

Conformation and Lameness

Discuss Lameness which might be associated with conformation faults. Include best uses and limitations of horses with listed conformation faults.

Base Wide:

When viewed from the front, horse's feet stand to the outside (wider) than the plumb line. Often seen in horses with a narrow chest, a horse that is base wide will incur added stress on the inside of its leg and foot. It can lead to lameness resulting from medial ringbone and/or sidebone and can cause hoof balance problems because a base wide horse lands and bears more weight on the inside of the foot. Although not considered a lameness in can lead to medial windpuffs. Best use and limitation depends on the severity of the fault, many horses with this fault can have a variety of athletic careers.

Toed Out:

When viewed from the front, horse's toes point away from each other. It may be accompanied by either base wide or base narrow conformation. It often leads to interference such as winging or plaiting and puts additional stress on the inside of the limb. If not managed through good shoeing/trimming the hoof will flare to outside and be upright inside which can add more stress resulting in the development of ringbone. If severe, horses with this fault may not be best used for performance such as dressage, jumping or speed events like barrel racing, since it can affect movement quality and cause interference. Better use would be a lower impact activity such as english/western pleasure or trail riding.

Sickle hocks:

When viewed from the side, horse stands under at an excessive angle from the hock. This causes excess stress at the back (plantar aspect) of the hock which primarily leads to strain on the plantar ligament resulting in lameness from a curb or strain of hind tendons. A horse with this fault would probably hold up to uses like upper-level dressage, eventing, racing, or high-level jumping.

Contracted heels:

This is a condition when the foot is narrower than normal especially at the back half or heel. It can be caused by poor shoeing or excessive dryness of the foot. It can also be the result of another ongoing lameness that prevents the horse from pressing the foot firmly to the ground which leads to reduced circulation through the digital cushion. Contracted heels are most often associated with navicular disease. Unless resolved by corrective shoeing and hoof care, a horse with this problem is best used for a lower impact activity like pleasure/trail riding, or a lower level lesson horse.

Long Sloping Pasterns:

This is when the angle of the pastern is greater than 45 degrees with a pastern that is too long for the length of the limb. This fault predisposes the horse to injury of the flexor tendons, suspensory ligament and sesamoid bones. Horses with this fault should not be used for high stress activity like jumping, eventing, racing or endurance.

Over at the Knee:

When viewed from the side, this fault shows a forward deviation of the knee (Carpus) and is usually associated with contracted tendons. This fault puts excess stress on structures both in front and in back of the knee, such as the sesamoid bones, the superficial flexor tendon, the extensor tendon, and the suspensory ligament. When severe, it can also lead to a less stable knee joint and could result in stumbling. This is the least problematic of all knee conformation faults and is often seen in race horses but, if severe, horses with this fault may not be safe for a high level of jumping.

Observe a mount in action and assess his athletic ability as it may be affected by any of the conformation faults listed above and below:

Straight Shoulder:

This can limit a horse's range of motion and quality of movement for activities such as dressage and jumping. Lessens the ability of a horse to fold knees when jumping and can lead to more concussion. However, it is a conformation point that is actually desired by quarter horse "pleasure horse" breeders because it leads to a shorter, slower stride.

Parrot Mouth:

This is seen as an "over-bite" (malocclusion) of the upper dental arcade. It generally will not affect the athletic performance of horses used for western riding activities such as reining, cutting, or pleasure since the horses are ridden on a loose rein. However, it can severely affect the horse's ability submit to the bit and be ridden with rein contact, therefore horses with this fault, especially if severe, are not the best candidate for a dressage horse. This fault can also lead to problems grazing and chewing and usually require consistent ongoing dental maintenance.

Slab sided:

Generally means less room for heart and lung which results in less endurance (cardiovascular capacity). Therefore, a slab sided horse may not be the best choice for endurance, racing or eventing. Saddles tend to slip more easily on slab sided horses and can be more difficult for a rider to put their leg on.

Observe a mounts motion and identify front and hind leg soundness and unsoundness.

Candidate should be able to assess the free-swing, symmetry, balance and consistency of rhythm of horse's movement. They should know to watch for head bob for front and hind leg lameness and should be able to identify and obvious lameness but not a subtle (grade 1 or 2) unsoundness. Candidate should identify any obvious blemishes or signs of prior injuries such as scars, old bows or bone spavin. Candidate should be able to assess straightness and correctness of horse's movement and be able to identify obvious faults such as paddling, winging, plaiting and interfering.

Discuss the anatomy of the leg, including bones, joints, principal tendons, and ligaments from the shoulder and hip down.

Candidate should be able to list, with a degree of confidence, all major bones in order on the leg such as scapula, humerus, ulna, radius, carpus (number of bones in joint meets standard, naming the bones exceeds), metacarpals, sesamoid, phalanx, and navicular. And be able to do the same for the hind limb such as pelvis, femur, patella, fibula, tibia, and tarsus. Knowing the all the veterinary terms for each bone, the name of each bone in the carpal and tarsal joint and the pelvis would be a demonstration of exceeding the standard.

