

Patient Care -

Basic Vitals

Normal Vitals - TPR

1 | Temperature

Factors that impact temp:

- Outside temperature
- Haircoat
- Weight *
- Exercise/Activity (Sz*)
- Stress, pain
- Metabolic Disease *
- Infection
- Age (old, young)
- Stool in rectum

2 | Pulse

Factors that impact HR/pulse:

- Pet size
- Exercise/Activity
- Stress, excitement, pain
- Mineral deficiencies *
- Sedation ↓
- Medications
- Heart disease
- Other disease/condition

3 | Respiration

Factors that impact RR/RE:

- Temperature
- Brachycephalic
- Blood - hypoxia, anemia
- Stress, anxiety, pain
- Tracheal collapse
- Airway/Lung disease
- Heart disease/failure

Temperature



Normal Fahrenheit	Normal Celsius
99.5° - 102.5°	37.5° - 39°

Rectal (DVM-preferred)

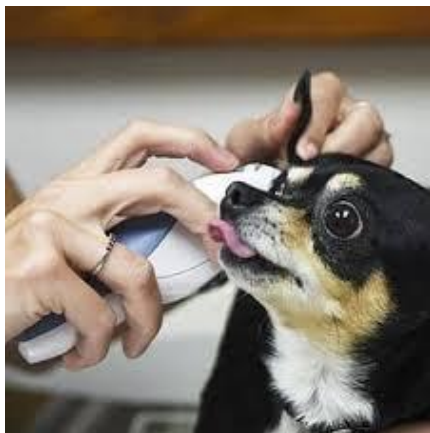
- Use lubricated, slip-on probe cover/sheath
- Insert gently into rectum

Aural / Tympanic

- Use probe cover
- Insert gently into ear canal

Inguinal / Axillary

- Use rectal thermometer
- Tuck into axillary or inguinal crease
- More accurate on thinly-haired pets





Pulse

Normal Canine		Normal Feline
<30lb	100-140bpm	170-200 bpm
>50lb	60-100bpm	

Femoral Artery

- Medial aspect of hind limb
- Up near inguinal crease
- Should be able to **palpate** (=feel) pulses

Tarsal, Dorsopedal

- May be able to palpate



NORMAL HEART SOUND



Heart Beat

Normal Canine		Normal Feline
<30lb	100-140bpm	170-200 bpm
>50lb	60-100bpm	

Auscultation = listening

- “Lub dub” sound
- Both sounds = 1 heartbeat
- Count for 15 seconds, then multiply by 4
 - ** Alternatives: 6 sec, 10 sec
- Listen to both sides of thorax & sternal

Abnormalities

- Murmurs
- Arrhythmias

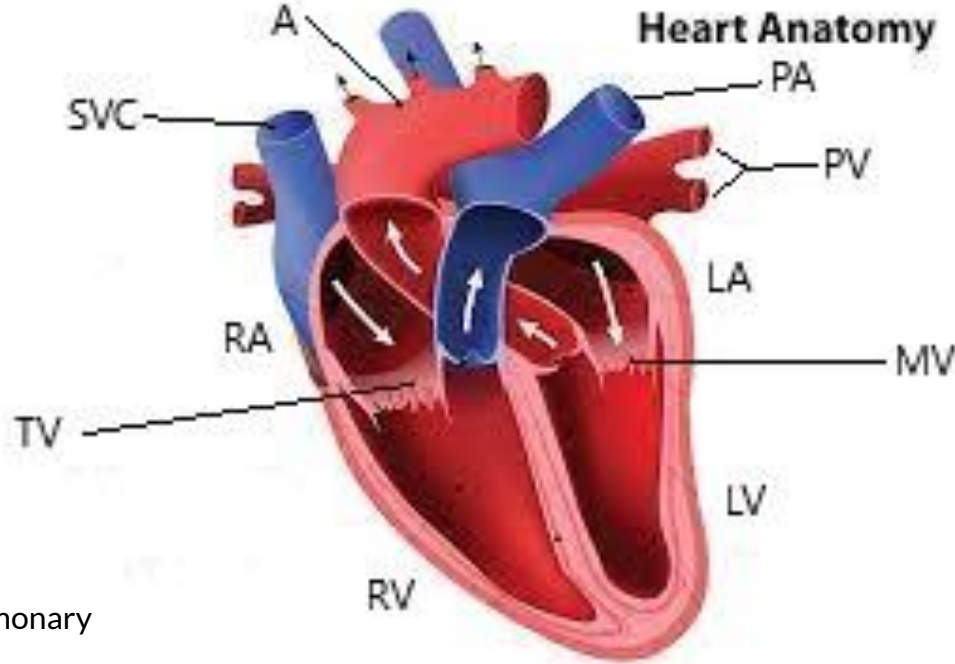


Deoxygenated blood from body returning to the heart flows through the Superior Vena Cava (SVC) into the Right Atrium (RA)

