thoracic source of neoplasia	(1) Radiographs: demonstration of neoplasm (2) Tissue biopsy confirmation if extrathoracic source is accessible	(1) Usually serosanguineous (2) Obstructive or inflammatory (3) Cytology: RBC, mononuclear cells, mesothelial cells, anaplastic cells (variable presence)	(1) Thoracocentesis (2) Surgical removal if there is solitary mass (3) Chemotherapy	Guarded to grave

Table 3: Clinical description of the pleural effusion causes in the cats

Pleural effusion is formed under the following general circumstances: (1) an imbalance of the transpleural hydrostatic pressure (congestive heart failure) or protein osmotic forces (hypoalbuminemia), (2) a change in the permeability of the membrane (pleuritis), (3) a decrease in the rate of reabsorption (pleuritis and lymphatic obstruction), or combinations of these mechanisms. The consequences to the patient by the mere presence of the fluid include decreases in lung vital capacity and total lung capacity.

The clinical signs of pleural effusion depend on the underlying etiology. It is important to consider the effusion only as "the tip of the iceberg". It behooves the clinician to determine the underlying cause in order to establish an accurate prognosis and formulate a specific treatment plan. The basic sign in all cats with moderate to large amounts of pleural effusion is dyspnea. Cough is seldom present unless the underlying cause results in bronchial or tracheal compression or irritation.



Picture 2: Control radiography after chest tube placement in a cat patient with pyothorax

The classic radiographic features of pleural effusion include: loss of detail of the cardiac outline, incomplete expansion of the lungs, fissure lines, blunting of the caudal lung lobe angles, scalloped lung lobe borders, and sometimes pleural thickening. Other thoracic radiographic abnormalities will depend on the specific cause. When thoracic detail is obscured, it is important to repeat the radiographs following chest drainage to help identify any underlying cause.

## book of the month

In this issue we have chosen an amazing book for you. "Textbook of Small Animal Emergency Medicine" published four years before in October 2018 by Wiley Blackwell.

Book was written by Kenneth J. Drobatz (Editor), Kate Hopper (Editor), Elizabeth A. Rozanski (Editor), Deborah C Silverstein (Contributor), Deborah C. Silverstein (Editor) and many more contributors.

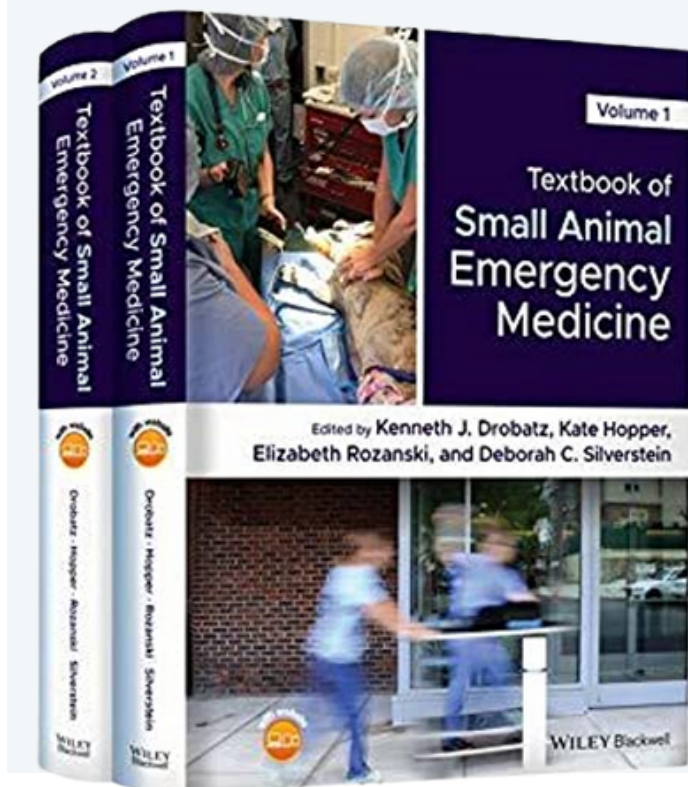
Textbook of Small Animal Emergency Medicine offers an in-depth understanding of emergency disease processes and the underlying rationale for the diagnosis, treatment, monitoring, and prognosis for these conditions in small animals.

- A comprehensive reference on a major topic in veterinary medicine
- The only book in this discipline to cover the pathophysiology of disease in depth
- Edited by four respected experts in veterinary emergency medicine
- A core text for those studying for specialty examinations
- Includes access to a website with video clips, additional figures, and the figures from the book in PowerPoint

The book is published as 2 volumes and over 1300 pages. We highly recommend this book all the future veterinary doctors. Due to it's enormous contents.

So what else we can say?

Enjoy reading and save more lives!





SOCIETATEA ROMÂNĂ  
VETERINARĂ DE ORTOPEDIE

# WORKSHOP INTRODUCERE ÎN ORTOPEDIE

PRINCIPII DE BAZĂ ÎN ORTOPEDIE - MODULUL I

Lectori:  
Caloiu Andrei  
Lucian Rugina  
Dragos Boghean  
Horia Elefterescu

# 2022



Workshop Ortopedie București  
Facultatea de Medicină Veterinară București



**29 - 30 OCTOMBRIE 2022**

# DOGS HIT-BY-CARS

Article by Mara- Catalina Busca

*There's no doubt that Romania is a nation of animal lovers. Romanian people enjoy having animals in their homes. According to a study of iSense Solution more than half of the adult population owns a pet and when it comes to which type they prefer, dogs and cats rank first. The dog is the favorite pet of large families, so, as highlighted in the study, 79% of pet owners prefer dogs.*

Dogs are an adventurous species and moreover, some of them are even fearless. Most dogs explore the world barefoot and uninhibited but, unfortunately, the world is full of things that can harm your dog so there's a pretty good chance it will get injured at least once or twice in its life because accidents can occur unexpectedly. So do not just sit around, get prepared for every eventuality beforehand.

Just as it happens with humans, injuries can be quite serious for dogs too, requiring prompt veterinary care to prevent them from potentially becoming life threatening. The doctor will first perform a detailed physical examination. The examination will include palpation and auscultation of all main organs and muscles with special attention to the abdomen and head, looking for signs of internal injuries and broken bones. Furthermore, to determine any internal injuries, the utmost important thing is to get radiographs, CT scan or ultrasound. Blood test will be done to check for internal bleedings and shocks.

## Possible symptoms

- Abnormal behavior
- Shock ( pale skin, weak pulse, cold extremities, rapid breathing)
- Bleeding
- Excessive barking, crying, chewing

The most common car injuries are fractures and the most frequent broken bones are the spine, jaw, pelvis and femur. That is to say, there are three main types of fractures:

- Simple fractures – the break is not visible but it causes pain and swelling
- Compound fractures - the break is obvious because the bone sticks through skin
- Complete fractures – the broken bone separates into more than two fragments

The clinical signs of bone fractures are pain and local swelling. In long bones, such as the femur, these signs include inability to bear weight on a leg and deformity.

Other car injuries dogs may experience are lacerations, internal bleeding, pulmonary damage, a ruptured diaphragm, spinal injury.

The prognosis of vehicular trauma depends on the severity of the injury and how soon you are able to get treatment for your dog.

## Treatment

The best available treatment is surgical correction with metal plates, pins, wires, screws or even external devices called fixators and, in some cases, they can be realigned and splinted with a cast.

If there are some lacerations they can be cleaned and treated right away by applying pressure and bandages. Deep or serious lacerations may require sedating the patient and potentially stitches. Any kind of internal bleeding will require surgery to determine the cause. There are cases when your veterinary doctor may happen to be in need of repairing a collapsed lung or to drain fluid around the heart; there may also be thoracic trauma that is likely to require surgery as well as hospitalization. If your dog has a laceration or hernia in the abdomen, surgery to repair the damage is usually needed right away. This also includes any damage to the liver or the spleen.

Many patients will need intravenous fluids, anti-inflammatories and pain killers. Any superficial cut needs to be cleaned and dressed as soon as possible.

Let's say your dog unexpectedly runs out the door, takes off during a walk or escapes from your yard, eventually getting hit by a car. What measures should you take if something that bad happens right in front of you? How should you behave?

### • Stay calm

It's very important not to panic. Your pet will be scared and as we know dogs are very in tune with human emotions so keeping a clear head makes it easier for you and may help to calm down your pup.

### • Call

Notify your veterinary doctor so that he and his team may begin the preparation for your arrival. You can always describe on the phone the extent of the injuries that you see indicating also the size of your pet.

### • First Aid only if necessary

And of course if there is external bleeding or an open wound, cover it with a clean cloth or bandage.

### • Be careful

If your dog had just been hit by a car there is a high chance they are afraid, and most likely injured. Even if it's your own dog, hurt and frightened animals will often lash out at people trying to help them.

### • Keep the dog safe and comfortable

If he is located on the road, only after you assess the safety, you move the pup off the road and you can take into consideration using a blanket to do so. Try to keep your pup as still as possible and gently move them onto a hard surface such as a wooden board so that you are able to transport them easier.

### • Prevention?

Consider every possible precaution to avoid your dog coming into contact with a **motor vehicle**.

- Teach „sit” and „wait” at every exit door of the house and street curb;
- Be alert when walking your dog close to a street;
- Do not drive with the car window open enough so that your pup can jump out;
- Never leave a dog unattended in a yard.