They should be able to discuss to origin and insertion of primary tendons and ligaments such as flexor tendons, extensor tendon, suspensory ligament (and where it branches), and check ligament. Knowing each function, muscle origin, and lesser known structures such as angular ligament, impar ligament, sesamoidean ligaments and collateral ligaments would clearly exceed the standard.

Choose the best mount of a selection of mounts for a specific purpose.

The candidate should be able to relate the mounts specific characteristics, such as conformation, soundness, movement, and temperament and discuss its most appropriate use in the best interest of the horse and rider.

Teeth

Be able to age a horse's mouth. (When incisors come in), full/dicigious mouth
Be familiar with the foal's mouth, maturing and aging of incisors and cheek teeth, incisors' shapes as wear progresses, know aging related to stars, cups and tooth angles. Know number of teeth, wolf teeth, Galvayne's groove.
Exceeds: able to fluidly put together complete mouth talking about all components of the presented mount.

Shoeing

Be ready to discuss the horse's shoes they are presenting, why they wear them in relation to movement.

Suggest what else might work with their conformation

Know various other shoes and when/why they are used

Be able to explain different studs, caulks, pads, corrective shoeing

Exceeds: Discuss any research currently being discussed in printed material.

Stable Construction/Pasture Management

Describe **parasite** control measures for the horse, the barn and paddock.

What method of de-worming do you use?

Discuss drug classifications?

Describe method of de-worming a new horse at the barn?

What age groups are more at risk of parasites?

What damage do parasites do to the various systems of the horse?

1. Large Strongyles (*Stongylus vulgaris*, *S. edentatus*, *S. equinus*), "blood worms"
General Info: Fairly large (3/4 to 2 in. long). Only *vulgaris* migrates through arteries. *edentatus* and *equinus* migrate through liver and cause less damage.
Life Cycle (*S. vulgaris*):
 - Adults live in cecum and produce eggs
 - Eggs passed in feces
 - Hatch and develop into infective larva which are ingested
 - Pass to SI where they borrow into artery walls, eventually traveling via the arteries to the LI causing arteriole blockage on the way into the cecum
 - Larva develop into adults in the cecumDamage Caused:
 - Arterial damage can lead to thromboembolic colic (portions of the intestine die due to lack of blood supply that has been compromised by migrating parasites)
 - Unthriftiness, anorexia, fever, enteritis, diarrhea
2. Small Strongyles
 - General Info: More common than large strongyles, but slightly less able to set up an infection in the horse.
 - Life Cycle:
 - Adults live in LI and lay eggs

Eggs pass in feces and hatch into infective larva
Larva are ingested
Larva form cysts in gut walls (persisting for weeks to months)
Emerge and develop into adults in large intestine

Damage Caused:

Can cause acute (sudden) onset of fever, diarrhea (can be chronic), weight loss, edema
Most serious if larva emerge as a mass from gut wall: colitis, colic

3. Ascarids, *Parascaris equorum*, "round worms"

General Info: Fairly large, spaghetti-like worms (6-8 in.)

Life Cycle:

Adults lay eggs in SI that are passed in feces
Eggs are ingested and hatch in SI
Larva penetrate gut wall and go to liver
Then migrate to lungs via blood
Coughed up and swallowed where they develop into adults in SI

Damage Caused:

Mostly in foals: Can cause impaction with heavy infection
"Summer colds": coughing, fever, nasal discharge from migration through lungs
thrifty (skanky) foals: poor hair coat, pot belly, some diarrhea. Could possibly lead to secondary bronchitis and bronchopneumonia

4. Tapeworms, *Anoplocephala magna*, *A. perfoliata*, *Paranoplocephala mamillana*

General Info: Segmented worm. Can become quite large (up to 2 ft.!).

Life Cycle:

Adults live in SI
Sections of the worms containing eggs are passed in the feces
Eggs are released and ingested by beetle mites
Horses ingest mites containing an infective larva
Larva develop into adults in SI

Damage Caused:

Can cause colic (enteritis)
Unthrifty (skanky horse)

5. Pinworms, *Oxyuris equi*

General Info: 2-2.5 in. long, white

Life Cycle:

Adults live in distal LI
Females lay eggs by attaching them to horse's perineum
Larva develop in eggs and then the eggs fall off
Larva are ingested
Larva travel to LI and encyst in ventral colon and cecal walls to mature into adults

Damage Caused:

Tail Itching from egg irritation
Little intestinal damage

6. Bots, *Gastrophilus*

General Info: Adult bot flies look like small honey bees.

Larva in horse look like red maggots.

Life Cycle:

Bot fly deposits yellow eggs on horse's legs, shoulders, belly

Horse eats eggs while grooming

Increased temperature, moisture and friction causes eggs to hatch in horse's mouth

Larva burrow into tongue and gums

Larva are swallowed and attach to stomach lining

Pass in feces in the spring/early summer to pupate into adult fly

Damage Caused:

Heavy infestations may result in GI disturbance (mild colic, etc.), unthrifty horse.

