A) Commonly Used Drugs
   1) Anti-inflammatory (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.

**Dipyrone (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 - Domoso®)
  • 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. Steroids

**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

**Trichlormethiazide/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® - cephalirin antibiotic)

**Pain control/anti-inflammatory**
- Surpass®, DMSO, EquiBlock®, EP-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 with in 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 NSAID 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)
- Guafensin (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
- 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.