

FIRST AID AND CPR FOR PETS

PRESENTED BY

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WE COMMEND YOU!



SAFETY SAFETY SAFETY!



DISCUSSION

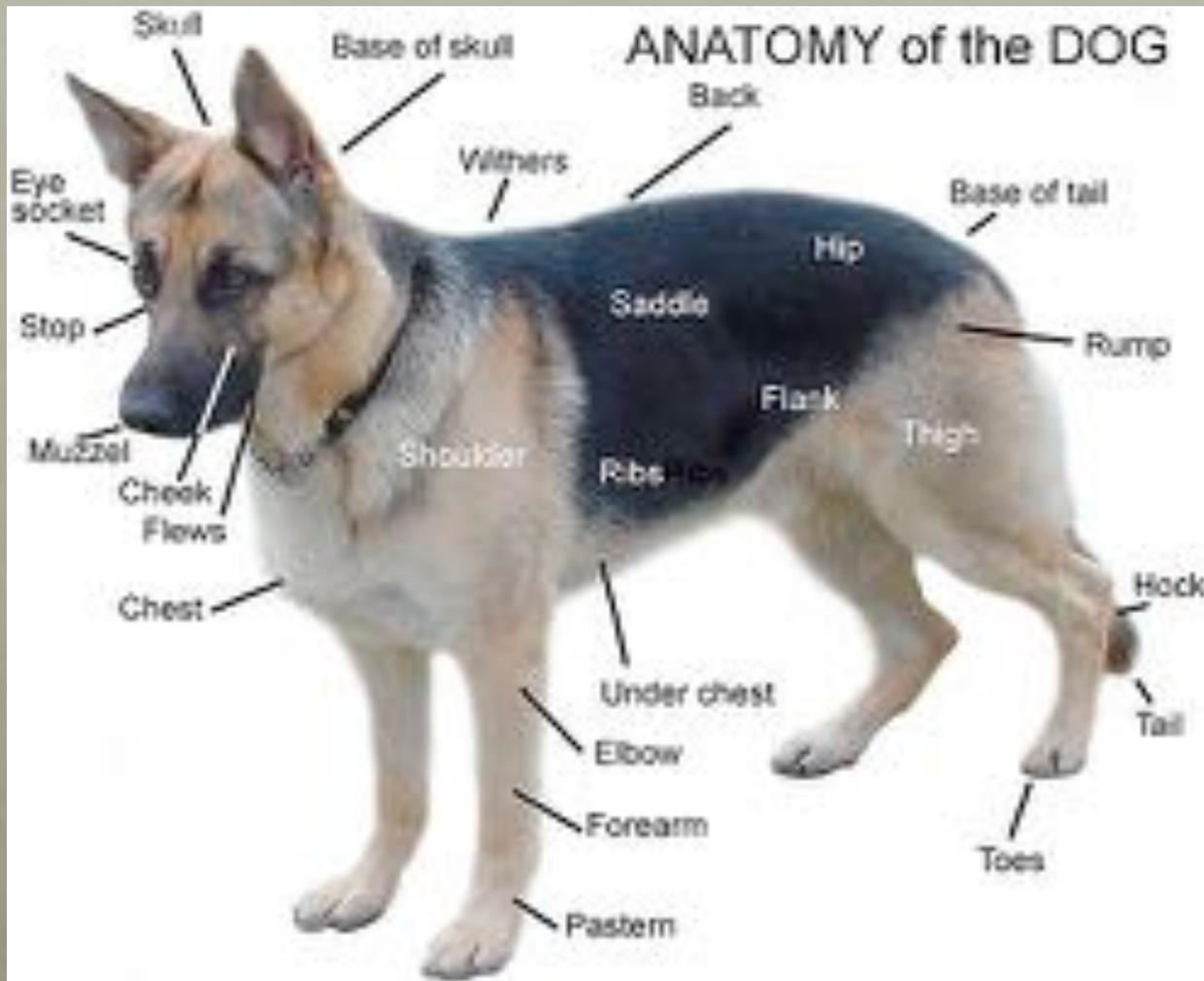
- 10 most common emergencies
 - Trauma (lacerations, HBC, fight wounds)
 - Toxins
 - Hemoabdomen
 - Anaphylaxis
 - Respiratory Distress
 - Heat stroke
 - Acute abdomen (vomiting diarrhea)
 - GDV
 - Seizure
 - Hind limb paresis



NORMAL DOG

Parameter	At Rest	Exercising	Emergency
Heart Rate	60-75	75-130	< 60 or >160
Respiratory Rate	10-20	36-panting	Labored or absent
Capillary Refill Time	1-2 seconds	1 second	>3 seconds
Mucus Membrane Color	Pink	Bright pink	white, blue, dark red, yellow or gray
Pulse Quality	Moderate	Bounding	Weak or absent
Temperature	100-101.5 °F	101-104 °F	< 98 or >105

ANATOMY



NORMAL



NORMAL



TPR

- Temp (panting or cold to the touch)
- Pulse
- Resp



LET THE GUMS TELL US



ABNORMAL

- LET'S GET TO THE VET

- Bloating abdomen – firm to the touch
- Panting, pacing, whining
- Increased urination / thirst
- Coughing / retching without production
- Vomiting / diarrhea
- Anorexia
- Unwilling to rise and or conduct normal activity