The HA has sound knowledge of horses, their care and training.

They can teach Stable Management and Mounted lessons.

They understand safety and emergency procedures.

The HA follow protocols to ensure the best outcome.

They are capable of teaching and training various age levels of riders and horses.

The HA is capable of running a barn including daily routine, training schedules, horse care and conditioning to ensure the wellness of the horse and riders.

Under supervision the HA can manage the barn to include orders, receipts and basic budget items.

What is the purpose of barn **checks**?

Discuss the reasons for a.m. & p.m. inspection.

How do these checks provide information about the horses health and safety?

Describe a method to assist a horse that is **cast** in the stall?

How can you prevent a horse being cast?

Describe a horse in **poor condition**.

What are causes of poor condition?

What are the corrective actions depending on the cause of poor condition?

Describe methods of **disease** prevention.

What are some best practices that ensure proper health maintenance?

Describe yearly inoculation schedule.

Describe annual tooth care.

How can you prevent the spread of a contagious disease? What stable management protocols are effective to contain the disease?

Describe methods of **grazing and paddock management**.

Why is turn out important to the horse's well being?

Describe methods of manure management?

What are your ideas to have a eco-friendly green barn?

Discuss methods of soil management?

What is a good plan to ensure the land is productive and free from erosion?

How can you prevent contamination to water, stream or pond?

What type of watering system, fencing and shelters would provide a safe healthy environment for the horse?

Describe methods of dealing with poisonous plants in your area?

Why is soil testing important?

How does fertilizers and seeding effect pasture management?

Travel causes stress. What **diseases and disorders** are associated with travel?

You have a generous budget to build your dream facility.

Describe the **stable construction** of your choice.

What type of facility?

Discuss your choice of material, design and priority of building requirements.

What type of ventilation, light, flooring, drainage, and protection characteristics would be used in the facility construction?

What is your preferred method of storage for feed, bedding, hay, equipment and tack?

Nutrition

Know the basic of how to balance a ration: 1 ½ to 3% of body weight, 60%-40%,70%-30% concentrates to roughage

Proteins are the building blocks of the body, name some major proteins

Vitamins, minerals know names and functions, (major minerals, exceeds if can name macro. Calcium/Phos. ratio

Know about protein percentages in relation to age of horse

Know why the horses listed on the standard are feed and why that would be important.

Supplements and dangers

Feeding in relation to conditioning.

Systems and Diseases

1. **Respiratory**: Nostril, alar fold, nasal turbinates (bonus = concha and meati), sinuses that are in the skull, nasopharynx, epiglottis, larynx, trachea, bronchi, bronchioles, alveoli; lungs covered by pleura, role of diaphragm. This would be the ideal list for the anatomy. I would say most candidates get 75-80% of it.

Diseases:

Heaves (COPD, RAD)

Causative Agent: Inflammation of airway, usually allergic component: non-contagious

Signs: Coughing during exercise, during feeding, or in certain environments; increased resp. rate, heave line in chronic cases, increased expiratory effort (double exhale), exercise intolerance

Care: Remove cause, change environment; steroids, clenbuterol (prescribed by vet), albuterol (prescribed by vet)

Recent Events: Now called recurrent airway disease

Rhinopneumonitis (Snots)

Causative Agent: Equine Herpes Virus (EHV-1 & 4) (USPC manual is wrong on type): direct & indirect contact

Signs: Upper respiratory infection, Snotty nose (this is a key sign)/nasal discharge-watery turning to thick and yellow (crusty

nose), mild fever, inappetance, depression, Rare cough-does NOT affect lungs *Young horses, transient horses
Care: Supportive, isolate from other horses
Recent Events: Large outbreaks resulting in neuro cases in FL and CA in the last couple years

Influenza

Causative Agent: Influenza virus, various strains (ie H3N8, N/5/03): direct & indirect contact
Signs: Upper and possibly lower respiratory infection, Fever, watery nasal discharge, depressions, dry COUGH-affects lungs (I often ask them to differentiate between influenza and rhino as this is a more practical application that a barn manager should know), Young or immuno-compromised horses, transient population
Care: Supportive, +/- antibiotics if worried about secondary pneumonia
Recent events: Flu outbreak in Australia

Strangles

Causative Agent: Streptococcus equi: direct and indirect contact
Signs: Thick and yellow nasal discharge, swollen submandibular lymph nodes due to abscesses that will break open and drain, fever, depression, inappetance, difficulty swallowing in severe cases; bastard strangles: lymph node abscessation other than submandibular lymph nodes, traditionally in young horses, horses +/- transient populations, HIGHLY contagious
Care: Isolate, supportive care, +/- penicillin, +/- hotpacking and lancing abscesses

EVA

Causative Agent: Arteritis virus: respiratory or venereal transmission
Signs: Limb edema (arterial inflammation), fever, nasal discharge, conjunctivitis & rhinitis, depression, abortion (5-10 mo), carrier stallions
Care: Isolate as very contagious
Bonus Info: impact on importing breeding animals, usually not vaccinated against unless outbreaks occur.