Blood flows from the Right Atrium (RA), through the Tricuspid Valve (TV) into the Right Ventricle (RV)

Blood flows from the Right Ventricle (RV), into the Pulmonary Artery (PA)

The Pulmonary Artery (PA) delivers blood to the lungs where it is **oxygenated**



Oxygenated blood flows from the lungs, through the Pulmonary Vein (PV) into the Left Atrium (LA)

Blood flows from the Left Atrium (LA), through the Mitral Valve (MV) into the Left Ventricle (LV)

Blood flows from the Left Ventricle (LV) and exits the heart via the Aorta (A)

The Aorta (A) circulates blood throughout the body to deliver oxygen and remove waste

Terminology

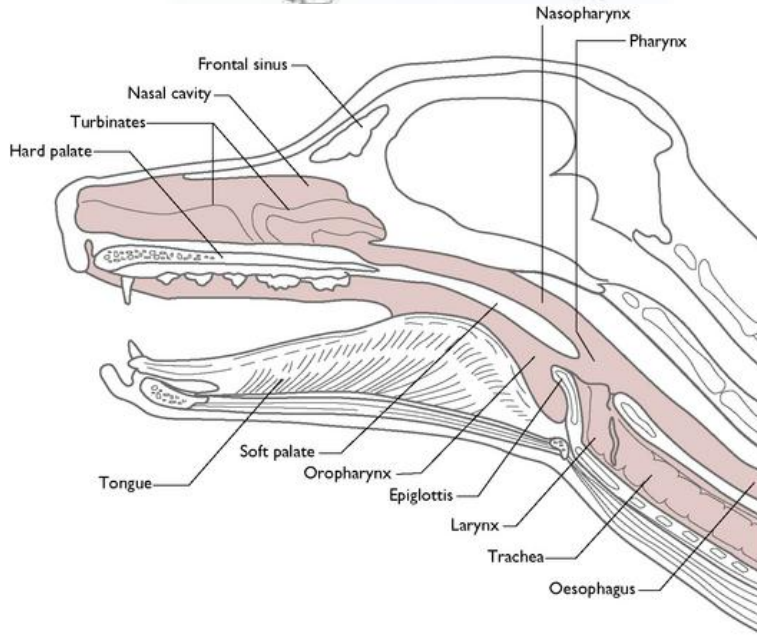
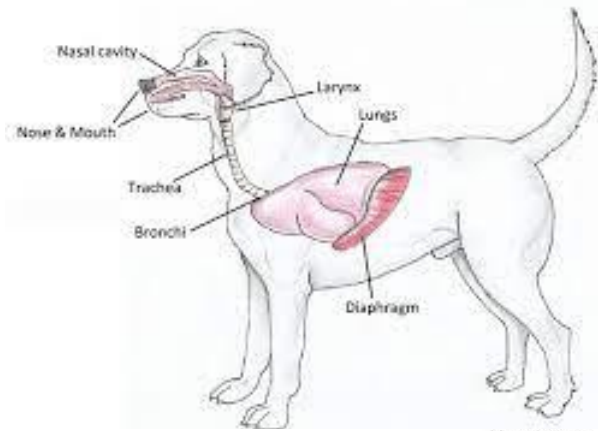
Bradycardia - slow heart rate

Tachycardia - fast heart rate

Gallop Rhythm - additional beats (S3, S4) outside of the normal “lub dub”

Arrhythmia - irregular heartbeat

Respiration



Normal Canine	Normal Feline
20 - 40 bpm	20 - 40 bpm

Observe chest rise and fall

- This cycle = 1 breath
- Count for 15 seconds, then multiply by 4
 - ** Alternatives: 6 sec, 10 sec
- If panting, *still count* and use “Respiratory Description” box with qualifying information

Abnormalities

- Irregular, ragged, dyspneic breaths
- Panting cats
- Increased effort / abdominal component