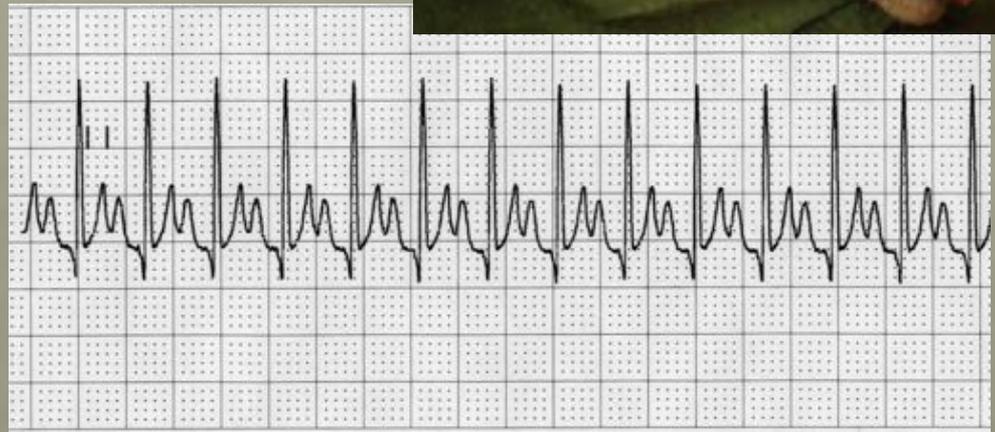
TOP 10 EMERGENCIES TRAUMA

- Skin lacerations
- Bite wound
- Hit by car
- Neurologic
- Result
 - Hemorrhage
 - Infection
 - Pain
 - Paralysis
 - Shock
 - Death



TRAUMA CAN LEAD TO SHOCK

- The result of inadequate blood supply to vital organs as a result of blood loss or fluid loss, fight or flight response, toxins, respiratory or cardiac compromise, burns and or infection
- Clinical signs
 - Rapid and or irregular heart rate
 - Weak pulse
 - Hypothermia
 - Slow / shallow breathing
 - Decreased mentation



WHAT TO DO FOR SHOCK

- Stop bleeding!
- Apply muzzle if the injury does not interfere with airway
- Protect wounds and inhibit further trauma
 - Splints on fractures
 - Bandage bandage bandage
 - Never remove penetrating FB if you don't have to
 - Immobilize entire patient as needed
- Heat support
- Seek medical support
- Don't give oral medications

TRAUMA / SHOCK

- Call ahead with situation, TPR if applicable and ETA
- Once at the vet
 - Stabilize
 - IVF
 - Hemostasis
 - Analgesics
 - Antibiotic
- Giving vet adequate history can be difference of life and death

TOP 10 EMERGENCIES TOXINS



- Plants

- Azalea
- Rhododendron
- Sago Palm
- Cyclamen
- Kalachoe
- Autumn Crocus
- Foxglove
- Lily
- Amanita mushroom
- Yew
- Marijuana



TOP 10 EMERGENCIES TOXINS

- Chocolate
 - Best to worst
 - Chocolate flavored cakes and or cookies
 - Milk chocolate
 - Semisweet and dark chocolate baking chocolate
 - Toxic ingredient theobromine
- Clinical Signs
 - Hyperactivity
 - v/d. tremors, seizures
 - Tachycardia



TOP 10 EMERGENCIES TOXINS

- Xylitol
 - Sugar free gum contains – 0.3g of xylitol
 - Low blood sugar at 0.1g/kg
 - Liver fail – 0.5g/kg
- Clinical signs
 - weakness/collapse
 - Liver failure



TOP 10 EMERGENCIAS TOXINS

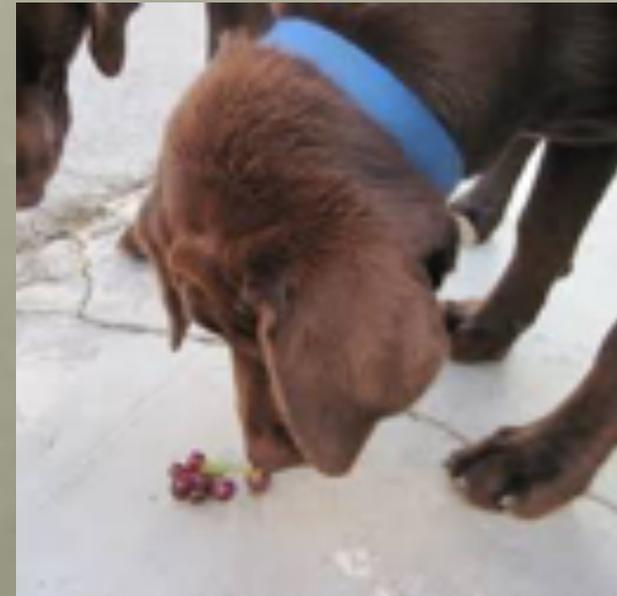
- Rodenticides
 - Anticoagulant
 - DeCon ***
 - Typically green or blue dye
 - Neurotoxin
 - Bromethalin, strychnine, Rat be gone, Zinc Phosphate
- Clinical Signs

Typically takes multiple days to show clinical signs
It will not be obvious because typically internal bleeding



TOP 10 EMERGENCIES TOXINS

- Grapes and Raisins
 - Raisins are disgusting
 - Cause kidney failure at relatively low dose
 - Cause is unknown
 - Renal compromise within 24-48h
- Clinical Signs
 - Lethargy, vomiting, diarrhea
 - Anuria



TOP 10 EMERGENCIES TOXINS

- Human Medications
 - Weed
 - Cardiac medications
 - Anti-depressants
 - Acetaminophen cats
 - Ibuprofen dogs
- Clinical signs
 - variable



A German Shepherd dog is shown from the chest up, positioned in the lower right quadrant of the image. The dog's head is tilted upwards, and its mouth is wide open, showing its teeth and tongue. The dog is surrounded by a dense field of tall, green, leafy plants that resemble hemp or cannabis. The background consists of a line of dark green trees under a bright, overcast sky. The entire image is framed by a red border at the top and a grey border on the sides.