2. **Urinary:** Kidneys, ureters, bladder, urethra, vagina/penis

Diseases:

Azoturia (inaccurate term: should be called rhabdomyolysis as azoturia is a clinician sign of this disorder)

Causative Agent: Genetic component that cause metabolic disturbances (polysaccharide storage myopathy), mineral and electrolyte disturbances (i.e. selenium deficiency), exercise issue (recurrent exertional rhabdomyolysis); antiquated to talk about feeding full grain ration on day off then working horse the next day (Monday morning disease)

Signs: Stiff gait to unable to move, rump muscles hard, sweating, distress, Bad=no urination, dark brown urine hours AFTER tying-up; can result in equine renal failure from excessive filtration of muscle breakdown products (myoglobin)
Care: Move as LITTLE as possible. Heat on muscles. Call vet!
Veterinary care: fluids, Banamine, muscle relaxants
Recent events: Lots of new research

3. **Circulatory/lymphatic:** Vena cava, right atrium, right ventricle, pulmonary artery, lungs, pulmonary vein, left atrium, left ventricle, aorta, arteries, arterioles, capillaries, venules, veins; lymph vessels drain into vena cava, Organs of the lymphatic system: lymph nodes, spleen, bone marrow, and thymus

Disease:

EIA

Causative Agent: Retrovirus=lifetime infection: transmission by biting flies

Signs: Variable. Non-symptomatic carriers are possible; can be cyclical disease; Acute phase: fever, limb and ventral edema, inappetance, depression, icterus, abortion; Chronic: weight loss, unthrifty, general weakness, intermittent fever

Care: Mandatory quarantine horse for life or euthanasia

EVA

Causative Agent: Virus: respiratory or venereal transmission

Signs: Limb and ventral edema (arterial inflammation), fever, nasal discharge, conjunctivitis & rhinitis, depression, abortion (5-10 mo), carrier stallions

Care: Isolate as very contagious

Bonus Info: impact on importing breeding animals, usually not vaccinated against

4. **Nervous:** Brain (CNS): cerebrum, midbrain: thalamus, hypothalamus, cerebellum, brainstem: pons, medulla oblongata, cranial nerves; Spinal cord (CNS): cervical, thoracic, lumbar, sacral, cauda equine, it would be great if they could talk about parts of the spinal cord. Briefly about autonomic nervous system: sympathetic vs. parasympathetic. Peripheral nerves: motor vs. sensory. The manual has a little section about parts of a nerve: Nerve cell body, dendrites, axons, synapses. **The nervous system is an incredibly complicated system.

Diseases:

Rhinopneumonitis

Causative Agent: Equine Herpes Virus (EHV-1)

Signs: Respiratory disease can turn into debilitating neurologic form (virus mutates) or can have without even having respiratory disease first: nervous system signs: ataxia, recumbency (bad), weakness, usually affects hind limbs more, decrease tail tone, incontinence

Care: supportive, acyclovir (expensive)

Recent Events: Large outbreaks resulting in neuro cases in FL and CA in the last couple years

Encephalomyelitis (Eastern, Western, Venezuelan)

Causative Agent: Virus transmitted by mosquito, birds in cycle
Signs: Central nervous system: HIGH fever, depression sleeping sickness changes in behavior circling, head pressing, seizures, blindness, ataxia, weakness, paralysis. Eastern highest mortality rate, then Venezuelan, then Western

Care: Supportive, generally make complete recovery if overcome disease

West Nile:

Causative Agent: virus transmitted by mosquito, birds in cycle
Signs: Central nervous system: Similar to EE, tends to have more muscle fasciculations

Care: Supportive

EPM

Causative Agent: Sarcocystis neurona (protozoa)

Signs: VARIABLE as can affect any part of the nervous system: asymmetrical, ataxia, muscle atrophy, gait abnormalities; head tilt, facial paralysis, blindness, circling

Care: Anti-protozoal drugs and antibiotics (Marquis, Navigator, Re-Balance, TMS), anti-inflammatories

Tetanus

Causative Agent: Clostridium tetani toxin: Produced by bacteria that is ubiquitous in the environment (soil, etc.). Usually introduced through wounds, especially puncture type wounds. Could be introduced through a veterinary procedure (i.e. surgery, IM injection)

Signs: Rigid paralysis: differentiate from botulism: prevents breakdown of acetylcholine at neuromuscular junction: continuously activated muscle cells; saw horse stance, lock jaw, elevated tail, prolapse of third eyelid, sneering expression (lips pulled back), very sensitive to light and sound, sweating, unable to breathe: death

Care: antitoxin, high levels of penicillin, usually fatal
Horses are extremely susceptible

Botulism

Causative Agent: Clostridium botulinum toxin: Usually injected the TOXIN in contaminated hay.

