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Preventive Care - Winter Seminar Series (Second Session) - 11/17/2016

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ROAD MAP

- Definitions:
- Goals:
- Parts:
  - Basic Husbandry/Management
  - Dental Health
  - Foot Health
  - Parasites
  - Vaccination

DEFINITIONS

- **Preventive Care** – Health measures taken to prevent, or reduce risk, of developing disease or illness.
  - Avoid illness, improve health.
  - Including education and consultation.
- **Parasites –** An organism that lives in or on another and takes its nourishment from that other organism.
- **Strategic Deworming –** Focused deworming based on YOUR horse's parasite load as an individual, time of year, environment, stage of life, specific drug (efficacy), and target parasite.
- **Vaccination -> Immunization:**
  - **Vaccination** - When a **vaccine** is administered.
  - **Immunization** - What happens after vaccine administration. Stimulation of your horses immune system so the body can recognize the disease and protect itself from future infection -> Immunity!
- **Dental Floating -** When a metal rasp (i.e. a float) is used to file down sharp enamel points (rough edges) that develop from continuous **eruption** of teeth and uneven wear.
- **Farriery -** The art of a craftsman who trims and shoes horses' hooves.

GOALS

- **This Talk…** To provide you with PRACTICAL INFORMATION!!
- **Deworming (endoparasite control)(*equids*)** - To **limit** parasite infections so animals remain healthy and clinical illness does not develop.
  - Minimize risk of disease, control egg shedding, avoid development of drug resistance.
    - NOT eradication of parasites from a particular individual.
      - Impossible to achieve.
      - Inevitable result of over-deworming is accelerated development of parasite drug resistance.
- **Vaccination:**
  - Eradication of disease (e.g. smallpox) – that's HVA's goal!
  - Reduce the **number** and/or **severity** of infections.

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HUSBANDRY/MANAGEMENT - *You can lead a horse to water….*

- **Nutrition (presentation to come!)**
  - Forage, concentrate, water, trace mineral, supplements???
  - Forage – **1.5% body weight per day** (15#/day for 1000# horse) – **maintenance**
  - Concentrate – may not be necessary
  - Water (clean) – 26-45L/horse/day ~ 7-12gal/horse/day ~ **(1gal or 3L /100#BW/day)**
- **Shelter**
  - Barn – individual stalls or standing
  - Run-in shed
- **Pasture**
  - 2+ acres/horse is ideal
- **Fencing**
  - Safety for both animals and people
  - Fence visibility
  - Materials:
    - wood, woven wire (coated), pipe, or PVC
    - Electric fencing (wide ribbon wire or coated wire is best)
  - At least 48" high with posts that are no more than 10' apart
- **Manure**
  - 1000# horse can produce up to 50# manure a day
  - Pile, spread, compost
  - Flies!!!

HOOF CARE - work with your farrier-veterinarian team

- **Goal** – to have a "**balanced foot.**"
  - Theoretical ideal shape or conformation of a given foot, the position of the hoof relative to the limb above, and the way that the foot should be trimmed
- Considerations
  - the hoof-pastern axis (HPA)
  - the center of articulation
  - Diseases of the foot – laminitis, navicular syndrome, fracture, deformity.
- Most common interval needed for trimming – **every 4-6wks**
  - Hoof wall growth ~1cm/month

DENTAL CARE - Veterinarian

- Floating is necessary based on the continuous eruption of a horses teeth (beaver, rat, rabbits, etc..) and the diet of the domestic horses
- Horses are born with their entire adult tooth already in their skull/sinus cavities.
- **Malocclusion** – imperfect positioning of teeth when the jaws are closed
  → sharp enamel points, wave mouth, hooks/ramps, monkey/parrot mouth.
- **Floating Interval/frequency**
  - On AVG. the domestic horse should have their teeth **floated every 1-2yrs**.
    - Based on how rapid sharp enamel points and other malocclusions develop.
    - Spring and fall (6mo interval) dental checks to determine if floating is needed.
  - Some horses only need to have their teeth floated every 5yrs, some horses every 6mo… it's up to the horse.
  - If malocclusions are corrected when they are mild, they usually take one visit to address/correct
    - The opposite is true if you wait until dental issues are severe… no savings $$$