**I LOST THE BALL
BUT IT'S COOL**

IT'S ALL COOOLL

TOXINS – WHAT DO YOU DO?

- ASPCA Animal Poison Control Center
 - 888-426-4435
 - Keep the case number
- Always bring sample of product to vet
- If non-corrosive toxin and swallowed within an hour
 - Induce emesis – shot glass every 5min until emesis or 3x's
 - Or if chocolate, xylitol, grapes / raisins anytime
- If corrosive, do NOT induce emesis
 - Bleach, batteries, cleaning materials
 - Seizing, risk of aspiration and or already obtunded

PUKE OR NOT TO PUKE

- YES!!!!
 - Chocolate
 - Gum
 - Raisins
 - Within 1hr



TOXINS – WHAT WILL THE VET DO?

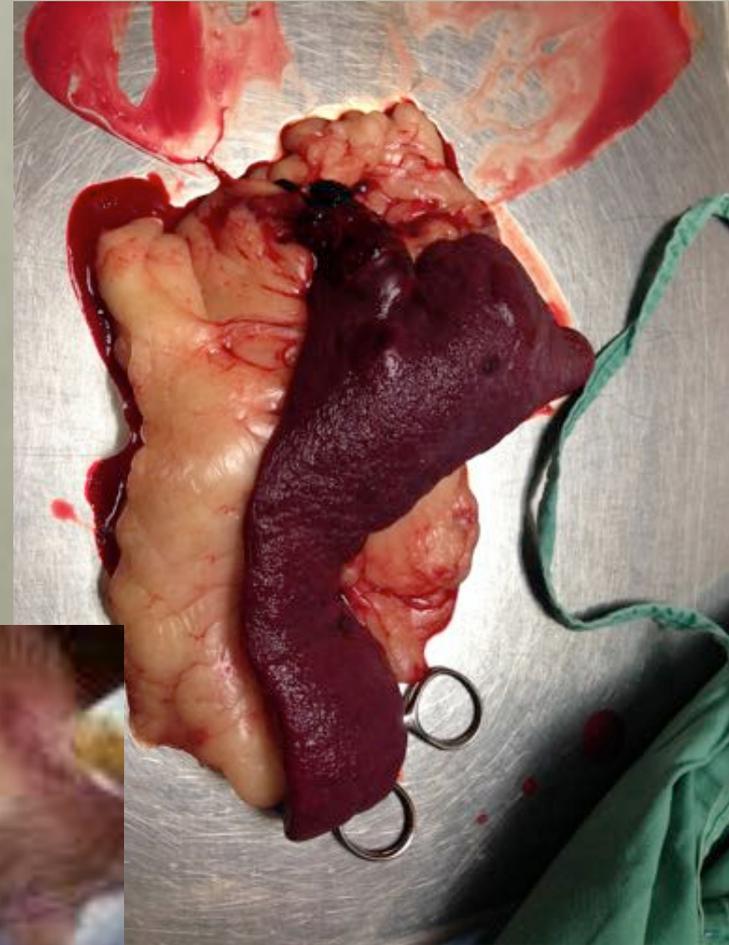
- Emesis – Apomorphine
- Activated charcoal – oral and enema
- Fluids
- Antidotes and supportive care
 - Chocolate – sedatives
 - Xylitol – glucose and liver protectants
 - Grapes/Raisins – diuresis
 - Rodenticides – Vit K
 - Human meds – symptomatic
 - Weed – cheeto's and Pink Floyd

TOP 10 EMERGENCIES

HEMOABDOMEN

- Blood / bleeding in the abdomen
- If not trauma or rat bait then 75% of the time it is rupture of malignant tumor of liver, spleen, GI tract or kidney
- Leads to shock, DIC then death in sometimes less than 1h
- Clinical Signs
 - Acute weakness, white mm, weak pulse, distended abdomen, bruising

HEMOABDOMEN



HEMOABDOMEN – WHAT DO YOU DO?

- Notice clinical signs fast – speed is everything
- Call ahead to vet and tell them hemoabdomen
- Consider prognosis of 75% malignant cancer
- Wrap abdomen and heat support
- Get to the vet!

HEMOABDOMEN – WHAT WILL THE VET DO?

- Surgery!
- Support care
- Submit to lab to define if cancer
- 24h-72h hospital stay
- Blood transfusion
- \$3000-\$4000



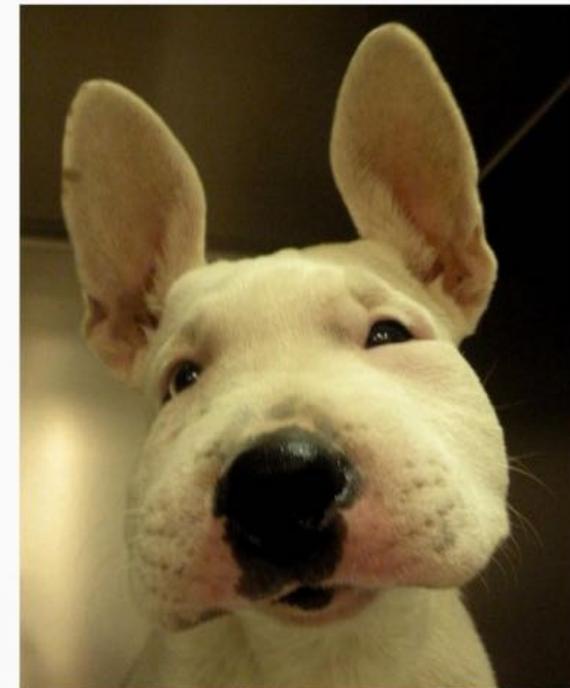
Abdominocentesis yielded blood in this patient that presented for sudden onset "collapse".