Signs: Flaccid paralysis: differentiate from tetanus: prevents release of acetylcholine @ neuromuscular junction: muscle cells not activated; drooling, recumbent, eventually unable to breathe=death, muscle tremors (weakness), become recumbent

Care: antitoxin (hard to get), usually fatal
Vaccinate in endemic areas

Periodic Ophthalmia (this is the closest system although I don't expect them to talk about this with neuro diseases)

Causative Agent: possibly *Leptospira* bacteria, usually immune-mediated

Signs: squinting, tearing, cloudy eye (advanced), papillary constriction, can come and go; progressive disease

Care: steroids, atropine, NSAIDS, usually can't completely stop progression, just slow it

Rabies

Causative Agent: Virus transmitted through saliva of infected animal

Signs: Different forms: Furious form: aggressive, salivation, itchy, frantic ataxia, muscle tremors; Dumb form: severe depression, salivation, paralysis, unable to drink; Paralytic form: flaccid paralysis, recumbent; 100% fatal

Care: Euthanize. Be careful handling ANY neurologic animal!
Core vaccine as recommended by AAEP

5. **Digestive:** Teeth, tongue, salivary glands, pharynx, epiglottis, esophagus, stomach, duodenum, jejunum, ileum, cecum, large colon (bonus if they know the parts: right ventral, sternal flexure, left ventral, pelvic flexure, left dorsal, diaphragmatic flexure, right dorsal,), small colon, rectum, anus. Liver, pancreas

Diseases:

Colic

Causative Agent: Spasmodic, gas distention of intestines, impaction of intestines, strangulation or displacement of intestines, diet changes, cribbing, thromboembolic from parasite migration, small strongyle mass emergence (more...)

Signs: Inappetent, pawing, rolling, looking at sides, distressed, not defecating posturing to urinate, phlegm, yawning, sweating, increased heart rate and respiratory rate (more...)

Care: Call vet before doing anything. Be able to give TPR, time of last defecation, appetite, length of colic signs, diet history, work history, signs horse is exhibiting

Choke

Causative Agent: Blockage of esophagus (feed bolus, etc.)

Signs: Distressed horse, feed coming out of mouth and nose, excessive salivation extending neck, frequent swallowing

Care: Remove hay and **water** until vet gets there! Occasionally chokes will resolve on their own. Once a horse chokes, they are predisposed to choking again.

PHF

Causative Agent: Ehrlichia risticii (bacteria): transmission not completely known: snails in cycle, mayflies? ?, tends to have endemic areas.

Signs: Profuse watery diarrhea, fever, colic, inappetent, depression, ventral and limb edema, laminitis can be a result

Care: treat with tetracycline antibiotics. Often need to be hospitalized for supportive care.

Recent events: Outbreaks linked to mayflies

**Vaccine does not prevent disease. Possibly decreases severity

6. **Reproductive:** Mare: Ovary, Oviduct/Fallopian tube/uterine tube, horns of uterus, body of uterus, cervix, vagina, clitoral glans, vulva; Stallion: Testicle, epididymis, vas deferens, ampulla, urethra, penis. Vesicular, prostate, and bulbourethral glands. Testicle

is descended through inguinal rings and held in scrotum. Cremaster pulls testicles closer to body.

Diseases:

EVA

Causative Agent: Virus: respiratory or venereal transmission

Signs: Limb edema (arterial inflammation), fever, nasal discharge, conjunctivitis & rhinitis, depression, abortion (5-10 mo), carrier stallions

Care: Isolate as very contagious

Bonus Info: impact on importing breeding animals, usually not vaccinated against. If vaccinate for this disease, veterinarian should have record of horse being seronegative (and keep that record!) prior to vaccination

Rhinopneumonitis

Causative Agent: EHV-1

Signs: Abortion in last trimester, neonatal death (w/in few days of birth)

Care: None

Prevention: Vaccinate pregnant mares with KILLED vaccine @ 5th, 7th, 9th month of gestation.

7. **Musculoskeletal** (says skeletal on standard which I think it wrong): All major bones (other than legs that they should have done during stations): Skull: maxilla, mandible (exceeds knows names), hyoid apparatus (bonus), cervical spine (7), thoracic spine (18), lumbar spine (6), sacrum (5), coccygeal spine (18-23), ribs (18 pr.), sternum. Side note on leg bones anatomy: I think it is important that they know the names of all the carpal and tarsal bones in addition to knowing the numbers for the metatarsal/carpals and the phalanges. Muscles: Try to keep this to major muscles groups as listed in manual (if they miss a few, no big deal): masseter, brachiocephalus, rhomboids, nuchal ligament, splenius, cervical and thoracic trapezius, pectorals, deltoids, brachial biceps, triceps, cervical and thoracic serratus ventralis, latissimus dorsi, longissimus dorsi, intercostals, external abdominal oblique, internal abdominal oblique, transversus abdominus, iliopsoas, gluteals, tensor fascia lata, biceps femoris, hamstring: semitendinosus, semimembranosus
Bonus: shoulder muscles (subclavian, supraspinatus, infraspinatus), neck muscles: sternomandibular, sternohyoid, etc., any deeper trunk or hindend muscles