- Medical procedure - To thoroughly perform an oral exam and correct dental issues on most horses requires:
  - Sedation – to be administered only by licensed veterinarian in that state.
  - Full mouth speculum – facilitates examination and treatment of ALL teeth.
  - safety
- Why don't horses in the wild need to have their teeth floated?
  - Diet – more rough forage, silica, no grain/concentrate – they float their own teeth!
  - Wild horses do not live nearly as long as the domestic (well cared for) horse (12-18yrs vs 25-35yrs)
  - If they have bad teeth they don't survive long enough to propagate their genes – selection pressure for good dentition, strong bones, hardy animals.

PARASITE CONTROL

<u>Strategic Deworming</u> vs Rotational Deworming

- Rotational Deworming – based on 40yr old concepts.
  - Large strongyles (S. vulgaris) – Rare.
  - Using a different dewormer every 2mo, year round.
  - More costly
  - No health benefits
- The times have changed… so we need to adapt.
- Horses vary greatly in their innate susceptibility to infection -> they require individualized attention to their parasite control needs.
- Frequent treatments not needed to keep horses healthy
  - Right TIME, right DEWORMER, right PARASITE
- Strategic Deworming - based on YOUR horse's parasite load as an individual, time of year, environment, stage of life, specific drug.
  - Decreased cost, decreased resistance of parasites, more effective.

THE USUAL SUSPECTS

- Small Strongyles (Cyathostomins)
    - Adult horses (> 2yrs old)
- Roundworms (Ascarid - Parascaris equorum)
    - Foals, weanlings, yearlings (≤ 2yrs old)
- Tapeworms (Cestode - Anoplocephala perfoliata)
- Bots (Gasterophilus spp.)
- Pinworms (Oxyuris equi)

SMALL STRONGYLES: *Cyathostomins*

- The major parasite of concern in ADULT HORSES.
- Ubiquitous – all grazing horses are infected.
- Cause disease – only at high levels.
- Diagnosis (severity) – FECAL egg count
- Treatments:
    - Ivermectin (Zimectrin) or Moxidectin (Quest)
    - Pyrantel (Strongid)
    - Fenbendazole (Panacur)
- High levels of resistance:
    - Decades of frequent deworming (rotational deworming)

ENCYSTED SMALL STRONGYLES

- May cause <u>serious illness</u>…**larval cyathostominosis**
    - Most commonly cause illness in horses < 5yrs old (can be any age though)
    - Low incidence of illness but can be serious!
    - Late Winter -> Spring
        - Mass emergence of dormant larvae that are “hibernating” in the intestinal wall = MUCOSAL INFLAMMATION -> **CLINICAL SIGNS**
            - Acute syndrome – severe diarrhea, acute weight loss
- Treat when mucosal burden is at its peak (end of grazing season – FALL)… KILL ‘EM ALL
    - Before they can emerge and cause illness
- Only effective treatments:
    - **Moxidectin (Quest)**
    - **Panacur Power Pack = double dose of fenbendazole (panacur), once daily x 5 days**

ROUNDWORMS: *Ascarids – Parascaris equorum*

- Horses < 3yrs old - (FOALS, WEANLINGS, YEARLINGS)
    - Rarely cause disease in adult horses
- Cause disease in YOUNG HORSES:
    - Ill thrift, poor growth
    - Airway inflammation (cough, nasal discharge)
    - Small intestinal impactions → rupture ▯ death!
- Need a slow kill to reduce risk of impactions
    - **Fenbendazole (panacur, safeguard) is the dewormer of choice.**

    - Ivermectin (zimectrin) – may cause impaction from rapid kill.
- Resistance:
    - *Ivermectin (zimectrin), Moxidectin (quest)

TAPEWORMS: ***Cestode - Anoplocephala perfoliata***
- Adult horses (>3yrs old)
- Common
    - grass pastures, moist environmental conditions
- Strong seasonality
    - mild temperatures (do not survive winter & summer)
- Can cause disease
    - Small mucosal erosions -> May cause colic (ileocecal impactions, spasmodic colic)
- Difficult to diagnose
    - Not easily seen on fecals (FEC)
    - Intermittent shedding
    - Serology – blood test
- Treatment
    - 1-2 properly timed treatments annually (usually **after the first hard frost**)
    - **Praziquantel (plus, max, gold)** = **quest plus, equimax, zimectrin gold**
    - **Double dose strongid**