ANAPHYLAXIS

- Reaction that ultimately could be fatal that involves multiple organ systems and typically manifests in dermal and gastrointestinal clinical signs
- 3 main triggers
 - Foods
 - Insects
 - Drugs
- Histamine release, H1 – H4 receptors through out body causing various clinical reaction

ANAPHYLAXIS

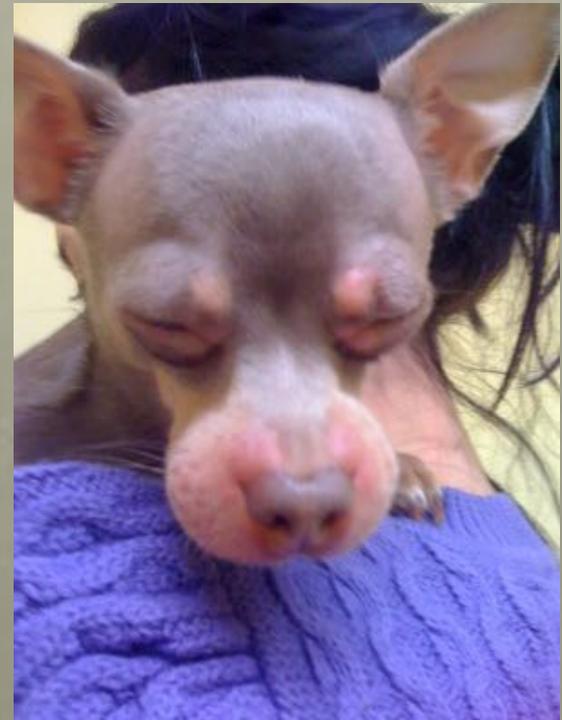
- Acute onset
 - Itchy, red, swollen skin
 - Vomiting or diarrhea
 - Wheezing, excessive panting, coughing



ANAPHYLAXIS

WHAT DO YOU DO?

- Treatment
 - Benadryl 1mg/lb oral
 - But this only treats the skin and gastric h receptors
 - Steroids
 - Controversial
 - Get to vet, describe allergen
 - Epinephrine



ANAPHYLAXIS

WHAT DO YOU DO?

- Epi Pens
 - 0.15mg – 10-30lb
 - 0.3mg – 30lb plus
- Or talk to your vet



ANAPHYLAXIS

WHAT WILL THE VET DO?

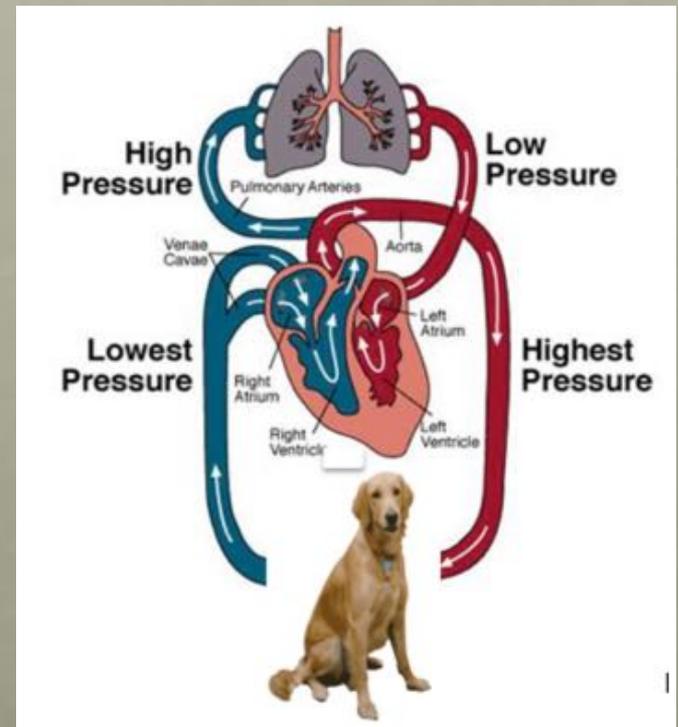
- Stabilize
- Inhibit further reaction
 - Epinephrine
 - Steroids
 - Diphenhydramine
- Check lab values to see if organs compromised

TOP 10 EMERGENCIES RESPIRATORY DISTRESS



RESPIRATORY DISTRESS CONGESTIVE HEART FAILURE

- Failure of the heart to keep blood flowing in a forward direction leads to back up into the lungs (with left sided heart failure) or body cavities and organs (with right sided heart failure).
- Valvular disease
- Dilated cardiomyopathy
- Restrictive cardiomyopathy
- Arrhythmia
- Congenital cardiac abnormalities
- Toxins
- Inadequate nutrition (taurine in cats)



CHF

WHAT YOU WILL SEE

- Coughing – may be productive
- Tachypnea at rest
- Increased respiratory effort
- Restlessness/Anxiety
- Progressive –
 - Hypoxia will cause gums to turn bluish
 - Restless may progress to listlessness to unresponsiveness

CHF

What should you do?

