Small animal veterinary nursing

Central College of Animal Studies

- **Contraindications**

- Do not use in cases of an acute infectious disease, an organ and feverish disease, detection of an unfavorable post vaccination reaction or allergy at former vaccinations and after stress imposed on animals (transportation, high environmental temperatures). Do not use in pregnant bitches in a high level of pregnancy and just after parturition.

- **Dosage and method of administration**

- The immunization dose per 1 animal is 1 ml, irrespective of species, age, sex and weight. The vaccine should be administered subcutaneously (s.c.) best of all into an area behind the scapula.

- Primary vaccination. Primary vaccination is carried out in dogs from age 6-8 weeks, second dose of vaccine is administered after 3 weeks after primary vaccination. It is advised to administer third dose of vaccine after 3-4 weeks after second dose in youngsters with specific colostral antibodies and in youngsters, to whom was administered second dose before finished 12th week of age.

- Revaccination: To maintain the persistent immunity, regular annual revaccination is advisable.

Nurses should know:

- Communicating with clients
- Advising clients on buying pets
- Advising clients on pet behaviour, including puppy parties; nutrition and
- feeding; obesity and weight clinics; pet reproduction; neutering of pets;
- control of infectious diseases; vaccination; overseas travel with pets, and pet
- passports; management of parasitic infections
- Preparing the client for euthanasia of a pet; the grief sequence and dealing
- with bereavement
- Admission and discharge of patients
- The processing of payments from clients

Vet nurse points

- Introduce yourself and let them know their pet is in exceptional hands.
- Know the pet's name and why it is at the hospital.
- Understand the procedures their pet is undergoing while in your care.
- Let them know they are welcome to call and you will be happy to inform them how their pet is getting on while in hospital.
- Never tell them everything will be fine. You can never be sure with medical procedures, but reassure them they are in the best hands possible – their pet is being treated as if it was your own pet in hospital.
- Make them feel their pet is special. Most clients are under the impression their pet is the only patient in the hospital and is essentially the most important pet you're dealing with that day.

Principles of client communication

- Communicating well and effectively with clients is an Essential part of the service provided by veterinary practice staff.

Smile and establish eye contact with the client and greet them and their pet by name whenever possible. Even if the nurse is on the telephone it is still possible to smile at the client and indicate that they should take a seat.

RESTRAINT OF DOGS AND CATS

1. vocal restraint
2. physical restraint
3. chemical restraint

Vocal restraint

- Speak to the dog or cat when approaching it
- Use the animals name
- if necessary speak firmly to the animal
- *Assistant* stands on apposite side of animal from person performing procedure

deafness

Physical restraint standing position

Place one arm under dogs neck so that forearm holds dog head securely

Pull dog close to chest of

Person performing restraint

Physical restraint with sitting position

Place one arm under dogs neck so that the forearm holds dogs head securely

Place other arm around dogs hindquarters'

Pull dog close to chest of person

performing restraint

Physical restraint in lateral recumbence

With the dog in standing position reach across dogs back and take hold of both forelegs in one hand and both hind legs in other hand

RESTRAINT AND POSITIONING FOR CEPHALIC VEINIPUNCTURE

- Place the animal in sitting position or sternal recumbence. Extend the animal's front leg by placing the palm of one hand behind the animal's elbow. . Compress the cephalic vein with the thumb, and stabilize the vein by rolling the skin laterally. For IV injection, slowly lift the thumb off the vein, leaving the hand in position behind the elbow to prevent the animal from withdrawing the leg.

RESTRAINT OF CAT FOR FEMORAL VEINIPUNCTURE

- Take the scruff of the cat’s neck in one hand, grasping as much of the loose skin as possible along the neck. Grasp high up between the ears, or the cat may be able to turn her head and bite. Wrap the fingers of the other hand around and through the cat’s hind legs. Gently stretch the cat out by separating your hands. Brace the cat's back and neck firmly against your forearm. The hand holding the hind legs can then be used to hold the top leg and tail out of the way, while the person performing the veinipuncture pulls out on the leg closer to the table. Pressure placed vertically on the inner thigh will occlude and raise the femoral vein.

Restraint Equipment - Towels

Place cat in sternal recumbency on top of the towel, parallel with end of towel. Hold the scruff!

Wrap shortest end tightly around cat's body, leaving the head exposed (make sure towel is not tightly wrapped around neck

Wrap the rest of the towel around cat's body tightly

Ideal for:

- ✓**Examining eyes**
- ✓**Giving oral meds**
- ✓**Femoral, jugular venipuncture**
- ✓**IM injections**

Special Handling Equipment

Trapped cats will hiss, growl before striking out with claws

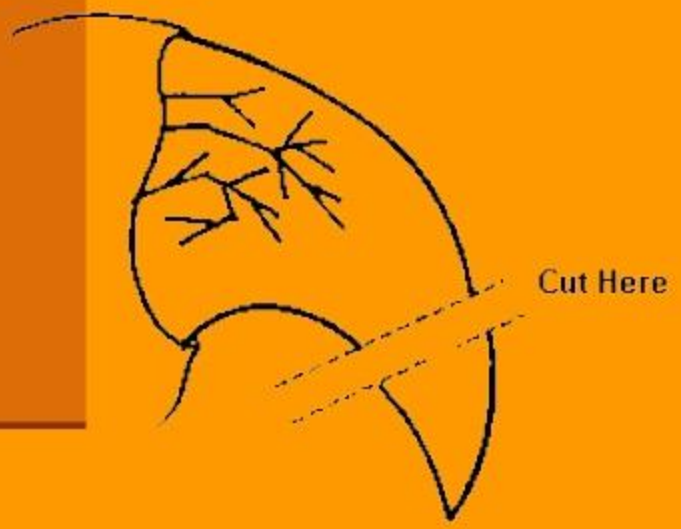
- Gauntlet gloves
- Towels
- Leash
  (used with scruffing)
- Box
- Net Bag

Nail Trimming Equipment

Cat nail trimmers

Guillotine type clippers

Where to Trim Nails



This is the approach to take when trimming each nail be sure to hold the cat still so you don't accidentally cut into the quick

Originally prepared by Suzanne Hetts, Ph D and Kathy Macklem for the DDFL, 1992

Restraint Equipment – Cat Bags

1. Place cat sternally on top of open bag on table and scruff it
2. Use your body to keep cat from standing up
3. With other hand, bring up one side of neck strap and quickly bring up other band and fasten the bag. Watch your fingers!
4. Curl the cat's hindlimbs up and into the bag
5. Make sure cat's head is tucked under your elbow and zip it up

Restraint Equipment – Cat Bags

www.vetmed.wsu.edu/.../resized/cat_saph_veni.JPG

Restraint Equipment – Cat Muzzles

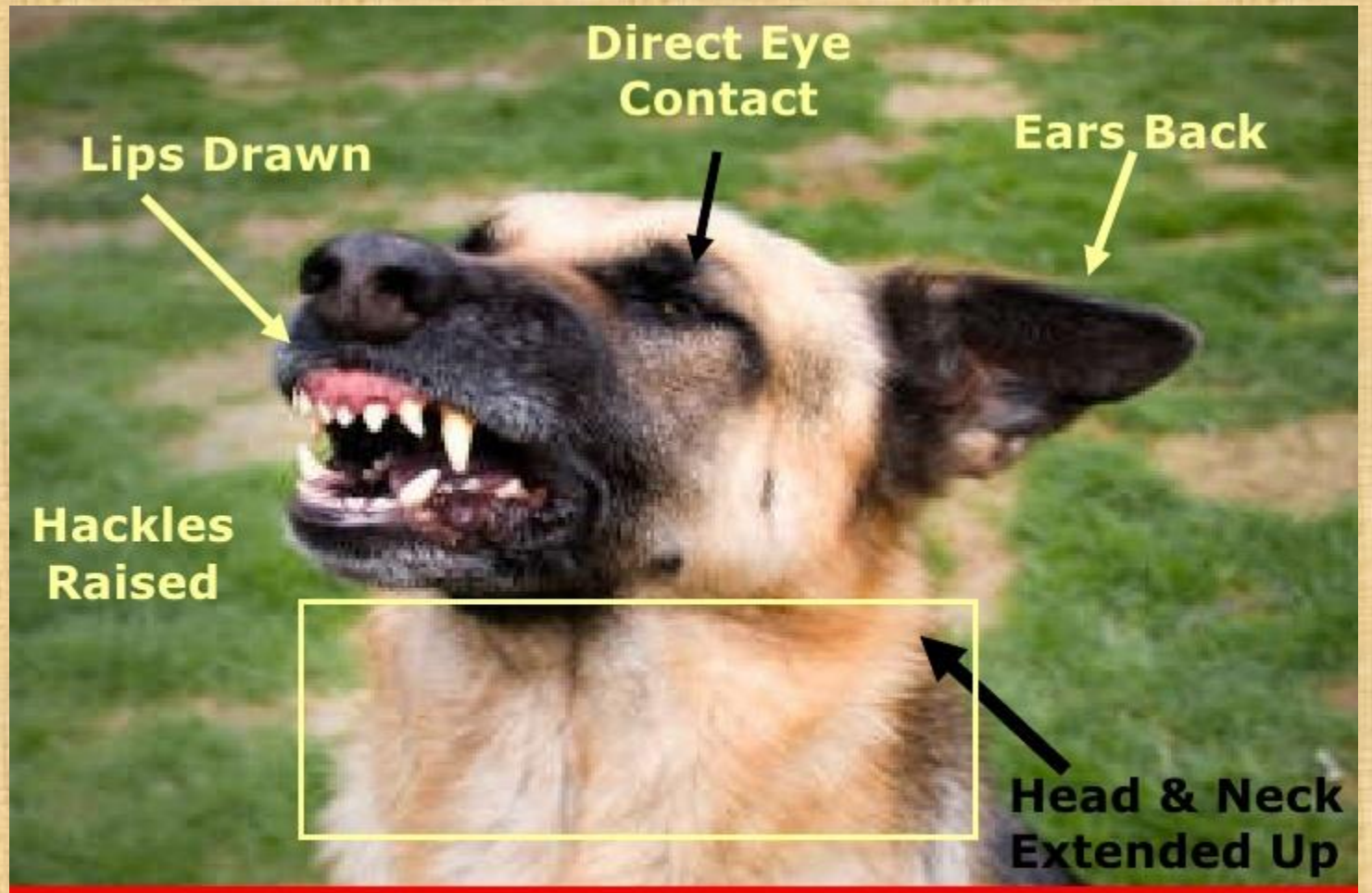
Size Matters!

Sternal recumbency

Grasp scruff and one tab of muzzle with same hand

Bring muzzle up and around other side of face and secure on top behind ears tightly (velcro)

Make sure cat's nostrils are exposed!



PRELUDE TO A DOG BITE

Restraint Techniques

- **Standing Restraint**
  - Wrap one arm around dog's neck to control head.
  - Wrap other arm under abdomen. Pull dog close to your body

Use this restraint for:

- ✓**Physical exam**
- ✓**IM, SQ Injections**
- ✓**TPR**
- ✓**Expressing Anal Glands**

Restraint Techniques

- **Sternal Restraint**
  - From standing restraint, move your hand from under the abdomen to behind the stifles, and gently press the stifles forward, making the dog sit.
  - Use your body to gently push down on dog's back while pulling its front legs forward

Use this restraint for:

- ✓**Cleaning ears**
- ✓**Applying eye meds**
- ✓**Giving oral meds**

Restraint Techniques

Lateral Restraint

- With dog in standing position, reach across its back and grab both forelimbs in one hand & both hindlegs in the other
- Place the index finger of each hand between the 2 legs being held
- Slowly lift dog's legs up and let its body slide against yours until it is lying laterally.

Restraint Techniques

Lateral Restraint (cont.)

Use forearm closest to dog's head to put pressure on head to keep dog from reaching around and biting

Important! Lift dog's forelegs slightly off the table – it prevents them from trying to get up

Use this restraint for:

- ✓**Urine catheterization**
- ✓**SQ, IM injections**
- ✓**Lateral saphenous venipuncture**

Restraint Techniques

Jugular Venipuncture

In sternal recumbency, move the hand from under the dogs neck up to under the mandible. Curl fingers around mandible

Tilt dog's head back and up to expose jugular vein

Place other hand around shoulder of dog and lean on the animal to keep him still. Legs can also be extended over the table edge (for small breeds)

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Restraint Techniques

Cephalic Venipuncture

Dog in sternal recumbency, keep its body close to yours

Encircle one arm under the dog's neck and head.

With the other hand, brace the dog's elbow and using the thumb on the same hand, "roll" the vein and occlude it for the person taking the blood

Restraint Techniques

Lateral Saphenous Venipuncture

With dog in lateral recumbency, the restrainer releases hind legs and uses that hand to grab and squeeze the leg just above the knee, occluding the saphenous vein

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Restraint Equipment - Muzzles

Using Muzzles

Commercial Muzzles vs. Gauze Muzzles

Do NOT use "CLING"

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Commercial Muzzles

Purpose: to keep dog from biting

Different types (leather, nylon or basket) for different types of dogs

Proper fit is key!

Estimate size based on dog's muzzle

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Applying a Gauze Muzzle

The length must be adequate to wrap around the muzzle at least twice, then tie behind the ears.

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Applying a Gauze Muzzle

A large loop is made in the center of the length of gauze. The loop should be about 3 times the diameter of the dog's muzzle

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Applying a Gauze Muzzle

The loop is placed around the muzzle and pulled tight at dorsum of the nose. A single knot is placed.

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Applying a Gauze Muzzle

The long ends of the gauze are brought behind the ears and tied in either a square knot or a easy release bow.

It's a good idea to tie a square knot and have scissors handy in case the muzzle needs to be quickly removed.

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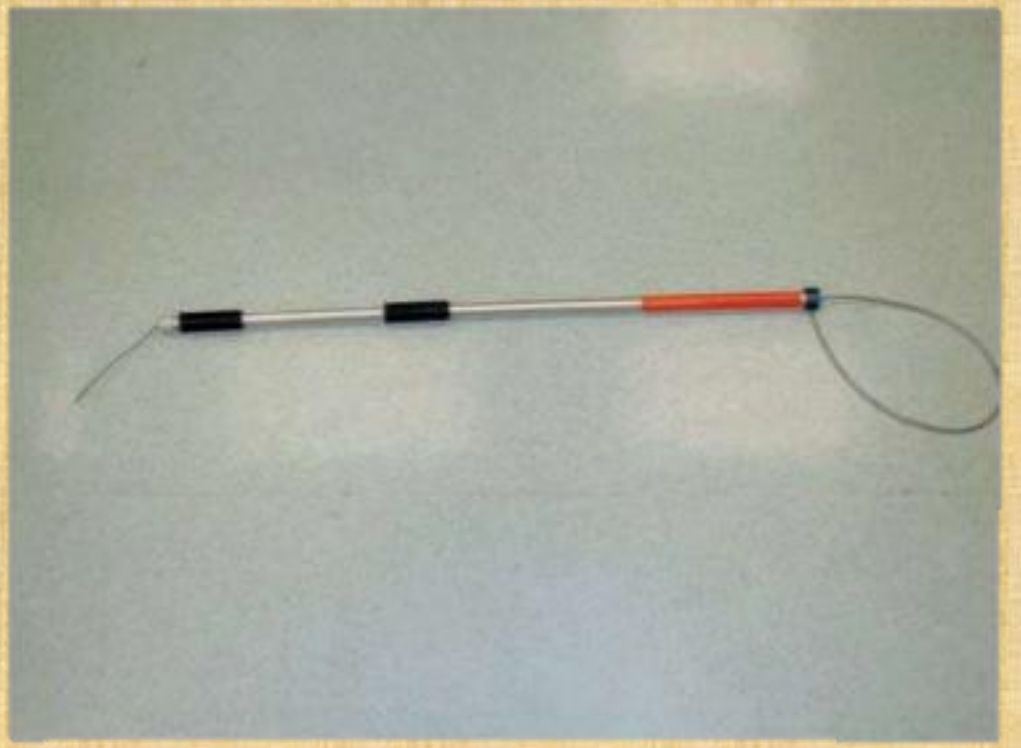


Commercial Elizabethan collar

Cat Bag

- A cat bag is useful for restraint because it prevents the cat from scratching. The
- Head is still exposed, however. These bags are typically made of nylon. The cat bag is used to:
- Restrain a cat so that personnel do not get scratched.
- Provide access to specifi c areas of the body through various zippered openings allowing for injections or venipuncture.
- To provide restraint while anesthetizing a cat with an anesthetic mask.

Obtain the cat bag you will be using and unzip the top all the way open.

Scruff the cat and lift it into the bag.
This should be done in one swift motion.

Giving pill

Different Methods in giving pill
:FoodPill, CrushPill ,PushDrop on the FloorP,ill Hidden in a Hot Dog/Wiener

1
Hide the pill in a meatball. Hide it in the dog food.

2
Roll the pill into a thin strip of sliced lunch meat.

3
Sometimes simply rubbing the pill with butter will work.

Pill Crush Method

1
Crush the pill. The easiest way to do this is with a mortar and pestle.

2
Thoroughly mix the pill powder that you created with a teaspoon of a soft, creamy treat your dog loves: a spoon-full of canned dog food, peanut butter, or yogurt.

3
Let your dog lick the spoon-full of food/pill mixture.

How to Get Your Dog to Swallow a Pill

Pills are given for several reasons, for instance, to rid them of worms or to experiment with new drugs

Step 1

Have some one restrain the dog in sitting position. Face the dog. Place one hand over the upper jaw, with thumb and fingers applying pressure to fold the lips inside the mouth. This will force the dog's mouth open part away.

Step 2

Pick up the pill between your index finger and thumb. Place the middle finger of free hand on the lower incisors. These are short teeth in the front end of the lower jaw. Press down, forcing the dog to open its mouth wider.

Step 3

Push the head back, so that its muzzle points up. This will give you a clear view down its throat. Drop the pill on the back of the tounge

Step 4

Close the dog's mouth and hold it shut. Stoke the throat until the dog swallow the pill. You will be able to feel the throat move in swallowing

Chemical restraint

Reasons for Chemical Restraint

- Reduce anxiety
- Reduce fear related aggression, so improved safety for handlers
- Immobilization
- Reduce stress
- Reduce struggling, so less potential for injury to patient or handler during procedure

Routes of Administration

- Oral
- Spray
- Pill/liquid
- Parenteral
- S.Q. Subcutaneous
- I.M. Intramuscular
- I.V. Intravenous
- Darts

Disadvantages

- Most are CNS depressants
- Many are CV and/or respiratory depressants
- Hypothermia is common
- If sedation for handling, may be unexpected → P may have eaten recently → > chance of V
- Injury can occur during induction or recovery
- Patient requires monitoring after procedure

Considerations

- Species
- Physical factors
  - Age
  - Sex
  - Physical condition
    - Pregnancy
  - Anatomy
    - Brachycephalic
- Emotional status
  - Fearful?
  - Aggressive?
- Environment
  - Noise
  - Odors
  - Other patients

Brachiocephalic breeds

What does the RVT do?