Diseases:

Laminitis

Causative Agent: endotoxins (colic, grain overload, retained placenta), mechanical (injury to opposite leg), inappropriate inflammatory response (fever immune-mediated), metabolic (Cushings, Equine Metabolic Syndrome), ponies, administration of high corticosteroid dose

Signs: Rocking back onto hind legs, landing with heels, increased digital pulse

Care: Initially ICE feet! NSAIDS; Chronic: special shoeing to reduce pull on flexor tendons and make breakover at toe easier

(It would be great if an HA candidate new about some of the more current information on laminitis, check out horse.com and Equus)

Azoturia: See description in urinary section

Causative Agent: Genetic component that cause metabolic disturbances (polysaccharide storage myopathy), mineral and electrolyte disturbances (i.e. selenium deficiency), exercise issue (recurrent exertional rhabdomyolysis); antiquated to talk about feeding full grain ration on day off then working horse the next day (Monday morning disease)

Signs: Stiff gait to unable to move, rump muscles hard and quivering, sweating, distress, Bad=no urination, dark brown urine hours AFTER tying-up; can result in renal failure from excessive filtration of muscle breakdown products (myoglobin)

Care: Move as LITTLE as possible. Heat on muscles. Call vet!

Veterinary care: fluids, Banamine, muscle relaxants

Recent events: Lots of new research. I think H-A candidates should know about some of this

Predisposing factors and symptoms for horse if: (There usually isn't time to go in-depth into this if you do 2 systems/candidate)

1. **Fever:** Part of systemic inflammatory response.

Causes: infection, pain, over-heated.

Signs: Increased rectal temperature, depression, anorexia, increased heart rate

2. **Inflammation:** Anything that activates the body's immune system such as: allergies, injury, infection.

Cardinal signs of inflammation: heat, swelling, redness, pain, loss of motion

3. **Edema:** accumulation of fluid in tissues: decreased circulation (impaired outflow): lymphangitis, hypertension, low oncotic pressure in circulatory system

4. **Arthritis:** Remodeling of bone and cartilage in joints, joint inflammation.

Due to: poor conformation, excessive wear and tear.

Signs: Lameness, joint effusion.

5. **Shock:** Response to preserve vital organs in response to major systemic insult. Most common in horse: hypovolemic: decreased blood volume from blood loss or blood sequestration; endotoxic: retained placenta, GI disturbance; anaphylactic: allergic-type reaction.

Signs: weakness/depression, increased capillary refill time, pale mucous membranes, cold extremities, increase heart rate, weak peripheral pulses

6. **Dehydration:** Decreased water portion in circulatory system.

Causes: decreased water intake, increased water loss (sweat, diarrhea, some forms of colic.

Signs: Skin tent (best over point of shoulder), increased capillary refill time, tacky mucous membranes, depression

Cushing's and PPID are the same in the horse but are differentiated in other animals. Cushing's is the syndrome. PPID is the actual physiologic problem. In the horse, the dysfunction is generally thought to originate from the pituitary only.

Cushings/PPID

Cause: neuro-hormonal dysfunction of the pituitary gland (located at base of brain near hypothalamus)

Signs: Usually affects older horses (late teens or older). Long hair coat (hirsutism) that does not shed in summer, weight loss, muscle atrophy (especially top-line), possible increased appetite, increased drinking and urinating, laminitis, fat deposits along neck, sheath, above eyes and tail head, immunosuppression: more prone to getting infections

Care: Veterinarians will do blood tests (glucose and insulin levels, dexamethasone suppression, TRH stimulation test). Diet changes: low starch with high fat diets;

Drugs often used: *pergolide*, Evitex (nutraceutical), Thyro-L (levothyroxine)

Insulin Resistance

Cause: Unknown, overweight horses and some breeds (ponies, cresty-necked breeds) are pre-disposed

Signs: Overweight horses, laminitis, fat deposits along neck, sheath, above eyes and tail head

Care: Veterinarians will do blood tests (glucose and insulin levels; dextrose clearance test); Diet changes: low starch diets; Thyro-L (levothyroxine); Often treat the same as Cushinoid horses

Equine Metabolic Syndrome

Cause: CHRONIC Insulin Resistance (definition at University of Tennessee)

Unknown, overweight horses and some breeds (ponies, cresty-necked breeds) are pre-disposed

Signs: Overweight horses, laminitis, fat deposits along neck, sheath, above eyes and tail

