

Equine Drugs & Medications

*Presented by Kathy Ott, DVM – Cleary Lake Veterinary Hospital
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AGENDA

- A) Commonly Used Drugs
 - 1) Anti-inflammatories (NSAIDs)
 - 2) Antibiotics
 - 3) Sedatives
 - 4) Steroids
 - Therapeutic
 - Hormonal
 - 5) Muscle Relaxants
 - 6) Antihistamines
 - 7) Blocking Agents
 - 8) Reproductive Drugs
 - 9) Anti-ulcer Drugs
 - 10) Eye medications
 - 11) Dewormers
 - 12) Topicals
 - 13) Diuretics
 - 14) Miscellaneous
- B) Properly Giving Medications
- C) Show Regulations & Guidelines
 - 1) USEF
 - 2) AQHA
- D) Race Drugs
- E) Generic Drugs
- F) Compounded Drugs
- G) Open Discussion

1. Non-steroidal Anti-inflammatories (NSAIDs)

- Reduce inflammation (decreases swelling), control pain (analgesic) and reduce fever (Anti-pyretic)
- Excessive use can cause gastric or intestinal ulcers and/or kidney or liver damage and reduce clotting ability
- **Always take temperature (99-101) of horse first and confer with veterinarian prior to giving.*

Phenylbutazone (bute)

- Comes in pills, paste, powder or injectable
- Injectable can only be given in the vein, NOT in muscle; it will cause severe muscle damage. If it leaks outside the vein it can cause severe phlebitis or thrombosis of jugular vein.
- Most likely of the NSAIDs to cause ulcers from high doses or long-term use.

Flunixin meglumine (Banamine®)

- Available in paste or injectable form
- Good drug for colic and muscle pain
- Allow 30 – 40 minutes to take effect
- Intramuscular injections of Banamine can cause severe or fatal clostridial myositis and are not recommended.
- IV injections can accidentally be given intra-arterially (carotid artery) and cause seizures, collapse and death.

Ketoprofen (Ketofen®)

- Shorter half-life than above drugs so less damaging but also shorter time it's effective.
- Can be “stacked” with above drugs for USEF showing if proper documentation filed (until December 2011).
- Labeled IV only but given IM as well.
- Many drugs sound and “look” alike though can be greatly different uses and actions.

Firocoxib (Equioxx®)

- Newer drug with fewer GI side effects (was Vioxx®)
- Available in paste or injectable (IV) forms
- More expensive than above drugs.

Acetylsalicylic acid (Aspirin)

- Has a very short half-life in horses
- Primarily used for eye problems such as uveitis (moon blindness).
- Comes in powder form and is given orally twice daily.

Dipyrrone (Novin®)

- Antipyretic, antispasmodic used for colic
- Forbidden for USEF showing.

Naproxen (Naprosyn®; Aleve® in humans)
Meclofenamic acid (Arquel®) – no longer available

Surpass® (Diclofenac) – see under topical

- Has limitations on amount used.

DMSO (dimethyl sulfoxide - Domsoso®)

- Used topically, IV or orally via stomach tube
- Used for central nervous system problems, founder, swelling and inflammation.

“Natural anti-inflammatories”

- These are “drugs” too and in high doses may have side effects.
- Includes devils claw, yucca, grape seed extract.

2. Antibiotics

- Used to treat infections; best prescribed based on culture and sensitivity as a lot of resistance occurs.
- GI upset and diarrhea are the most common side effects.
- Frequency of administration varies greatly between antibiotics.

Oral

TMS, SMZ, Tucoprim®, Uniprim® (sulfas)

- Most commonly used antibiotics; most resistance as well.
- Inexpensive with little side effects.

Doxycycline

- Acts as an anti-inflammatory as well as an antibiotic
- Used for tick-borne diseases and susceptible infections

Metronidazole

- Very bitter taste, often given rectally or will cause anorexia
- Used for anaerobic infections

Injectables

Procaine Penicillin

- Gram-positive coverage, lots of resistance developing; given IM
- Can cause anaphylactic reaction or procaine reaction – we recommend against its use unless prescribed by a veterinarian.
- Prohibited USEF or AQHA showing due to Procaine
- Available over the counter; recommend not purchasing (storage problems)
- Potassium penicillin can be given IV but is very expensive and reactions can still occur

Gentamicin

- Gram negative coverage; given IV or IM. Can sting when given.