- Prepare supplies for sedation & procedure
- Controlled Substance Log
- Prepare area to maximize P comfort
- Position P appropriately
- Induce anesthesia or assist DVM in inducing
- Monitor P during & after procedure
- Keep DVM informed of any changes in P status

Vital Signs

- Used to evaluate cardiovascular and respiratory systems
  - Heart rate and rhythm
  - Respiratory rate and depth
  - Mucous membrane color
  - Capillary refill time
  - Blood pressure
  - Body temperature

Reflexes and Other Indicators of Anesthetic Depth

- Reflex: Involuntary protective responses to stimuli that can be used to determine anesthetic depth
  - Palpebral reflex
  - Swallowing reflex
  - Pedal reflex
  - Corneal reflex
- Muscle tone
- Eye position and pupil size

Anesthetic Recovery

- Time between discontinuation of anesthetic and time when patient is able to walk unaided
- Factors
  - Length of procedure
  - Anesthetic protocol used
  - Patient condition
  - Body temperature
- Patient must be watched continually during recovery

Injectable Anesthetic Agents

- Phenothiazine tranquilizers
  - To calm and sedate patients before general anesthesia
  - Reduced anxiety during induction and recovery
  - Does not diminish P consciousness
  - Example: acepromazine alone or in combination with other drugs


NDC 50989-160-11
Acepromazine
Maleate Injection
10 mg/mL
NET CONTENTS: 50 mL
VEDCO
A Sterile Solution for
Intravenous, Intramuscular
or Subcutaneous Injection
ANADA 200-361, Approved by FDA

Acepromazin arrhythmia & bradycardia

Injectable Anesthetic Agents

- α_2-adrenergic drugs
  - Sedatives used with other drugs to produce effects from sedation to general anesthesia
  - Examples:
    - Xylazine and medetomidine and dexmedetomidine in SA
    - xylazine, detomidine, and romifidine in LA


50 mL
AnaSed®
INJECTION
Xylazine
100 mg per mL
Sedative and Analgesic
For Horses and Cervidae
CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian.
Do not use in Cervidae less than 15 days before or during the hunting season.
NADA #139-236, Approved by FDA
50 mL
AnaSed®
INJECTION
Xylazine
100 mg per mL
DEXDOMITOR
DORMOSEDAN®
(detomidine hydrochloride)
Sedative and Analgesic
For Use in Horses Only
Sterile Solution—10 mg/mL
Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian.
Net Contents: 5 mL
NADA #140-862
Approved by FDA
DOMITOR
DOMITOR
Sedivet®
1.0% Injection
Net Contents: 20 mL
NADA 141-229, Approved by FDA
Boehringer
Ingelheim

Alpha-2 antagonists

- Yohimbine, Atipamezole, Tolazoline
  - Used to reverse effects of alpha-2 agonists (anesthesia, analgesia)
  - Typically takes effect in 3-5 minutes after IM injection

Benzodiazepine + dissociative

- *Telazol* - Equal parts zolazepam (benzodiazepine) + tiletamine (dissociative, cyclohexanone)
- Acidic (can burn/sting)
- Provides analgesia & muscle relaxation
- Not okay as sole agent for major surgery
  - Can do TKX (telazol + ketamine + xylazine)
- Effect in 1-10 minutes following IM injection
- Mostly used IM, but Plumb lists an IV dose

Injectable Anesthetic Agents

- Benzodiazepine tranquilizers
  - Used with other drugs to produce effects from sedation to general anesthesia
  - Controlled substances
  - Examples: Diazepam, midazolam, zolazepam


10 mL Multiple-dose
℞ only
DIAZEPAM
Injection, USP
5 mg/mL
CIV
NOTE: Solution may appear colorless to light yellow.
HOSPIRA, INC., LAKE FOREST, IL 60045 USA

Injectable Anesthetic Agents

- Dissociatives
  - Used alone to immobilize patients for minor or brief procedures
  - Produce immobilization, not surgical anesthesia
  - Example: ketamine


Ketaset®
KETAMINE HCl INJ., USP
FORT DODGE®
Equivalent to
100 mg/mL
Ketamine
10 mL

Disassociatives, cyclohexanones

- Produces trance like state with some reflexes intact.
  - Ketamine, tiletamine
- Some analgesia (poor visceral analgesia)
- Rigidity of muscles (catalepsy)
- May cause seizures in dogs when used alone
- IV, IM, (SQ)

Injectable Anesthetic Agents

- Propofol
  - Short-acting IV anesthetic
  - Used to induce general anesthesia
  - Has anticonvulsant and antiemetic properties
  - Rapid induction can cause apnea and hypotension


PropoFlo™ 28
(propofol)
28
DAY SHELF LIFE
PropoFlo™ 28
(propofol) Intravenous Anesthetic
Injection for Use in Dogs
200 mg/20 mL
PropoFlo™
Propofol
20 mL Single Dose Flip Top Vial
Abbott

گذشته گذشته است
,در بهترین حالت هذیانی بیش نیست
و آینده تصوری خیال پردازانست
همَه چیز درهمین جاست پس درحال زندگی کنیم

5 سوال اساسی در نسخه خوانی

- 1 چه دارویی
- **2 چه شکلی
- 3چه میزانی
- 4چه زمانهایی
- 5 چه مدتی

Prescription

- RP
- 1/ amp aminophillin 250 mg # 5
- 8 سی سی داخل میکروست انفوزیون هر 8 ساعت
- 2/ vial cefazolin 250 mg# 3
- هر 12 ساعت 100 میلی گرم اهسته وریدی

HOMETOWN VETERINARY ASSOCIATES
2000 West Chelsea Ave., Brookside, PA 13233
(324) 555-0214

Date: November 22, 2001

Patient: Cricket Species: Canine

Owner: Kathy Gagnier Phone: 555-0127

Address: 2000 Christopher Ln;
West Brookside, PA 13235

℞ Amoxicillin tablets 100 mg #30 tabs
Sig: 1 tab q8h PO PRN until gone

Robert L. Bill D.V.M.

A hypothetical prescription for a pharmacist.

Commonly Used Medical Prescription Abbreviations[2]

Abbreviation	Meaning
bid	Twice daily
disp	dispense
g (or gm)	gram
gr	grain
gtt	drop
h (or hr)	hour
IC	intracardiac
IM	intramuscular
IP	intraperitoneal
IV	intravenous
L	liter
mg	milligram
mL (or ml)	milliliter
OD	right eye
OS	left eye
OU	both eyes
PO	by mouth

PO	by mouth
prn	as needed
q	every
q4h	every 4 hours
qd	every day (daily)
qid	four times daily
qod	every other day
sid	once a day
SQ (or SC)	subcutaneous
stat	immediately
TBL or Tbsp	tablespoon
tid	three times daily
TD	transdermal

COMMON MEDICATIONS

Antimicrobials[34A]

Generic Name	Trade Names	Routes	Notes
Aminoglycosides			
Amikacin	Amiglyde-V	IV, IM, SC, intrauterine	Keep animal well hydrated; possible nephrotoxic, ototoxic effects
Gentamicin	Gentocin, Garasol	IV, IM (stings), SC (stings), PO (water additive), topical	Keep animal well hydrated; possible nephrotoxic, ototoxic, neurotoxic effects
Neomycin	Biosol	IV, IM, SC, PO, topical	Not absorbed well systemically; highly nephrotoxic when given parenterally
Penicillins			
Amoxicillin	Amoxi-Tabs, Biomox	IV, IM, SC, PO, intramammary	Give with food if GI upset occurs
Penicillin G	Flocillin, Dual-Pen	IV, IM, SC, PO	Route of administration depends on drug form (potassium, procaine, benzathine)

Penicillins—cont'd			
Amoxicillin with clavulanic acid	Clavamox	PO	An alternative for bacteria that have developed resistance to amoxicillin
Ampicillin	Polyflex	IV (slow), IM, PO	Do not give orally to rabbits
Ampicillin/ sulbactam	Unasyn	IV, IM	Similar activity as clavunalate
Cephalosporins			
Cefadroxil	Cefa-tabs, Cefa-drops	PO	First-generation cephalosporin; cephalosporins should not be used in patients with a known allergy to penicillin
Cefazolin	Ancef, Kefzol	IV (slow), IM, SC	First-generation cephalosporin
Cefovecin sodium	Convenia	SC	Single injection provides 14-day therapeutic level
Cephalexin	Keflex	PO	First-generation cephalosporin
Cefoxitin	Mefoxin	IV, IM, SC	Second-generation cephalosporin

Continued

Antimicrobials[34A]—cont'd			
Generic Name	**Trade Names**	**Routes**	**Notes**
Tetracyclines			
Tetracycline	Panmycin	IV (slow), IM, PO	Tetracyclines may cause tooth discoloration in prenatal and neonatal animals
Doxycycline	Vibromycin, Doxirobe gel	IV, PO, periodontal gel	Longer half-life; better central nervous system penetration than tetracycline
Oxytetracycline	Oxytet, Terramycin	IV, IM, PO	Many veterinary products and uses, including feed additive
Quinolones			
Ciprofloxacin	Cipro	IV, IM, SC, PO	Rarely used in veterinary medicine
Enrofloxacin	Baytril, Baytril Otic	IM, PO, topical	Similar to ciprofloxacin; avoid use in patients with renal failure
Orbifloxacin	Orbax	PO	Veterinary drug
Marbofloxacin	Zeniquin	PO	Newest veterinary-approved fluoroquinolone
Moxifloxacin		Ophthalmic	For gram-negative corneal infections

Lincosamides and Macrolides			
Clindamycin	Antirobe	IM (stings), SC, PO	Do not administer to rabbits, hamsters, guinea pigs
Azithromycin	Zithromax	PO	Better absorption, longer half-life than erythromycin
Sulfonamides			
Sulfadiazine or trimethoprim	Tribrissen, Di-Trim	IV, SC, PO	Can precipitate in the kidneys of dehydrated animals; can cause keratoconjunctivitis sicca
Sulfadimethoxine	Albon	IV, IM, SC, PO	Sulfas are coccidiostatic
Miscellaneous			
Metronidazole	Flagyl	IV, PO	Antiprotozoal; may be neurotoxic and immuno-suppressive at higher doses
Antivirals			
Idoxiuridine, trifluridine		Topical	Ophthalmic antivirals for feline herpes infection
Interferon-α2A	Roferon-A	PO	For treatment of nonneoplastic FELV

Continued

Antimicrobials[34A]—cont'd

Generic Name	Trade Names	Routes	Notes
Antifungals			
Fluconazole	Diflucan	IV, PO	Fungistatic; is probably most useful for central nervous system infections
Griseofulvin	Fulvicin U/F	PO	Known teratogen in cats
Itraconazole	Sporanox	PO	Information on safety and toxicity is limited
Ketaconazole	Nizoral	PO	Less toxic than amphotericin B; used to reduce dosage of cyclosporine
Nystatin	Panalog, Derma-vet, Mycostatin	PO, topical	Used to treat gastrointestinal and skin *Candida* infections
Miconazole	Monistat-1V, Conofite	Topical	Used to treat fungal ophthalmic infections

ANTIPARASITICS[24]

Antiparasitics for Treating Internal Parasites in Dogs and Cats*

Drug	Toxocara, Toxascaris	Ancylostoma, Uncinaria	Trichuris	Taenia	Dipylidium	Giardia	Coccidia
Albendazole	+	+	+	+	−	+	−
Fenbendazole	+	+	+	+	−	−	−
Furazolidone	−	−	−	−	−	+	−
Ivermectin	+	+	+	−	−	−	−
Metronidazole	−	−	−	−	−	+	−
Milbemycin oxime	+	+	+	−	−	−	−
Praziquantel	−	−	−	+	+	−	−
Selamectin	+	+	−	−	−	−	−
Sulfadiazine or trimethoprim	−	−	−	−	−	−	+
Thiabendazole	−	−	−	−	−	−	−

+, Indicated for use; −, not indicated for use.
*Many of these medications are used in combination with other antiparasitics.

Antiparasitics for Treating External Parasites on Dogs and Cats*[24A]

Drug	Fleas	Lice	Mites	Ticks
Allethrin	+	–	–	–
Amatraz	–	–	+	–
D-Limonene	+	+	–	–
Fipronil	+	+	–	+
Imidacloprid	+	+	–	–
Lime-sulfur	–	–	+	–
Lufenuron	+	–	–	–
Methoprene	+			
Permethrin	+		–	
Pyrethrins	+		–	
Selamectin		–		
Spinosad	+	–	–	–

+, Indicated for use; –, not indicated for use.
*Many of these medications are used in combination with other antiparasitics.

Heartworm Preventives*[2]				
Generic Name	**Trade Names**	**Route, Dose Interval**	**Approved for Use in Dogs**	**Approved for Use in Cats**
Ivermectin	Heartgard and others	By mouth (PO) monthly	Yes	Yes (some products)
Milbemycin oxime	Interceptor and others	PO monthly	Yes	No (doses do exist)
Selamectin	Revolution	Topical monthly	Yes	Yes
Moxidectin	Advantage multi	Topical	Yes	Yes

*Many of these medications are used in combination with other antiparasitics.

Preanesthetics, Sedatives, Anesthetics[34A]			
Generic Name	**Trade Names**	**Routes**	**Notes**
Barbiturates			
Pentobarbital	Nembutal	IV (slow to effect)	Used for induction of general anesthesia and to manage status epilepticus; can be used as a single agent for euthanasia; Class II–controlled substance; short-acting agents
Pentobarbital with phenytoin	Beuthanasia-D	IV	For euthanasia only
Thiopental	Pentothal	IV only	May adsorb to plastic IV bags and lines; ultra–short acting
Tranquilizers and Sedatives			
Acepromazine	PromAce, Atravet	IV, IM (stings), SC, PO	Do not use in conjunction with organophosphates; may cause paradoxical central nervous system stimulation, hypotension
Dexmedetomidine	Dexdomitor	IV, IM	Alpha-2 agonist often used as CRI

Diazepam, midazolam	Valium, Versed	IV, IM, PO, rectal	Used as anxiolytic, muscle relaxant, appetite stimulant, perianesthetic, and anticonvulsant
Oxazepam, alprazolam	Serax, Xanax	PO	Used primarily in behavior modification programs
Medetomidine	Domitor	IV, IM	Alpha-2 agonist used for sedation or analgesia in young, healthy animals; adverse effects, such as bradycardia, can be treated by reversing the drug
Xylazine	Rompun, Anased	IV, IM, SC	Alpha-2 agonist used for sedation analgesia in young, healthy animals; available in 20 and 100 mg/ml; check concentration before administering; respiratory depression and vomiting are common side effects and can be treated by reversing the drug
Miscellaneous Anesthetics			
Ketamine	Ketaset, Vetalar	IV, IM	Dissociative anesthetic; most reflexes and muscle tone are maintained; no somatic analgesia exists

Continued

Preanesthetics, Sedatives, Anesthetics[34A]—cont'd			
Generic Name	**Trade Names**	**Routes**	**Notes**
Miscellaneous Anesthetics—cont'd			
Propofol	Rapinovet, PropoFlo, Diprivan	IV only	Rapid induction and recovery; drug is carried in an egg lecithin and soy base, which supports bacterial growth
Tiletamine/ zolazepam	Telazol	IV, IM	Tiletamine is a dissociative anesthetic; zolazepam is a tranquilizer; most reflexes are retained
Etomidate	Amidate	IV	Minimal effects on cardiovascular and respiratory system occur; given alone causes myoclonus
Guaifenesin	Guailaxin	IV, PO	Muscle relaxant perianesthetic when given parenterally; expectorant when given orally
Anticonvulsants			
Phenobarbital	Luminal	IV (slow), IM, PO	Is usually the first drug of choice for idiopathic epilepsy; may be used for status seizure; long acting

Anticonvulsants—cont'd			
Bromides	Potassium (sodium)	PO	Used as an adjunct in management of idiopathic epileps
Clonazepam	Klonopin	PO	Duration of activity may be short in dogs
Diazepam	Valium	IV, rectal, intranasal	Used to control seizures in progress
Pentobarbital	Nembutal	IV	Used in status epilepticus for intractable seizures

Analgesic and Antiinflammatory Agents[34A]

Generic Name	Trade Names	Routes	Notes
Nonsteroidal Antiinflammatory Drugs (NSAIDs)			
Acetylsalicylic acid	Aspirin	PO	Analgesic, antiinflammatory, and antipyretic; can use with caution in cats; enteric coating prevents gastric irritation
Carprofen	Rimadyl	IV, IM, SC, PO	Labrador retriever may be more prone to severe side effects
Deracoxib	Deramaxx	PO	COX-1 sparing; approved for dogs only
Etodolac	EtoGesic, Lodine	PO	COX-2 selective; approved for dogs only
Firocoxib	Previcox	PO	COX-2 selective; chewable tablets; approved for dogs only
Ketoprofen	Ketofen, Orudis	IV, IM, SC, PO	
Meloxicam	Metacam	IV, SC, PO, TM	COX-2 selective; used for chronic or acute musculoskeletal disorders; approved for use in cats

Analgesic and Antiinflammatory Agents[34A]—cont'd

Generic Name	Trade Names	Routes	Notes
Nonsteroidal Antiinflammatory Drugs (NSAIDs)—cont'd			
Piroxicam	Feldene	PO	Use in cats is as an antineoplastic agent
Tepoxalin	Zubrin	PO	COX and LOX inhibitor; rapidly disintegrating tablets for dogs
Tolfenamic acid	Tolfedine	IM, SC, PO	Pharmacologically similar to aspirin; approved for dogs and cats in Canada and Europe
Tramadol	Ultram	PO	Used for management of chronic and acute pain
Dimethyl sulfoxide (DMSO)		IV, topical	Teratogenic in some species; wear gloves when applying
Corticosteroids			
Dexamethasone	Azium, Dexasone	IV, IM, SC, PO	Long acting
Methylprednisolone	Medrol, Depo-Medrol, Solu-Medrol	IM, SC, PO	Intermediate acting

Prednisolone sodium succinate	Solu-Delta-Cortef	IV, IM	Intermediate acting
Triamcinolone	Vetalog	IM, SC, PO	Intermediate acting
Prednisone	Meticorten, Deltasone	IV, IM, SC, PO	Intermediate acting
Hydrocortisone	Cortef	IV, IM, PO	Short acting
Glycosaminoglycans			
Glucosamine	Many	PO	Often combined with chondroitin, these agents are considered nutraceuticals, not drugs
PSGAG	Adequan	IM	Postinjection inflammation is possible when administered into the joint
Pentosan polysulfate	Cartrophen-Vet (outside U.S.), Elmiron	IM, SC, PO	Used for osteoarthritis and interstitial cystitis (cats)