Respiration

Normal Canine	Normal Feline
20 - 40 bpm	20 - 40 bpm



Terminology

Dyspnea - difficulty breathing

Bradypnea - slow respiratory rate

Tachypnea - fast respiratory rate

Orthopnea - “straight” breathing, positional

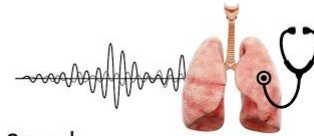
Apnea - absence of breathing

Crackles - popping, bubbling sound, wet vs. dry

Wheezing - due to airway narrowing, usually expiratory sound, sometimes musical quality

Stertor - congested, snoring or snorting sound of the upper airway

Stridor - high-pitched, usually inspiratory sound, often due to obstruction/narrowing of upper airway



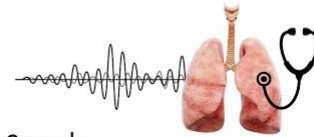
Lungs Sounds

Fine Crackles (aka Rales)



Lungs Sounds

Coarse Crackles (aka Rales)



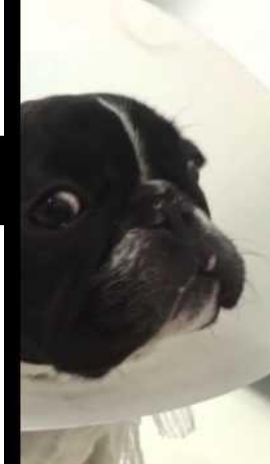
Lungs Sounds

Wheezing (Expiratory)



Lungs Sounds

Stridor





Orthopnea, Dyspnea



Normal Vitals – MM/CRT and Mentation

4 | Mucous Membranes

Tissues lining the cavity of the mouth (and elsewhere).

Tells us:

- Oxygenation
- Circulation
- Hydration

5 | Capillary Refill Time

The small blood vessels in extremities and superficially.

Tells us:

- Perfusion
- Circulating blood volume

6 | Mentation

Mental activity, awareness, and behavior.

Tells us & can be affected by:

- Some neuro status
- Head trauma
- Toxin/drug exposure
- Systemic disease

Normal MMs

- Pink
 - Indicates good oxygenation
 - RBCs in capillaries contain hemoglobin, which is red-pigmented
- Moist
 - Indicates good hydration level
 - Abnormal =
 - Tacky
 - Dry



Pigmented MMs

- Shades of brown - black
 - Normal
 - Can be prevalent in certain breeds
 - Can be more prevalent in animals with darker coats



Pale MMs

- Pale pink - pale
 - Indicates poor blood supply
 - RBCs in capillaries contain hemoglobin, which is red-pigmented
 - Anemia
 - Shock



White MMs

- Pale - white
 - Indicates even poorer blood supply (usually severe anemia or shock)



Icteric MMs

- Yellow Discoloration = “Jaundice”
 - Often indicates liver abnormalities
 - Excessive bilirubin in blood
 - Can indicate destruction of RBCs
 - May indicate pancreas or gallbladder issues



Cyanotic MMs

- Blue - purple - grey discoloration
 - Under-oxygenated blood
 - Build-up of carbon dioxide in tissues
 - Any number of conditions that cause decreased oxygenation
 - Heart disease
 - Tracheal collapse
 - Pneumonia
 - Other respiratory distress



Injected MMs

- Dark, “brick red” discoloration
 - Can be due to inflammation/gingivitis
 - Usually at the gumline, not all over
 - Usually due to increased blood flow to gums
 - Early stages of heat stroke
 - Sepsis, blood-borne infection



CRT

- Capillary Refill Time
 - Lift upper lip to expose gums
 - Firmly press on gums above canine tooth
 - This causes *blanching* when the blood is displaced
 - Observe how long it takes for normal color to return
 - Normal = **1-2 seconds**
 - Abnormal:
 - **<1 sec**
 - **>2-3 sec**



Mentation

- BAR = Bright, Alert, Responsive
- QAR = Quiet, Alert, Responsive



Mentation

- Dull , Depressed - decreased responsiveness to stimuli
- Obtunded - patient awake, but decreased responsiveness to stimuli
- Stuporous - unresponsive unless noxious or painful stimuli
- Comatose - unresponsive to *all* stimuli
- Disoriented , Demented - decreased responsiveness, but then inappropriate reaction



Patient Care -

Additional Vitals

Normal Vitals - BG, PCV/TS, BP

1 | Blood Glucose

Dissolved glucose (sugar) circulating in the blood

- Normal = 80-120 mg/dL
- Glucose is from food
- Used for energy in body
- Can indicate diabetes
- Can indicate liver shunt, insulinoma, other