Ceftiofur (Naxcel®)

- Given IM. Expensive, but few side effects.
- Good broad-spectrum coverage, especially gram-positives.

Oxytetracycline

- Given IV for Lyme, Anaplasmosis, etc.

Enrofloxacin (Baytril®)

- Given IV or orally. Expensive. DO NOT use in foals.

Antifungal

Griseofulvin

- Oral powder – available compounded.

Antiprotozoals

Ponazuril (Marquis®)

- Treatment for EPM – 28-day course of oral paste

Diclazuril (Protozil®)

- Brand-new EPM treatment – oral granules

3. Sedatives/Tranquilizers

Acepromazine

- Most common. Available in paste or injectable (IM or IV).
- Best for sheath cleans (penile paralysis?)
- Not a pain killer, very slow onset.
- Decreases seizure threshold; be careful in cushingoid/older horses.
- Lowers blood pressure (vasodilates); don't use if bleeding.
- Orally: takes 2 hours to work; IM: takes 45 minutes; IV: takes 10-15 minutes

Detomidine (Dormosedan®)

- Available in injectable (IM or IV) or gel (given under tongue)
- Fast acting, good pain killer, causes significant ataxia

Xylazine (Rompun)

- Available in injectable (IM or IV), can be mixed with ace
- Good pain killer; used in refractory colic cases, causes ataxia

Romifidine (Sedivet®)

- Same class as detomidine and xylazine
- Causes sedation without as much ataxia

Butorphanol (Torbugesic®, Dolorex®)

- Opioid – controlled substance, good pain killer
- Can cause excitement if given alone
- Generally given with xylazine or detomidine

Reserpine

- Oral or injectable; tests for 30 days
- Injectable can cause severe diarrhea
- Is actually a human antipsychotic drug
- Used for horses on stall rest (pills are best – can titrate dose)

Fluphenazine

- Injectable human anti-psychotic medication
- Dangerous; severe side effects can occur. Used some at racetracks.

Other quieting agents

- Dexamethazone, Valerian root, Magnesium Sulfate, B-1, ACTH

4. Sterioids

Therapeutic – Corticosteroids (“cortisone”)

Dexamethazone

- Most commonly used for allergies (heaves, hives, etc), anaphylactic reactions, severe inflammation, spinal or brain trauma.
- Has mild quieting effect
- Comes as injectable (IM or IV) or powder
- Powder is compounded and has short expiration.
- Injectable as 2mg/mL or 4mg/mL (3mg/mL active ingredient)

Triamcinolone (Vetalog®, Kenalog®)

- Longer acting; used primarily in joints; protective effect on cartilage

Methylprednisolone (Depo-Medrol®)

- Used primarily in joints; can cause cartilage damage in long term
- Don't confuse with Depo-Provera/P-4

Prednisolone (Solu-Delta Cortef®)

- Fast acting! Solu-Delta Cortef is injectable.
- Oral prednisone is not absorbed by horses; needs to be prednisolone (available in tablets)

Hormonal (DO not handle if pregnant)

Altrenogest/Progesterone (Regu-Mate®)

- Oral use; regulates mare's cycles, keep mares out of heat
- “Legal” for mares (USEF) but not geldings or stallions; not tested for.
- WEAR GLOVES!

P-4 (Depo-Provera®/“Depo”; injectable progesterone)

- Can cause muscle soreness.

New injectable progesterone

- More expensive than Regu-Mate.
- From BETS lab – has 2 new compounded injectable altrenogests: 10 day & 30 day

Synovex® implants

- Combination of progesterone and estrogen
- Used to suppress estrus (heat)

ECP (estrogen/estradiol)

- Used for “locking stifles”

Boldenone (Equipoise®)

- Muscle builder & appetite stimulant
- Formerly used at the racetrack; potential for abuse

Stanazolol (Winstrol®) & Testosterone

- Other anabolic steroids with potential for abuse

5. Muscle relaxants

Methocarbamol (Robaxin®)

- Available only in tablet form now (500mg or 750mg)
- OK to use USEF in regulated doses (i.e. 10 500mg tabs, 6.5 750mg tabs)
- Compounded forms available in paste or injectable

Dantrolene

- Useful in treatment/management of exertional rhabdomyolysis (tying up)
- Illegal USEF, AQHA

Lactanase

- Given IV; compounded only; questionable efficacy; not tested for

AzoturX®

- “Natural” oral supplement for tie-up horses

6. Anti-Ulcer drugs

Omeprazole (GastroGard®, UlcerGard®)

- FDA approved
Note: Compounded omeprazole (there is no generic for horses) and the human form Prilosec® are available but are not FDA-approved and do not have the same absorption and bioavailability as GastroGard and UlcerGard. GastroGard and UlcerGard are microencapsulated and survive the stomach acid to be absorbed in the duodenum.