Analgesic and Antiinflammatory Agents[34A]—cont'd

Generic Name	Trade Names	Routes	Notes
Muscle Relaxants, Opioid (Narcotic) Analgesics			
Methocarbamol	Robaxin-V	IV, PO	Skeletal muscle relaxant, may cause sedation
Butorphanol	Torbutrol, Torbugesic, Dolorex	IV, IM, SC, PO	Partial agonist or antagonist; poorly absorbed from gastrointestinal tract; also used as an antitussive
Buprenorphine	Buprenex	IV, IM, SC, TM	Partial agonist; may cause respiratory depression; TM administration is unreliable in dogs
Fentanyl	Duragesic	Transdermal; also IV, epidural	Continuous, sustained analgesia

Hydromorphone	Dilaudid	IV, IM, SC, rectal	μ agonist; may cause panting, then respiratory depression; Class II controlled substance
Methadone	Dolophine	IV, IM, SC	Synthetic opioid; less likely to induce vomiting than other opioids
Morphine	Infumorph Duramorph	IM, IV Epidural	Vomiting usually occurs Preservative-free; extra-label use

Parenteral Fluids[1]

Fluid	Content	Tonicity	pH	Osmolality
Lactated Ringer's solution	Na^+, K^+, CA^{++}, Cl^-, lactate	Isotonic	6.7	273
Plasmalyte A	Na+, K^+, Cl^-, Mg^{++}, glucose	Isotonic	7.4	294
Sodium chloride 0.45%	Na^+, Cl^-	Hypotonic	5.0	155
Sodium chloride 0.9%	Na^+, Cl^-	Isotonic	5.0	310
Dextrose 5%	Glucose	Hypotonic	5.0	253
Dextrose 2.5% with 0.45% sodium chloride	Na^+, Cl^-, glucose	Isotonic	4.5	280

Blood Products[1]			
Contents	**Shelf Life**	**Preparation**	**Comments**
Fresh Whole Blood (FWB)			
RBCs, plasma proteins, coagulation factors, WBCs, platelets	Less than 8 hours after initial collection	Use immediately after collection	Restores blood volume and oxygen-carrying capacity
Stored Whole Blood (WB)			
RBC, plasma proteins	Up to 42 days (dependent on anticoagulant and preservative used); refrigerate at 1°-6° C	Bring to room temperature before using	Restores blood volume and O_2-carrying capacity, WBC and platelets not viable; factors V and VII diminished
Packed Red Blood Cells (PRBC)			
RBC	Dependent on anti-coagulant used; refrigerate at 1°-6° C	Bring to room temperature before using	Same O_2-carrying capacity as WB but with less volume

FP			
Plasma, albumin, stable coagulation factors	5 years frozen at –18° C or colder	Thaw in 37° C warm-water bath	Frozen after more than 8 hours after collection; no platelets; administer within 4 hours of thawing
Cryoprecipitate (Cryo)			
Factor VIII, von Willebrand's factor, fibrinogen, fibronectin	12 months frozen at –18° C or colder	Thaw in 37° C warm-water bath	Administer within 4 hours of thawing

Blood transfusion

$$90\ \text{mL} \times BW_{kg} \times \left(\frac{\text{Desired PCV} - \text{Patient PCV}}{\text{Donor PCV}} \right)$$

Cardiovascular Drugs[34]			
Generic Name	**Trade Names**	**Routes**	**Notes**
Inotropic			
Digoxin	Lanoxin, Cardoxin	IV, PO	Toxic and therapeutic doses may overlap Dobermans tend to be sensitive to digoxin
Dobutamine	Dobutrex	IV infusion	Use diluted solutions within 24 hours
Pimobendan	Vetmedin	PO	Used to manage congestive heart failure; available in Canada and Europe
Adrenergics			
Epinephrine	Adrenalin	IV, IM, SC IT IC Inhalation	Available in several sizes for various uses: 1:100 (1% or 10 mg/ml) topical, inhalation 1:1000 (0.1% or 1 mg/ml) IV, IM, SC, IT 1:10,000 (0.01% or 0.1 mg/ml) IV, IC
Dopamine	Intropin	IV infusion	Effects are dose dependent
Anticholinergics			
Atropine	Many	IV, IM, SC	Used for cardiac support

Glycopyrrolate	Robinul-V	IV, IM, SC	Used for cardiac support; not suitable for emergency use
β-Blockers			
Atenolol	Tenormin	Oral	Can disrupt blood sugar control in diabetic patients
Propranolol	Inderal	IV (slow), PO	Can be blocked by β-blocker antiarrhythmics
Metoprolol	Lopressor, Toprol	PO	Similar to propranolol, safer for patients with bronchoconstriction
Sotalol	Betapace, Cardol	PO	Similar to propranolol
Calcium Channel Blockers			
Amlodipine	Norvasc	PO	Use cautiously in animals with heart failure
Diltiazem	Cardizem	PO	Toxicity may be treated with calcium infusion
Angiotensin-Converting Enzyme (ACE)			
Benazapril	Lotensin	PO	For adjunctive treatment of heart failure

Continued

Cardiovascular Drugs[34]—cont'd

Generic Name	Trade Names	Routes	Notes
ACE Inhibitors			
Enalapril	Enacard, Vasotec	IV, PO	Give on an empty stomach
Vasodilators			
Hydralazine	Apresolene	IM, PO	Use cautiously in patients with severe renal disease
Nitroglycerin	Nitro-Bid, Nitrol	Topical	Wear gloves when applying ointment
Antiarrhythmics			
Lidocaine	Xylocaine	IV	Do not use lidocaine with epinephrine preparations for intravenous solutions
Procainamide	Pronestyl, Procan	IV, IM, PO	Use with caution with other antiarrhythmics
Quinidine	Quinidex	IV, IM, PO	Use with caution with other antiarrhythmics

Diuretics			
Furosemide	Lasix, Disal, Diuride, Salix	IV, IM, PO	Veterinary preparations are normally slightly yellow; if human preparations turn yellow, do not use
Spironolactone	Aldactone	PO	Potassium-sparing diuretic
Mannitol	Osmitrol, Mannitrol	IV infusion	Primary use is to decrease intracranial pressure
Anticoagulants			
Heparin	Many	SC	Used in DIC and in IV flush solutions
Dalteparin, Enoxaparin	Fragmin, Lovenox	SC	LMWH used to prevent thromboembolisms

Respiratory Drugs[34]

Generic Name	Trade Names	Routes	Notes
Bronchodilators			
Albuterol	Ventolin, Proventil	PO, inhalation	Most adverse effects are dose related and generally transient
Terbutaline	Brethine	SC, PO, inhalation	
Metaproterenol	Alupent	PO, inhalation	
Aminophylline	Many	IV, IM (painful), PO	Do not inject air into multidose vials; CO_2 causes drug to precipitate; narrow therapeutic index
Theophylline		IV, IM, PO	Available in sustained-release oral dose form
Inhaled Steroids			
Fluticasone	Flovent	MDI	Use a spacer for administration
Beclomethasone	Vanceril, QVAR	MDI	Use a spacer for administration

Antihistamines			
Chlorpheniramine	Many	PO	Do not allow time-released capsules to dissolve before oral administration
Cyproheptadine	Periactin	PO	Also used for appetite stimulation in cats
Diphenhydramine	Benadryl	IV, IM, PO	IV form used to counteract anaphylactic reactions
Hydroxyzine	Atarax	PO	All antihistamines may cause sedation
Clemastine	Tavist	PO	Do not use the over-the-counter product Tavist-D
Trimeprazine (with prednisolone)	Temaril-P	PO	Combination antihistamine and corticosteroid
Antitussives			
Butorphanol	Torbutrol, Torbugesic	IV, IM, SC, PO	Narcotic cough suppressant
Codeine	Many	PO	Cough syrups containing codeine are usually combination drug products
Hydrocodone	Hycodan, Tussigon	PO	Narcotic cough suppressant

Respiratory Drugs[34]—cont'd

Generic Name	Trade Names	Routes	Notes
Antitussives—cont'd			
Dextromethorphan	Robitussin	PO	Nonnarcotic cough suppressant; available over the counter
Decongestants			
Phenylpropanolamine	Propagest, Proin	PO	Most common use in veterinary medicine is to treat urinary incontinence
Mucolytics			
Acetylcysteine	Mucomyst	IV, PO, inhalation	Antidote for acetaminophen toxicity
Stimulants			
Doxapram	Dopram	IV, SC, sublingual	Use in newborn resuscitation is controversial

Gastrointestinal Drugs[34]

Generic Name	Trade Names	Routes	Notes
Antiemetics			
Maropitant citrate	Cerenia	SC, PO	Prevent and treat acute vomiting; treat motion sickness
Chlorpromazine	Thorazine	IV, IM, PO, rectal	Protect from light; may discolor urine to a pink or red-brown
Dimenhydrinate	Dramamine	PO	Used primarily for motion sickness
Dolasetron	Anzemet	IV, IM, SC	Similar to ondansetron with once-daily dosing
Meclizine	Antivert	PO	Primarily used for motion sickness
Metoclopramide	Reglan	IV (slow), IM, SC, PO	Promotility agent; inhibits gastroesophageal reflux
Ondansetron	Zofran	IV, PO	Indicated for refractory vomiting, chemotherapy sickness, and other hard-to-treat nausea
Prochlorperazine	Compazine	IM, SC, PO, rectal	Rectal suppositories available for at home use in vomiting animals

Continued

Gastrointestinal Drugs[34]—cont'd

Generic Name	Trade Names	Routes	Notes
Antiulcer			
Antacids	Amphogel, Maalox, Basalgel, Tums	PO	Neutralize acid; can affect absorption rates of other oral medications
Cimetidine	Tagamet	IV, IM (stings), SC, PO	Oral form available over the counter; do not refrigerate injectable form
Famotidine	Pepcid	IV, IM, SC, PO	Oral form available over the counter
Nizatidine	Axid	PO	Similar to ranitidine with prokinetic activity
Ranitidine	Zantac	IV (slow), IM (stings), SC, PO	Reduces gastric acid output
Sucralfate	Carafate	PO	Forms a protective barrier at gastric ulcer site; administer 60 minutes before other medications or food

Misoprostol	Cytotec	PO	May cause gastrointestinal side effects such as diarrhea
Omeprazole	Prilosec	PO	A proton-pump inhibitor, may affect absorption rates of drugs requiring a low stomach pH; do not split caplets
Appetite Stimulants			
Cyproheptadine	Periactin	PO	Appetite stimulation in cats; may take more than one dose to be effective
Diazepam	Valium	IV	Appetite stimulation in cats effective immediately after injection; dose is a fraction of that used for sedation
Oxazepam	Serax	PO	Appetite stimulation in cats
Antispasmodics			
Aminopentamide	Centrine	IM, SC, PO	Hypomotility drug; discontinue if urine retention is noted as a side effect

Continued

Gastrointestinal Drugs[34]—cont'd			
Generic Name	**Trade Names**	**Routes**	**Notes**
Stimulants			
Metoclopramide	Reglan	IV (slow), IM, SC, PO	Do not use if gastrointestinal obstruction is suspected
Cisapride		PO	Has been removed from U.S. market; used in management of feline chronic constipation
Laxatives			
Magnesium salts	Milk of Magnesia	PO	Hyperosmotic; holds water in gastrointestinal tract and softens stool
Bisacodyl	Dulcolax	PO, rectal suppository	Stimulant laxative
Lactulose	Enulose	PO	Hyperosmotic; also used to reduce blood ammonia levels in hepatic disease
Docusate	Colace, DSS	PO, enema	Stool softener; watch hydration status

Antidiarrheals			
Diphenoxylate/ atropine	Lomotil	PO	Opiates reduce gut motility; small amount of atropine reduces other narcotic effects
Kaolin/pectin	Kaopectate, K-P-Sol	PO	
Bismuth subsalicylate	Pepto-Bismol	PO	May discolor the stool to black
Emetics			
Apomorphine		IV, IM, SC, topically in conjunctiva	If vomiting does not occur with initial dose, subsequent doses are not likely to be effective and may induce toxicity; wear gloves when handling
Miscellaneous			
Ursodiol	Actigall	PO	Use to increase the flow of bile
SAMe	Denosyl	PO	Nutraceutical agent used as an adjunct to treatment of liver disease

Continued

Gastrointestinal Drugs[34]—cont'd

Generic Name	Trade Names	Routes	Notes
Miscellaneous—cont'd			
Pancreatic pancrezyme	Viokase	PO	Products contain lipase, amylase, protease enzymes; cats strongly dislike the taste of powder forms
Activated charcoal	Toxiban, Liquichar	PO	Adsorbant used to prevent absorption of toxic elements in the gastrointestinal tract

Endocrine Drugs[34]

Generic Name	Trade Names	Routes	Notes
Estrogens			
Estradiol	ECP	IM	Primarily used to induce estrus; prevents pregnancy after mismating in dog and cat (rare use); toxic to bone marrow; contraindicated in pregnancy

Diethylstilbestrol (DES)		PO	Used to treat estrogen-responsive urinary incontinence and other conditions in dogs and cats; toxic to bone marrow; contraindicated in pregnancy; banned in food animals
Progestins			
Megestrol	Ovaban, Megace	PO	For false pregnancy, control of estrus cycle; contraindicated in pregnancy; can induce hypo-adrenocorticism, personality changes, transient diabetes, and has many other side effects
Medroxy-progesterone	Depo-Provera	IM, SC, PO	Used in treatment of some behavioral and dematologic conditions; many side effects
Pituitary Hormones			
Desmopressin	DDAVP	SC, intranasal	Antidiuretic hormone used in the control of diabetes insipidus
Oxytocin	Pitocin	IV, IM, SC	Induction and enhancement of uterine contractions at parturition

Continued

Endocrine Drugs[34]—cont'd

Generic Name	Trade Names	Routes	Notes
Pituitary Hormones—cont'd			
Corticotropin	Cortrosyn	IV, IM	Used in the ACTH stimulation test
Steroids			
Fludrocortisone	Florinef	PO	Mineralocorticoid for the treatment of hypoadrenocorticism
Desoxycorticosterone (DOCP)	Percorten-V	IM	Mineralocorticoid for the treatment of hypoadrenocorticism
Stanozolol	Winstrol	PO	Anabolic steroid; rarely used; U.S. controlled drug
Steroid Inhibitors			
Mitotane, Trilostane	Lysodren, Vetoryl	PO	For treatment of pituitary-dependent hyperadrenocorticism; trilostane must be imported in the United States

Selegiline (l-deprenyl)	Anipryl, Eldepryl	PO	For the treatment of hyperadrenocorticism; also used in the treatment of canine cognitive dysfunction
Antidiabetics			
Insulin	Many	SC	Store in refrigerator; mix gently—do not shake before using; clients should be given thorough instructions on the use of insulin
Glipizide, Glyburide	Glucotrol, Micronase	PO	Oral hypoglycemic agents
Drugs Affecting the Thyroid			
Levothyroxine	Soloxine, Thyrozine	PO	T_4 thyroid hormone supplement
Liothyronine	Cytobin	PO	T_3 hormone supplement; may be useful in hypothyroid cases that do not respond to T_4
Methimazole	Tapazole	PO	Used in the medical management of hyperthyroidism

Antidotes and Reversing Agents[26A]

Generic Name	Trade Names	Uses and Indications
Acetylcysteine	Mucomyst	Acetaminophen toxicity
Atipamezole	Antisedan	Reversal of medetomidine (Domitor)
Atropine	Many	Organophos-phate toxicity
Calcium EDTA	Calcium Disodium Versenate	Lead poisoning
Fomepizole (4-MP)	Antizol-Vet	Ethylene glycol toxicity
Methylene blue	Urolene Blue	Reversal of benzodiaze-pines (Valium)
Naloxone	Narcan	Ethylene glycol toxicity
Yohimbine	Yobine	Reversal of xylazine (Rompun)

MEDICAL MATH

Conversion Factors[2]

Weight or Mass
1 kilogram (kg) = 2.2 pounds (lb)
1 kilogram (kg) = 1000 grams (g)
1 kilogram (kg) = 1,000,000 milligrams (mg)
1 gram (g) = 1000 milligrams (mg)
1 gram (g) = 0.001 kilogram (kg)
1 milligram (mg) = 0.001 gram (g)
1 milligram (mg) = 1000 micrograms (µg or mcg)
1 pound (lb) = 0.454 kilogram (kg)
1 pound (lb) = 16 ounces (oz)
1 grain (gr) = 64.8 milligrams (mg) (household system)
1 grain (gr) = 60 milligrams (mg) (apothecary)
Volume
1 liter (L) = 1000 milliliters (ml)
1 liter (L) = 10 deciliters (dl)
1 milliliter (ml) = 1 cubic centimeter (cc)
1 milliliter (ml) = 1000 microliters (µl or mcl)
1 tablespoon (TBL or Tbsp) = 3 teaspoons (tsp)
1 tablespoon (TBL or Tbsp) = 15 milliliters (ml)
1 teaspoon (tsp) = 5 milliliters (ml)
1 gallon (gal) = 3.786 liters (L)
1 gallon (gal) = 4 quarts (qt)
1 gallon (gal) = 8 pints (pt)
1 pint (pt) = 2 cups (c)
1 pint (pt) = 16 fluid ounces (fl oz)
1 pint (pt) = 473 milliliters (ml)

Dosage Calculations[2]

$$\text{Dose (Mass)} \times \frac{\text{Volume}}{\text{Mass of Drug}} = \text{Amount of dose form to be given}$$

$$\text{Dose (Mass)} \times \frac{\text{Tablet}}{\text{Mass of Drug}} = \text{Amount of dose form to be given}$$

$$\frac{\text{\# Tablet}}{\text{Dose}} \times \frac{\text{\# Doses}}{\text{Day}} = \text{Total tablets dispensed}$$

Fluid Therapy Calculations[23]

Calculations of Fluid Requirements

Body weight (kg) × % dehydration = ml fluid deficit*

(60 to 80 ml/kg) × Body weight (kg) = ml of daily fluid requirement*

Free-Drip Calculations

$$\text{Drops per minute} = \frac{\text{Total infusion volume} \times \text{drops/ml}}{\text{Total infusion time (min)}}$$

*Estimation of ongoing losses × 2 = ml of ongoing losses.