Driveway accidents occur more often than people realize. Always be sure pets are safe before backing out of your driveway. What we always need to remember is that owning a dog comes with so many responsibilities and an important part of being a dog owner is keeping your dog happy and healthy, but the crucial one is keeping him safe.

### recovery from a car accident

tips for bone healing



### Resources:

- *Vehicular Trauma in Dogs* by: Dr. Linda Simon, MVB MRCVS (<https://wagwalking.com/condition/vehicular-trauma>)
- *What to Do if Your Dog is Hit by a Car* by Mindy A. Cohan, VMD (<https://www.petmd.com/dog/emergency/what-do-if-your-dog-hit-car>)
- *What you should do if your dog is hit by a car* (<https://www.animergevets.com/site/blog/2021/02/10/what-to-do-if-dog-hit-by-car>)
- *Which are the Romanians' favorite pets?* by Irina Marica (<https://www.romania-insider.com/which-are-the-romanians-favorite-pets>)
- *Dog Hit By Car: Injuries to Watch For* (<https://dogdiscoveries.com/uncategorized/dog-hit-by-car-injuries-to-watch-for>)



# HBC ENTERS YOUR CLINIC

## *step-by-step approach*

Article by Amy Newfield, CVT, VTS (ECC)



## meet the AUTHOR

Amy is the owner of Veterinary Team Training.

In 2003 she became boarded as a Veterinary Technician Specialist in Emergency and Critical Care.

She has been on the board of the Academy of Veterinary Emergency & Critical Care Technicians & Nurses ([www.avecctn.org](http://www.avecctn.org)) holding several positions including President. She also holds a master's degree in management and leadership.

Amy is well published in over 25 subjects and has over 70 published works (book chapters and articles).

**She also published two best-selling and award-winning books, "Oops, I Became a Manager" and "Oops, My Team is Toxic" which are dedicated to help leadership and teams create healthy workplace environments.**

She has received numerous awards including three speaker of the year awards and two technician of the year awards.

Amy has worked as a veterinary technician for over 25 years. She has devoted her career to emergency medicine, education and promotion of the veterinary technician and nurse and development of the leadership team.

She lives in the United States in the state of Massachusetts where you can find her eating chocolate, running in the woods, diving in the ocean and spending time with her wonderful furry pets.

*HBC (Hit-by-Car) cases are one of the most complicated polytrauma cases in veterinary medicine. Patient must be examined seriously while trying to find the major problem which will cause life threatening situation. Veterinary doctor should stay focused and calm. This article is about step-by-step approach to HBC patient.*

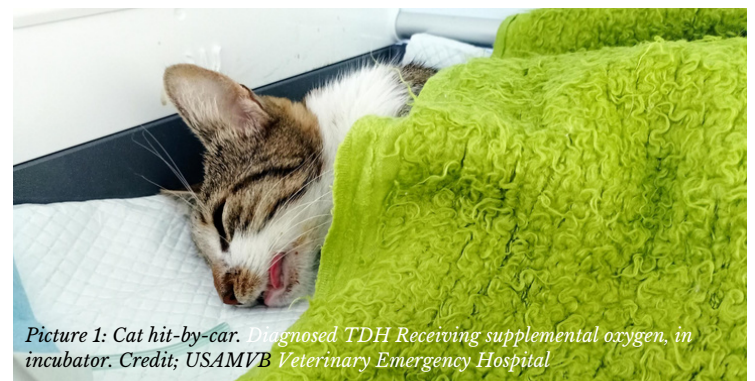
### A 10 Step Approach

Immediately upon a HBC patient arriving a veterinarian should be notified of arrival. This does not mean that initial treatment should be put on hold. Instead benign, non-invasive treatments should begin by the team.

#### STEPS DO NOT ALWAYS OCCUR IN A LINEAR FASHION

- 1.** Triage using R.A.P.
- 2.** Notify the owner of WHY, WHAT, HOW MUCH
- 3.** Obtain blood pressure, pulse ox and attach ECG
- 4.** Administer oxygen if needed
- 5.** Obtain official set of vitals (T, P, R) if there is time and if it is appropriate
- 6.** Place IV catheter(s) & run blood
- 7.** Start fluid therapy and consider pain medication
- 8.** Obtain approval for other treatments (radiographs, ultrasound, medications)
  - Update owner on pet's status
- 9.** Veterinarian should speak to owner on prognosis
- 10.** Continue to work on stabilizing pet
  - Prepare pet for hospitalization and further treatments

*Initiate CPR immediately at any point if pet arrests*



Picture 1: Cat hit-by-car. Diagnosed TDH Receiving supplemental oxygen, in incubator. Credit; USAMVB Veterinary Emergency Hospital

## Steps Explained

All HBC patients are emergencies. Adrenaline is usually released in large amounts when the pet experiences blunt trauma. Adrenaline acts as a pain reliever and helps to elevate the heart rate. Because of this, the pet may get hit and then immediately act as if nothing happened. *Unfortunately, this can mask underlying signs such as pulmonary contusions or internal bleeding.*

It's important to note that not all steps occur in a linear fashion. If the patient arrives deceased you may need to start CPR immediately instead of obtaining a blood pressure.

### 1. Triage Using R.A.P.

One of the fastest and most effective ways to triage is by using the RAP system: Respiration, Alertness, Perfusion. Most times the pet is experiencing some type of shock and will need emergency treatment.



Picture 1: Dog hit-by-car. Receiving supplemental oxygen. Credit; USAMVB Veterinary Emergency Hospital

## RESPIRATORY

Any change in an animal's breathing is an emergency. **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 look at how the patient is breathing. Your sight will be important at determining if the patient is having difficulty breathing or not.

Mucous membrane color is also an important tool in determining respiratory function. Though not completely accurate (because lighting, anemia or icterus hides the appearance of cyanotic membranes) any presence of cyanosis issue which needs to be addressed immediately. Severely anemic patients may mask the "blue" color of cyanosis because at least 5g/dl of hemoglobin is required in order for patients to physically show the color "blue". This is also true is patients that are extremely icteric or in severe shock. If the patient is severely white or jaundice it may mask the cyanosis.

Should you question if the animal is having respiratory problems, you should immediately obtain a pulse oximetry level. A pulse oximetry machine measures the oxygen saturation of hemoglobin, which is a very insensitive measure of oxygenation. Normally animals should have a range from 98-100% on room air. The drawback to a pulse oximetry machine is that, at times, it is not very accurate. Patient movement, poor perfusion, hair, or any color other than pink mucous membranes (icterus, cyanosis, anemia) can cause the reading to be inaccurate. However, the pulse oximetry machine continues to be a fairly quick and easy test to use to determine overall oxygenation.

If there is any question on the degree of respiratory dysfunction the patient should be given oxygen supplementation until treatment and diagnostics can begin.

## ALERTNESS

Upon initial presentation the level of consciousness (LOC) should be assessed. There are many different methods to classify LOC. Depending on the text you read there may be some minor changes to the LOC levels.

An animal may be conscious, but have abnormal mentation such as slow or inappropriate response to stimuli. When a patient presents to the clinic it is important to simply observe the animal initially to see how mentally appropriate it is.

### You should observe the animal and ask yourself:

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

It is important to note the patient's LOC upon presentation. Any patient that has a declining LOC is an emergency and the overall prognosis of the patient worsens.

## PERFUSION

It is important to be able to identify early indicators of failure in the cardiovascular system so that the patient does not decline further.

During a physical exam mucous membrane color may be altered from a normal healthy pink to a muddy, grey or pale color. Any change in mucous membrane color is a life-threatening emergency. Capillary refill time should always be under two seconds. During cardiovascular collapse you may see an increase to three seconds or greater.

Heart rate may be either increased or decreased. Pulse strength may be either bounding or weak. Both the heart rate and pulse rate may be irregular or nonsynchronous. During auscultation an arrhythmia or murmur may be detected. Typically, in cats their response to trauma is to have a low heart rate. This is more concerning than a tachycardic response because it's an indication that the heart is not being up with the demand.

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 and placed in the patient's record.

## 2. Notify the Owner of WHY, WHAT, HOW MUCH

Client reaction can be completely unexpected. It's important to remember to not become emotionally involved yourself. Maintain a calm and professional attitude at all times.

Owners of these pets should be informed in a clear concise manner of WHY, WHAT and HOW MUCH.

- WHY their pet needs emergency treatment
- WHAT is going to be done to their pet
- HOW MUCH it is going to cost (rough estimate)

Having them sign a consent form to treat and explaining exactly the procedures that are going to take place will help to avoid confusion as well as help to protect the practice and staff involved.

## 3. Obtain Blood Pressure, Pulse Ox and Attach ECG

Depending on the nature of the emergency it may not be able to get a full set of vitals right away. The importance of obtaining a temperature or capillary refill time may not be as important as initiating CPR. When appropriate all vitals should be obtained at some point. In addition to performing a full physical exam all HBC patients should receive a blood pressure, an ECG and a pulse ox.

It's easy to quickly place an ECG then to periodically auscultate the patient. Placing an ECG will give you real time cardiac information.

*Picture 2: Dog hit-by-car in the emergency room. ECG attached and receiving oxygen plus IV fluids .Credit; USAMVB Veterinary Emergency Hospital*

A blood pressure may not be done right away because it may be obvious the patient is not perfusing well, but at some point, one should be obtained.

If the patient presents in respiratory distress you do not need to obtain a pulse oximeter. The patient's respiratory system is compromised and you don't need a number on a pulse ox to instruct you to administer oxygen.