BOTS: ***Gasterophilus spp.***
- May cause actual illness to horses (but not common) – it takes a lot of bots to cause clinical signs
    - Gastric ulcers, inflammation (gastritis)
- Bot fly lays eggs on horse's legs -> horse ingests eggs -> develop in stomach (8-10mo) -> feces (2-3wks) -> bot fly! (surprise)
- Treatment:
    - 1-2 properly timed treatments annually (Spring & Fall)
    - **Ivermectin (zimectrin) or Moxidectin (quest) – only boticidal treatments.**

PINWORMS: ***Oxyuris equi***
- Young horses (<3yrs) **>** adults
- Sporadic
    - Individual horse problem (as opposed to herd disease)
    - Usually only one or few horses affected out of a group.
- Not huge health concern
- Eggs deposited on anus → ITCHY BUTT → tail rubbing, rump abrasions
- Diagnosis:
    - Perineal scraping
    - Scotch tape test
- Transmission:
    - Contact, manure (field)
- Treatment:
    - Most dewormers are effective – resistance may be developing to ivermectin
    - **Fenbendazole (panacur, safeguard) or Pyrantel (strongid) – preferred**
    - **Wash (tail head, anus, perineal area)**

OUR WEAPONS - DEWORMERS

- *This is not an all-inclusive list… these are the most common, most effective dewormers we have at our disposal* and only a couple examples of the most common "brand name" products.
  - **Ivermectin (+/- praziquantel) – Zimectrin, Zimectrin Gold, Equimax**
  - **Moxidectin (+/- praziquantel) – Quest, Quest Plus**
  - **Fenbendazole – Panacur, Safe-Guard**
  - **Pyrantel – Strongid, Strongid C**

RECONNAISSANCE

FECAL EGG COUNT (FEC)

- The ONLY means available to estimate the worm burden and egg contamination potential of a horse, and determine the effectiveness of anthelmentics (dewormers)
- Relatively inexpensive
- To get the most accurate estimate:
  - **3 consecutive samples taken at 6mo intervals -> then annually**

- Guidelines:
  - Sealed (ziplock bags are great) & labeled please (*owner name, horse name, date of collection*)
  - < 12hrs old (*post defecation*), not frozen, not diarrhea
  - Refrigerate immediately (can keep up to 7 days)
  - 1 nugget is plenty!
  - *Just **drop them off at HVA office**… or Camille's place! – Just kidding.*
- Shedding class for most adult horses remains consistent.
  - Immune status - health of horse
  - Level of parasite exposure - management
- Small strongyles & Roundworms – good ☺
- Tapeworms, Bots, & Pinworms – not good ☹

Shedding Class	Egg count level (EPG)	Percentage of population (adult horses)
Low	0 - 200 EPG	**50 - 70**
Moderate	200 - 500 EPG	10 - 20
High	> 500 EPG	20 - 30

EGG REAPEARANCE PERIODS (ERP)

- ERP – Time between last deworming and start of significant shedding.
  - i.e. How long it takes the worms to re-infect horse.
- We have to wait a suitable amount of time after deworming to take a fecal sample to determine the horse's natural shedding level.
  - A **MINIMUM of 4wks after the ERP** for the last drug used. (**16wks is safe to remember**)
- Goal - measure the innate ability of the horse's immune system to regulate parasite levels.

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Product Example	Drug Name	ERP	Time to Collect Fecal (post deworming)
Panacur	Fenbendazole	4-5wks	≥ 9wks
Strongid	Pyrantel	4-5wks	≥ 9wks
Zimectrin	Ivermectin	6-8wks	≥ 12wks
Quest	**Moxidectin**	10-12wks	**≥ 16wks**

FECAL EGG COUNT REDUCTION TEST (FECRT)

- The percentage of reduction in fecal egg count after deworming.
- Goal – To see if drugs are effective or resistance is developing
    - Used to determine if strongyles and/or ascarids are resistant to a given dewormer (anthelmintic).
- >85% = acceptable (> 95% means no resistance)

$$\frac{\text{FEC (pre tx)} - \text{FEC (post tx)}}{\text{FEC (pre tx)}} \times 100 = \text{FECR \%}$$

SHEDDING = SPREADING

- Although horses grazing together share the same population, they demonstrate huge differences in their levels of strongyle egg shedding.
    - Every horse is an INDIVIDUAL… but they are HERD animals after all!
- 20-30% of adult horses shed approximately 80% of the eggs.
- **FEC** – to determine the shedding potential of a horse.