- If your pet has a known history of any heart disease call your vet immediately
- Remain calm and try to minimize stress
- Count respirations if your dog doesn't seem quite right

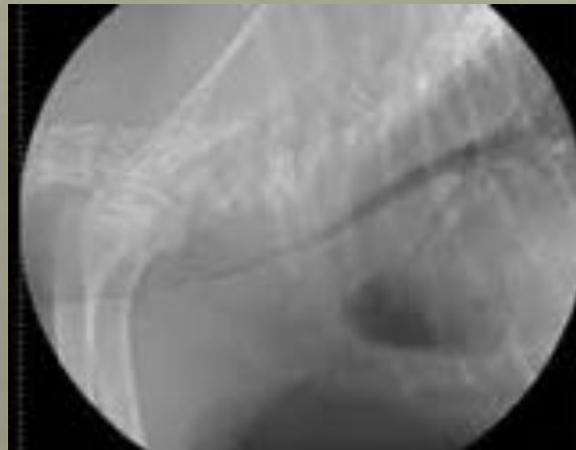
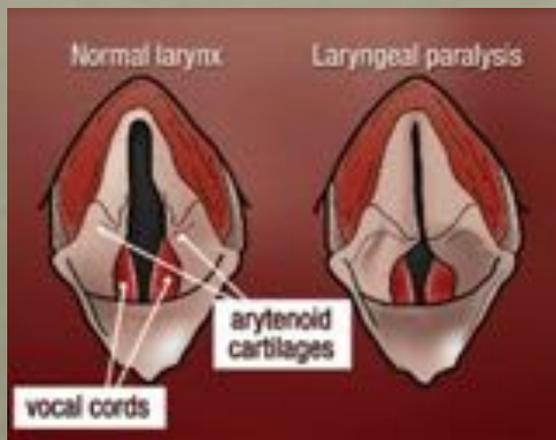
What your vet will do

- Minimize stress
- Oxygen support
- Diuretics
- Chest x-rays
- Echocardiogram

RESPIRATORY DISTRESS

AIRWAY OBSTRUCTION

- Brachycephalic syndrome
- Laryngeal paralysis
- Collapsing trachea
- Foreign material
- Trauma/Swelling



AIRWAY OBSTRUCTION

WHAT YOU WILL SEE (OR HEAR)

- Increased respiratory noise
- Increased effort (inspiration)
- Anxiety



AIRWAY OBSTRUCTION

What should you do?

- Stay calm; reduce stress
- Call your vet
- Cool down if necessary
- If a foreign body is lodged and there is NO airflow
 - Finger sweep only if this will not further stress the dog and you won't get bit
 - If dog is unconscious may attempt "Heimlich maneuver"

What your vet will do

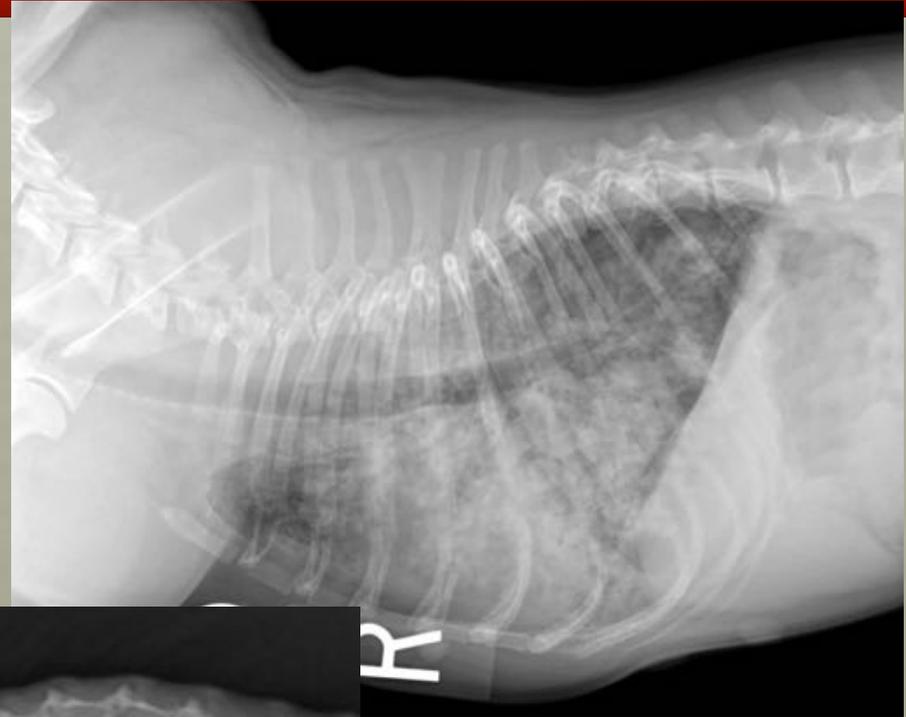
- Capture the airway if necessary
- Reduce stress
- Oxygen support
- Diagnostics
 - Laryngeal exam
 - Radiographs/ CT/ Fluoro
 - Scope
- Treatment options



RESPIRATORY DISTRESS

LOWER AIRWAY DISEASE

- Pneumonia
- Bronchitis
- Asthma
- Pleural effusion
- Cancer



LOWER AIRWAY DISEASE

WHAT YOU WILL SEE

- Increased respiratory effort
 - Inspiratory vs expiratory
- Tachypnea
- Distressed
- Cough (+/-)
- Abnormal position/posture
 - Neck extended
 - Elbows out
- Open mouth breathing NEVER normal in a cat



LOWER AIRWAY DISEASE

What should you do?