## 4. Administer Oxygen if Needed

Providing oxygen is important for any patient in any type of shock or respiratory distress. If you are unsure whether the pet needs oxygen, it is better to give it then to not. The goal is to administer oxygen the most effective and least stressful way to the patient. Most patients who have been hit by a motor vehicle can benefit from oxygen supplementation.

## 5. Obtain Official Set of Vitals If There is Time and if it is Appropriate

- Temperature
- Heart Rate with Pulses
- Respiratory Rate with Effort
- Mucous Membranes
- Mentation
- Capillary Refill Time

Obtaining a full set of vitals is only appropriate if the patient is in an early stage of shock. If the patient is very critical it does not matter what patient's body temperature is.

Attaching an ECG quickly will give you a heart rate. Starting treatment may be more important than taking the time to perform a full physical exam. That can occur when the pet is more stable.

## 6. Place IV Catheter(s) & Run Blood

Gaining venous access is important in all HBC pets. Studies have shown that short, large diameter catheters allow for higher fluid flows and increasing the diameter of the catheter by one size can cut the time it takes to bolus a liter of fluids by half. This may mean the difference between life and death to a patient. When a pet is hemodynamically unstable you may have to choose a smaller gauge catheter because of smaller-than-normal vein size or poor integrity of the vessels. If venous access is too difficult to obtain attempting a cut-down or placing an intra-osseous catheter should be considered. When you place the peripheral catheter, you should attempt to draw blood from it first before you flush or start any fluids. This is the fastest way to obtain blood without performing another venipuncture stick. All emergency patients should have a PCV, TS and blood glucose performed. Based on findings the veterinarian may prescribe other bloodwork for the pet (CBC, Chemistry, blood gas). If blood cannot be obtained through the IV catheter, IV fluids should be initiated. Once the patient is stable it may be easier to obtain blood from another peripheral vein.

## 7. Start Fluid Therapy & Consider Pain Medication

Pain can increase and even cause shock, so it is important to treat the pain.

Opioids are great because they have limited effects on hemodynamics. There continue to be many false thoughts about the benefits of pain (helps to inhibit patient movement, can't fully assess the patient, etc). It has been proven that recovery time is greatly reduced when pets experience less pain.

There are two types of fluids that can be given: Crystalloids (the most common) and Colloids. Interestingly enough there is no clear consensus that proves one type of fluid reduces mortality.

There are three types of crystalloids: Isotonic (LRS, Norm-R, P-Lyte, Hypertonic (7-7.5% NaCl), Hypotonic (0.45% NaCl). Isotonic crystalloids are still the most common used. They are similar to the body's extracellular fluid by containing similar electrolyte concentrations (sodium, chloride, potassium, magnesium, calcium and bicarbonate-like anions). Isotonic crystalloids will distribute rapidly. Within 30 minutes 75-98% of the fluids shift into the extravascular space. You need large volumes in order to make a difference and the infusion must be continuous.

Hypertonic fluids contain a higher osmotic pressure than isotonic. Useful when large volumes cannot be given fast enough. Hypertonic saline causes fluid to shift from the intracellular space to the extracellular space, which causes improved venous return and cardiac output. One dose equals four times the volume of isotonic saline. The use of hypertonic saline is also known as limited-volume resuscitation and is currently recommended in head trauma cases. It helps to reduce cerebral swelling without worsening edema.

Hypotonic fluids contain a lower osmotic pressure than isotonic (5% Dextrose in Water, 0.45% NaCl). Hypotonic fluids should NOT be used to treat shock because they contain too much water and will redistribute too quickly.

Colloids (hetastarch, albumin, plasma, blood) are high molecular weight fluids that do not pass readily through the capillary membranes. Colloids help to increase oncotic pressure because they keep fluids in the intravascular space. Roughly 50-80% of the infused volume stays in the intravascular space. Most veterinarians reach for colloids when crystalloids fail.

## 8. Obtain Approval for Other Treatments

There are very few other treatments that need to be performed that are emergent. Permission from the owner should be obtained for any other diagnostics. While obtaining radiographs or an ultrasound may yield a better diagnostic picture, it is always important to stabilize the patient first.

An owner may not have the funds to proceed so it's important to ask permission before suturing wounds, taking radiographs or casting a broken leg. A team member should alert the owner as to the pet's status, what is being done to help the pet and how long it will be until the veterinarian is able to speak with them.

## 9. Veterinarian Should Speak to Owner on Prognosis

While it seems like it may take awhile to perform all the above steps, it will likely have only been a few minutes. The pet arrived after being hit by a car and was triaged quickly. The pet was in shock and taken to the treatment area. An ECG was placed on the pet while someone started to shave down the leg for an IV catheter. Another team member placed a face mask of flow by oxygen on the pet's nose. A catheter was placed, 1.0mls of blood was drawn from it and a bag of fluids was started. A team member started to run a PCV/TS and a blood glucose. The veterinarian took the time to perform a full physical exam while another hospital team member obtained a blood pressure and attempted to get a pulse ox reading. The veterinarian gave the pet pain medication.

At this point, further diagnostics may be requested like radiographs. The owner should have been consulted with to ensure they want to continue with treatment. After all diagnostics have been completed the veterinarian must speak to the owner on the progress and diagnosis of the pet.



Picture 3: Another dog hit-by-car in the emergency room. ECG attached and receiving oxygen plus IV fluids while veterinarian giving information to the owner. Credit; USAMVB Veterinary Emergency Hospital

## 10. Continue to Work on Stabilizing Pet

It may take hours or even more than a day to stabilize a pet that has been hit by a car. Stabilization is defined as all vital parameters returning to normal.

This is defined by normal blood pressure, appropriate mentation, normal heart and respiratory rate, pink mucous membrane color, normal capillary refill time and normal temperature. You may need to administer blood pressure medication or place nasal lines in the patient to obtain stabilization.

The hit by car patient turns into a hospitalized patient after the patient is stabilized. Most pets that have been hit by car are in need of emergency care.

### CONCLUSION

It is important to be organized and take a step-by-step approach with any emergency. Failure to do so can cause added stress to the situation and may delay patient care.

Having all members of the team understand what steps need to be taken can mean the difference between life and death for the patient.



**AICI  
SALVĂM  
VIEȚI**

*pentru că  
putem!*





# BACK TO SCHOOL

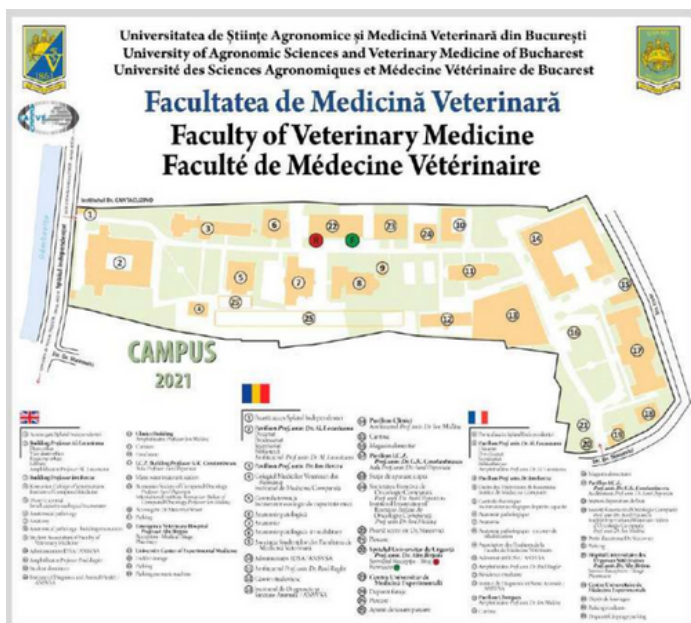
Article by Ghita Rodica-Maria

*Even though we are at the end of October and we are all still thinking about the holidays, we have to remember that faculty has started and we have to focus on what will come next in our professional training. Our vacation was definitely not very long, but, for sure, we all enjoyed it and gathered our energy for a whole new year.*

Many of us are used to with what the faculty means, but among us there are also the new 1st year students whom we salute and congratulate for choosing this noble path together with all those involved with the soul for a better future for animals. For those who are new in this faculty, but also for those who have been students for several years, I will list some useful sources for a productive year.

## 01 The map of our faculty

This is the map of our campus on Splaiul Independentei. This map is addressed to those who want more details related to the positioning of the buildings where they will carry out their educational activity. You can find it at the entrance from Splaiul Independentei and it is translated into all 3 languages spoken in our faculty: Romanian, English, French.



## 02 The structure of the academic year

### • Semester 1

03.10.2022-18.12.2022 - Didactic activity  
19.12.2022-08.01.2023 - Winter vacation  
09.01.2023-29.01.2023 - Didactic activity  
30.01.2023-19.02.2023 - Exam session  
20.02.2023-26.02.2023 - Vacation after the exam session

### • Semester 2

27.02.2023-16.04.2023 - Didactic activity  
17.04.2023-23.04.2023 - Easter holiday  
24.04.2023-11.06.2023 - Didactic activity  
12.06.2023-02.07.2023 - Exam session  
03.07.2023-23.07.2023 - Vacation after the exam session  
24.07.2023-30.09.2023 - Summer holiday  
24.07.2023-30.07.2023 - Overdue session  
04.09.2023-10.09.2023 - Review session

## 03 Student assessment

The verification forms provided in the education plan are: **exam, colloquium, verification along the way and project.**

The learning results are evaluated with a grade from 1 to 10, grade 5 certifies the minimum skills and passing an exam.