Intravenous Fluid Rate Calculations[1A]

	60 DROPS/ml	
ml/hr	drops/min	sec-drop
5	5	12
10	10	6
15	15	4
20	20	3
25	25	2
30	30	2
35	35	2
40	40	2
45	45	1.5
50	50	1
55	55	1
60	60	—

- Cat 4000 gr with osteomielite
- Ceftrax
- Clindamicine

Case exercise

- The case is 5 years cat 3.850 kg
- Refer with feline asthma
- Medication : prednisolone / theophyline
- Taper prednisolone 1 mg/kg
- Theophyline 20mg/kg

Cat 4 month with upper respiratory signs 900gr

Lincospectine for 5 days 5%

- Dog canine parvovirous 4.700 kg
- Ranitidine
- Metoclopramid
- Ringer
- Ampicillin
- Gentamicin

- Dog with gi infectection

Infusion 1/3 2/3

Sucralfate

Pencillin 6.3.3

Amikacin

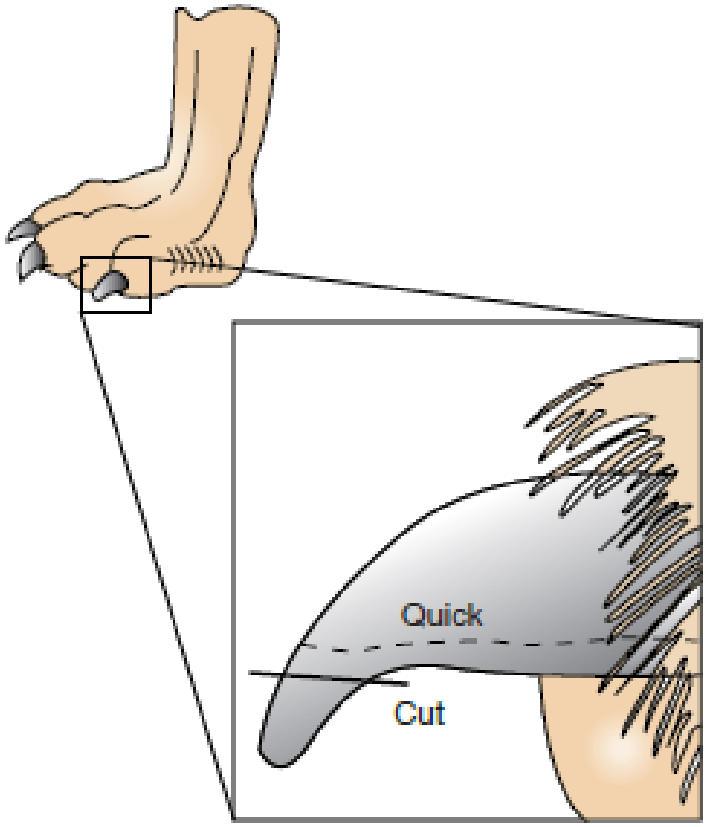
Metronidazol

Sulfsalazine

NAIL TRIMMING[29]

Nail trimmers are available in a variety of styles and sizes. Guillotine-type trimmers (Resco) are available in regular and large sizes. The blade can be replaced when it becomes dull. Scissors-type trimmers (White) work well for ingrown nails, for nails of puppies and kittens, and for cat claws. The trimmers must always be clean and sharp.

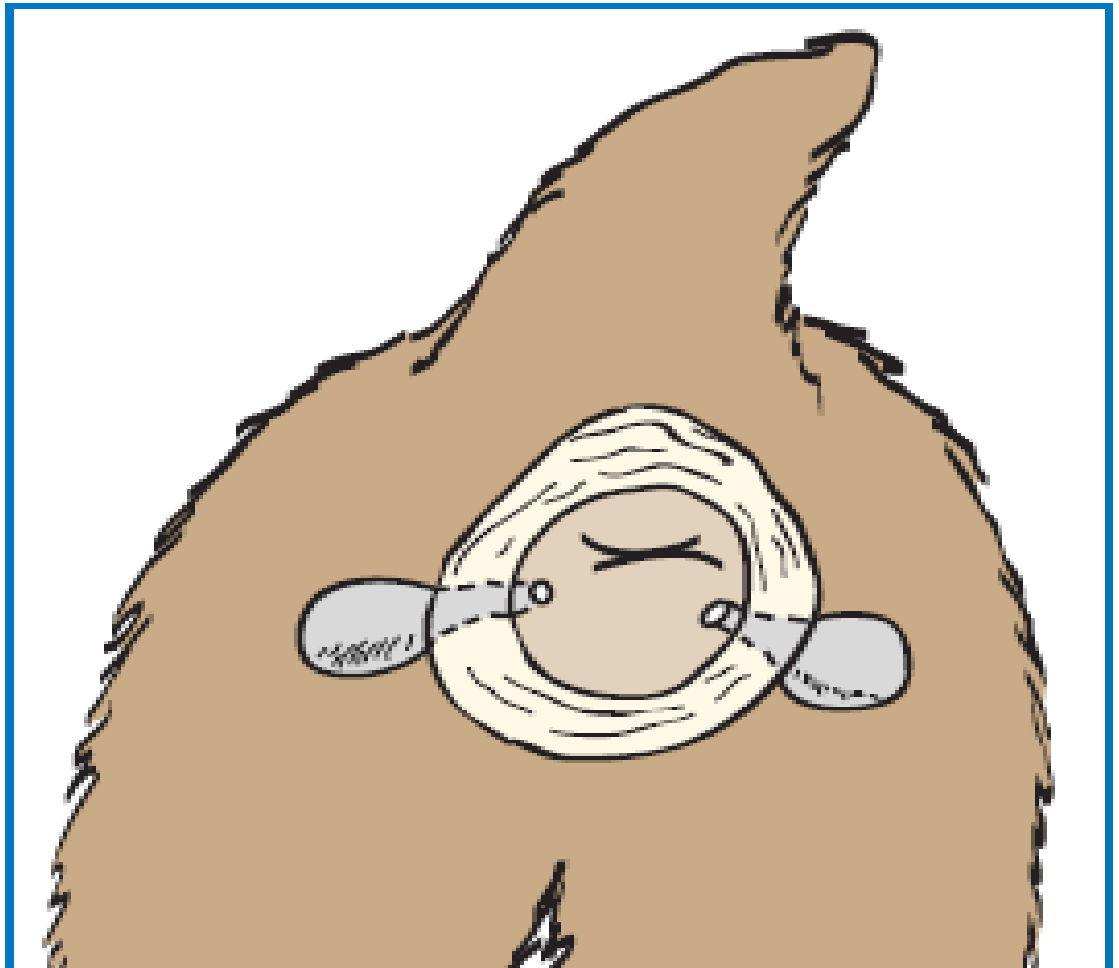
NAIL TRIMMING[29]—cont'd



All types of trimmer blades are positioned within 2 mm from the end of the quick. With a swift, smooth motion, the nail is cut just distal to the quick. In patients with white nails, the quick is visible and easy to avoid. In those with dark nails, the end of the nail is pared down a little at a time until a clearer or lighter color appears in the cross section of the nail. This is the tip of the quick. The remaining untrimmed dark nails are compared with the trimmed nail for proper length of trim.

EXPRESSING ANAL SACS[23]

Anatomy of the canine anal sacs are located at approximately the 4 o'clock and 8 o'clock positions. The anal sacs are best emptied, or "expressed," using the internal technique of inserting a lubricated, gloved forefinger into the rectum. External expression of the anal sacs is a technique that requires squeezing the anal glands from the external anal sphincter.



Good to know

AGE EQUIVALENCES

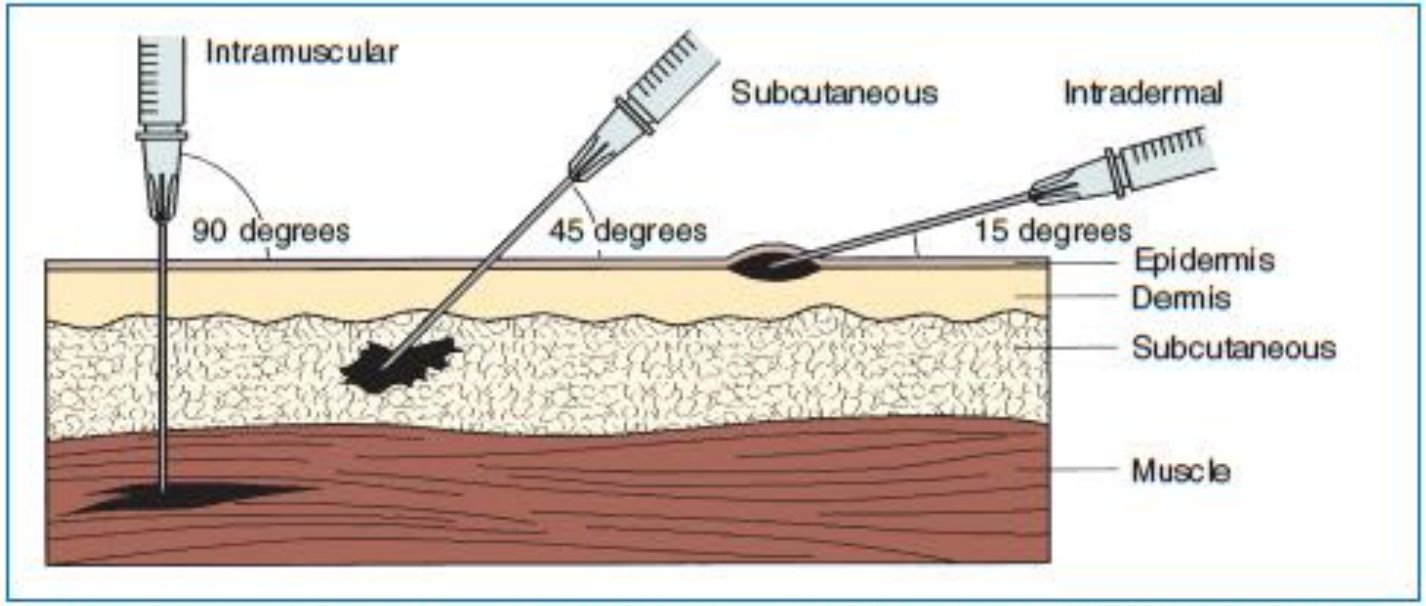
AGE EQUIVALENTS FOR DOGS[29]

Comparative Age in Human Years				
Dog's Age	0-20 lbs	21-50 lbs	51-90 lbs	>90 lbs
5 years	36	37	40	42
6 years	40	42	45	49
7 years	44	47	50	56
10 years	56	60	66	78
12 years	64	69	77	93
15 years	76	83	93	115
20 years	96	105	120	—

AGE EQUIVALENTS FOR CATS[29]

Cat's Age	Comparative Age in Human Years
1 year	15
2 years	24
5 years	36
7 years	45
12 years	64

INJECTION TECHNIQUES[22]



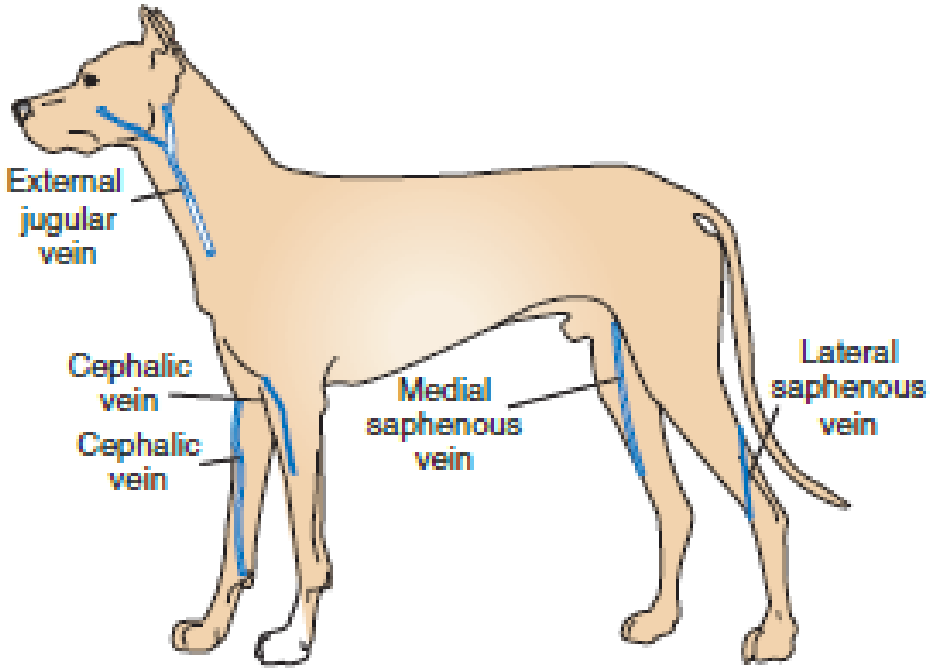
Comparison of angle of injection and location of medication deposit for IM, SQ, and ID injections.

Subcutaneous Injection Technique[23]

1. Grasp the skin between thumb and forefinger along the dorsolateral aspect of the neck or back and lift gently to form a tent.
   a. Avoid intrascapular area, especially for vaccines and insulin administration.
2. Insert the needle into the skin fold and aspirate.
   a. If blood is aspirated, withdraw the needle and use another injection site.
   b. If no blood is aspirated, inject the medication or fluids slowly.
3. Multiple injection sites can be used along the dorsum and lateral to the spine.

1. Ensure patient is properly restrained.
2. Locate muscle group of choice by palpation.
   a. Epaxial muscles lateral to the dorsal spinous process of lumbar vertebrae 3 to 5.
   b. Quadriceps muscles of the cranial thigh.
   c. Triceps muscles caudal to the humerus.
   d. Lateral aspect of semimembranosus/semitendinosus muscles.
3. Swab the injection site with a disinfectant.
4. Insert the needle 1 to 2 cm at a 45- to 90-degree angle.
5. Aspirate the syringe to ensure the needle is not placed in a blood vessel.
   a. If blood is aspirated, withdraw the needle and insert into a different site.
   b. If no blood is aspirated, inject the medication at a slow to moderate rate.
6. Remove the needle and massage the muscle to disperse the medication.

VENIPUNCTURE[32]



The veins accessible for collection of venous blood in dogs and cats.

Jugular Blood Collection Procedure[32]

1. Clip hair from a small area over the jugular furrow.
2. Distend the vein with blood (raise the vein) by applying firm pressure at the thoracic inlet at the most ventral portion of the jugular furrow, lateral to the trachea.
3. Palpate the distended vein.
4. Apply alcohol and allow alcohol to dry.
5. Insert the needle, bevel upward, at a 20- to 30-degree angle to the vein.
6. Once the tip of the needle is in the vein, apply suction to collect the sample or insert vacutainer tube onto collection needle.
7. Once the sample is collected, release the pressure on the vein, halt suction, and withdraw the needle from the vein.
8. Place gentle pressure on the venipuncture site, and hold for approximately 60 seconds.

Cephalic Blood Collection Procedure[32]

Lateral Saphenous Blood Collection[32]

1. Clip hair from a small area over the vein.
2. Have the animal restrained in lateral recumbency with the legs toward the venipuncturist and the back toward the holder.
   a. Restrain by grasping the forelimbs with one hand and elevating them slightly off the table while applying pressure down on the neck of the patient with the same forearm.
3. Grasp the uppermost hind leg with the other hand.
4. Grasp the hind foot and palpate the distended vein.
5. Swab the area over the vein with alcohol and allow the alcohol to dry.
6. Place the thumb adjacent to the vein to stabilize it and prevent movement during venipuncture.
7. Insert the needle, bevel upward, at a 20- to 30-degree angle to the vein.
8. Once the tip of the needle is in the vein, apply suction to collect the sample.
9. Once the sample is collected, release the pressure on the vein, halt suction, and withdraw the needle from the vein.
10. Place gentle pressure on the venipuncture site, and hold for approximately 60 seconds.

Medial Saphenous Blood Collection Procedure[32]

1. Clip a small amount of hair from the area over the vein.
2. Have the animal restrained in lateral recumbency with the legs toward the venipuncturist and the back toward the holder.
   a. The restrainer should hold the animal's head with one hand while retracting the uppermost hind leg with the other hand.
   b. The restrainer applies pressure in the inguinal region to occlude the medial saphenous vein and cause it to distend with blood.

3. Grasp the metatarsal region of the rear limb closest to the table and extend the leg.
4. Palpate the distended vein.
5. Place the thumb adjacent to the vein to stabilize it and prevent movement during venipuncture.
6. Insert the needle, bevel upward, into the vein.
7. Once the tip of the needle is in the vein, apply very slight suction to collect the sample.
8. Once the sample is collected, have the holder release pressure on the vein.
9. Halt suction and withdraw the needle from the vein.
10. Place gentle pressure on the venipuncture site, and hold for approximately 60 seconds.

INTRAVENOUS CATHETERIZATION

Catheter Selection[4]

Patient Size (in Pounds)	Vein	Type of Catheter	Catheter Diameter (Gauge)
Canine			
0-5	Saphenous/ cephalic	Over the needle	24
5-25	Saphenous/ cephalic	Over the needle	22
25-80	Saphenous/ cephalic	Over the needle	20
80 and up	Saphenous/ cephalic	Over the needle	18
0-5	Jugular	Through the needle	21
5-25	Jugular	Through the needle	18
25-80	Jugular	Through the needle	16-18
80 and up	Jugular	Through the needle	16
0-5	Saphenous/ cephalic	Butterfly	24-23
5-25	Saphenous/ cephalic	Butterfly	22
25-80	Saphenous/ cephalic	Butterfly	20
80 and up	Saphenous/ cephalic	Butterfly	18
Feline			
0-4	Femoral/ cephalic	Over the needle	24
4 and up	Femoral/ cephalic	Over the needle	22
0-4	Jugular	Through the needle	21
4 and up	Jugular	Through the needle	18
0-4	Cephalic	Butterfly	24
4 and up	Cephalic	Butterfly	22

Diagnostic and treatment

Procedures

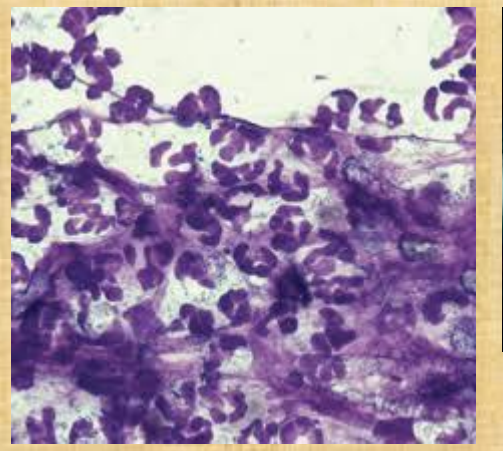
ADMINISTERING OTIC AND OPHTHALMIC MEDICATIONS[28]

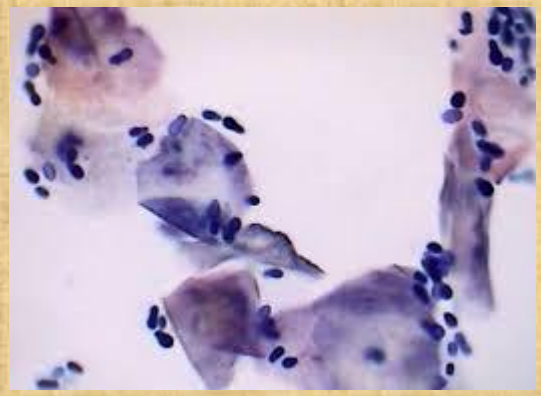
Turn the dog's head toward the person administering the drug with both hands around the head or a hand around the muzzle.