Sucralfate

- Used in gastric hind gut ulcers. Questionable availability.

Cimetidine

- Not proven effective in gastric ulcers in horses; used more as anti-tumor medicine for melanomas

Oral supplements

- U-7®, Neigh-Lox®, Ulcrin®
- Make many claims but no peer-reviewed research to support them

7. Antihistamines

- Used for allergies or allergic reactions; illegal for USEF & AQHA

Hydroxyzine

- Human drug; good for hives; comes in tablets/pills

Pseudoephedrine/Pyrilamine (Tri-Hist Granules™)

- Equine powder; questionable efficacy; granules

Injectable antihistamines

- VERY dangerous in the horse i.e. Tripelennamine (Recovr®)

8. **Blocking Agents**

- Illegal USEF or AQHA – can be withheld 24 hours and medication form filled out by veterinarian if used for a therapeutic purpose.

Lidocaine

- Most commonly used to block for sutures, etc.

Carbocaine

- Longer acting & less irritating than lidocaine
- Used for nerve blocks and joint blocks

Pitcher Plant Extract (Sarapin®)

- “Natural” blocking substance; illegal but not tested for

Topicals

- Benzocaine (EPF-5®/Equine Pain Formula)
- Capsaicin (Equiblock®)

Illegal venoms – cobra venom; cone snail venom

- No legitimate therapeutic uses; can cause sloughing of skin.

9. **Reproductive Drugs (DO NOT handle if pregnant)**

Altrenogest (Regu-Mate®)

- Oral – Keeps non-pregnant mares out of heat and keeps pregnant mares pregnant

Prostaglandins (Lutalyse®, Prostin®)

- Brings mares into heat
- IM injection only; can cause severe sweating and cramping 15 minutes after administration

Oxytocin

- Helps with milk let-down and to clear uterus; causes cramping
- Do NOT give to pregnant mares

HCG – human chorionic gonadotropin (Chorulon®)

- Induces ovulation

Deslorelin

- Induces ovulation

Domperidone

- Helps with milk production/let-down in mares not producing enough milk

10. Eye Medications

- Tubes of medicine look very similar!!
- Consult a veterinarian first and check expiration dates!

Antibiotic ointments/drops

- Triple Antibiotic: Neomycin/Polymyxin B/Bacitracin
- Gentamicin, chloramphenicol, ciprofloxacin, oxytetracycline
- Used for treatment of corneal ulcers and conjunctivitis

Steroid ointments/drops

- Hydrocortisone and dexamethasone; usually combined with an antibiotic
- Dangerous to use if eye is injured
- Used for uveitis or conjunctivitis

Atropine ointment/drops

- Dilates the eye – use sun protection!
- Relieves pain associated with constricted pupil
- Can cause ileus (reduced gut motility) and colic with long-term use

Serum

- Horse's own serum, spun down from whole blood
- Healing growth factors and anti-inflammatory proteins help heal ulcers

Antifungal drops

- Miconazole

11. Joint Support Medications

Polysulfated glycosaminoglycans – PSGAGs (Adequan®)

- Given IM for joints, tendons, ligaments
- Can also be given intra-articularly, usually in combination with a corticosteroid

Hyaluronic acid (Legend®, Hyalovet®, Hyvisc®, Hylartin V®)

- Legend is given IV, primarily for joints
- Other forms used intra-articularly, usually in combination with a corticosteroid
- Some forms derived from rooster combs; others are laboratory-generated

N-glucosamine

- Compounded, unknown efficacy
- Component of cartilage/synovium

Oral Joint Supplements (“neutraceuticals”)

- Hundreds of products available; none are FDA-approved
- Components can include glucosamine, chondroitin sulfates, MSM, avocado soy unsaponifiables (ASU), hyaluronic acid, hydrolyzed collagen, vitamin C, herbal ingredients, etc.
- Our top choices are: Platinum CJ, Cosequin ASU, SmartFlex products