- Winter session: 3 weeks
- Summer session: 3 weeks
- Overdue session: 1-2 weeks
- Review session: 1 week

## 04 Where can i see my grades?

In the first week of the faculty, you will get the gradebook through which you can prove your quality as a student within the faculty and in which you will be able to note down your grades.

USAMVB faculties also use the UMS online platform to note down student's grades. All you have to do is log in to your account and see your exams results.

## 05 Student associations

Within our faculty there are three student associations. They make sure that your student rights are respected, offer you professional and personal development projects and greatly simplify your student life. Associations often organize activities and projects. You can sign up as a volunteer where you will get involved in changing the student environment and where you will participate in the dynamic events organized by them.

In addition to the experience that volunteering offers you, it is included as an optional discipline and you can get 2 credits per semester in years 2, 3 and 4.



Association of students in veterinary medicine in Bucharest ( ASMVB)



Association étudiante Gaudeamus  
Branche vétérinaire - FMV Bucuresti

## 06 Career Counseling and Guidance Center

At USAMVB you benefit from a dedicated center with specially designed programs to support you during your studies.

- Counseling the educational offer
- Career orientation
- Vocational, entrepreneurial and psychological counseling

You can benefit from professional training courses and digital skills courses adapted to meet the demands of the labor market and offer opportunities for professional development.

For more details: <http://consiliere.usamv.ro/>

## 07 Academic platforms

### • UMS

Here you can access your grades, fees and school status at any time. The University Management System platform keeps you up to date with all aspects related to this academic matter.

Link:

[https://www.student.usamv.ro/ums/do/secure/inregistrare\\_user](https://www.student.usamv.ro/ums/do/secure/inregistrare_user)

### • USAMV Site

It is the place where you can find all the current information related to the latest events, announcements and information about the university.

Link: <https://www.usamv.ro/en/>

### • FMVB Site

It is the place where you can find all the current information related to the latest events, announcements and information about the faculty.

Link: <https://fmvb.ro/>

## 08 Faculty library

The library of the Faculty of Veterinary Medicine in Bucharest is the oldest specialized library in the country, which is part of the national higher education system. The library participates in the process of instruction, training and education as well as in the scientific research activity of the faculty, making available the necessary data, information and knowledge. The library has a publishing fund of approximately 200,000 copies.

### Work program:

- During the academic year  
Monday to Friday: 9:00-16:00
- During exams  
Monday-Friday: 9:00-18:00

# GOOD LUCK!

THE  CAMPUS  
*we could be heroes!*

# ADVICE FOR FUTURE VETS

Article by Nestian Maria

*Welcome to the beginning of your Veterinary Medicine adventure!*

*First of all, **congratulations** for choosing this University and especially for choosing to be a veterinarian!*

I am sure that you are very nervous about this new beginning but I am here to help you with some advice. I know that, at least in the first semester, university can be overwhelming and you may start believing that you didn't make the right choice, but I can guarantee you that you can handle it very well.

## Be good, do good

Your patients can't express their feelings. They can't tell you what hurts or what their needs are, but you can learn to understand them. Help them as much as you can. That can sometimes mean staying ten minutes longer than your shift, texting the owners to make sure that everything is ok with their pet or carrying treats and toys wherever you go in case some patient may need some extra happiness.

## You learn for your future, not for the grades

We all want good grades, but in Veterinary Medicine there are things that are more important than being the first in your class: an animal's life. Every piece of information you learn, every boring class you attend and every teacher you meet help you develop skills that one day may save someone's beloved pet.

## Try it all

During your 6 years of university you will face a lot of challenges. From learning how to work in a lab, learning how to properly build an animal shelter, examining a cat to going to the farm and examining cows. Even if you think you already know what you want to specialise in, I recommend you to try everything, maybe you will find something even better.



## You can't save them all

Most of us start this journey thinking that they can save all the animals. Unfortunately, it is impossible. During your practice you will learn that loss is a natural thing and, sometimes, it can be better than letting an animal live in pain. You need to learn not to let it affect you too much. You need all your energy to help other animals that can be saved.



## These years go fast


Six years of university seem a lot at the beginning, but you will see that it goes too fast. Of course you have to learn a lot in this period of time, but don't forget to have fun, make friends and enjoy every moment.



## Make it fun

Take every moment and try to make it memorable. Maybe you can try to volunteer to the same NGO with a friend or try learning together for that difficult exam. You will see that you are not alone in this experience and it may help you enjoy it all a little more.

**GOOD LUCK**

 "Go get your white coat and your favourite colour scrubs and enjoy each moment of this journey! It may seem overwhelming, but in the end you will see that it was worth it!"



# TRUE EMERGENCY TRACHEAL RUPTURE

Article by Petre Ciprian Dragomir



*Tracheal rupture is life threatening situation in veterinary medicine. Even it is rare in dogs than other emergencies, As a veterinarian practitioner you should be ready for those cases. Tracheal ruptures occurs mostly after dog interactions, like bite wounds. Let's have a close look to tracheal rupture.*

The trachea is the anatomical structure that connects the oral cavity and nose with the lungs. This is continued by the bronchi, bronchioles which, later on, will form the pulmonary alveoli, thus completing the respiratory system

The specialized literature describes the trachea as it follows: The trachea and bronchi form a continuous system of tubes conducting air between the larynx and the smaller passages (bronchiole) in the lungs. They have very similar construction and together are sometimes termed the tracheobronchial tree.

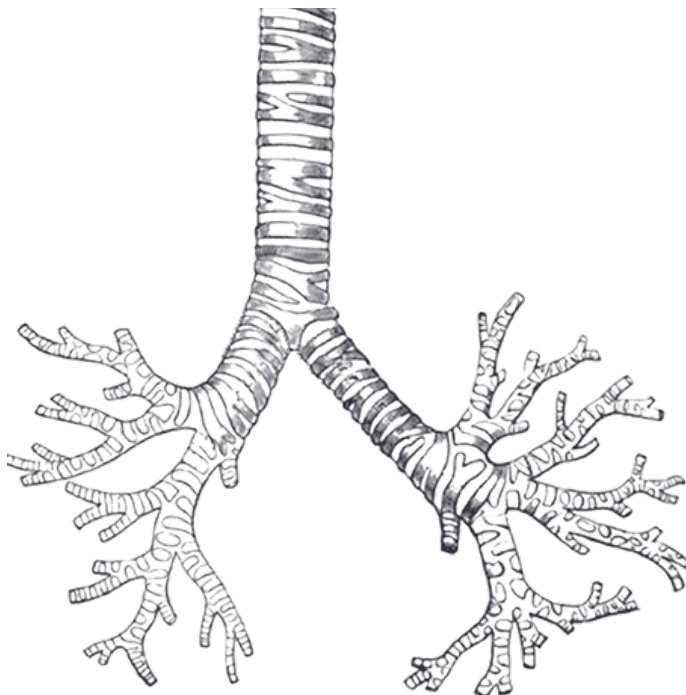


Figure 1- <https://ro.wikipedia.org/wiki/Trahee>

Looking carefully at the cellular and tissue structure of the trachea, we will notice that the tracheal wall is composed of an internal mucosa, a fibro-cartilaginous intermediate layer, and a serosa or adventitia. This fibro-cartilaginous structure gives the trachea its unmistakable appearance. In its entire length, it is surrounded by numerous bands of cartilage, which form these rings. Rings that, on the dorsal side, are incomplete.

The specific structure gives it the advantage that it cannot be crushed or collapsed and allows it to make small changes in length when the diaphragmatic wall is contracted (a process that happens at the moment of air inhaling).

In other words, the trachea, this hose or tube, allows clean air from the outside, and oxygen to enter the lungs and then be transported in the blood and throughout the human body, allowing at the same time the elimination of carbon dioxide.

In the case of cats, tracheal trauma is most often encountered at the time of intubation. The method used either in critical situations (respiratory emergencies) or given anesthesia, choosing the wrong endotracheal tube or simply forcing it at the time of intubation can lead to tracheal rupture. If the application of the probe was successful, this does not mean that there are no more risks.

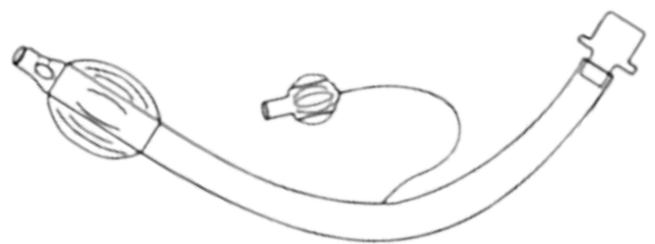


Figure 2- <http://www.prorsq.ro/catalog/echipamente-pentru-intubatie/394-sonda-endotraheala-cu-balonas-marimea-75.htm>

Most of these probes are provided with a special balloon. It is inflated to ensure the stability of the probe during the operation itself.

At the time of ex-tubation (removal of the endotracheal tube from the trachea), if the balloon is not deflated when trying to pull the tube outward, that balloon will cause damage to the trachea and possibly rupture.

In the case of dogs, the occurrence of such trauma is different. Traumatology of the trachea becomes more complex due to how it can appear. In addition to the risks presented above, an essential factor is the bites that occur after fights between two or more dogs.

In the image presented, we can see the areas most often bitten, when it comes to a fight. Mainly the bites are made in the area of the head, of the front limbs, but most importantly in the area of the neck.