Ear sampling

Ear sampling

- Cytology
- Ectoparasites
- Culturing
- Malassezia
- Combination infection





Ocular sampling

Ocular sampling

laboratory methods for the assessment of conjunctival specimens are: microscopic examination of cytological preparations, culture and susceptibility testing, live virus isolation, polymerase chain reaction, direct immunofluorescent antigen test and histopathological examination for snip biopsies. Findings like inflammatory or neoplastic cells, cellular alterations, inclusion bodies and microorganisms, offer valuable information not only for localized ocular disorders, but for systemic diseases as well.

Nasal discharge sampling

Clinical examination of animal with nasal discharge

Area	*Assessment*	*Notes*
Nose	Air flow (test with glass slide or cotton wool)	Reduced with diseases that obstruct the nasal cavity, e.g., nasal neoplasia, polyp
	Ulceration/depigmentation of the nares/nasal planum	e.g., aspergillosis in dogs (Squamous cell carcinoma of nasal planum, but this doesn't usually present with a nasal discharge)
Face	Symmetry	Asymmetry and facial/nasal distortion is typically caused by neoplasia (but also trauma and potentially fungal infections, especially *Cryptococcus* infection in cats)
	Pain	Following trauma or, more commonly, a destructive rhinitis e.g., aspergillosis
Eyes	Ocular discharge/epiphora	Viral infection in cats

Clinical examination of animal with nasal discharge

Eyes	Ocular discharge/epiphora	Viral infection in cats Obstruction of nasolacrimal duct by nasal mass
	Exophthalmos	Retrobulbar mass (neoplasia, abscess)
Mucous membranes	Petechiation/ecchymoses	(Clotting disorders)
Teeth	Dental disease	Tooth root abscess Oronasal fistula
Palate	Ventral deviation	Nasopharyngeal polyp Neoplasia
	Cleft	Congenital Traumatic
Lymph nodes	Submandibular lymphadenopathy	Can accompany any disease of the nasal (and oral) cavity, non-specific finding
Ears	Aural discharge, mass in horizontal canal	Aural polyps can accompany nasopharyngeal polyps in cats

Tracheal lavage sampling

So why do we perform an endotracheal lavage?
This is done to obtain fluid analysis and culture of the lower airway. As the lower airway is sterile, an ENL should be performed using sterile technique.
First, make sure you have all your supplies set up prior to anesthesia.
This should include:

Multiple sterile endotracheal tubes (ETT) with the cuff tested for leaks
Sterile lubrication
Sterile gloves
A sterile 10 ml and 60 ml syringe
Sterile saline drawn up in 10 ml aliquots
A sterile, appropriately sized red rubber catheter or polypropylene catheter to deliver saline and aspirate fluid back from
An EDTA tube (for fluid analysis) and red top tube or culturette (for culture)
An anesthetist or anesthesiologist to perform the procedure

Tracheal lavage

Skin sampling

- Payoderma
- Ectoparasite
- Mite
- Fungal investigation

Skin sampling equipments

- magnifying glass;
- otoscope;
- Wood's lamp;
- scissors and electric clippers for hair removal
- forceps (plain and rubber-coated tips);
- liquid paraffin;
- KOH (potassium hydroxide);
- scalpel blades of various shapes and sizes;
- cotton buds, alcoholic wipes and swabs;
- microscope slides and cover slips;
- stain (for example, Diff-Quik and lactophenol blue);
- swabs for bacteriology (charcoal and dry);
- ; toothbrush
- dermatophyte test medium and Sellotape;

Abdominocentesis

Patient Preparation

Patient positioning in left lateral recumbency may be most effective to avoid puncture of the spleen. Restraint may be completed manually or with sedatives and analgesics. Before the abdomen is penetrated, a wide surgical clip and preparation of the site using aseptic technique must be completed along the ventral midline centered at the umbilicus (Color Plate 155-1). If abdominal ultrasonography has revealed a focal area of peritoneal fluid accumulation, a standard aseptic clip and preparation of that location is prudent.

productive Puncture Sites Simple Abdominocentesis With the prepared animal in left lateral recumbency, insert the needle or fenestrated over-the-needle catheter just caudal to the umbilicus at or within 1 to 2 cm right of midline. Direct the needle toward the dependent side, slightly caudal toward the pelvis.

Thoracocentesis

The site for **thoracocentesis** is between the 7th and 8th **intercostal space**. If fluid is suspected in the pleural **space** then the needle should be **inserted** 2/3rds of the way down the chest. Using aseptic preparation of the lateral thoracic region, we use a thoracocentesis set up (e.g., 20 gauge needle attached to an extension set, 3-way stopcock, and 60 ml syringe) to gently penetrate the pleural space (e.g., cranial to the rib, 7-9th intercostal space). Sedation or local anesthesia is not typically necessary during this procedure.

Cont…

- A thoracentesis should be performed cranial to the rib, as the blood vessels and nerves lie caudal to the rib ("hiding" behind the rib).

- Thoracentesis should be performed at the 7th to 9th intercostal space to avoid the heart (3th–5th ICS) or liver (caudal to the 9th ICS).

Advancing the needle into the pleural space

A cadaver in lateral recumbency, with the hair clipped and each rib marked with an overlay of red ink.

Urinary catheterization

CATHETER SIZES[12A]

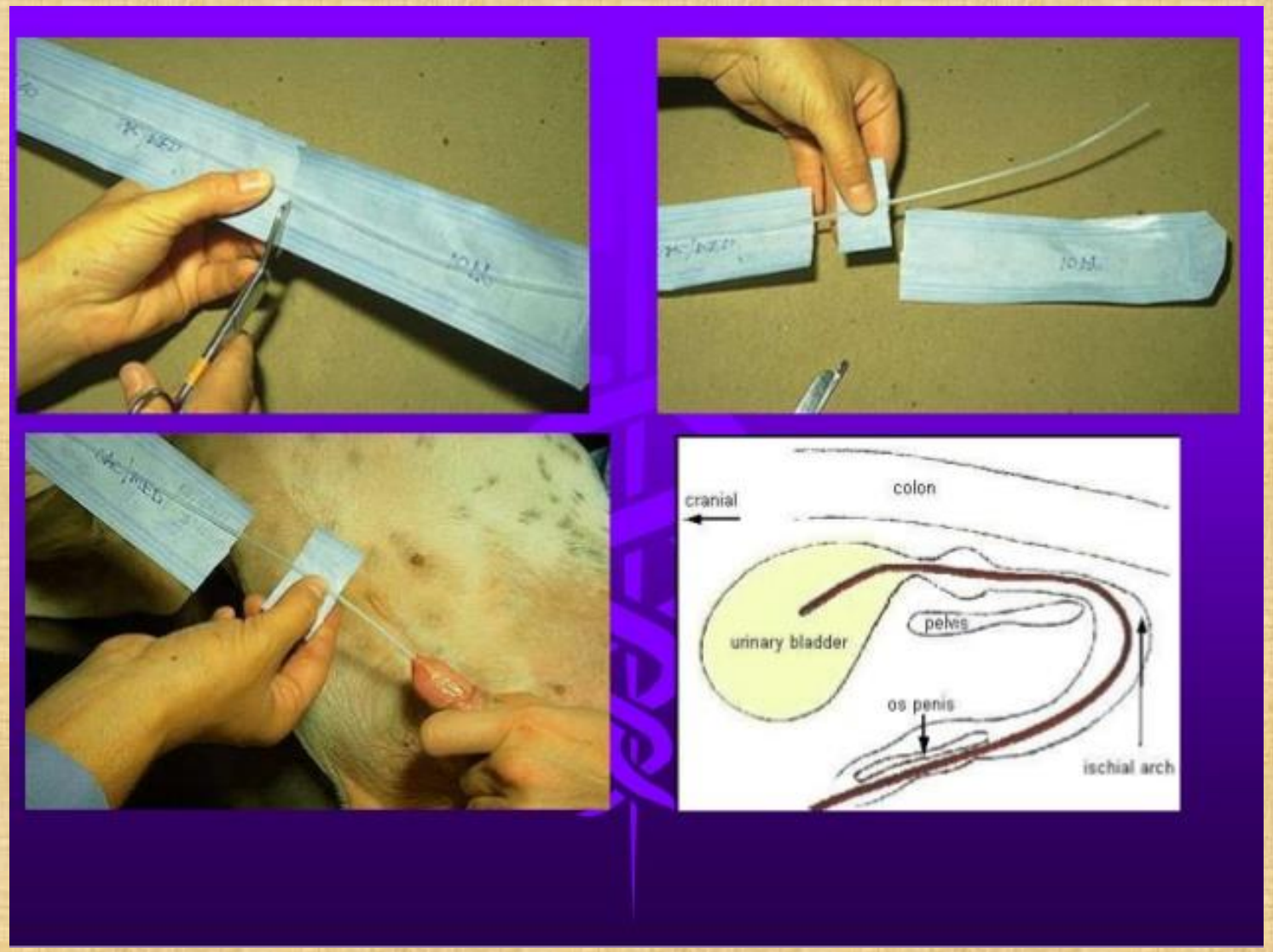
Animal	Urethral Catheter Type	Size (French Units*)
Cat	Flexible vinyl, red rubber, or tom cat catheter (polyethylene)	3.5
Male dog (≤25 lb)	Flexible vinyl, red rubber, or polyethylene	3.5 or 5
Male dog (≥25 lb)	Flexible vinyl, red rubber, or polyethylene	8
Male dog (>75 lb)	Flexible vinyl, red rubber, or polyethylene	10 or 12
Female dog (≤10 lb)	Flexible vinyl, red rubber, or polyethylene	5
Female dog (10-50 lb)	Flexible vinyl, red rubber, or polyethylene	8
Female dog (>50 lb)	Flexible vinyl, red rubber, or polyethylene	10, 12, or 14

*The diameter of urinary catheters is measured on the French (F) scale. One French unit equals approximately 0.33 mm.

ROUTINE URINALYSIS PROCEDURE[17]

1. Prepare a laboratory sheet with patient information, date, time, and method of urine collection.
2. If sample was refrigerated, make note on the record and allow the sample to warm to room temperature.
3. Properly mix the sample.
4. Record the physical characteristics: color, clarity, volume, and odor of sample by gentle inversion.
5. Calibrate the refractometer with distilled water to 1.000.
6. Determine and record the specific gravity of the sample.
7. Dip a reagent test strip into the urine sample and remove promptly, making sure to tap lightly the edge of the strip on a paper towel to remove excess urine.
8. Read the pad's color at the appropriate time intervals as stated by the manufacturer's directions, and record the results.
9. Properly label a 15-ml conical centrifuge tube.
10. Pour approximately 5 to 10 ml of the urine sample into the centrifuge tube.
11. Centrifuge the sample for 5 to 6 minutes at 1000 to 2000 rpm.
12. Make note of the amount of sediment.
13. Pour off the supernatant, leaving approximately 0.5 to 1 ml in the tube.
14. Resuspend the sediment by gently mixing with a pipette or flicking the tube with the fingers.
15. Transfer a drop of reconstituted sediment to a microscope slide with a transfer pipette, and place a cover slip over it.
16. Alternatively, place 1 drop of Sedi-Stain to 1 drop of urine on a microscope slide, and place a cover slip over it.
17. Subdue the light of the microscope by partially closing the iris diaphragm.
18. Examine the entire specimen under the cover slip with the high power (40×) objective to identify and quantify cells, casts, crystals, and bacteria.
19. To aid in the detection of these elements, the fine adjustment knob should be continuously focused.
20. Record results.

Male dogs

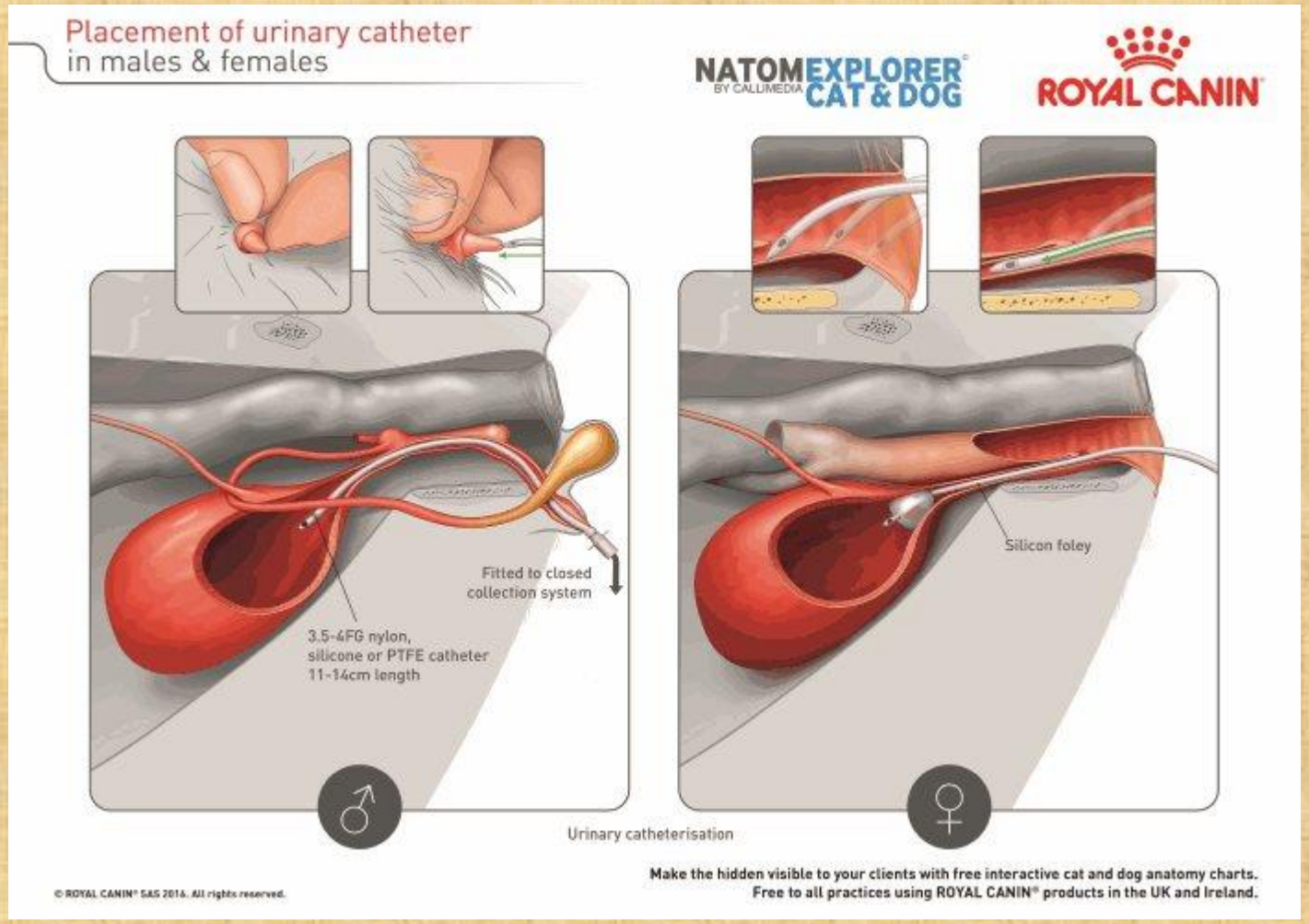

cranial
colon
urinary bladder
pelvis
os penis
ischial arch

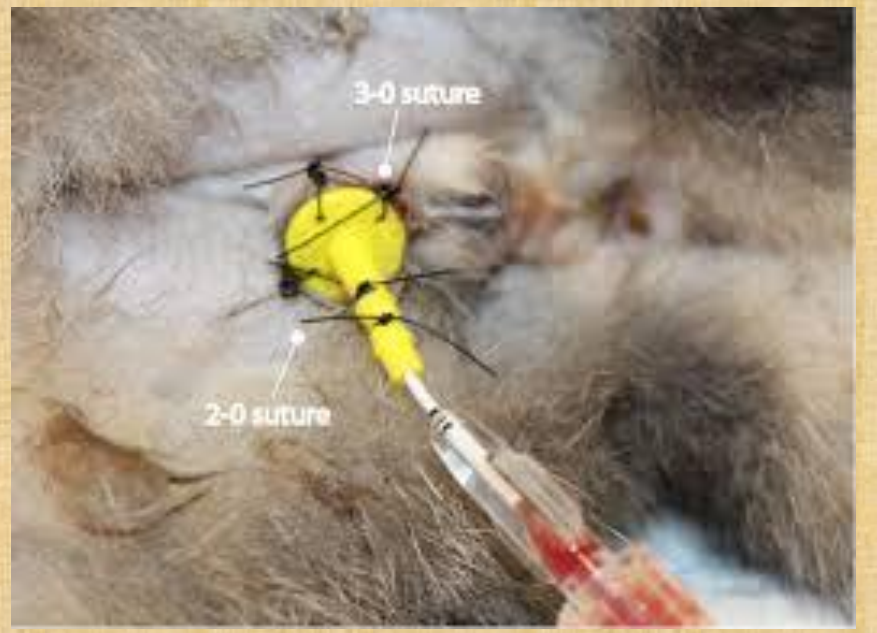
Urinary Catheterization of a Female Dog

PROCEDURE 26-3 Urinary Catheterization: Female Dog

1. Restrain the dog standing or in sternal recumbency with the feet off the end of the table.
2. Cleanse the external genitalia with antiseptic solution and rinse it with saline.
3. Flush the vagina and vestibule with sterile saline injected through a syringe.
4. Insert a vaginal speculum directed dorsally, and spread the wings of the speculum to visualize the urethral orifice on the ventral floor of the vagina.
5. Lubricate the tip of the catheter with sterile water-soluble lubricating jelly.
6. Gently insert the tip of the catheter into the external urethral orifice, and advance it into the lumen of the bladder, being careful not to advance it too far.

Male and female cats




3-0 suture
2-0 suture

Csf sampling

1) The patient should be anesthetized under general anesthesia with endotracheal intubation. A stiff endotracheal tube is recommended to avoid occlusion of oxygen flow during the neck flexure required for the procedure.

2) Typically, the cerebellomedullary cistern (CMC) is the preferred site of collection in dogs and cats for atlanto-occipital cerebrospinal fluid collection. The patient should be placed in lateral recumbency for optimal access to the CMC site.