12. Diuretics

Acetazolamide

- Diuretic used to control HYPP in quarter horses and paints; also used for glaucoma

Furosemide (Lasix®, Salix®)

- Used to treat severe edema and congestive heart failure
- Given to racehorses pre-race to reduce risk of exercise-induced pulmonary hemorrhage (EIPH – “bleeding”); also in barrel horses

Trichlomethiazide/Dexamethasone (“Tri-dex”/Naquasone®)

- Used to control limb edema/inflammation

13. Miscellaneous Drugs

Clenbuterol (Ventipulmin®)

- Bronchodilator; illegal for showing
- Useful in severe cases of recurrent airway obstruction (heaves) or inflammatory airway disease

Pergolide (formerly Permax®)

- Only available compounded; used to treat Cushing’s disease

Levothyroxine

- Supplemental thyroid hormone for metabolically challenged horses

Tiludronate (Tildren®)

- Anti-osteoclastic drug; keeps bone from self-destructing
- Useful in true navicular disease and other cystic diseases (stifle OCDs)
- Very expensive – have to order from overseas

Isoxsuprine

- Vasodilator; used to increase blood flow to feet
- Currently only available compounded. OK for USEF.

Vitamin B12 (Cyanocobalamin)

- Appetite stimulant, “upper”

14. Topicals

Antibiotics/antibacterials/wound treatments

- ◆ Nitrofurazone (yellow ointment) – many trade names. Use gloves! Also good for sweat wraps.
- ◆ Chlorhexadine - Dermachlor®, Nolvasan®; Good topical antibiotic.
- ◆ Scarlet oil/BluKote® – Very irritating
- ◆ Caustic powder/ WonderDust® – proud flesh control
- ◆ Gentamicin/betamethasone spray – antibiotic & anti-inflammatory
- ◆ AluSpray® (aluminum): “liquid bandage”
- ◆ SWAT – bug repellent built in
- ◆ Sunscreen – good for white noses
- ◆ Zinc oxide – sunscreen/soother on irritated skin
- ◆ Iodine – best for use in feet
- ◆ Thrush treatment – Kopertox (copper naphthenate), Thrush Buster, bleach, iodine, dry cow treatment (Tomorrow® - cephalosporin antibiotic)

Pain control/anti-inflammatory

- Surpass®, DMSO, EquiBlock®, EPF-5®

15. Dewormers

- Look for chemical names (active ingredient!)
Note: Brand names can cause confusion – e.g. Zimectrin® is the same as Parid Eq® (both are ivermectin); Equimax® is the same as Zimectrin Gold® (both are ivermectin and praziquantel)
- Basic Dewormers by chemical:
Avermectin class: ivermectins (see above), moxidectin (Quest®)
Pyrantel class: Strongid®, Strongid C®
Benzimidazoles: fenbendazole (Panacur®), oxibendazole (Anthelcide EQ®)
Praziquantel: Added for tapeworms

How to give medications

- Always take temperature first!
- Check expiration date
- Call veterinarian!
- Prescription medications: Veterinarians must have a proper client/patient relationship and have seen horses within the last 12 months in order to dispense medications. **State Law!**
- Always continue medications for full treatment recommendation and stay on schedule (especially important for antibiotics)
- Notify veterinarian if horse is not tolerating treatment or if there are any problems administering the medication as directed.

Oral medications – pills, powder, paste

- Pills/powder – can give in feed
 - Can crush or grind in coffee grinder
 - Some can dissolve in syringe and give in mouth as paste
- Pastes – check that the tab is set prior to administration (e.g. one client gave an entire tube of wormer to a miniature horse, and another client gave an entire tube of bute paste to pony)
- New Dormosedan gel – Goes UNDER the tongue (sublingual)
- Double-check dosages
- Check with your veterinarian about placing medications in feed, or additives that may make administration easier, such as molasses, karo syrup, apple sauce, or sugar-free maple syrup for insulin-resistant horses.