- Stay calm; minimize stress
- Call your vet
- Report concurrent problems to your vet
 - Lar-par
 - Megaesophagus
 - Recent smoke exposure

What your vet will do

- Oxygen support
- Reduce stress
- Medications
 - Bronchodilators
 - Antibiotics (pneumonia)
- Fluid removal (if present)
- Diagnostics
 - Radiographs/ CT/ Scope
 - Culture
- Treatment Plan

TOP 10 EMERGENCIES

HEAT STROKE

- Hyperthermia of a non-fever cause associated with systemic inflammatory response leading to a syndrome of multi-organ dysfunction
- Classic vs. exercise induced



- Higher risk:
 - Brachycephalic, laryngeal paralysis, geriatric, obese, dark/thick coat, heart disease
 - Confinement, poor ventilation, high humidity, lack of acclimatization

HEAT STROKE

WHAT YOU WILL SEE

Early Signs

- Elevated body temperature (usually $> 105^{\circ}\text{F}$)
- Excessive panting
- Tachycardia
- Bounding pulses
- Brick red mucous membranes



Late Signs

- Variable body temperature
- Petechial hemorrhages or ecchymoses
- Tachycardia
- Thready pulses/ pulse deficits
- Bloody diarrhea
- Dark urine
- Neurologic signs:
 - Ataxia
 - Cortical blindness
 - Stuporous/comatose
 - Seizures

HEAT STROKE

What should you do?

- Call vet!
- Start external cooling on the way to the hospital!
- Spray dog down with tepid water
- Drive with windows down or a/c on
- Make sure that water is available to drink

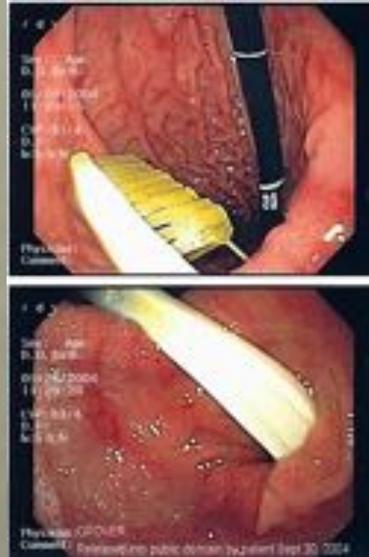
What your vet will do

- Continue cooling until core temperature has reached 103°F
- Start IV fluid therapy
- Run blood tests to check for organ damage and clotting problems
- Provide supportive care depending on progression of signs and organ damage

TOP 10 EMERGENCIES

ACUTE ABDOMEN

- Sudden onset of vomiting, diarrhea and/or abdominal discomfort
 - Pancreatitis
 - Foreign body obstruction
 - Dietary indiscretion
 - Peritonitis
 - Hepatic disease
 - Biliary disease
 - Urogenital



ACUTE ABDOMEN

WHAT YOU WILL SEE

- Diarrhea
- Vomit
- Loss of appetite
- Lethargy/weakness
- Dehydration
- Abdominal discomfort
 - Prayer position
- Abdominal distention
- Breath pattern changes

Some present with all of these signs while others present as just “ADR”



ACUTE ABDOMEN

What should you do?

- Call vet
- Don't force animal to eat if not interested
- Ensure clean water is available
- Minimize pressure on abdomen
- Start thinking about anything that may help the doctor
 - New food
 - Dietary indiscretion
 - Missing toys
 - History of similar signs



What your vet will do

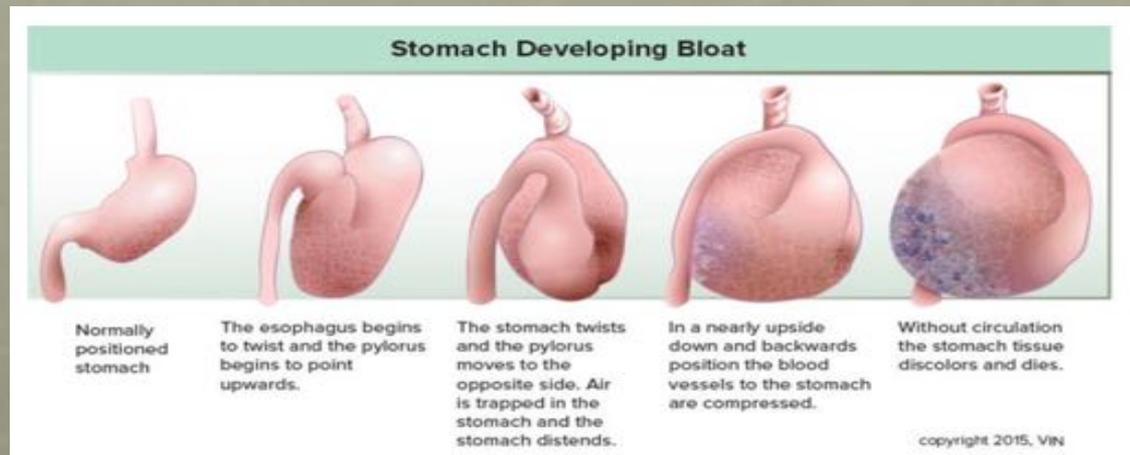
- Blood work
- Abdominal x-rays &/or ultrasound
- Hospitalization
- Pain control
- Fluid support
- Nutritional support
- +/- Surgery

TOP 10 EMERGENCIES

GASTRIC DILATATION VOLVULUS

- GDV aka Bloat
- What happens?
 - Gas and/or food stretches the stomach beyond its normal size, causing severe abdominal pain. The distended stomach then rotates, twisting off the exit route for the gas inside as well as cutting off blood supply to the stomach and spleen.

- Rapid progression
- Fatal if untreated



GDV

WHAT YOU WILL SEE

- Very painful!
- Abnormal behavior
- Unproductive retching
- Abdominal
distension*



GDV

What should you do?