3) The anatomic location of this preferred site is found at the junction between the lines formed by the occipital protuberance/arch of the axis (C2 vertebrae) and the cranial edges of the wings of the atlas (C1 vertebra).

csf

4) A spinal needle (e.g., 20 or 21 gauge, 1.5 inch needle) is commonly used to reach the CMC site in most dogs and cats. NOTE: Larger dogs > 30 kg may require a longer (e.g., 2.5 inch) spinal needle.

5) Prior to insertion of the needle, aseptic technique is imperative. The CSF area is clipped followed by a surgical scrub.

6) An assistant holds the head in ventral flexion so that the muzzle/nose is parallel to the table. This position is why using a stiff endotracheal tube during general anesthesia is important, to prevent occlusion of the tube with flexion of the neck. It is also important that the assistant monitors respiration during the procedure.

csf

7) Once in the appropriate position, the needle is positioned on the midline, perpendicular to the neck, and advanced slowly 1-2 mm at a time penetrating the skin, and then the dura mater.

8) During advancement through the dura mater and atlanto-occipital membrane, the clinician may feel a slight ‘pop’. Following this “pop”, and after the dura is penetrated, resistance should decrease.

9) Once through these membranes, the stylet is removed, and CSF flow is visually observed and collected.

Figure 2: Aseptic collection of cerebrospinal fluid obtained by cerebellomedullary cisternal puncture.

Cats and dogs vaccination


Rabies Vaccine
MERIAL

Lyophilized part:

Excipients:

Canine core vaccine

Core vaccines are recommended for all puppies and dogs with an unknown vaccination history. The diseases involved have significant morbidity and mortality and are widely distributed, and in general, vaccination results in relatively good protection from disease. These include vaccines for **canine parvovirus** (CPV), **canine distemper** virus (CDV), **canine adenovirus** (CAV), **and rabies**. In addition, the **leptospirosis vaccine** is now recommended as a core vaccine for dogs in California because the disease has the potential to occur in any dog (even in urban environments), can be life-threatening, and the vaccines are considered safe and efficacious, with recent improvements in safety over the last decade.

•DHPPIL

- Distemper
- Infectious hepatitis
- Parvovirus
- Parainfluenza
- Leptospirosis (icterohaemorragiae /grippotyphosa/sejroe)

Distemper canine virous

- Canine distemper (sometimes termed hardpad disease) is a viral disease that affects a wide variety of animal families, including domestic and wild species **of dogs, coyotes, foxes, pandas, wolves, ferrets, skunks, raccoons, and large cats, as well as pinnipeds, some primates**, and a variety of other species. Animals in the family Felidae, including many species of large cat as well as domestic cats, were long believed to be resistant to canine distemper, until some researchers reported the prevalence of CDV infection in large felids.[2] Both large Felidae and domestic cats are now known to be capable of infection, usually through close housing with dogs[2][3] or possibly blood transfusion from infected cats,[2] but such infections appear to be self-limiting and largely without symptoms.[3]

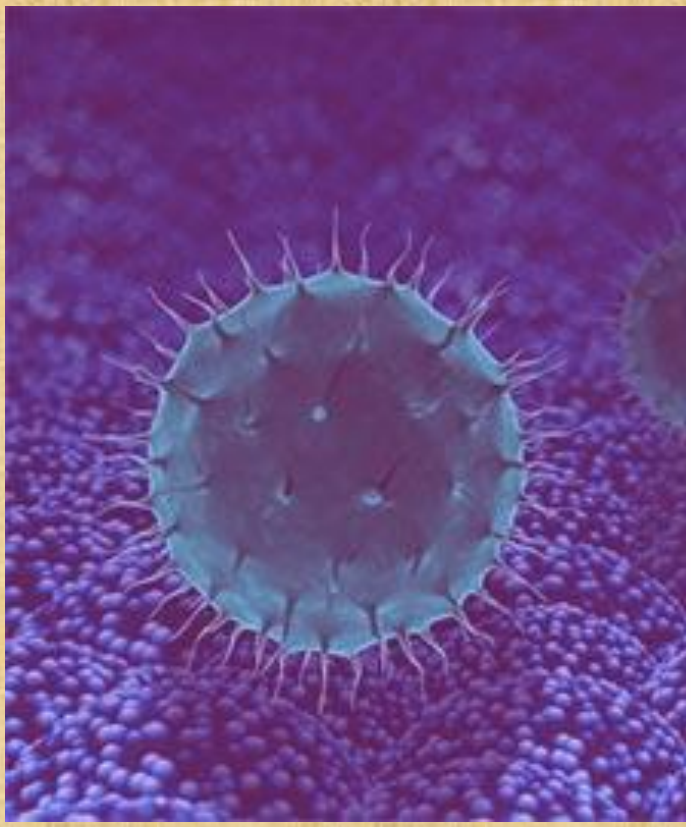
- In canines, distemper affects several body systems, including the gastrointestinal and respiratory tracts and the spinal cord and brain, with common symptoms that include high fever, eye inflammation and eye/nose discharge, labored breathing and coughing, vomiting and diarrhea, loss of appetite and lethargy, and hardening of nose and footpads. The viral infection can be accompanied by secondary bacterial infections and can present eventual serious neurological symptoms.

- Canine distemper is caused by a single-stranded RNA virus of the family Paramyxoviridae (the same family of the viruses that causes measles, mumps, and bronchiolitis in humans). The disease is highly contagious via inhalation.[4] Morbidity and mortality may vary greatly among animal species, with up to 100% mortality in unvaccinated populations of ferrets. In domestic dogs, while the acute generalized form of distemper has a high mortality rate, disease duration and severity depends mainly on the animal's age and immune status and virulence of the infecting strain of the virus.[4][5] Despite extensive vaccination in many regions, it remains a major disease of dogs, and was the leading cause of infectious disease death in dogs, prior to a vaccine becoming available.[6]

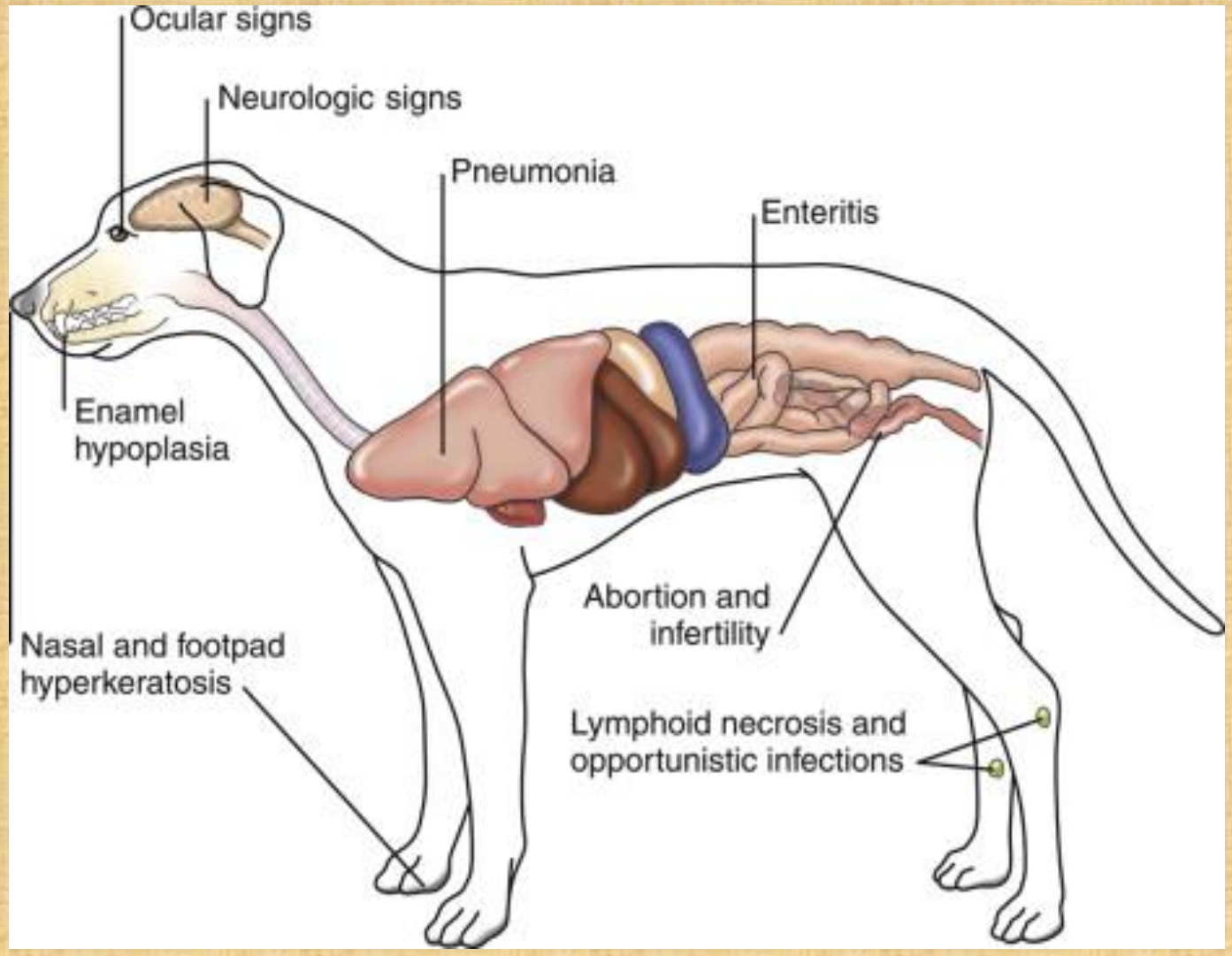
- In dogs, signs of distemper vary widely from no signs, to mild respiratory signs indistinguishable from kennel cough, to severe pneumonia with vomiting, bloody diarrhea, and death.[9]

- Commonly observed signs are a runny nose, vomiting and diarrhea, dehydration, excessive salivation, coughing and/or labored breathing, loss of appetite, and weight loss. If neurological signs develop, incontinence may ensue.[10][11] Central nervous system signs include a localized involuntary twitching of muscles or groups of muscles, seizures with salivation and jaw movements commonly described as "chewing-gum fits", or more appropriately as "distemper myoclonus". As the condition progresses, the seizures worsen and advance to grand mal convulsions followed by death of the animal. The animal may also show signs of sensitivity to light, incoordination, circling, increased sensitivity to sensory stimuli such as pain or touch, and deterioration of motor capabilities. Less commonly, they may lead to blindness and paralysis. The length of the systemic disease may be as short as 10 days, or the start of neurological signs may not occur until several weeks or months later. Those few that survive usually have a small tic or twitch of varying levels of severity. With time, this tic usually diminishes somewhat in its severity

- Paramixivirous



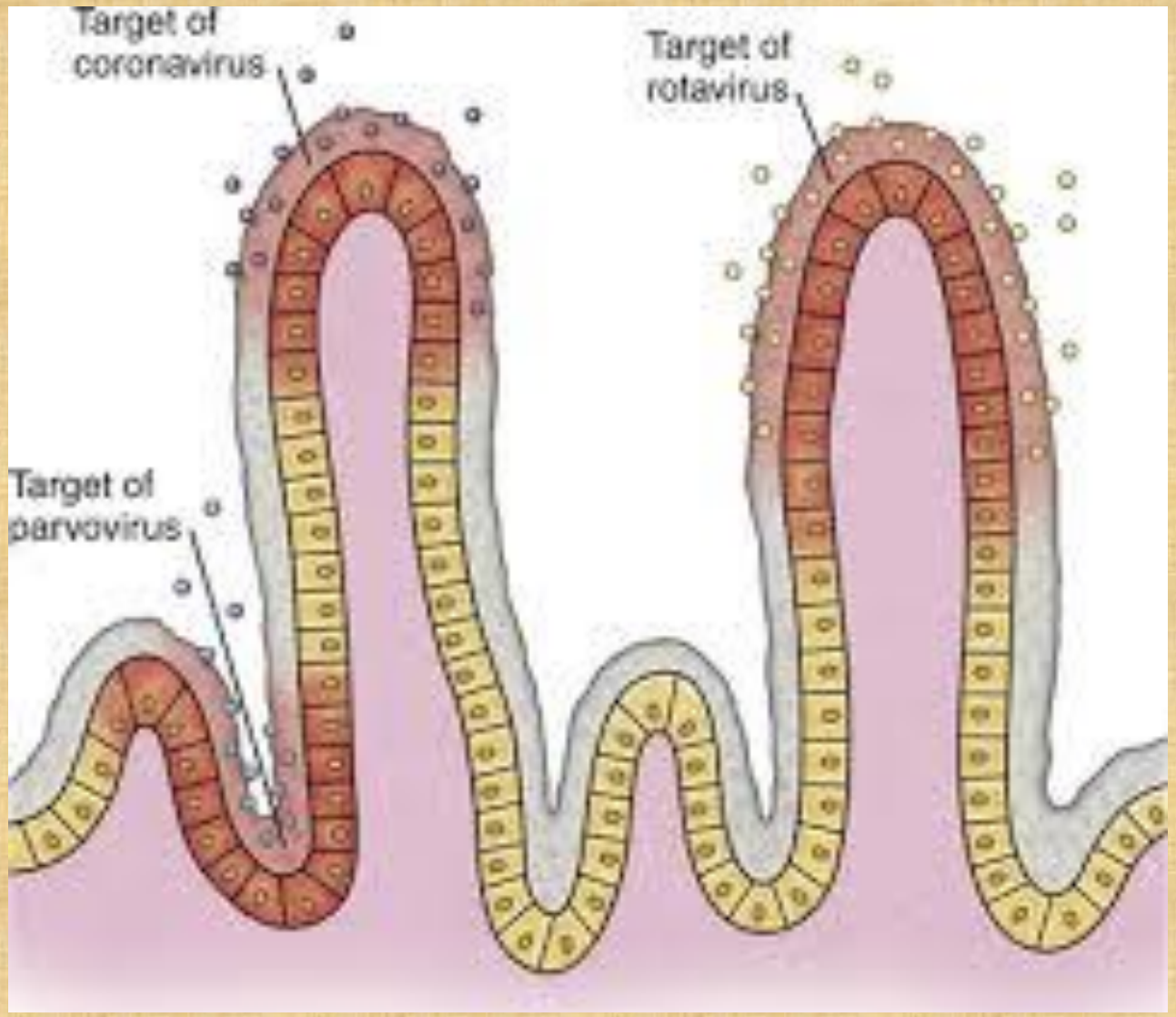

copyright O'Meara - Pet Informed.

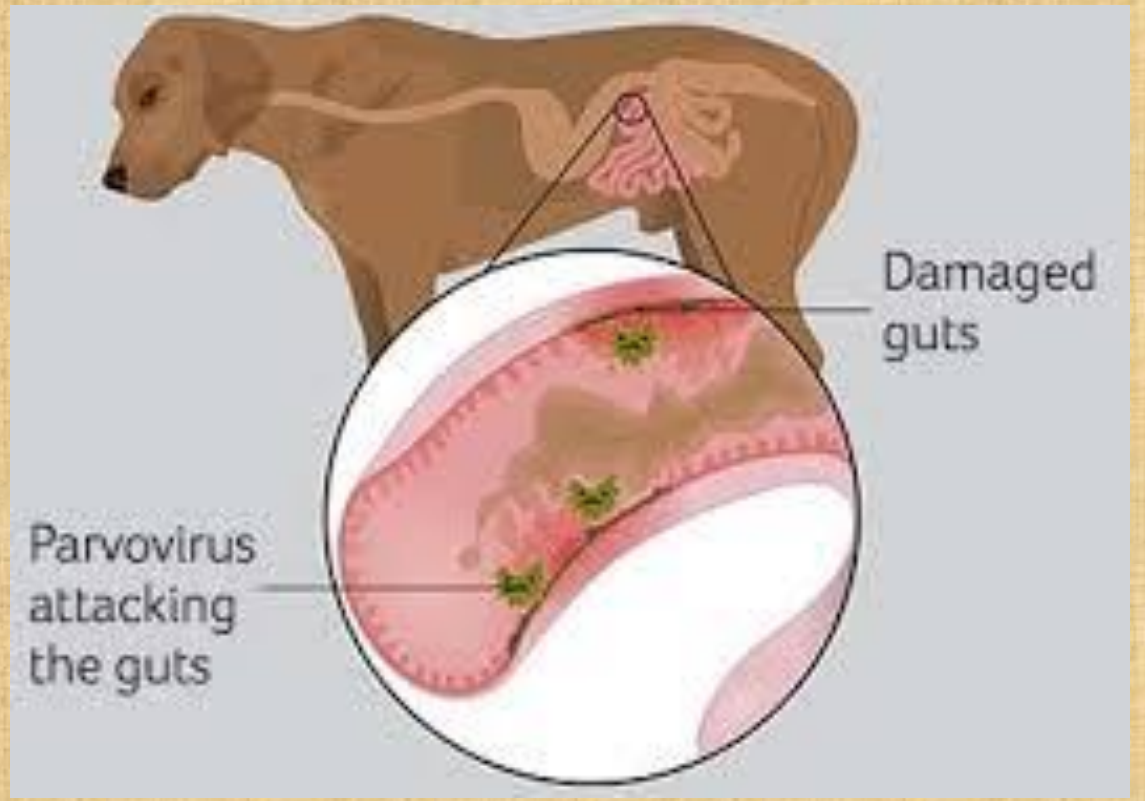

Ocular signs
Neurologic signs
Pneumonia
Enteritis
Enamel hypoplasia
Abortion and infertility
Nasal and footpad hyperkeratosis
Lymphoid necrosis and opportunistic infections

Canine parvovirus

- Canine parvovirus (also referred to as CPV, CPV2, or parvo) is a contagious virus mainly affecting dogs. CPV is highly contagious and is spread from dog to dog by direct or indirect contact with their feces. Vaccines can prevent this infection, but mortality can reach 91% in untreated cases. Treatment often involves veterinary hospitalization. Canine parvovirus may infect other mammals including foxes, wolves, cats, and skunks.

- Severe, bloody diarrhea
- Lethargy
- Anorexia
- Fever
- Vomiting
- Weight loss
- Weakness
- Depression
- Dehydration
- Any


Target of coronavirus
Target of rotavirus
Target of parvovirus


Damaged
guts
Parvovirus
attacking
the guts

Diagnosis

- Diagnosis is made through detection of CPV2 in the feces by either an ELISA or a hemagglutination test, or by electron microscopy. PCR has become available to diagnose CPV2, and can be used later in the disease when potentially less virus is being shed in the feces that may not be detectable by ELISA.[3] Clinically, the intestinal form of the infection can sometimes be confused with coronavirus or other forms of enteritis. Parvovirus, however, is more serious and the presence of bloody diarrhea, a low white blood cell count, and necrosis of the intestinal lining also point more towards parvovirus, especially in an unvaccinated dog. The cardiac form is typically easier to diagnose because the symptoms are distinct.[4]

- Treatment


ICLEAR
RAPID TEST KIT
Σ 10
· Result in minutes
· For veterinary diagnostic use only
VetD-Plus


CPV Ag
C
T

- "CPV is very stable in the environment and is resistant to the effects of heat, detergents, alcohol, and many disinfectants."