Injectables

- Always use a new needle and sterile syringe.
- Intravenous (IV) injections should only be given by trained personnel: dangers include hitting the carotid artery (causes seizures, violent reactions and occasionally death) or injecting subcutaneously, causing local irritation
- Intramuscular (IM) injections can be given in neck, hind leg (semimembranosus) or pectorals (not the gluteals!). Beware of bacterial infections possible with any IM injection.
- Subcutaneous (SQ) injections – allergy injections only

Eye medications

- Do not touch eye with the tip or applicator; hold it off to side
- Can use a tuberculin syringe under the eyelid
- Don't need to place medication directly over the injury – the eye will spread out the medication effectively
- Wait 5 minutes between eye medications

Show regulations & Guidelines for USEF

USEF & AQHA call #1-800-MED-AHSA(633-2472) hotline

Dexamethasone

- IV or IM, used for therapeutic purposes only
- 2mg/100lb > 12 hours = 1200lb = 24 mg. (1200lb = 12ml of 2mg/ml)
- Note: 4mg/mL Dex is actually 3mg/mL active ingredient, so for a 1200-lb. horse you need to actually give 8mLs, not 6mLs.
- Can be used in combination with an NSAID.
- Use no more than 5 days in a row.

Other Steroids

- Triamcinolone (Vetalog), methylprednisolone (Depo-Medrol)
- If given for therapeutic use, less than 7 days prior to competition
- Must fill out drug report (i.e. injecting joints).

NSAIDS – (See list page 3)

- Dexamethasone and Methocarbamol are not NSAIDs and can be used in conjunction with any one of the NSAIDs.

NEW RULES:

- If using more than one NSAID within 7 days, you must file an NSAID medication report. As of December 1, 2011, you can no longer use 2 NSAIDs within 7 days. (Note: this may change to 3 days).
- Also new rule change proposed to allow Banamine for colic. This would have a 24-hour withdrawal and file medication report.

Dipyrone – cannot be used within 7 days

Isoxsuprine – can now be used anytime with no report

Tildren – can be given at anytime with no report

Regu-Mate & injectible progestins – not actually “legal” for geldings and stallions, but not forbidden substances either.

Magnesium sulfate (MgSO₄) – given IV at higher dosage or too quickly can cause death – several reports of this last season. Not “legal”; USEF working on threshold levels.

“Natural” substances – be careful of what may or may not be in them!

Tranquilizers – Must be withdrawn 7 days prior unless used for a therapeutic reason. Does not include shipping, clipping, floating, mane pulling or shoeing.

Forbidden substances include:

- Bronchodilators such as Ventipulmin
- Antihistamines such as hydroxyzine and Tri-Hist.
- Caffeine – No coffee for your horse or Chocolate (theobromine).
- Devil’s Claw, lavender, passionflower and valerian root.
- Furosemide (Lasix)
- Guafenisin (cough suppressant)
- Procaine penicillin

AQHA (differences from USEF)

- Isoxsuprine – OK but has limits on amounts.
- Dexamethasone – similar to USEF.
- NSAIDs – only 1 allowed.
- Furosemide – Allowed 4 hours out

Race Drugs

- 1 NSAID (bute, flunixin or ketoprofen) allowed 24 hours before race
- Furosemide allowed 3-4 hours before race depending on jurisdiction – helps prevent bleeding
- Other bleeder medications are illegal, but not always tested for, and are short-acting
- Erythropoietin – “Blood doping”: increases stamina but can cause death (fatal anaphylactic reactions). Illegal.
- Cobra venom, cone snail venom – blocking agents
- Anabolic steroids – illegal since 2008
- Horses coming off track usually “clean” of drugs, although trainers will often give bute or Banamine themselves
- ACTH, thiamine (vitamin B1), MgSO₄ – quieting effects (illegal)
- All FDA-approved drugs also have withdrawal periods, as with USEF, but they differ from state to state

Generic Drugs

- Generic refers to a drug name not protected by a trademark. i.e. Flunixin meglumine (Banamine).
- These drugs are FDA-approved but no longer under patent.
- Note: When a drug is approved by the FDA, the manufacturer receives rights to that drug for a certain amount of time. The drug companies often spend years of time and millions of dollars to do research to have a drug approved.
- Drugs that currently have trade rights include Regu-Mate and GastroGard. There are no valid generic forms of these drugs.

Compounded Drugs

- Refers to medications that are mixed by compounding pharmacies and are not FDA-approved
- These are allowed in veterinary medicine by a prescription, ONLY if there is no similar FDA-approved product available.
- For example, compounded omeprazole is illegal, because there is an FDA-approved product available (GastroGard, UlcerGard).
- Compounded drugs are NOT guaranteed for safety, efficacy or actual amount of drug present. They can be both ineffective and dangerous to use.