Care: Veterinarians will do blood tests (glucose and insulin levels; dextrose clearance test); Diet changes: low starch diets

Diseases associated with travel and exposure to strange mount: Usually have discussed this earlier on during disease discussion: Rhino, EVA, EIA, Strangles, Influenza

Special Care:

Non-steroidal Anti-inflammatories (NSAIDs)

1. Phenylbutazone (Butazolidan, Bute)

Administration:

Orally: Up to 2 g once daily or 1 g twice daily in 1000 lb horse
Giving more than recommended dose does not increase effect
Takes ~2 hours to effect if give orally, lasts ~12 hours

IV: Must be IN vein! (usually 200 mg/ml) 2 g = 10 ml for 1000 lb horse
NEVER IM

Uses:

Relief of musculoskeletal pain

Possible Hazards: With chronic use

Bad if given outside of the vein

GI ulceration: stomach, right dorsal colon

Kidney damage in dehydrated animals

2. Flunixin meglumine (Banamine)

Administration: (usually comes in 50 mg/ml)

IV: 10 cc 1000 lb horse (1.1 mg/kg)

Orally: same dose as IV; can use IV liquid orally (may not be as effective)

Can give IM, but tends to cause injection abscesses

Uses:

Pain relief: especially GI, eye, musculoskeletal

Anti-pyretic (lowers fever)

Possible Hazards: With chronic use

GI ulceration

Kidney damage in dehydrated animals

3. Salicylic Acid (Aspirin)

Uses:

Chronic musculoskeletal problems: especially laminitis & navicular

Lowers ability of body to clot, not used much for horses

Possible Hazards:

GI ulceration (most gentle NSAID)

Kidney damage in dehydrated animals

4. Dipyrone: weakest acting

Administration: Has to be compounded as no longer available commercially

IV: up to 10 cc per 1000 lbs (500 mg/ml concentration)

Uses:

Pain relief: colic especially

Anti-pyretic (lowers fever)

Possible Hazards:

Same as other NSAIDS

5. Ketoprofen (Ketofen): (like ibuprofen)

Administration:

IV: 1.1-2.2 mg/kg once daily (usually 100 mg/ml concentration)

Uses:

Musculoskeletal pain relief

Anti-pyretic (lowers fever)

Possible Hazards: With chronic use

Same as other NSAIDS

Steroidal Anti-inflammatories

1. Dexamethasone (Azium)

Administration:

IV, IM, orally: up to .2 mg/kg (this is a pretty high dose), usually 20mg in 1000 lb horse

**Concentration varies quite a bit by brand so READ label to figure out mg/ml

Uses:

Fast-acting anti-inflammatory on every tissue in body

Often used for allergic reactions, heaves

Possible Hazards:

LAMINITIS!!!!!! Use with caution in older horses and ponies

Lowers immune response

Taper off drug if receive more than one dose

Sedatives, Analgesics

1. Acepromazine (Promace, Ace): Phenothiazine

Administration:

Increasing dose from max recommended dose, does NOT increase sedation
IV, IM, Orally: 0.04-0.1 mg/kg (for 1000 lb., 1 cc IV, 2 cc IM, 3 cc orally)

*Takes at least 10 min. (usually 15 to 20 min.) to take effect

*Lasts 1-2 hours

Uses:

Tranquilization for minor things: turnout, trailering, prevent excitement

Does not immobilize, less ataxia than alpha-2 agonists

Does not decrease pain

Possible Hazards:

Does NOT work well if horse is already excited!

Penile paralysis, prolapse of third eyelid

Lowers blood pressure

NEVER use in emergency situation where horse might go into shock: colic, fracture, lacerations

2. Xylazine (Rompum): alpha-2 adrenergic agonist (usually comes in 100 mg/ml)

Administration: Horses react differently to this drug.

IV: Dose is .5 mg/kg (2.25 cc in 1000 lb horse):

Usually 1-2 cc in 1000 lb horse.

IM: Double to triple dose of IV amount

Time to effect: 5 min. in IV, up to 20 min. IM

Length of effect: 30-40 min IV, 60-90 min. IM (dose dependent)

Uses:

Sedation (lowers head) and analgesia (blocks pain, especially visceral)

Used by veterinarian for many procedures: colic, joint injections, premed for anesthesia

Possible Hazards:

Ataxia

Intra-arterial injection = BAD!!!

Lowers heart rate, decrease GI motility, increases blood pressure, horses often sweat

Can mask pain from colic

Extremely lethal in humans

Has a reversal agent

3. Detomidine (Dormosedan): alpha-2 agonist (usually comes in 10 mg/ml)

Administration: Horses react differently to this drug.

IV: Dose is 20-40 ug/kg: Usually .2-1 cc in 1000 lb horse.