The main factor that causes such trauma is the bite itself. Their strength, deeply embedded fangs, and shaking reflexes can cause serious trauma. In addition to the skin and muscles that will be affected, there is a possibility that other structures will be affected (blood vessels, nerves, bones that can fracture, or in this case - the trachea).

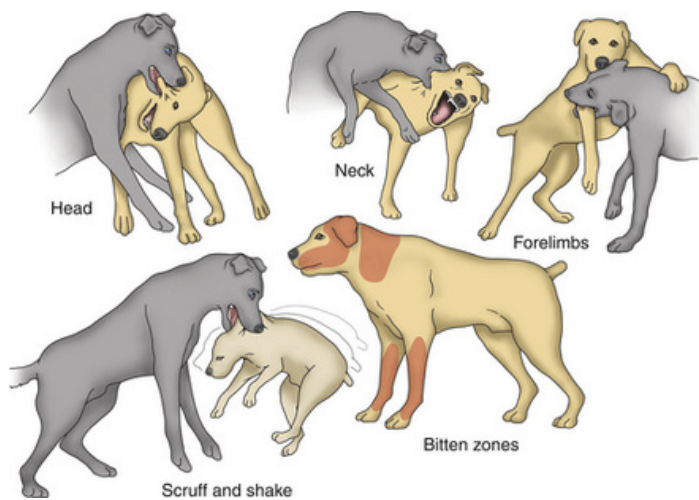


Figure 3-<https://veteriankey.com/bite-and-scratch-wound-infections/>

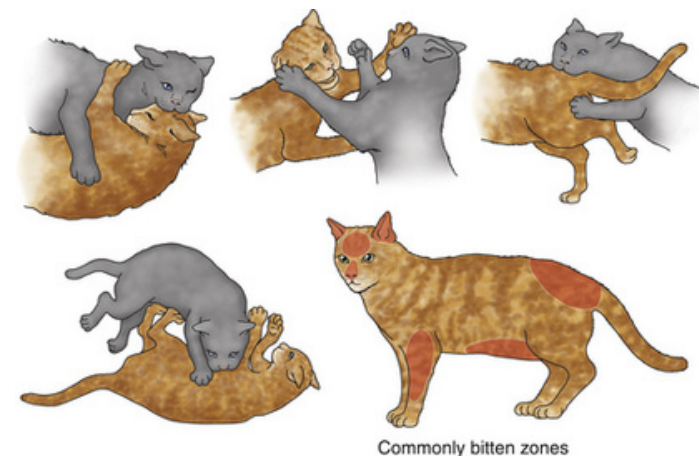


Figure 4- <https://veteriankey.com/bite-and-scratch-wound-infections/>

They are called "crushing wounds" or "crush injuries" and they occur when force or pressure is put on a body part. This type of injury most often happens when part of the body is squeezed between two heavy objects. Damage related to crushing injuries includes **Bleeding, Bruising, Compartment syndrome** (increased pressure in an arm or leg that causes serious muscle, nerve, blood vessel, and tissue damage), **Fracture** (broken bone), and **Laceration** (open wound).

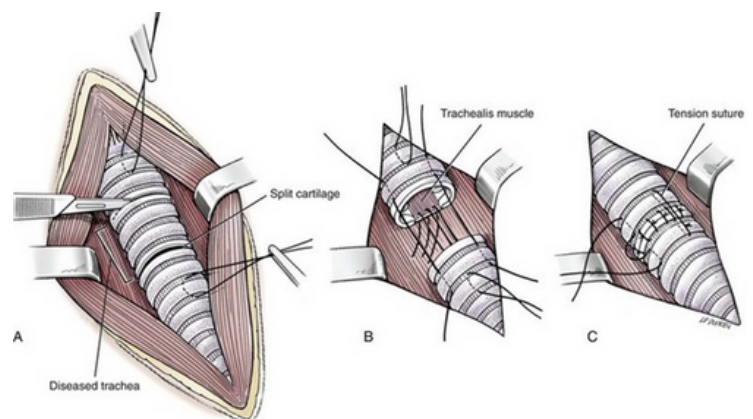
You may be wondering: But I have also seen cats fighting and biting each other. When they beat, isn't there a risk of trauma to the trachea?

The answer is no! Because, as we can see in the picture next to it when cats get into a fight, the areas they attack are the head, the forelimbs, the back, and mainly the abdominal area. So, during the fight, the neck doesn't get affected.

Any abnormality of the trachea, especially its rupture, presents particular clinical signs. In addition to the abnormal, abdominal, heavy breathing, most of the time in the area of the rupture, oscillations of the skin and muscles are observed. All this time, air will penetrate under the skin and diffuse subcutaneous emphysema will be created.

If you encounter such a case, the first thing to do is to stabilize the patient. Remember this is an emergency! Administration of medicines, infusion treatments, and especially oxygen therapy are the first things you have to think about. Later, after other investigations and if the patient is stable, surgical intervention can be decided.

The surgical intervention involves suturing the trachea itself. First, the skin in the area of the lesion is incised, the muscles are sectioned and the trachea is highlighted. After anatomical repositioning, the trachea can be sutured using a resorbable monofilament thread.



The drawing shows the "simple" steps for this surgical intervention. Spacers and forceps are used to enlarge the surgical area.

## What happened to Bobi?

*A real example of such a critical situation is Bobi. He was a patient of the University Emergency Hospital Prof. Univ. Dr. Alin Birtoiu.*

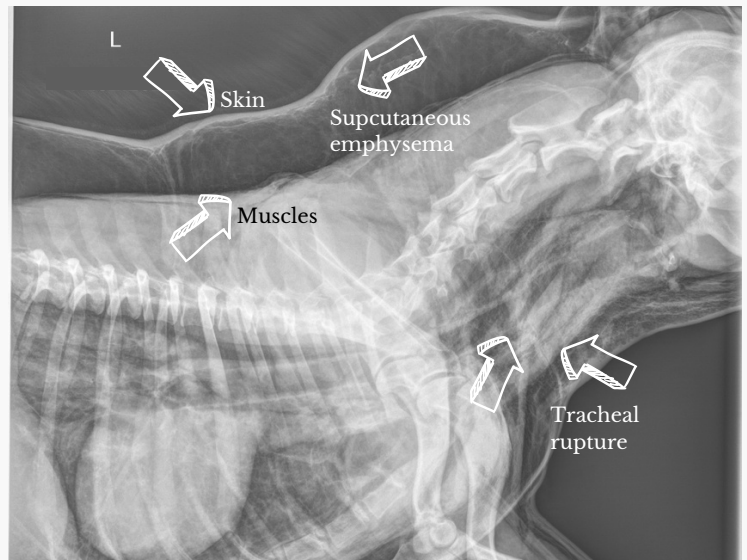
Bobi was brought to the clinic after two days when he fought with other dogs on the street. Initially, the owners went to a doctor's office, but they decided to come to the faculty hospital for better care.

It was just couple days after Dr. Dumitru Magaleas started to work in our Emergency Hospital. He and other doctors were just getting used to this new and huge hospital. Suddenly Bobi and his owner entered as an emergency after the triage and first emergency response Dr. Magales directly ran to Surgery and wanted help from surgeons. While quick consultation with Dr. Uzun, intranasal prongs were already placed and Bobi was receiving oxygen. **Subcutaneous emphysema, respiratory distress all were pointing that possible tracheal rupture and also pneumothorax.**

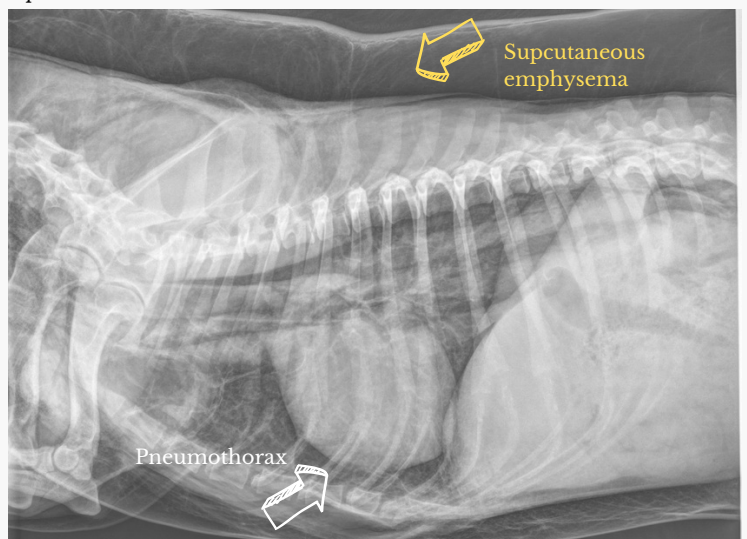


Picture 1; Bobi after the radiographs, prepared for the emergency surgery. Copyright belongs to FMVB-Surgery department. (2022)©