THE RESISTANCE

- The ability of worms in a population to survive treatments that are generally effective against the same species and stage of infection… INHERITED.
- Fecal Egg Count Reduction Test (**FECRT**) is the only method currently available to detecting resistance.
- Not an individual horse problem. Horses sharing the same pasture share the same population of parasites. This would be a **HERD PROBLEM**.

		RESISTANCE		
Product Example	**Drug**	**Common**	**Early Indications**	**None**
Panacur	Fenbendazole	**Small Strongyles**	Roundworms	Large Strongyles
Strongid	Pyrantel	**Small Strongyles**	Roundworms	Large Strongyles
Zimectrin	Ivermectin	**Roundworms**	Small Strongyles	Large Strongyles

OTHER CONTROL METHODS

- **Environmental:**
  - Worms need manure to develop – it's what they do.
  - Egg in manure -> pasture -> ingestion (gross!)
  - If ALL FECES is promptly removed from pasture → NO MORE PARASITES!
    - Lets get real!
    - Vacuuming pasture - $$$$, not realistic for many operations.
  - TEMPERATURE + MOISTURE – biggest factors
    - Hot weather, very cold weather, dry conditions = destruction of worms.
    - **COMPOSTING** – before spreading manure on field.
    - Resting pasture (dragging can speed this up) – 3wks – 9mo depending on weather
    - Cross-Species grazing (cattle, goats, sheep, camelids) – parasites are species specific.
- **Organic/herbal Dewormers:**
  - No controlled, formal studies → efficacy not proven, safety not proven → Not approved by the FDA so not "drugs" → companies can say anything they want and their product does not have to be effective at all….
  - Unregulated
- **The bottom line_____**
  - If we cannot remove manure from pasture then strategic deworming with effective products the next best thing.

THE BIG PICTURE – K.I.S.S PRINCIPLE

STRATEGIC DEWORMING

- Treatments should be:
  - Right TARGET - Based on FECAL sample
  - Right TIME – Seasonality, lifecycles of worms
  - Right TREATMENT – Most effective dewormer for parasites we are trying to kill.

- **ADULTS:**
  - Based on FECAL sample – **SHEDDING CLASS**
    - FECAL not accurate for TAPES, BOTS, ENCYSTED SMALL STRONGYLES)
  - Deworm **annually** with drug to kill **TAPES & BOTS - Fall** (***after 1st hard frost***)
    - **TAPES:**
      - Quest Plus (moxidectin/praziquantel)
      - Zimectrin Gold (ivermectin/praziquantel)
      - Double Dose Strongid
    - **BOTS:**
      - Quest (moxidectin)
      - Zimectrin Gold (ivermectin)
    - **BOTH:**
      - Quest Plus (moxidectin/praziquatel)
  - Deworm **annually** with drug to kill **ENCYSTED SMALL STRONGYLES**
    - *Fall may be best time for this as well*
    - **Quest Plus (moxidecting/praziquantel)**

- **Panacur Power Pack – double does panacur, once daily x 5 days.**
- ALL OTHER TREATMENTS SHOULD BE TARGETING HORSES WITH HIGH *STRONGYLE* CONTAMINATION POTENTIAL (**HIGH SHEDDERS**) OR at the discretion of the veterinarian for health reasons.
  - **Ivermectin (Zimectrin)** or **Moxidectin (Quest)** – still most effective
  - Pyrantel (Strongid), Fenbendazole (Panacur) – resistance popping up.

