

The Elkhorn Veterinary Clinic **Fall Equine Seminar**

October 2, 2024





Welcome

2024 Fall Equine Seminar



List of Speakers:

- Dr. Phil Burns
- Dr. Liz Henderson
- Dr. Walker Hyche
- Dr. Tess Tucker
- Dr. Kristen Zainer

Every horse deserves great preventive care. Especially yours!

The Elkhorn Veterinary Clinic Equine Wellness Program is an easy and affordable preventive care plan. As veterinarians, we feel strongly about the value of preventive medicine and its role in keeping your horse healthy. Each service provided in our Equine Wellness Program has been carefully selected to assure that your horse receives the highest quality essential preventive care available.

Don't miss out on any opportunities to save!
Enroll today using the QR code below:



Still have questions? Contact us at:
262-723-2644

2024 Equine Wellness Program Fee \$595

Save 25% on the Following:

- Annual Coggins test
 - One dental exam
 - One dental float (level 1 or 2) with sedation*
 - One fecal egg count
 - Annual Vaccinations:
 - Tetanus Toxoid
 - Eastern & Western Encephalomyelitis
 - West Nile Virus
 - Rabies
 - Potomac Horse Fever
 - Influenza (Spring & Fall)
 - Rhinopneumonitis (Spring & Fall)
 - Two general health exams (Spring & Fall)
 - Nutrition & weight consult (Spring & Fall)
 - Digital medical record sheet
- Your savings continue with 10% off on all of the following services:*
- Imaging (x-ray, ultrasound, endoscopy)
 - Laboratory tests
 - Veterinary exams
 - Additional fecal egg counts
 - Microchipping



Our Wellness Program takes your personal preferences and financial needs into consideration:

- Choose your veterinarian & the appointment time that best fits your schedule.
- Save even more when you share farm calls among multiple owners at the same location.
- Take 5% off the price of the program when enrolling 3 or more horses.
- Take advantage of our payment plan - pay half down now and the remainder over five months.
- Receive a prorated refund on any unused services.

Vaccinations

Core Vaccines

Core Vaccines help to prevent serious, often fatal diseases, that are of particular risk to most horses. They are highly recommended for all horses, regardless of their status.

- Tetanus
- Rabies
- West Nile Virus
- Eastern Equine Encephalomyelitis
- Western Equine Encephalomyelitis

Tetanus is an extremely serious disease of the central nervous system that has a **high mortality rate in horses**. The bacteria causing tetanus, *Clostridium tetani*, is **found in soil worldwide**, and therefore every unvaccinated horse is a potential victim.



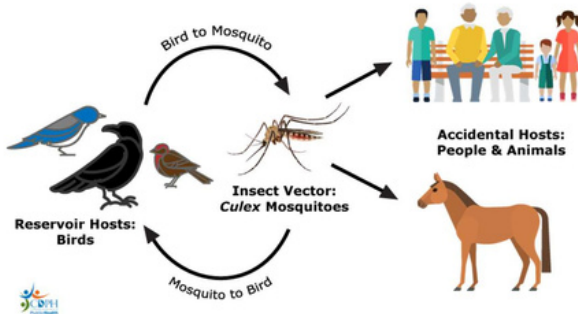
Rabies is caused by a lyssavirus that infects the nervous system and salivary glands and is almost always **spread directly between animals** through saliva. It is important to vaccinate against rabies as it **can be spread to humans**. Rabies is **100% fatal** in horses and humans.

Eastern & Western Encephalomyelitis are mosquito-borne, viral infections that can cause severe encephalitis in horses and humans with a case fatality rate as high as 90%.

West Nile Virus is a mosquito-borne disease that causes inflammation or swelling of the brain and spinal cord. One in three clinically infected horses will die.



West Nile Virus Transmission Cycle



Horses & Humans are dead-end hosts to West Nile Virus

Preventing mosquito-borne illnesses:

- Keep horse current on vaccinations.
 - Annual vaccination recommended in the spring in Wisconsin/Illinois
- Use insect repellents
- Keep horses inside at night
- Eliminate standing water and areas where standing water collects
- Stock tanks and ponds with mosquito-eating fish.

Climate change in Wisconsin may bring wetter summers. Increased rainfall increases the number of mosquitos and thus the risk of mosquito-borne illness.

Risk-Based Vaccines:

Risk-based vaccines may be recommended based upon the horse's individual needs.

For instance, horses attending horse shows or stabled with horses that do so may be considered high risk for communicable diseases.



Risk-Based Vaccines:

- Equine Influenza
- Equine Rhinopneumonitis (EHV 1&4)
- Potomac Horse Fever
- Strep (Strangles)



Elkhorn Veterinary Clinic Recommended Vaccination Schedule (For Adult Horses)

- Tetanus -Annually
- Rabies -Annually
- West Nile Virus -Annually in the Spring
- Eastern & Western Encephalomyelitis -Annually in the Spring

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- Equine Influenza -High risk -Semiannually, Low Risk -Annually
 - Rhinopneumonitis -High risk -Semiannually, Low Risk -Annually
 - Potomac Horse Fever -Semi-annual to Annual
 - Strep -High risk -Semi-annual to Annual



Your veterinarian is your best source of information regarding the vaccines your individual horse needs.