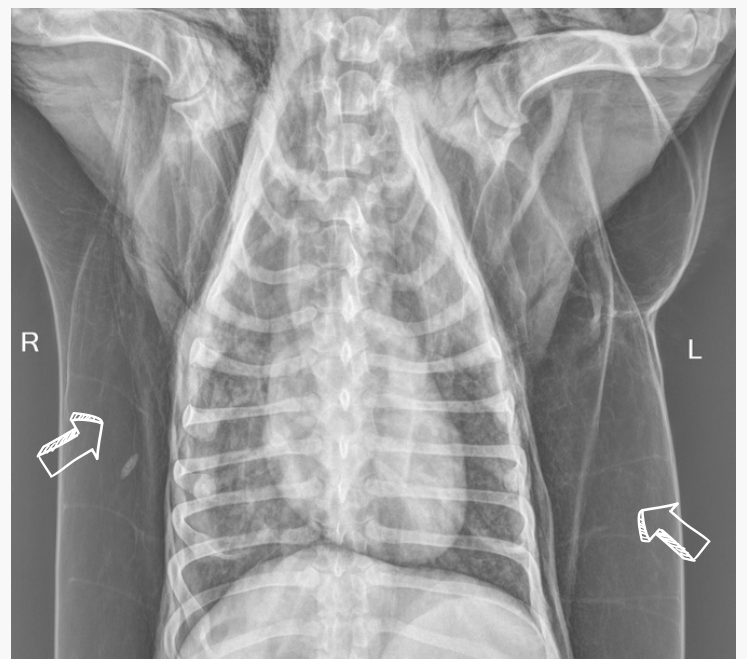
The other situation must be well-considered, which is pneumothorax caused by tracheal rupture. Before entering to surgery it is mandatory to stabilize the patients with pneumothorax. On the other hand, Bobi's situation was seriously critical due to the rupture. So surgeons first performed thoracentesis and retrieved as much as free air in the thoracic cavity they can. Bobi was looking to our doctors with concerned eyes. Which Dr. Uzun afterwards will always say "Bobi was trying to say us that how much he was sorry" when he will remember this patient.



Picture 2; Lateral radiographic view of the neck. Credit: FMVB radiology department



Picture 3; Lateral radiographic view of the thorax. White arrow shows elevated heart, mild to moderate pneumothorax. Yellow arrow shows subcutaneous emphysema. Credit: FMVB radiology department

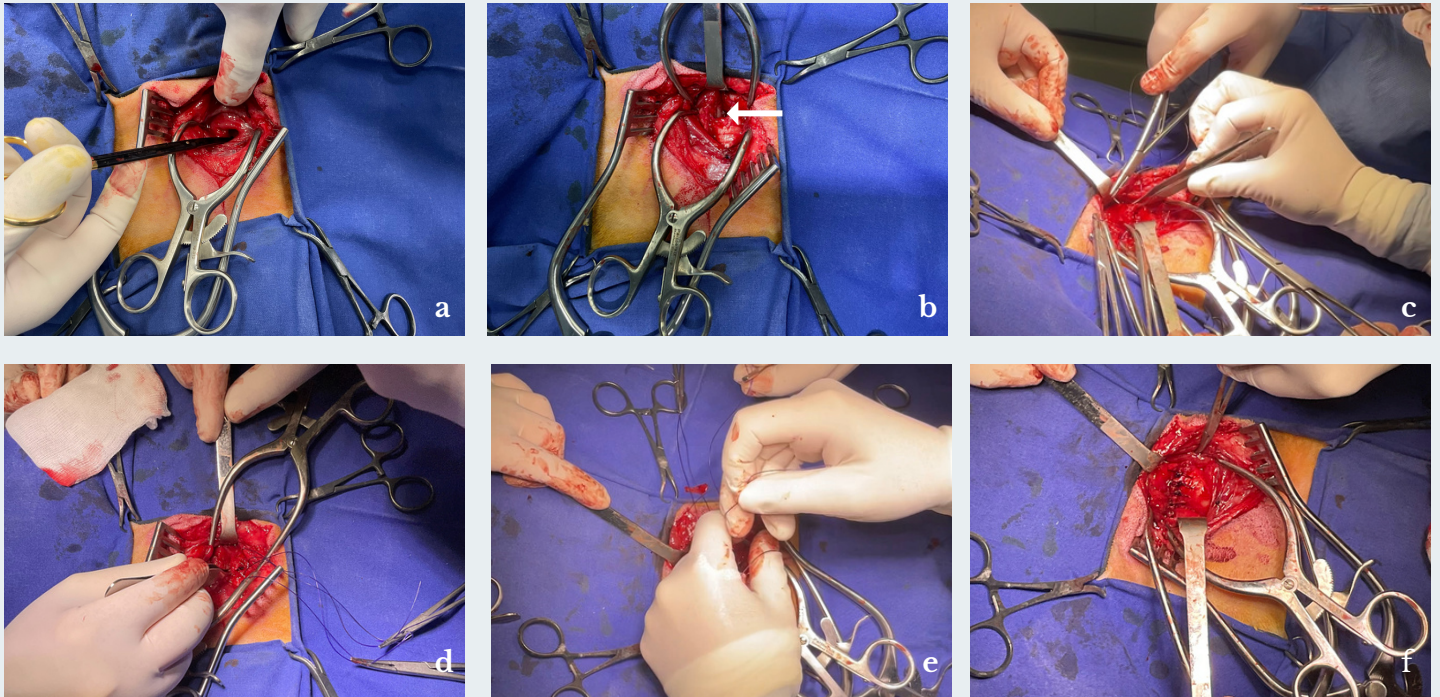


Picture 4; VD rx image of the thorax. White arrows showing bilateral subcutaneous emphysema. Credit: FMVB radiology department

## surgery

After quick preparation of the patient, surgical theatre, Bobi has taken to surgery. As was presented above, the ruptured ring removed and anastomosis was done.

Care must be taken in the surgery due to region's anatomy. As you know the thyroid gland, Right and left common carotid arteries, left and right thyroid arteries. I am not even mentioning the nerves. One wrong move can cause laryngeal paralysis or rupture of those arteries.



Picture 5; In surgery pictures; 5a- After the incision visualizing the tracheal and the ruptured ring. 5b- White arrow is pointed the rupture and tracheal tube. 5c- Placing the stay sutures before removing the ruptured ring. 5d- Controlling all the stay sutures and far - far, near - near sutures. 5e- Performing surgeon's knots. 5f- The last image before closing the surgical incision. far - near, far - far, near - far and near - near sutures. Copyright belongs to FMVB-Surgery department. (2022)©

Even though the surgery ended successfully and Bobi got over it well, he was still hospitalized in the intensive care unit for approximately two weeks. You will most likely ask me why such a long hospitalization was needed if the problem was fixed.

Unfortunately, the subcutaneous emphysema spread to approximately 80% of the body surface and he had to stay hospitalized to remain under the observation of doctors and to be given treatment.

The walks on which he was taken around the college campus were done in a harness, not with a leash because any leash he had would have been applied to the suture made on the skin and there is a risk of wound dehiscence.

Funny and at the same time interesting was the fact that when you caressed Bobi, or simply touched him, the traces of your hand and fingers remained "impregnated" due to the air under the skin.

At the external school, the farewell between masters and Bobi was extremely emotional and Mrs. Conf. Univ. Dr. Iuliana Ionascu declared him as "a hero and a winner!"

Because of the suture, Bobi had to wear a harness when he is taken out for a walk. He received a new harness as a gift from the doctors and a medallion with his name and a special message from everyone.





In this way, we would like to thank all those who took care of Bobi during his hospitalization, from the students in practice to our doctors:

Conf. Univ. Dr. Ionascu Iuliana  
 Sef Lucrari Univ. Dr. Seralp Uzun  
 Assist. Dr. Peteoaca Alexandra  
 Dr. Turcu Maria Roxana  
 Dr. Elena Roman  
 Dr. Dumitrascu Dragos – Marian  
 Dr. Iancu Tiberiu  
 Dr. Dr. Dumitru Magaleas

to **A FIGHTER AND  
A WINNER!**

Science has so far  
 been unable to tell us  
 how self-aware dogs  
 are, much less  
 whether they have  
 anything like our  
 conscious thoughts.

This is not  
 surprising, since  
 neither scientists nor  
 philosophers can  
 agree about what the  
 consciousness of  
 humans consists of,  
 let alone that of  
 animals.”

– John Bradshaw



# CE GREȘIM ÎN DIAGNOSTICUL CITOLOGIC?

Article by Tomescu Gabriel

*Examenul microscopic este investigația paraclinică de mare importanță care stă la baza diagnosticului de suspiciune sau de confirmare. În medicina veterinară, îl folosim complementar examenului clinic în diagnosticarea tipului de afecțiune (circulator, inflamator, distrofic sau tumoral) sau în depistarea parazitozelor.*

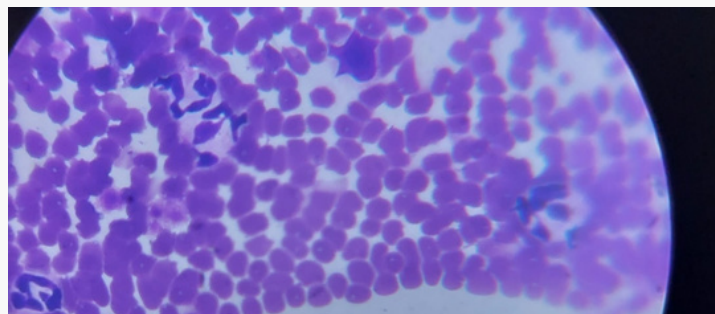
În acest scurt articol, vă voi prezenta un aspect care îi poate induce în eroare pe cei aflați la început de drum în diagnosticul citopatologic. În dorința de a găsi rapid un rezultat paraclinic, de a demonstra în fața proprietarilor și a colegilor mai experimentați că ne descurcăm, ajungem să punem un diagnostic eronat. Cauzele se pot regăsi în orice etapă premergătoare examinării: recoltarea sângelui (EDTA este soluție hipertona), prepararea frotiurilor (întindere întreruptă, uscare forțată) sau colorarea lor (coloranți vechi sau contaminați).