- **FOALS, WEANLINGS, YEARLINGS (< 2yrs old)**
  - Treatments based on FEC is not recommended
    - Immune system developing, FEC will be changing!
    - Different parasites (ROUNDWORMS > small strongyles)
  - We can still use strategic deworming (targeted treatments)
  - **FIRST YEAR OF LIFE (4 treatments)**
    - **3mo** old
      - Fenbendazole (Panacur)
      - Roundworms
    - **6mo** old (weaning time) - FEC - Roundworms vs. strongyles
      - Fenbendazole (Panacur)
      - Roundworms
    - **9mo** old
      - Ivermectin (Zimectrin) or Moxidectin (Quest)
      - Strongyles
    - **12mo** old
      - Ivermectin/praziquantel (Z-Gold) or Moxidectin/praziquantel (Quest plus)
      - Strongyles + Tapes

- **KVA RECOMMENDED PROGRAM – ADULT HORSES**
  - HVAequine.com -> Education -> Deworming Recommendations
  - http://www.kvaequine.com/education.html
  - **FORMULATED JUST FOR <u>YOUR</u> HORSE!**

Shedding Class	March	April	May	June	July	August	September	October	November
1	Fecal	MOX or PP						Fecal	*IVM/PRZ or DD PYR
2	Fecal	MOX or PP			IVM			Fecal	*IVM/PRZ or DD PYR
3**	Fecal	MOX or PP		IVM		IVM		Fecal	*IVM/PRZ or DD PYR
Unknown	***	MOX or PP		IVM		IVM		***	*IVM/PRZ or DD PYR

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VACCINATION -> IMMUNIZATION

- Goals:
  - Eradication of disease (e.g. smallpox) – that's HVA's goal!
  - Reduce the **number** and/or **severity** of infections.
- No vaccine is 100% effective… guaranteed.
  - Management, immune status, level of protection, exposure
- A "standard" vaccine program for all horses does not exist.
  - Individual assessment – risk of developing disease, consequences, effectiveness, risk of adverse reactions, cost

2016 Pennsylvania Disease Outbreaks

- EDCC – Equine Disease Communication Center
  - www.equinediseasecc.org
  - Daily updates of new or ongoing disease outbreaks across the country
  - Searchable by disease or by state

AAEP CORE VACCINES

- What is a CORE vaccine?
  - those "that protect from diseases that are endemic to a region, those with potential public health significance, required by law, virulent/highly infectious, and/or those posing a risk of severe disease.
  - Core vaccines have clearly demonstrated efficacy and safety, and thus exhibit a high enough level of patient benefit and low enough level of risk to justify their use in the majority of patients."
    - *~American Veterinary Medical Association*
  - FDA APPROVED

- **Eastern/Western Equine Encephalomyelitis**
  - **EEE/WEE**
- **Tetanus**
- **Rabies**
- **West Nile Virus**

EEE/WEE

- WHAT- Neurologic disease affecting brain and spinal cord, accompanied by acute onset of fever
- WHERE- Widespread presence across the USA
  - Vector season
- HOW- Transmitted to horses by mosquitoes
  - Natural reservoir hosts are wild birds or rodents
  - Humans, though rare, can also become infected by mosquitoes
  - NOT contagious horse-horse or horse-human
- Mortality
  - EEE 90% - Young horses are particularly susceptible
  - WEE 50%
- Venezuelan (VEE) form not diagnosed in USA in over 40 years – some cross-protection offered by annual vaccination for EEE/WEE

RABIES

- WHAT- Fatal neurologic disease affecting the brain and spinal cord
  - 2 forms – aggressive form & paralytic 'dumb' form
- WHERE– EVERYWHERE (wildlife)
- WHO - EVERYONE
- HOW - Infection is through a bite wound or broken skin in contact with saliva of an infected animal
  - Fox, raccoon, skunk, bats – most common rabid animals
- Unvaccinated horses with acute onset of neurological disease and any possible history with contact with wildlife should be considered suspect.
  - Vaccination history?
- Testing – histopathology of brain and spinal cord (only after death or euthanasia)
- Mortality – 100%
- TREATMENTS – NONE