- Unlike most other viruses, CPV is very stable in the environment and is resistant to the effects of heat, detergents, alcohol, and many disinfectants. A 1:30 bleach solution will destroy the infective virus. Infective CPV has been recovered from surfaces contaminated with dog feces even after three months at room temperature.

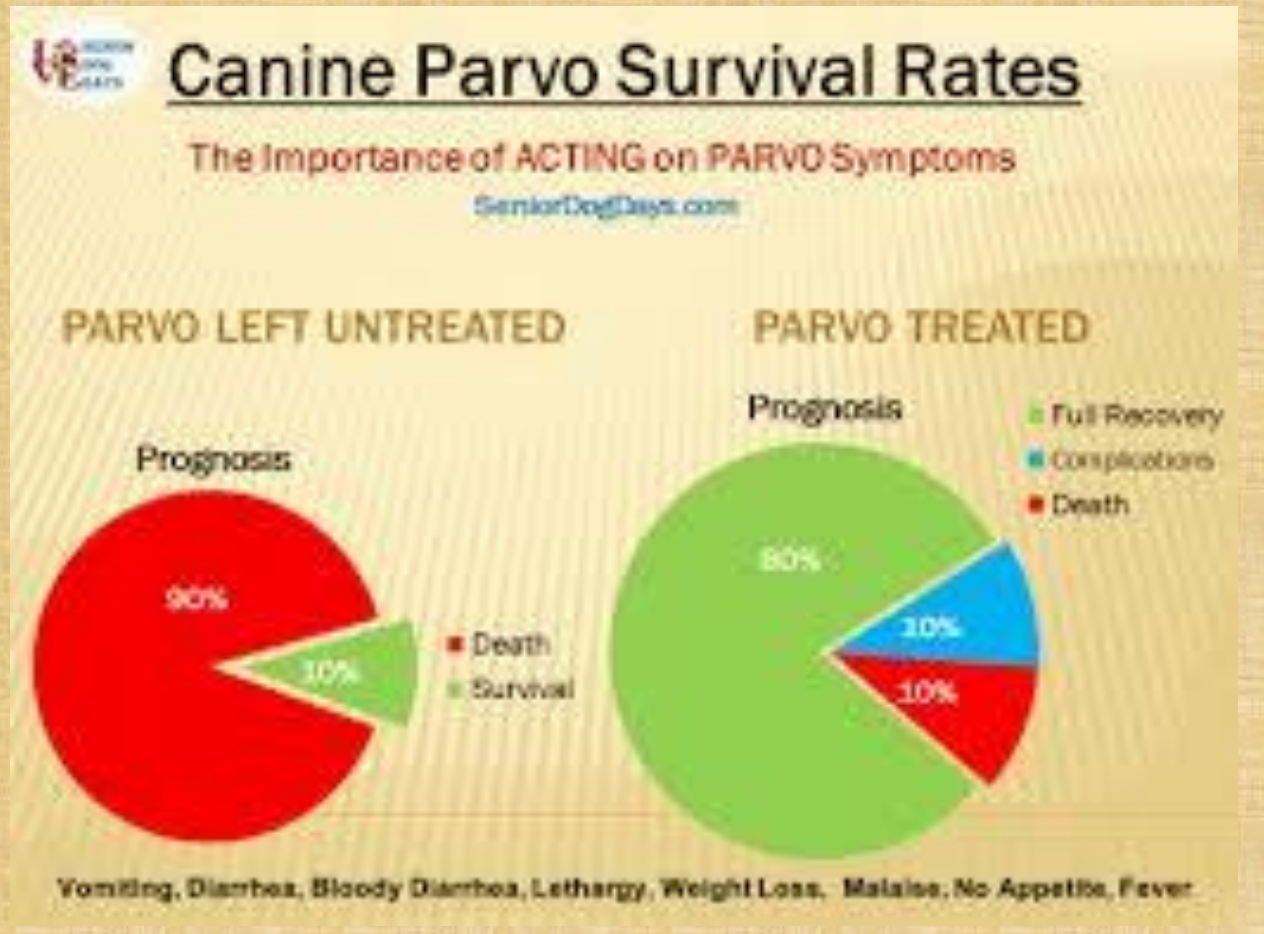
- Due to its environmental stability, the virus is easily transmitted via the hair or feet of infected dogs, or on shoes, clothes, and other objects contaminated by infected feces. Direct contact between dogs is not required to spread the virus. Dogs that become infected with the virus and show clinical signs will usually become ill within six to ten days after exposure.

- "There is a simple in-clinic test for CPV that will screen for this disease."
- There is a simple in-clinic test for CPV that will screen for this disease. Occasionally, a dog will have parvovirus but test negative for virus in the stool. Fortunately, this is an uncommon occurrence. A tentative diagnosis is often based on the presence of a reduced white blood cell count (leukopenia) and clinical signs. If further confirmation is needed, stool or blood can be submitted to a veterinary laboratory for additional tests. The absence of leukopenia does not mean that the dog does not have CPV infection. Some dogs that become clinically ill may not have a low white blood cell count.

- Is there a way to kill the virus in the environment?
- The stability of the CPV in the environment makes it important to properly disinfect contaminated areas.

- "A solution of 3/4 cup of chlorine bleach in one gallon of water (133 ml in 4 liters of water) will disinfect food and water bowls and other contaminated items."
- A solution of 3/4 cup of chlorine bleach in one gallon of water (133 ml in 4 liters of water) will disinfect food and water bowls and other contaminated items. It is important that chlorine bleach be used because most disinfectants, even those claiming to be effective against viruses, will not kill the canine parvovirus.

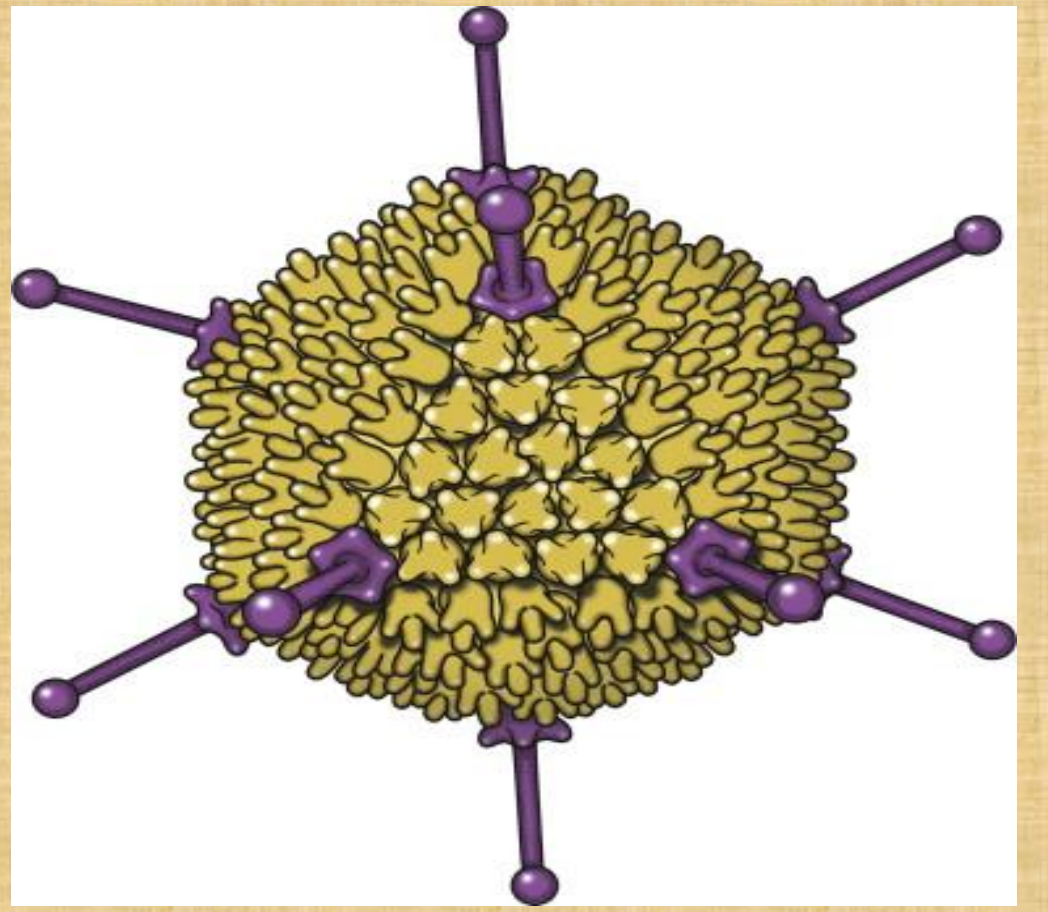

Bleach
Vinegar
Mild Dish
wikiHow


Canine Parvo Survival Rates
The Importance of ACTING on PARVO Symptoms
SeniorDogDays.com
PARVO LEFT UNTREATED
Prognosis
90%
10%
Death
Survival
PARVO TREATED
Prognosis
60%
30%
10%
Full Recovery
Complications
Death
Vomiting, Diarrhea, Bloody Diarrhea, Lethargy, Weight Loss, Malaise, No Appetite, Fever

PARVO KILLS

vaccinate your dog

Infectious Canine Hepatitis



- Hepatitis is defined as inflammation of the liver. As a specific disease, infectious canine hepatitis (ICH) is a viral infection caused by a member of the adenovirus family.

- Does it affect other animals or people?
- Other members of the dog family (e.g., foxes) can be infected, but ICH virus is harmless to people.

How is the canine hepatitis virus spread?

- The hepatitis virus is present in the urine, as well as in the nose and eye discharges of infected animals. The virus is transmitted by direct contact with these infected materials. Young dogs are at highest risk of contracting this virus and signs of disease usually occur within two to five days after exposure. However, the incubation period (period before clinical signs appear) can be as long as 14 days. In older dogs, some ICH infections may go unnoticed or be mild and resolve without medical intervention.

clinical signs

- In the mild form the dog may merely have a decreased appetite, appear depressed and have a mild fever. Some dogs develop opacity (cloudiness) of one or both corneas of their eyes (so-called blue eye) one to two weeks later. Dogs may have respiratory signs such as eye and nasal discharge and a cough that is indistinguishable from other forms of upper respiratory tract infections or kennel cough (see handout “Kennel Cough or Tracheobronchitisin Dogs”).

- In severe cases, usually in young puppies, along with the fever, depression, and loss of appetite, there is abdominal pain, vomiting, diarrhea, edema (fluid swelling under the skin) of the head and neck, and possibly jaundice. Such cases are often fatal.

Treatment

- As with most viral infections there is no specific treatment. Antibiotics are ineffective against viruses, but may help to treat secondary bacterial infections.

CANINE PARAINFLUENZA VIRUS

- Canine Parainfluenza is one of the many virus that can cause kennel cough in dogs. This cough is usually contracted from other dogs within close quarters that have the virus, such as kennels. The good news is that this condition is non-life threatening and usually clears up anywhere from a few days to a few weeks.

Canine Parainfluenza Virus

Signs includes -

coughing , fever & loss of appetite

Risk factors -

went for boarding , visiting the groomer , playing at the park

Vaccinate Your Dog

KVC 2018

SYMPTOMS

- Hacking cough
- Coughing up phlegm
- Sneezing
- Gagging
- Nasal discharge
- Fever
- Pneumonia can even develop in some cases

treatment

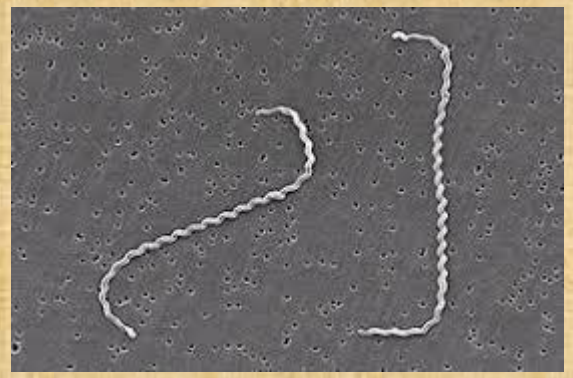
- Medication may be recommended.
- Steam via a humidifier or running the shower may ease the discomfort associated with parainfluenza.
- Affected dogs should be kept away from irritants like cigarette smoke.
- Dogs should be kept away from other animals to prevent the spread of the parainfluenza.

Leptospirosis

- Leptospirosis is a disease that affects dogs, as well as many other kinds of animals. The organism that causes leptospirosis is a **spirochete bacteria** and is found throughout the world. There are a very large number of Leptospira; about 230 of them have been identified.

- In the United States, Leptospirosis is in the environment because it is carried in rats, wildlife, as well as domestic livestock. More cases are seen in late summer and fall and often after heavy rainfalls. Leptospira is known to exist in standing water, dampness, and mud. Winter conditions tend to lower the risk because Leptospira do not tolerate freezing temperatures.

- Pets can become infected through contact with urine of infected animals such as raccoons, skunks, rats, feral cats, dogs, and other animals. Often, dogs contract the disease by swimming in stagnant water or drinking contaminated water in puddles.



SIGNALMENT

- Leptospirosis has conventionally been thought to most commonly affect young adult, male, large-breed or hunting dogs living in rural areas. Indeed, some studies have found intact male dogs and working dogs to be overrepresented among leptospirosis patients.1,2 However, other studies have found similar seroprevalence among dogs of large and small breeds, both sexes, and all age groups.3,4 In addition, living in an urban or suburban environment has been identified as a significant risk factor for the development of leptospirosis, resulting from increased interactions between dogs and wildlife in periurban settings.5 Thus, leptospirosis should be suspected in any dog with consistent clinical signs, regardless of signalment or perceived exposure.

Clinical signs

- Lethargy
- Arthralgia and myalgia
- Polydipsia and polyuria
- Oliguria or anuria
- Altered hydration status (overhydration with oliguria/anuria or dehydration with polyuria)
- Gastrointestinal abnormalities (decreased appetite, vomiting, diarrhea)
- Icterus
- Bleeding tendency (petechia, melena, hematochezia, epistaxis)
- Tachypnea
- Conjunctivitis

Diagnosis

- The most common clinicopathologic findings in dogs with leptospirosis are those associated with acute injury to the kidneys and liver

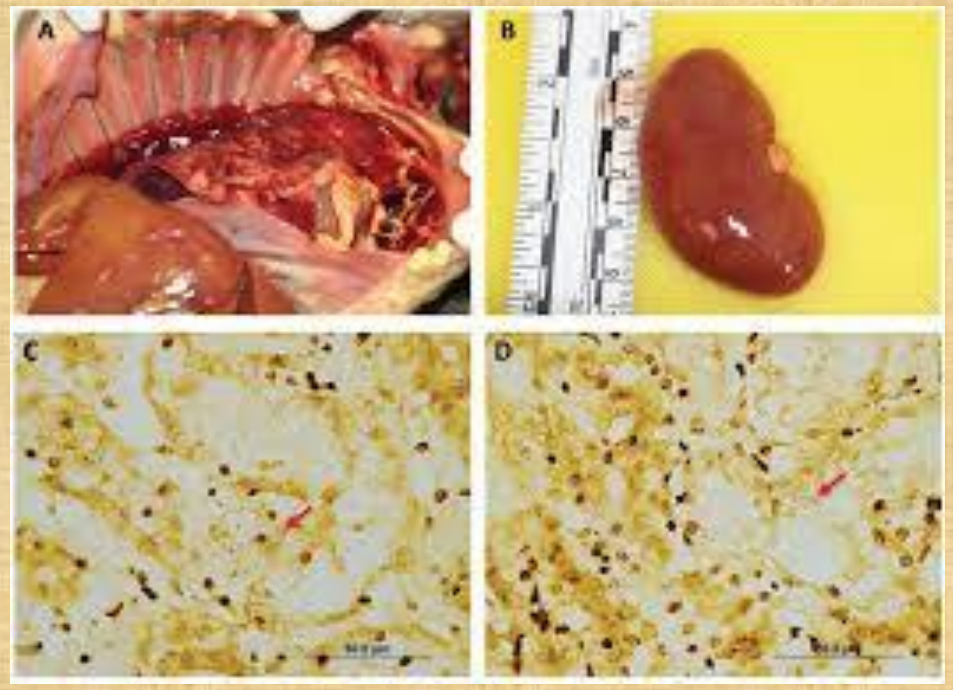
Treatment

- Ampicillin 20–30 mg/kg IV q6–8h
- Penicillin G 25,000–40,000 U/kg IV q6–8h
- Doxycycline 5 mg/kg PO q12h or 10 mg/kg PO q24h
- Renal Injury
- Hepatic Injury
- Pulmonary Injury

Hospitalized Patients

- For these dogs, renal function, electrolytes, acid-base status, packed cell volume, and serum protein levels should be monitored daily (or more frequently if markedly abnormal). During the course of hospitalization, complete blood counts every 48 hours are recommended to assess for thrombocytopenia. Biochemical changes often normalize within 1 to 2 weeks of therapy. As the polyuria resolves and the patient can maintain adequate hydration without additional fluid support, IV fluids can be tapered off and the dog can be discharged from the hospital. However, these patients should be re-examined within 1 week of discharge and then every 1 to 3 weeks thereafter until clinically stable.

- Place warning signs on patient’s cage
- Limit movement of patient through the hospital (although isolation is not needed)
- Wear personal protective equipment (gloves, disposable gown, eyewear/facemask) when handling the patient
- Do not pressure wash animal cages (to avoid aerosolization of leptospires)
- Minimize urinary contamination (walk the patient frequently)
- Clean with disinfectant solutions that will inactivate leptospires (e.g., bleach, iodine-based products, accelerated hydrogen peroxide, quaternary ammonium)
- Launder bedding normally with hot water and detergent


A
B
C
D

Cats vaccination

- **Core Vaccines for Cats**
- Core vaccines are those recommended for all cats, no matter where they live or under what conditions.
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- The four core vaccines for cats are:
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- Rabies
- **FVRCP:**
  - **Feline Rhinotracheitis Virus/Herpesvirus 1 (FVR/FHV-1)**
  - **Feline Calicivirus (FCV)**
  - **Feline Panleukopenia (FPV)**
-


Feline Rhinotracheitis-
Calici-Panleukopenia-
Vaccine
Modified Live Virus
FELOCELL
3

Noncore vaccines

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- Vaccines that are appropriate for some cats in some circumstances are considered noncore vaccines (or lifestyle vaccines).
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- The noncore vaccines include:
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- Feline *leukemia* virus (FeLV)
- *Chlamydophila felis*
- *Bordetella bronchiseptica*
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FELINE VIRAL RHINOTRACHEITIS

- Feline viral rhinotracheitis (FVR) is an infectious respiratory disease of cats characterised by fever, conjunctivitis, nasal and ocular discharges and sneezing.
- It is caused by a herpesvirus (feline herpesvirus 1) which is the most common agent found in the feline respiratory disease complex which also commonly includes feline calicivirus, chlamydiosis and mycoplasmasosis

Clinical signs

- Fever
- Depression and anorexia
- Sneezing
- Ocular and nasal discharges
- Acute conjunctivitis may be a feature and lead to ulcerative keratitis.
- Tongue ulceration and pneumonia may also occur.
- Pregnant cats may abort.