- Call vet immediately!
- Do not wait for abdominal distention

Large deep chested dogs are at a higher risk of developing GDV.

Classic Breeds: Great Dane, St. Bernard, Weimaraner

But...

ANY DOG CAN BLOAT!!!

What your vet will do

- IV access and fluids
- Pain control
- Decompress stomach
- ECG
- X-rays
- Surgery

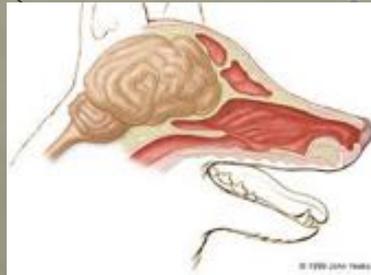


TOP 10 EMERGENCIES

SEIZURES

What are they?

- Transient occurrence of signs due to abnormal excessive or synchronous neuronal activity in the brain
- Generalized tonic-clonic
 - Generalized muscle spasms
 - Loss of consciousness
 - Post-ictal period of disorientation
- Partial/Focal
 - Focused muscle twitching (i.e. face)
 - +/- change in behavior



What causes them?

- Primary (idiopathic) seizures have no identifiable underlying cause
 - Typically diagnosed in animals 1-5 years old
 - Underlying causes must be ruled out prior to definitive diagnosis
- Secondary seizures
 - Underlying cause either in the brain (tumor, infection, trauma)
- Reactive seizures
 - Underlying outside the brain (hypoglycemia, liver disease, toxins, etc.)

SEIZURES

WHAT YOU WILL SEE

- Four parts to a seizure
 - Prodrome is the time period prior to the onset of seizure activity.
 - Aura is the beginning of the seizure.
 - Abnormal sensory and motor behavior like pacing and licking
 - Autonomic patterns like salivating or vomiting
 - Ictal period is the actual seizure activity.
 - Involuntary muscle tone or movement and/or abnormal behavior lasting usually from seconds to minutes
 - Postictal period happens after the seizure and can last from minutes to hours.
 - Disorientation
 - Abnormal behavior for that animal

SEIZURES

What should you do?

- Stay calm and stay safe
 - Try to look at a clock and note the start and stop time of the seizure
- Prevent secondary injuries
 - Move sharp objects away
 - Move other pets to another room
- Call vet if the seizure lasts more than 5 minutes or if the pet has more than 2 or 3 seizures in 24 hours

What your vet will do

- Administer antiepileptic medication if the seizure is ongoing
- Blood work
- Imaging
- Hospitalization if seizures can not be controlled by other means
- Treatment of any underlying disorders
- Medical management if idiopathic

TOP 10 EMERGENCIES

HINDLIMB PARESIS

- Sudden loss of function of the hind limbs
 - Can vary in severity from abnormal gait (dragging toes, stumbling) to complete paresis and inability to move/feel
- IVDD – large dogs vs small dogs
 - Pressure on spinal chord causes damage to nerves sending and receiving signals from legs to brain
 - Pressure can cause permanent damage to the nerves is not treated quickly (<12 hours)
- Spinal trauma

HINDLIMB PARESIS

WHAT YOU WILL SEE

- Back pain – guarding behavior
- +/- Incontinence
- May affect one side worse than the other
- If ambulatory
 - Dragging/scuffing of toe nails
 - Ataxic gait (engine isn't talking to the caboose!)
- If non-ambulatory
 - May pull with front legs and drag back legs to move around
 - Decreased or loss of sensation in the affected legs

HINDLIMB PARESIS

What should you do?

- Call vet ASAP!
- Keep the back parallel to the ground
- Limit handling and movement as much as possible to prevent pain and further damage
- Think about when you first noticed the signs (look at a clock) – your vet will want to know

What your vet will do

- Full exam/stabilization
- Pain control
- Neurologic exam
- Imaging
 - X-ray vs CT vs MR
- Discuss treatment options
 - Surgery
 - Medical management

FIRST AID KIT

- Muzzle
- Rubber gloves
- Betadine / Neosporin
- Blunt scissors
- Cotton socks
- Maxipad / TeflaPad
- Ace Bandage / Vet Wrap
- Towel
- Duct tape / roll gauze
- Maybe
 - Benadryl
 - Epinephrine
 - Splints



BANDAGING AND WOUND CARE

- Bandaging
 - Don't get bit and stop the bleeding!
 - Protects wounds from environment
 - Discouraging self mutilation
 - Support for strains or fracture
 - Proper placement is incredibly important for blood flow
- Application
 - Clean and dry wound
 - Never below fracture site or tight around the neck
- 3 Layers
 - Contact layer
 - Absorbent layer
 - Outer layer

BANDAGING AND WOUND CARE

- Contact Layer
 - Telfa Pad
 - Sterile
 - Absorbent
 - Allow drainage to pass to next layer without becoming wet
 - Free of particles and or fibers
 - Application of neosporin to this layer

BANDAGING AND WOUND CARE

- Absorbent layer
 - Applied over contact layer
 - Not too tight
 - Even layer – ridges cause pressure necrosis and pain
 - 1” roll small dog limb, 2” medium, 3-4” large dog
 - Always wrap from toes or tip to body
 - Patient should be able to wiggle toes and they should not swell and or be cold/painful
 - Gauze wrap to reinforce as needed
 - Get to vet

BANDAGING AND WOUND CARE

- Outer layer
 - Vetwrap usually
 - Toes to body or tip to body
 - Even width and snug but do not stretch elastic tape
 - Unroll first then apply