2 | Packed Cell Volume / Total Solids

Percent of blood that is red blood cells / plasma proteins

- Normal canine = 30%- 50%
- Normal feline = 25%- 45%
- Can indicate anemia
- Can indicate dehydration

3 | Blood Pressure

The driving force for blood flow to the body

- Affects perfusion
- Affects O₂ delivery
- Too low OR too high can cause organ dysfunction or failure, stroke, or death



Blood Glucose (BG)

HYPO glycemia	Normal BG	HYPER glycemia
< 60 mg/dL	80-120 mg/dL	> ~150* mg/dL



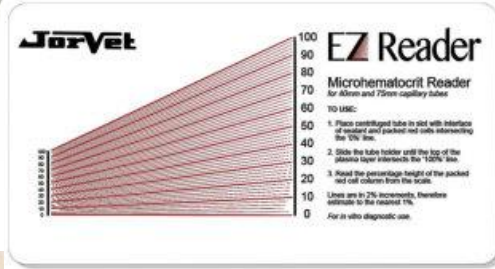
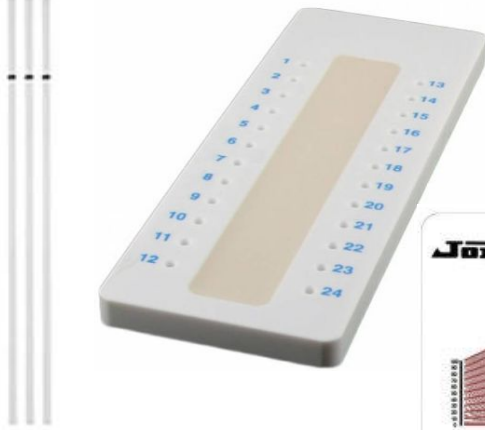
AlphaTrak 2 Glucometer

- Range = 20 - 750 mg/dL
- Single-use testing strips
- Rapid results
- Minimal blood sample needed
 - Peripheral blood sample

FreeStyle Libre

- Range = 40 - 500 mg/dL
- Sensor can be in place for 14 days
- Instant, unlimited results with scanner
- Digitally tracked to see trends
- No poking the patient
 - Interstitial fluid sample (lag*)





PCV/TS

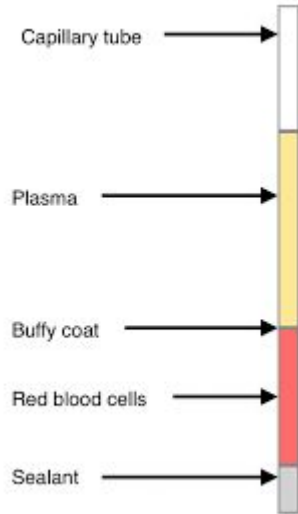
Normal Canine PCV	Normal Feline PCV
30% - 50%	25% - 45%

Hematocrit Tubes/Capillary Tubes, Clay

- Minimal blood sample needed
- Fill tubes, insert clay stopper
- Centrifuge
- Manual reading for result

Some factors that affect PCV

- Anemia = low RBC count
 - Hemorrhage, immune-mediated (IMHA)
- Hydration
 - Dilution = lowers PCV
 - Dehydration = raises PCV
- Breed = sighthounds
- Polycythemia vera





Blood Pressure (BP)

HYPO tension	Normal BP	HYPER tension
<80-90 mmHg systolic	120-130 mmHg systolic	>160-180 mmHg systolic

Doppler

- Measures systolic pressure
 - Systolic = arterial pressure during heart contraction
 - Diastolic = resting arterial pressure
- Non-invasive, performed on limb or tail

Hypotension

- Treatment:
 - IV fluids, boluses, HES, meds/pressors

Hypertension

- Treatment
 - Medications

Normal Vitals - IOP

4 | Intraocular Pressure

Fluid pressure within the eye

- Fluctuates
 - Fluid production
 - Can fluid travel through?
 - Fluid drainage
- Comparative IOP should be very close

5 |

6 |



IOP

Normal IOP

10-25 mm Hg

TonoPen

- Gently touch tip to cornea
- Manual readings for result
- Need to numb eye

TonoVet

- Rapid pressure sampling
- Automatic averaging of results
- No need to numb eye

High pressure

- Optic nerve damage, glaucoma, blindness

Low pressure

- Corneal swelling, cataracts, macular damage

Thanks!