Se poate întâmpla când avem o suspiciune de babesioză, de exemplu. Etalăm frotiuri, le uscăm, începem să colorăm unul, dar până este gata de examinat, ne uităm „de curiozitate” pe un preparat necolorat. Artefactele rezultate din procesul de recoltare și preparare a frotiului ne pot induce în eroare. Dacă recoltăm mai puțin sânge decât este indicat pe eprubeta cu EDTA, atunci celule se ratatinează, dacă proba o întindem întrerupt sau apăsăm prea tare pe lamă, afectăm morfologia celulei, dacă uscăm cu aer cald frotiurile, va crește fals numărul echinocitelor, acestea fiind „artefactuale”. Trofozoizii de Babesia spp. nu sunt simple forme rotunde sau cu aspect de lacrimă, sunt paraziți endoglobulari ce conțin organite în citoplasmă. Acestea se colorează și ies în evidență la examinarea microscopică. Se pot confunda adesea cu spații optice goale din eritrocite, având forme și dimensiuni diferite. Totodată, folosirea cloranților vechi sau contaminați determină apariția artefactelor. În cazul colorației Diff Quick, primul pas soluție de metanol 95% și are rol de fixare a celulelor. Cu cât este folosit mai mult, alcoolul se evaporă, concentrația scade, iar fixarea nu se realizează corespunzător. Rezultatul constă în remanența apei în celule, astfel apar spații optice goale în eritrocite.

În vederea acestei hemoparazitoze, trebuie făcut diagnostic diferențial și față de alte patologii: anemie hipocromă, carență în fier sau unele intoxicații. În aceste situații, depistăm în frotiu keratocite și prekeratocite. Sunt hematii modificate, ce prezintă vacuole intracitoplasmice și întreruperi ale membranei celulare. Anemia hipocromă este descrisă când în frotiu sunt prezente eritrocite colorate mai puțin intens, centrul acestora fiind caracterizat prin paloare crescută.

Având în vedere toate aceste aspecte, diagnosticul citologic al piroplasmozelor devine unul dificil. Dacă respectăm procesul de realizare a frotiului, avem în vedere rezultatele examenului clinic, conștientizăm posibilitatea coexistenței patologiilor și tot nu suntem siguri dacă într-adevăr în frotiul examinat există trofozoizi de Babesia spp., atunci este indicat să utilizăm examenul PCR în vederea unui diagnostic de confirmare.

De reținut: recoltăm cât trebuie în eprubete cu EDTA, facem frotiuri prin întindere și le uscăm ușor, fără curent puternic sau sursă de căldură, respectăm colorația, avem în vedere diagnosticul diferențial, ne confirmăm suspiciunea.



## Bibliografie:

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3. Jennifer a. Neel, DVM, DACVP (clinical), Associate Professor, Clinical Pathology, NC State College of Veterinary Medicine Raleigh, NC, "Blood smear basics", NC, 27607, 2016;
4. [www.medschool.co/test-findings/kerocytes](http://www.medschool.co/test-findings/kerocytes).

# Ce știm și ce nu știm despre stres

Article by Alina Chiriacu



## meet the AUTHOR

Alina Chiriacu is a well-known psychologist who divides her professional life between the seminars held at different faculties in Bucharest and her own psychology office where she mainly focuses on clinical and school psychology, but also on psychopedagogy and psychotherapy.

In 2008, she completed her undergraduate studies in the field of psychology at "Spiru Haret" University, Faculty of Psychology and Sociology. Then comes the second license in the field of Special Psychopedagogy at the University of Bucharest, Faculty of Psychology and Educational Sciences. Also, here she continues the professional training with two master's degrees, the first entitled: "Health Psychology - clinical research and behavioral optimization" and the second entitled: "Psychological assessment and intervention in the educational field". In 2021, she will complete her studies by graduating from the Doctoral School, and being offered the title of "Doctor in Psychology".

For 16 years, she held the position of Assistant Manager in two companies and continued her activity as a Trainer and Career Advisor, within several institutions, among which we mention: "Focus Plus SRL", and "The Romanian Institute of Psychology Association".

At the end of 2017, she became the President of the "Focus Educational Association" and holds this position until now.

In 2020, she becomes a Clinical Psychologist, Psychological Counselor, and Psychotherapist at the University of Agronomic Sciences and Veterinary Medicine in Bucharest.

At the same time, he is the Associate Teaching Staff for the Polytechnic University of Bucharest and the University of Bucharest, Faculty of Psychology and Educational Sciences.

During the years, she shows an intense scientific and research activity through a multitude of articles presented and published, but also through the function of co-author for various books. In 2018 and 2021, she is the coordinator of three books: "Educational psychology studies. The volume of a generation", "Discovery with the psychologist. From childhood to the age of wisdom" and "The price of beauty. Eating disorders and their psychosocial implications".

Throughout this period, she participates in numerous continuous training courses and receives numerous licensing certificates in the field in which he works. She coordinates the cancellation of at least 30 undergraduate theses and dissertation.

*Stresul este o realitate a vieții de zi cu zi. Termenul de „stres” a fost utilizat pentru prima oară în fizică pentru a analiza modul în care trebuiau proiectate structurile de rezistență pentru a susține greutatea ridicate și pentru a rezista la deformare. După transferul termenului din domeniul fizicii în cel al științelor comportamentale, utilizarea acestuia a suferit modificări.*

Conform lui *Wheeler (2007)*, în fizică stresul se referă la mărimea forței aplicate asupra unui obiect, în timp ce în viața reală se referă la factorii care pot aplica o anumită forță asupra ființei umane. **Dificultățile financiare, conflictele personale, problemele de sănătate sau cele de la școală/locul de muncă, toate acestea pun presiune pe corpul, mintea și spiritul omului.** Unele presiuni provin din mediul extern, dar cel mai adesea, ele provin din mintea persoanei, sub forma îngrijorării, a anxietății, a regretului, a descurajării, a lipsei de încredere în sine și în ceilalți, a unei stime de sine scăzute.

Stresul este considerat boala secolului XXI (Fink, 2006). Conform Modelului Tranzacțional al Stresului, cel mai prominent model teoretic al stresului psihologic, acesta este definit ca interacțiune dinamică între individ și mediu.

Mai exact, stresul este rezultatul percepției persoanei cu privire la dezechilibrul dintre cerințele mediului și resursele sale disponibile cu care poate să răspundă acestor cerințe (Lazarus, 1990). Stresul apare numai atunci când persoana percepe situația ce depășind resursele sale de coping.

În ultimii 50 de ani, termenul „stres” a fost utilizat tot mai intens în științele comportamentale și medicale. Teoriile sociale susțin faptul că stresul este un aspect inherent al vieții de student. Studiile efectuate confirmă că majoritatea studenților se confruntă cu niveluri ridicate de stres pe parcursul anilor de facultate, astfel că au nevoie de sprijin pentru a face față cu succes presiunilor din mediul academic. În aceste condiții, stresul pare să fi devenit principalul obstacol ce stă în fața performanței academice. O publicație a Universității din New York arată că 55% dintre studenți au declarat că cel mai acut factor stresor este mediul academic în sine, șase din zece studenți susținând că au avut cel puțin câteva momente în care s-au simțit atât de stresați încât nu au putut participa la cursuri (Essel & Owusu, 2017). Studenții la medicină sunt printre cei mai expuși la stres (Abdel & Hassan, 2017). Literatura de specialitate arată că, spre deosebire de studenții altor facultăți, studenții la medicină prezintă niveluri mai ridicate ale dependenței sau abuzului de alcool (Jackson et al., 2016), iar stresul constituie un factor de risc prevalent ce afectează procesul de luare a deciziilor și alterează activitatea rețelilor neuronale (Soares et al., 2013). Toate acestea sunt cauzate de faptul că activitatea academică presupune un volum crescut de efort, cu o centrare progresivă asupra autonomiei și a performanței.

Pe lângă pregătirea medicală și activitățile de laborator care au un potențial stresor ridicat, există și alți factori precum: primele contacte ale studenților cu pacienții, faptul că locuiesc singuri sau departe de familie, numărul crescut de ore de studiu, îngrijorările cu privire la performanțele academice și profesionale ulterioare. Cele mai frecvente surse de stres ale studenților sunt nemulțumirile față de curriculum și de examene, în ciuda faptului că acestea reprezintă o etapă fundamentală în procesul de instruire și certificare al viitorilor medici (Garg et al., 2017). În general, nivelurile crescute de stres pot fi cauzate de numărul ridicat de examene, timpul insuficient pentru studierea materialelor și a resurselor bibliografice, nopțile nedormite, dificultățile în înțelegerea unor subiecte, performanța academică scăzută și mediul competitiv (Dyrbye et al., 2011).

Din aceste motive, studenții la medicină sunt mai predispuși la a manifesta simptome de anxietate, depresie sau adicții, însoțite de frustrare, epuizare, neajutorare și chiar de tulburări psihice (Galán et al., 2011).