IM: Double dose of IV

Time to effect: 5 min. in IV, up to 20 min. IM

Length of effect: 60-90 min IV, 90+ min. IM (dose dependent)

Uses:

Sedation (lowers head) and Analgesia (blocks pain, especially visceral)

Used by veterinarian for many procedures: colic, joint injections, premed for anesthesia

Tends to be better at preventing "unexpected movements" by horse

Possible Hazards:

Ataxia

Intra-arterial injection = BAD!!!

Lowers heart rate, decrease GI motility, increases blood pressure, horses often sweat

Can mask pain from colic longer than xylazine

Extremely lethal in humans

Has a reversal agent

4. Butorphanol (Torbugesic): opioid, partial agonist

Administration: Schedule C drug, should only be used by a veterinarian

IV or IM: Up to 0.1 mg/kg (usually .5-1 cc for a 1000 lb horse)

Uses:

Analgesic, generally used with an alpha-2 agonist

Very mild sedation

Used for colic pain, dentistry, joint injections, to increase level of sedation

Relieves pain better if animal is already in pain (does not decrease inflammation)

Possible Hazards:

Ataxia

"Torb jerks"

Joint Protective Drugs

1. Hyaluronic Acid (Legend, MAP-5, Hyvisc, Hylartin V)

Administration: IV and/or intra-articular (IA) depending on product;

Dose:

IV: 40 mg, IA: 20 mg; Intervals vary tremendously between vets.

Usually, it is given weekly for 3-4 weeks, then once a month or in association with a strenuous event. Follow manufacturer's directions if in doubt.

Use:

Hyaluronic acid is a normal component of extracellular matrix of connective tissue (i.e. synovial fluid). Idea is to provide a protective effect to the joint by "lubricating" the joint. Exact mechanism of action is unknown. Also has some anti-inflammatory effect.

Hazards:

None really, possible joint infection if administered intra-articularly

2. Polysulfated glycosaminoglycans (Adequan)

Administration: IM

Use:

Thought to have a cartilage-protective effect. PSAGs are normal components of extracellular matrix.

Dose:

500 mg; Intervals vary tremendously between vets. Manufacturer instructions: every 4 days for 28 days. Usually, it is given weekly for 3-4 weeks, then once a month or in association with a strenuous event. Follow manufacturer's directions if in doubt.

Use:

Thought to have a cartilage-protective effect. PSAGs are normal components of extracellular matrix.

Hazards:

Possible infection @ injection site

HA Longeing

GOAL: To evaluate a horse the candidate is unfamiliar with, access level, "Put horse to work" at appropriate level and make corrections to improve horse.

CHECK LIST (to be observed before longeing begins)

Candidate:

- gloves
- watch
- foot wear /dress

Horse / equipment:

- boots /leg protection
- saddle /sircingle (fit/padding /safe/appropriate)
- bridle /longe cavesson (fit/padding/safe/appropriate)

Physical equipment:

- longe line (length,material,attachment)
- longe whip (length, lash)

DISCUSSION WITH EXAMINER BEFORE LONGEING BEGINS

- Candidate's experience
- Horse's experience
- Candidate's expectations for longe session

LONGEING APPROACH (to be evaluated by examiners)

- Style (parallel, in center, combination was it effective?)
- Control
- Size of circle
- Contact
- EFFECTIVENESS (timing /reaction to horse...praise /corrections)
 - Candidates physical body position ("square to horse" ahead or behind)

DISCUSSION AFTER 10 MINUTES

- Evaluation
- Understanding of how session is progressing
- Plan to make improvements

ABILITY TO MAKE REQUIRED CHANGES

FINAL DISCUSSION

All examiners need to be willing to step in when situations seem to be more than can reasonably expected for any candidate at the levels (lame horse, disobedient horse, ect.)

- HA candidates should be given a "bio" of their horse and if they will longe that horse.
- The candidates should be alerted to the degree of soundness of the horse they have been assigned

Meets Standard:

- The candidate should give the impression of having unlimited experience of longeing unfamiliar and new horses.
- Shows the authority and confidence associated with the A level.
- The candidate puts the horse to work, is willing to take a chance and try training techniques (bag of tricks).
- An accurate assessment of what the candidate wants to accomplish given the above ideas, with the assigned horse and with the allotted time.
- The candidate needs to make appropriate evaluations and corrections early on so they can work on improving the situation.
- The candidates need to be able to discuss what they produced ie: good and what could have been better.
- Have an idea of what the next logical training step would be, from what they discovered through their longeing.

Several things examiners need to be conscious of when testing the HA:

- The suitability of the assigned horses
- Always try to be open minded to techniques that you do not use, and be fair in your assessment of their effectiveness.
- Try and observe the candidates timing, when making corrections or rewards (it will allow you to understand what they think their goal is)
- If you (examiner) cannot "see" what the candidate is trying to show you...ask them to isolate parts of their circle that they think they have improved the horse....if nothing else it will create a conversation...that you can make evaluations from.

Thanks to Elizabeth Gatterdam, Marueen Pach, Terri Rocovich, Stacey Thacker DMV, Larry Byers and Lorelei Coplen for their help.