Transmission

- FVR is acquired through inhalation of aerosols. The virus is spread through coughing and sneezing by infected cats. Droplets may spread the infection up to a metre, so close contact between infected and susceptible cats is generally necessary.
- Ten per cent of recovered cats become asymptomatic carriers. Stress exacerbates shedding of virus by carriers.

Treatment

- Sponging away exudates around eyes and nostrils
- Maintaining patency of airways and improving airflow with steam vaporisers and inhalation decongestants
- Intravenous fluids for treating any dehydration
- Antibiotics to control secondary bacterial infections
- Stimulating appetite with strong smelling foods (e.g. sardines)

Feline calci virus (FCH)

- Feline calicivirus infection is a common respiratory disease in cats. The virus attacks the respiratory tract — lungs and nasal passages — the mouth, with ulceration of the tongue, the intestines, and the musculoskeletal system. It is highly communicable in unvaccinated cats, and is commonly seen in multicat facilities, shelters, poorly ventilated households, and breeding catteries.

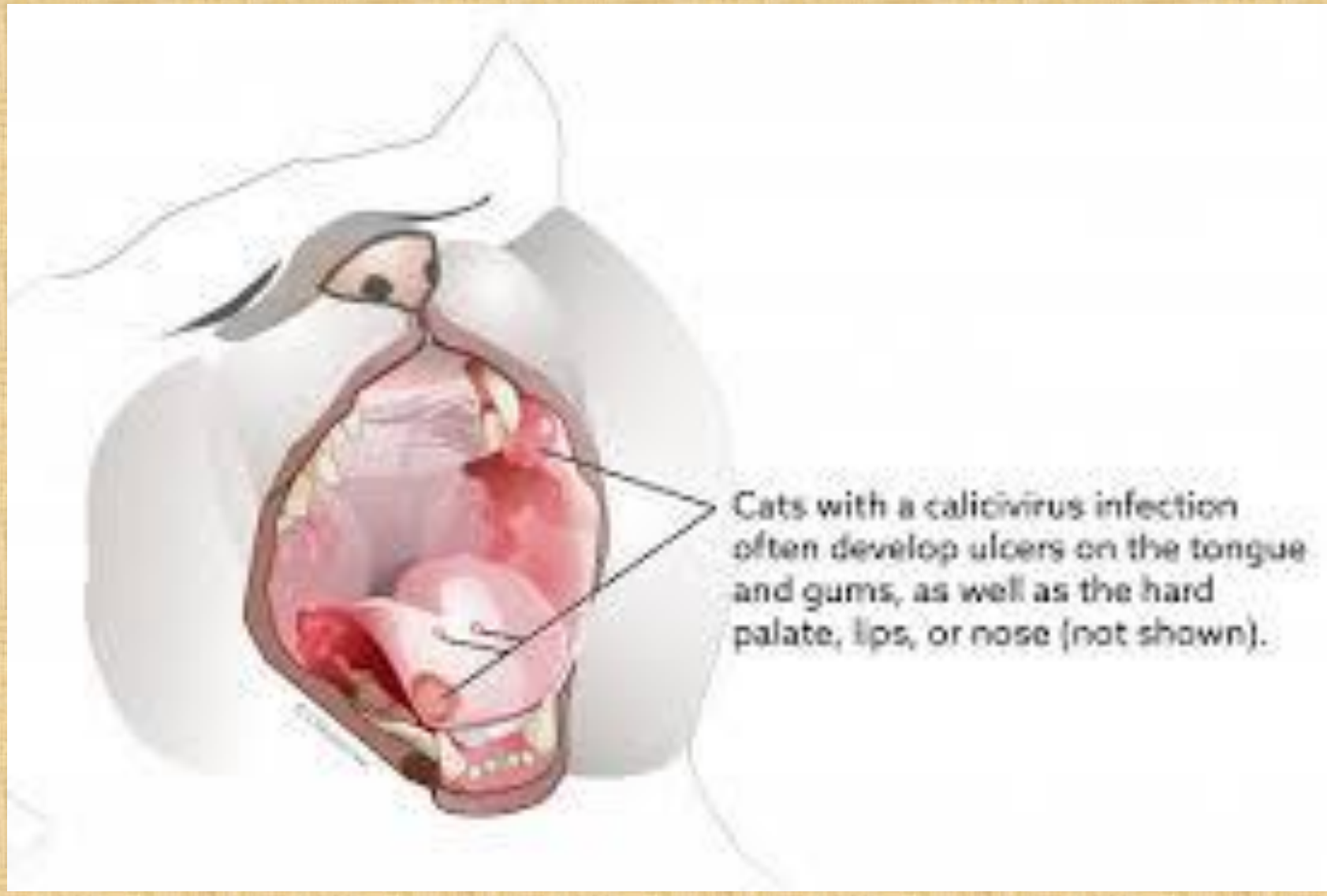
- While vaccination against the calicivirus is strongly advised, vaccinations have failed to decrease the prevalence of the disease. This infection can occur in cat of any age, but young kittens older than six weeks have been found to be most susceptible.

Symptoms and Types

- Loss of appetite (anorexia)
- Eye discharge
- Nasal discharge
- Development of ulcers on tongue, hard palate, tip of nose, lips or around claws
- Pneumonia
- Difficult breathing after development of pneumonia
- Arthritis (inflammation of joints)
- Lameness
- Painful walk
- Fever
- Bleeding from various sites

Treatment

- Your cat will need to be hospitalized for intensive care and treatment if it has developed pneumonia or is experiencing severe life-threatening hemorrhages. Oxygen will be given if your cat is unable to breathe comfortably due to pneumonia. While there is no specific medication that is given for viral infections of this type, broad spectrum antibiotics are given to prevent or treat the secondary bacterial infections that are commonly seen with viral infections. Ophthalmic antibiotics are prescribed for use in the affected eyes, and pain killers can be prescribed for patients with painful walking.



Cats with a calicivirus infection often develop ulcers on the tongue and gums, as well as the hard palate, lips, or nose (not shown).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FELINE PANLEUCOPAENIA

- Nature of the disease
- Feline panleucopaenia (FPL) is a widely distributed virus disease, closely related to canine parvovirus type 2, of cats that produces characteristic white blood cell changes. It can be associated with high mortalities in young cats.

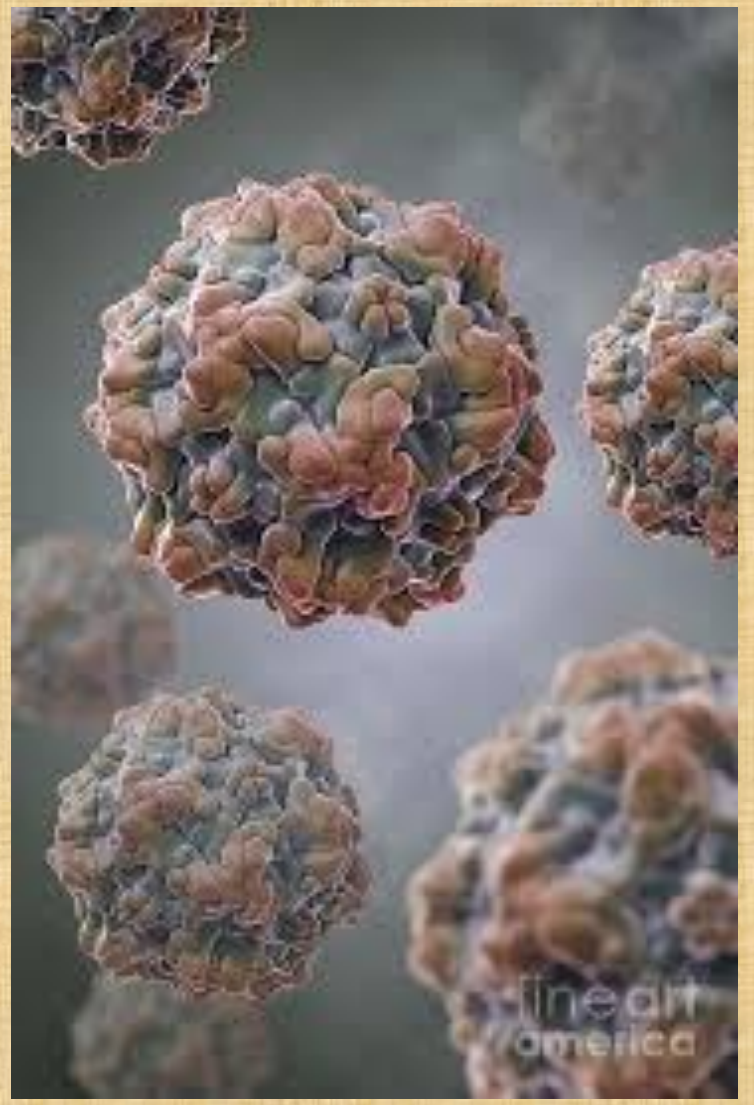
Clinical signs

- There is wide variation in the severity of clinical disease from sub-clinical to peracute fatal disease. A majority of unvaccinated adult cats in urban settings test positive and sub-clinical infections appear common. Peracute disease usually occurs in young kittens (less than 6 months) — there is sudden onset of depression, vomiting and death within 12-24 hours.Usual signs of FPL infection are:
- Fever
- Profound depression
- Rapid and severe weight loss
- Dehydration followed by:
- Vomiting
- Diarrhoea follows 1-2 days later
- Abdominal pain is usually presen

Prevention and Treatment

- Control / vaccines
- Aggressive supportive treatment can significantly reduce the mortality associated with FPL:
- Fresh whole blood transfusion to provide some leukocytes
- Fluid therapy to counteract dehydration
- Antibiotics to counter secondary bacterial infections
- Anti-emetics and anti-cholinergic to control severe vomiting and diarrhoea
- B vitamins until the cat starts eating again


FPV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Feline Panleukopenia

Signs, Diagnosis, Treatment, and Prevention

Panleuk is...

- Caused by a parvovirus
- Highly contagious
- Life threatening - especially to kittens
- Not contagious to people

Panleuk kittens may show...

Diarrhea
Vomiting
Depression
Lethargy
Anorexia
Death

Prevention:

With a modified-live vaccine at shelter intake or at 6-8 weeks, not a puppy 2 weeks until 16-20 weeks old

Testing:

Parvovirus SNAP test

Supportive Care

Proper Disinfection:

#1

#2

Remove organic debris

#3

Use an effective chemical (Bleach, Accel, Trifectant)

#4

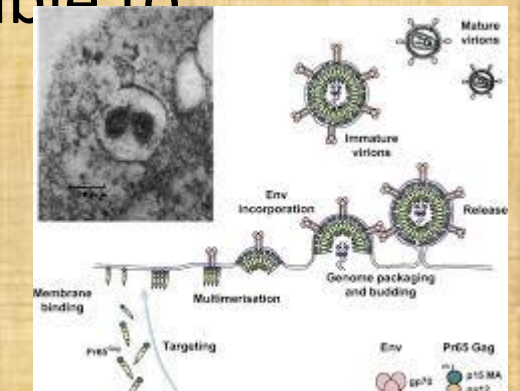
Let stand for 10 minutes. Repeat twice.

Adoption

Feline Leukemia Virus (retrovirus)

- Feline leukemia virus (FeLV) is second only to trauma as the leading cause of death in cats, killing 85% of persistently infected felines within three years of diagnosis. The virus commonly causes anemia or lymphoma, but because it suppresses the immune system, it can also predispose cats to deadly infections.

- Yet, exposure to the feline leukemia virus doesn't have to be a death sentence; about 70% of cats who encounter the virus are able to resist infection or eliminate the virus on their own



How Feline Leukemia Virus Is Transmitted

- Feline leukemia is a disease that only affects cats -- it cannot be transmitted to people, dogs, or other animals. FeLV is passed from one cat to another through saliva, blood, and to some extent, urine and feces. The virus does not live long outside the cat's body -- probably just a few hours. Grooming and fighting seem to be the commonest ways for infection to spread. Kittens can contract the disease in utero or through an infected mother's milk. The disease is often spread by apparently healthy cats, so even if a cat appears healthy, it may be infected and able to transmit the virus.

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Symptoms of Feline Leukemia Virus

- Pale gums
- Yellow color in the mouth and whites of eyes
- Enlarged lymph nodes
- Bladder, skin, or upper respiratory infections
- Weight loss and/or loss of appetite
- Poor coat condition
- Progressive weakness and lethargy
- Fever
- Diarrhea
- Breathing difficulty
- Reproductive problems like sterility in unspayed female cats
- Stomatitis – Oral disease that includes ulceration of gingiva
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Diagnosing Feline Leukemia Virus

- Your veterinarian can diagnose the disease by conducting a simple blood test called an ELISA, which identifies FeLV proteins in the blood. This test is highly sensitive and can identify cats with very early infections. It is important to remember that some cats will manage to clear the infection within a few months and will subsequently test negative.

- A second blood test, the IFA, detects the progressive phase of the infection, and cats with positive results for this test are unlikely to clear the virus. The IFA test is performed at a laboratory, rather than in your vet's clinic. In general, cats that are IFA-positive have a poor long-term prognosis

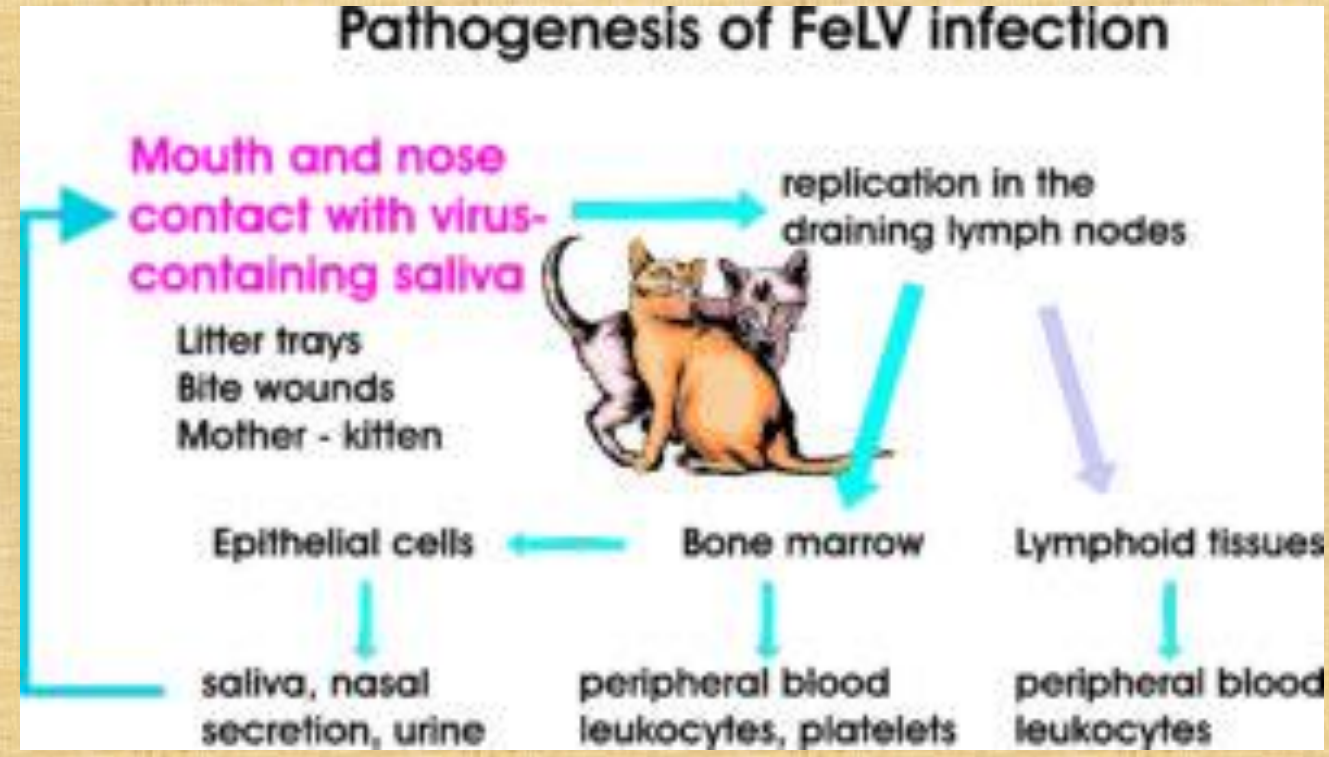
Treatment for Feline Leukemia Virus

- Eighty-five percent of cats persistently infected with feline leukemia virus die within three years of diagnosis. However, regular veterinary check-ups and good preventive health care can help keep these cats feeling well for some time and help protect them from secondary infection. Twice-yearly physical examinations, laboratory testing, and parasite control can prevent complications and identify problems quickly. All FeLV infected cats should be kept indoors and be neutered.

- There is presently no cure for FeLV infection. Secondary infections can be treated as they appear, and cats with cancer can receive chemotherapy. However, the prognosis is grave for cats with bone marrow compromise or widespread lymphoma.

- Keeping your cat indoors and away from infected cats is a sure way to prevent him from contracting FeLV. In addition, vaccines can be given to cats at high risk of exposure, such as those who go outside or live in shelters or catteries. Only cats that test negative for FeLV should be vaccinated, and even those that have received the vaccine should be tested if there has been a possible exposure to the virus. The test should not be given before 30 days after the possible exposure. According to the American Association of Feline Practioners, any cat that's sick should be tested. That's because there is a wide variety of health issues that can be associated with the virus.

- New cats or kittens over eight weeks of age should be tested for the virus before being introduced to a multi-cat household. Most veterinarians counsel against introducing a new cat into a household with a FeLV-positive cat, because he or she may be at risk for contracting the infection – even with vaccination. In addition, the stress of a newcomer may adversely affect the FeLV-positive cat.


Pathogenesis of FeLV infection
Mouth and nose contact with virus-containing saliva
Litter trays
Bite wounds
Mother - kitten
replication in the draining lymph nodes
Epithelial cells
Bone marrow
Lymphoid tissues
saliva, nasal secretion, urine
peripheral blood leukocytes, platelets
peripheral blood leukocytes