TETANUS

- WHAT - Rigid paralysis caused by *Clostridium tetani* bacterial toxin.
  - saw-horse stance, 3rd eyelid exposed, grimace, fever, increased heart & respiratory rates
- WHERE - Bacteria live EVERYWHERE – GI tracts of animals and humans, soil
  - Can survive as spores in environment for YEARS
- HOW - Bacteria enters wound and produces toxin which travels through blood and binds to nerve-muscle junctions causing muscle contraction
  - NOT contagious
- TREATMENTS -
  - If suspect infection, administer tetanus antitoxin to stop progression
  - 4-6 weeks for neuromuscular junction to regenerate, provide supportive care
- PREVENTION –
  - Annual vaccination
  - Vaccination booster at time of **wound if > 6mo since last vaccination**

WEST NILE VIRUS

- WHAT - Acute onset neurologic disease of the brain and spinal cord
  - fever, ataxia/incoordination, tremors of head and neck
- WHO - 96.9% of all non-human cases of WNV in mammals are horses
  - Infected birds are fed on by mosquitoes, which then transmit to horses, humans, and other mammals through a blood meal
- NOT contagious horse-horse or horse-human
- Mortality - about 33%
- Morbidity - 40% of survivors still have residual neurologic deficits
- TREATMENTS – Supportive care, antiviral drugs ($$$$$$)

RISK BASED VACCINES

- Veterinarian – risk-benefit analysis
  - Regionally (i.e. PA, mid-atlantic region)
  - Different populations within an area
    - Show, age, pleasure, pasture pet, environmental considerations (water, hay, etc..)
  - Individuals within the same population
    - Geriatric horse, wounds, moving horse, riding discipline

BOTULISM: ***Clostridium botulinum* -> Toxin (A, B, C, D, E, F, G)**

- WHAT – Rapidly progressive neuromuscular disease that is usually fatal to horses.
  - Wound Botulism
  - Forage Poisoning
  - Shaker Foal Syndrome
- Clinical signs – (subtle signs - horses found dead)(12hr-10d)
  - Generalized muscle weakness, slow eating and a shuffling gait with toe dragging -> tongue/tail tone are weak -> unable to eat/swallow -> muscle fasciculations -> recumbency (flaccid paralysis) -> death.
- WHERE – Type B - Common throughout the entire United States - SOIL
  - Highest concentration northeast of the Mississippi River (i.e. Kentucky and Pennsylvania)
- WHO – Adults and Foals = all horses
- TREATMENT – 30-90 days
  - Antitoxin - $$$$
  - Supportive care
  - If horses does not become recumbent (8hrs) they have better prognosis for survival.
- PREVENTION – Highly effective, safe vaccine (NEOGEN – BOTVAX)

Why Vaccinate for Botulism?

- Vaccination is cheaper than treatment
- Disease is almost always fatal
- Vaccine is safe and effective
- 23.5% of the soil samples across the U.S. test positive for *C. botulinum*
- 80% of cases are *C. botulinum* type B

EQUINE HERPESVIRUS (EHV): *EHV 1, 4 - Rhinopneumonitis*

- WHAT – Respiratory pathogen
  - EHV ¼ - Fever, lethargy, anorexia, nasal discharge, cough, enlarged LN
  - EHV 1 –
    - Abortion
    - Virus mutation -> **neurologic disease** (EHM – equine herpesvirus myeloencephalopathy)
- HOW (direct/indirect contact) –
  - Aborted fetuses (tissues and fluids too)
- WHO – Foals > Adults
- PREVENTION - Biosecurity, vaccination (frequent boosters for high risk horses)
  - Vaccination won't protect against neurologic disease but may decrease shedding/spreading.
- TREATMENT – Supportive care, antiviral drugs ($$$$$)

EQUINE INFLUENZA (FLU)

- WHAT - Highly contagious viral disease that spreads rapidly among naive horses.
  - Clinical signs - high fever, nasal discharge, enlarged LN, coughing (dry, harsh, nonproductive) -> Depression, anorexia, and weakness.
    - Secondary bacterial infection = PARTY!
- WHO – Horses 1–5 yr old are the most susceptible to infection.
- WHERE – Pretty much everywhere except New Zealand & Iceland

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  - o Open herds at higher risk.
- PREVENTION - Biosecurity, vaccination (frequent boosters for high risk horses)
- TREATMENT – Supportive care, rest, rest, rest, antimicrobials to decrease risk of secondary bacterial infection.