Monitor for

Swelling, cold digits, odor, saturation
change if occur

BANDAGING AND WOUND CARE

- Impalement and penetrating injuries
 - Stabilize foreign body, shorten if possible
 - Muzzle
 - Inhibit patient from moving
 - Get to the vet



SPLINT APPLICATION

- Stabilizes fractures to prevent further movement of the fragments and further damage to surrounding soft tissue
- Temporary until you get can get to the vet for full evaluation
- You will need:
 - A rigid/semi-rigid “splint”
 - Bandaging material
- The splint must immobilize the joint above AND below the fracture site to be effective
 - Splints and bandages below the fracture site add additional weight and cause further damage

SPLINT APPLICATION

BASIC LIFE SUPPORT

AKA - CPR

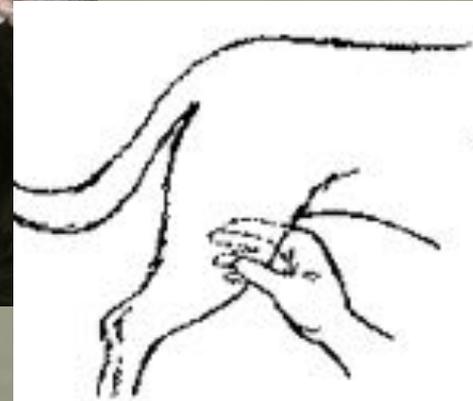
CPR IN PETS...

- Reassessment Campaign on Veterinary Resuscitation (RECOVER) initiative
- 4.1% survival rate for dogs, 9.6% survival rate for cats
 - Anesthesia related better prognosis (up to 25%)
 - Respiratory arrest alone better than full CPA
- Early recognition and intervention are key!!!

THINK ABC'S

- Airway
- Breathing
- Circulation

Look, listen, feel



CARDIOPULMONARY ARREST (CPA)

Warning Signs

- Weak, irregular pulses
- Very slow or very fast heart rate
- Changes in respiratory rate, effort, or pattern
- Very pale or blue gums
- Hypothermia

CPA

- Absence of a palpable pulse
- Absence of heart sounds
- Dilation of pupils
- Agonal breathing *

Unresponsive or Apneic (not breathing)



Initiate CPR Immediately

Basic Life Support

1 full cycle = 2 minutes

uninterrupted compressions/ventilation

1

Chest Compressions



100-120/min

- Lateral recumbency
- $\frac{1}{2}$ - $\frac{1}{3}$ chest width

2

Ventilation



10/min

- Intubate in lateral
- Simultaneous compressions

or

C:V 30:2

- Interpose compressions

CHEST COMPRESSIONS

- Call for help if anyone is nearby. You will get tired.
- Rate should be AT LEAST 100-120 per minute – Stayin' Alive
- Compress the width of the chest by $1/3$ - $1/2$
- Allow for full recoil! The heart needs to refill with blood
 - Don't lean
- Stand behind the animal (spine towards you) and from above (use a stool if necessary)

AVERAGE DOG



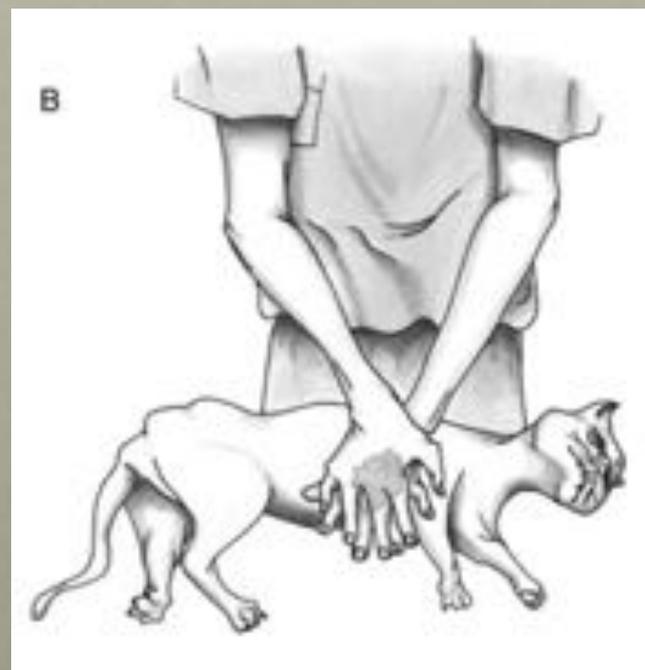
DEEP/NARROW CHESTED DOGS



BARREL CHESTED DOGS



CATS AND SMALL DOGS



MOUTH-TO-SNOOUT

- Hold the patient's mouth tightly closed, rescuer places his or her mouth over the patient's nostrils making a seal with the snout, and blows into the nostrils.
- Watch chest closely as you blow and stop when you see the chest rise
 - Keep in mind small animals will have a smaller tidal volume than you.
- Compressions: Breaths ratio of 30:2 is recommended
 - Approximately 4 rounds of "Stayin' alive"

MOUTH-TO-SNOOUT



CPR - WHAT NEXT????

- Get to veterinary hospital as soon as possible.
- Continue chest compressions on the way if it is safe to do so.
- Goal of CPR is return of spontaneous circulation (ROSC) – in other words, the heart is beating effectively on it's own
 - Mucus membrane color improves
 - Capillary refill time returns to <2 sec
 - Pulses are palpable
- If you are successful and see ROSC, still proceed to vet for evaluation
 - Supportive care for hypoxic damage suffered during CPA
 - Monitoring in case of re-arrest
 - Care for underlying cause of CPA