Organismul pune în funcțiune numeroase sisteme pentru a procesa și coordona răspunsurile adaptative, atât la nivel sistemic, cât și la nivel celular. Astfel, stresul are efecte directe asupra creierului și a întregului corp; incapacitatea de adaptare la o situație stresantă poate determina o funcționare cerebrală anormală, probleme fiziologice și psihologice, cum ar fi depresia, anxietatea sau burnout-ul (Essel & Owusu, 2017). Mai mult de atât, se presupune că stresul exacerbează multe alte simptome emoționale în rândul studenților, precum durerile de cap, oboseala, depresia, anxietatea, incapacitatea de adaptare (Dusselier et al., 2005).

Deși termenul de „stres” are adesea o conotație negativă, un nivel moderat de stres poate fi benefic și poate ajuta studentul să fie mai dinamic și să performeze mai bine. Cu toate acestea, este dificil de făcut o distincție între nivelul optim de stres, numit eustres și nivelul exagerat de stres, numit distres. Prima diferențiere între eustres și distres a fost făcută în anii 1960 de Selye (1976). Autorul definește eustresul ca nivel de stres ce crează provocare și constituie o forță motivațională pozitivă, fiind asociat cu emoții și rezultate pozitive, precum starea de bine sau satisfacția în muncă/învățare. Pe de altă parte, distresul este caracterizat prin acele experiențe în care persoana evaluează stresul ca amenințare, fiind asociat cu emoții și rezultate negative, cu stări corporale neplăcute, probleme de sănătate, insomnie.

Expunerea exagerată la un număr mare de factori stresori pe o perioadă îndelungată de timp, în absența unor resurse individuale suficiente, poate conduce la burnout. Burnout-ul este definit ca sindrom psihic ce cuprinde trei dimensiuni: epuizare copleșitoare, depersonalizare și neimplicare în activități (Maslach, 1993).

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# FIVE MINUTES OF ORTHOPEDICS

## "things to keep in mind"

Article by Dr. Andrei Caloiu



meet the  
AUTHOR

Dr. Andrei Căloiu graduated from the Faculty of Veterinary Medicine "Spiru Haret" Bucharest in 2005.

In 2011, he completed his Master's studies in the field of Companion Animal Pathology. Throughout his career, he attended multiple workshops, symposia and congresses, national and international, both as a participant and as a lecturer.

He wrote specialised articles in various orthopaedic topics in Revista Veterinarul and in Revista Veterinarul si Romanian Journal of Veterinary Orthopaedics and Imagistic (Revista Societății Române de Ortopedie Veterinară).

He is member of AOVET, ESVOT. In 2014, became the Scientific Secretary of the Romanian Society of Veterinary Orthopaedics, (SRVO) and in 2019 he has been elected the position of **President of the SRVO (Romanian Society of Veterinary Orthopaedics)**.

His passions are **orthopedics, traumatology and neurosurgery**.

He performed orthopaedic surgeries in the national premiere (THR - hip replacement - with uncemented prosthesis), Mini Hip THR (hip replacement for small breeds), PGR (Replacement of the femoral trochlea in dogs and cats).

He currently works as the manager and orthopaedic surgeon at the Sarmivet clinic, a clinic established in 2011 out of the desire to achieve and bring added value in veterinary orthopaedics.

### 01 The 4 forces encountered at bone level:

- Compression force
- Bending force
- Shear force
- Torsion

### 02 How do we evaluate an orthopedic patient by using the MBC score?

- Mechanic evaluation:

Mechanical Fracture Assessment									
Caution							Little Risk		
1	2	3	4	5	6	7	8	9	10
Buttress			Contact			Compression			
Multiple Limb Injury			Pre-existing Clinical Disease			Single Limb			
Giant Breed			Large Dog			Toy Dog			

- Biologic evaluation:

Biologic Fracture Assessment									
Caution					Little Risk				
1	2	3	4	5	6	7	8	9	10
Old Patient			Middle Adult			Young Adult		Juvenile	
Poor Health							Excellent Health		
Poor Soft Tissue Envelope							Good Soft Tissue Envelope		
Cortical Bone							Cancellous Bone		
High Velocity Injury							Low Velocity Injury		
Extensive Approach						Mini Approach		Closed	

- Clinical evaluation:

Clinical Fracture Assessment									
Caution									Little Risk
1	2	3	4	5	6	7	8	9	10
Poor Client Compliance					Good Client Compliance				
Poor Patient Compliance					Good Patient Compliance				
Wimp					Stoic				
High Comfort Level Required					Comfort Level Not a Consideration				

**03** The intramedullary Pin or the Kirschner Pin must represent 70% of the thickness of the medullary canal.

**04** The length of the orthopedic plate and the placement of the screws:

- The plate must be 2 – 3 times bigger than the length of the fracture.
- The length of the plate reduces the risk of the screws to be eliminated out from the plate.
- Plate with 6 holes: 3 screws placed in the proximal part of the bone.
- Plate with 6 holes – 4 screws placed in the distal part of the bone.

**05** The placement of the screws:

- The density of the screws placed in the bone: a proximal and distal rapport 0,4 – 0,5.

**06** When we are using a surgical orthopedic plate and screws we must have space to place minimum 3 screws on the proximal and 3 screws on the distal part.

**07** Complications that can occur in the process of bone healing:

- Delay or failure to reach the union of the fracture fragments (delayed healing, nonunion, malunion, osteomyelitis).

*Late healing:*

- 8-12 weeks postoperatively, fracture healing prolonged but healing is expected.
- The fracture does not present instability and there is no pain when the leg is palpable.
- Minimal lameness but that will improve.

*Nonunion:*

- Impossibility of fracture healing.

*Malunion:*

- Improper healing, without the functionality of the limb.

**08** The evaluation of the orthopedic surgery using the 4 A:

*Alignment:*

- Evaluation of bone alignment in relation to proximal and distal joints, torsions, angulations.

*Approach:*

- Evaluation of the alignment and approach of the fracture fragments.
- Maintaining those depending on the fixing methods.
- The importance of evaluating the approach until, the fracture is cured.

*Appliance:*

- The evaluation of the implant and how it will be applied to the bone.
- The length of the implant.
- The length and the position of the screws.
- Possible complications regarding the implant.

*Activity:*

- Returning as quickly as possible to the normal activity of the patient after the orthopedic surgery.
- Evaluating the callus that is formed on the bone in connection with the used implant.
- Evaluating the new bone that is formed, or bone lysis.
- Time that passed after the surgery, infections.

## QUESTIONS:

1. What is the most common force in fractures?

2. The intramedullary Pin or the Kirschner Pin must represent ..... of the thickness of the medullary canal.

- a. 95%      b. 50%      c. 70%

3. What is the diameter of the contramedullary pin?

- a. one cortex      b. two cortices


Stay  
tuned

cut the paper and  
put it in the box  
that you can find  
in the pharmacy,  
faculty hospital.

**SRV8**  
SOCIETATEA ROMÂNĂ  
VETERINARĂ DE ORTOPEDIE

Name and Surname

Year and the number

the winner will be  
announced in the  
next issue and on  
the instagram. 



## VITAL SIGNS IN CATS

TEMPERATURE: 37,7-39,2 °C

NORMAL HEART RATE: 160-220 BPM

CAPILLARY REFILL TIME: 1-2 SECONDS

URINARY OUTPUT: 1-2 ML / KG / H

RESPIRATORY FREQUENCY: 20-30 BREATHS/MIN

AVERAGE BLOOD PRESSURE: 100-150 MM HG

MUCOUS MEMBRANE COLOR: PALE PINK TO PINK

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## VITAL SIGNS IN DOGS

TEMPERATURE: 38-39,2 °C

NORMAL HEART RATE: <14 KG - 80-140 BPM  
>14KG - 50-110 BPM

CAPILLARY REFILL TIME: 1-2 SECONDS

URINARY OUTPUT: 1-2 ML / KG / H

RESPIRATORY FREQUENCY: 20-40 BREATHS/MIN

AVERAGE BLOOD PRESSURE: 120-140 MM HG

MUCOUS MEMBRANE COLOR: PINK

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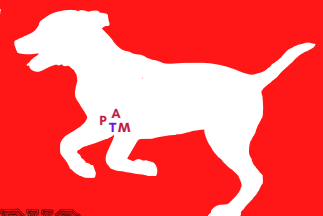
## SUPERFICIAL LYMPHATIC SYSTEM



## POINTS OF AUSCULTATION

	HORSES	CATTLE	CARNIVORE
MITRAL	4-5 LEFT	4 LEFT	5-6 LEFT
AORTIC	5 LEFT & RIGHT	4 LEFT	4 LEFT
PULMONAR	3 LEFT	3 LEFT	3 LEFT
TRICUSPID	3-4 RIGHT	3 RIGHT	3 RIGHT

ANATOMICAL PROJECTION OF CARDIAC ORIFICES ON THE CHEST, ONLY IN PATHOLOGICAL CONDITIONS, WHEN ENDOCARDIAL MURMURS APPEAR



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Vol 3 Issue 1

Christmas Special Edition

**WHO ARE WE?**  
to are you, here? We are -  
Campus, just a bunch of  
and, passionate and ambitious  
primary medicine students  
from Roumania, France,  
emerging in USAMWB, led by a  
ambitious and team oriented  
tertiary doctor p. 02

**DEALING WITH  
PNEUMOTHORAX  
IN EMERGENCY**  
I am in the night shift. Rooms  
filled with patients. A patient  
where you find a dog who just got  
hit by a car p. 06

**CHRISTMAS TIME  
AND PETS**  
It's most wonderful time of the  
year. But is also for our pet/bab  
to help you keep the magic alive,  
let us give you some tips to  
celebrate safely the Holidays with  
your pet. p.11