POTOMAC HORSE FEVER (PHF): *Neorickettsia risticii*

- WHAT - Acute enterocolitis syndrome
  - o Signs - mild colic, fever, diarrhea, anorexia -> laminitis/founder, abortion -> death
- WHERE – All over the US (a lot of cases in our area!)
  - o Pastures bordering creeks or rivers = increased risk
- WHEN - Spring, summer, fall
- HOW – Freshwater snails -> caddisflies, mayflies, dragonflies -> accidental ingestion by horse.
  - o NOT CONTAGEOUS
- PREVENTION – management strategies, vaccination (twice annual boosters)
- TREATMENT – Can be effective if illness caught early

STRANGLES: *Streptococcus equi*

- WHAT – Bacterial infection of the upper respiratory tract (pharyngeal area, guttural pouches, lymph nodes)
  - o "Strangles" - The condition in which an affected horse is suffocated as lymph nodes in the throat region become enlarged and obstruct the airway
    - ▪ Does not happen in all cases
  - o Fever, nasal discharge, anorexia, abscesses of mandibular lymph nodes (throat latch) ~ 7-10 days following exposure
- WHO – Any naive horse (increased risk) – Young > Adult
  - o Open herds, traveling – increased risk
- PREVENTION – Biosecurity, vaccination (or TITER – if previously exposed)
  - o Isolate, separate, test, re-test, infection = immunity
  - o Carrier horses = SOURCE
- TREATMENT – supportive care, +/- antimicrobials, guttural pouch scope/lavage.

RHINITIS: Equine Rhinitis A Virus (ERAV)

- WHAT - a potentially overlooked causative agent of respiratory diseases in horses
  - o Affects both upper and lower airways
  - o Mild to severe respiratory tract disease in horses (upper & lower airway)
  - o May be a contributing or exacerbating factor of inflammatory airway disease (IAD) and recurrent airway obstruction (RAO or heaves)
  - o Fever, nasal discharge, coughing, anorexia, pharyngitis, enlarged LN, occasionally leg edema
- WHO - young horses (<4yrs old) highest risk
  - o co-mingling, open herd, entering training, stress (performance or competition)
- HOW - contact through nasal secretions and aerosol inhalation.
- Usually not life threatening, $$$ losses
- TREATMENT – supportive care
- PREVENTION - Vaccination

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THE OTHER GUYS

- **LEPTOSPIROSIS:**
  - Sporadic disease - recurrent uveitis, late-term abortion, acute renal failure.
  - Exposure to the organism via the mucous membranes or abraided skin.
  - Shed in the **urine** of infected horses (abortion tissues/fluids) + wildlife.
  - Reproduction herds
- **ROTAVIRUS:**
  - Foal diarrhea (common cause) - maldigestion, malabsorption, and diarrhea.
  - Mortality is low (<1%) with veterinary intervention.
  - fecal-oral transmission -> As many as 70% of all foals in the United States will have at least one diarrheal episode prior to weaning
  - Reproduction herds
- **EQUINE VIRAL ARTERITIS (EVA):**
  - Usually not life-threatening to otherwise healthy adult horses
  - Respiratory secretions, venereal transmission (AI) -> Fever, depression, anorexia, dependent edema, hives, conjunctivitis, ocular/nasal discharge
  - Abortion (pregnant mares), death (young foals)
  - Carrier state in breeding stallions – Should test negative -> vaccinations
- **ANTHRAX: *Bacillus anthracis***
  - Rapidly fatal septicemic disease – NOT CONTAGIOUS
  - Spores in soil - Ingestion, inhalation, contamination of wounds.
  - Limited geographic areas (alkaline soil conditions)
    - Central/South America, sub-Saharan Africa; parts of Asia, Europe, and the Caribbean.
  - Only vaccinate horses in endemic areas

TITERS - ♫what are they good for?♫

- *"The use of antibody titers or other immunological measurements to determine if booster vaccination is warranted is not currently practiced in the horse as standardized tests and protective levels of immunity have not been defined for most diseases. A correlation between antibody levels and protective immunity under field conditions has not yet been identified."*
  - ~ American Association of Equine Practitioners

- Very costly compared to vaccinations
- Titer assay not available for all diseases we vaccinate for.
- Not enough data to strongly support protective immunity – what do the numbers mean?
- The goal is to protect YOUR horse and OTHER horses.
- We use vaccinations based on how they were designed/tested/FDA approved to be used by the labeled guidelines
- Exception for titers:
  - **Strangles titer** – Indicated before vaccination if horse has history of previous exposure.
    - Immunity – most horses have strong immunity after recovering from infection (75% of horses for 5yrs or longer)
    - Risk of vaccine reaction – *purpura hemorrhagica*
    - Horses with high titers should not be vaccinated.

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ADULT VACCINATION GUIDELINES

KVA EQUINE - CORE

- Initial series is **two doses (1 month apart)**(3-6wks)
- Chart is based on **annual vaccination program**

VACCINE	HORSES	HOW OFTEN *(after initial series)*	CONSIDERATIONS
Tetanus	ALL	1x/year	Soil - Booster at time of **wound** or **surgery** if **> 6mo since last vax**.
EEE/WEE	ALL	**1**-2x/year	Mosquitos, geographic distribution
WNV	ALL	1-**2**x/year	Mosquitos, geographic distribution
Rabies	ALL	1x/year	Wild animals
Potomac Horse Fever (PHF)	ALL (in our region)	2x/year	Mayflies
Botulism	ALL (in our region)	1x/year	Soil is everywhere! **** 3 dose initial series***

KVA EQUINE (Risk Based Vaccinations – For YOUR horses)

- Initial series is **two doses (1 month apart)(**3-6wks)
- Chart is based on **annual vaccination program**

VACCINE	HORSES	HOW OFTEN *(after initial series)*	CONSIDERATIONS
Flu (influenza) Rhino (EHV ¼)	Open Herd, showing	2x/year	
Strangles	Open Herd, showing, never exposed	1x/year	* Titer before vaccination if horse may have been exposed.
Rhinitis (ERAV)	Open Herd, showing/training, young horses (<4 yrs old)	**1-**2x/year	**** 3 dose initial series***

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BROODMARE VACCINATION GUIDELINES

KVA EQUINE - CORE

- Initial series is **two doses (1 month apart)(**3-6wks)
- Chart is based on **annual vaccination program**
- Broodmares should be receive **boosters 1mo before foaling**.

VACCINE	HOW OFTEN *(after initial series)*	CONSIDERATIONS
Tetanus	1x/year	Soil - Booster at time of **wound** or **surgery** if **> 6mo since last vax**.
Influenza (Flu)	2x/year	
Rhino (EHV ¼)	**5mo, 7mo, 9mo gestation**	* No initial series
EEE/WEE	**1**-2x/year	Mosquitos, geographic distribution
WNV	1-**2**x/year	Mosquitos, geographic distribution
Rabies	1x/year	Wild animals
Potomac Horse Fever (PHF)	2x/year	Mayflies
Botulism	1x/year	Soil is everywhere! **** 3 dose initial series***

FOAL VACCINATION GUIDELINES (<12mo old)

KVA EQUINE - CORE

- Initial series is **THREE doses (1 month apart**)(3-6wks) – **excluding RABIES & PHF**
- **Mare previously vaccinated (1mo pre-foaling) – Start vaccinations at 5mo old**
- **Mare NOT previously vaccinated (1mo pre-foaling) – Start vaccinations at 3mo old**
- Chart is based on **annual vaccination program**

VACCINE	HORSES	HOW OFTEN *(after initial series)*	CONSIDERATIONS
Tetanus	ALL	1x/year	Soil - Booster at time of wound or surgery if > 6mo since last vax.
EEE/WEE	ALL	**1**-2x/year	Mosquitos, geographic distribution
WNV	ALL	1-**2**x/year	Mosquitos, geographic distribution
* Rabies	ALL	1x/year	**** 2 dose initial series- regardless of mare vax status***
* Potomac Horse Fever (PHF)	ALL (in our region)	2x/year	Mayflies **** 2 dose initial series (regardless of mare vax)***
Botulism	ALL (in our region)	1x/year	Soil is everywhere! **** 3 dose initial series***

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AAEP VACCINATION GUIDELINES

- Full charts/guidelines available at:
- www.aaep.org -> OWNERS -> GUIDELINES -> VACCINATION GUIDLINES