Your veterinarian is your best source
of information regarding your horse's
vaccination needs.

Please ask us
if you have questions.
We are happy to help!



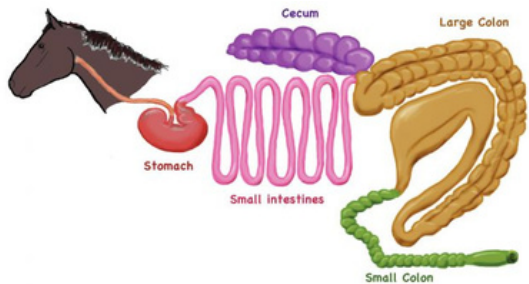
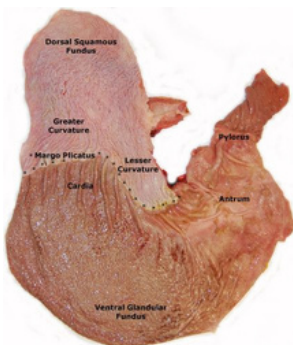
Fall Seminar 2024

Ulcers

Dr. Kristen Zainer



Anatomy



Classification

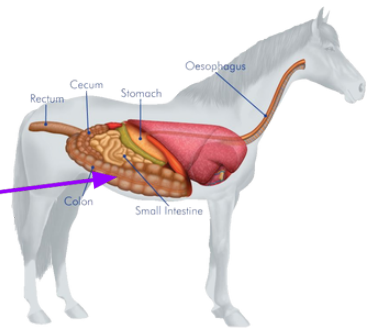
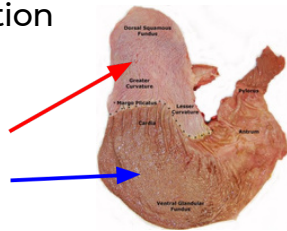
Foregut

Squamous

Glandular

Hindgut

Large colon, often right dorsal colon



Squamous

Symptoms

Irritability and "Girthiness"

Poor Performance

Weight Loss and/or poor body condition

Mild abdominal discomfort/colic symptoms

Poor appetite

Diagnosis

Gastroscope

Treatment

Omeprazole

Ranitidine

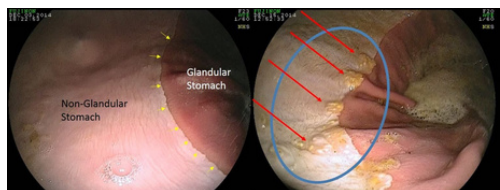
Sucralfate

Feed and supplements

AVOID NSAIDS

Table 1. Grading system for equine squamous gastric disease (adapted from 1999 EGU/C Council's)

Grade	Squamous Mucosa
0	The epithelium is intact and there is no appearance of hyperkeratosis
I	The mucosa is intact, but there are areas of hyperkeratosis
II	Small, single or multifocal lesions
III	Large single or extensive superficial lesions
IV	Extensive lesions with areas of apparent deep ulceration



Glandular

Symptoms

Similar non-specific signs as with Squamous

Diagnosis

Gastroscope

Treatment

Misoprostol

Doxycycline

Feed and

supplements

AVOID NSAIDS



Colon

Symptoms

Diagnosis

Presumptive compared to gastric

Abdominal Ultrasound

Thickness of wall > 3 mm

Fecal Occult Blood Test

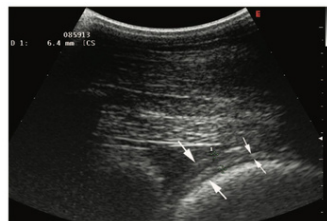
Albumin and hemoglobin assessment

pH < 6.5

Treatment

Misoprostol

AVOID NSAIDS



Causes

NSAIDS

Rapid and/or drastic feed changes

Acidosis

Stress

High Concentrate Diets

Restricted access to hay/grass



Prevention

Access to hay 24/7

UlcerGard several days before and after known stressful event (show, new pasture-mate, etc.)

AVOID NSAIDS

Less grain

Supplements, but be wary of marketing gimmicks

Citations

Sykes, Benjamin & Hewetson, Michael & Hepburn, Richard & Luthersson, Nanna & Tamzali, Youssef. (2015). European College of Equine Internal Medicine Consensus Statement-Equine Gastric Ulcer Syndrome in Adult Horses. *Journal of veterinary internal medicine / American College of Veterinary Internal Medicine*. 29. 1288-1299. 10.1111/jvim.13578.

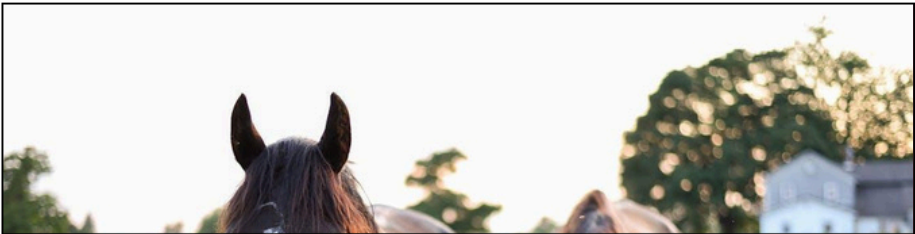
Illustration of the various components that encompasses the equine gastrointestinal tract. Source: UGA Extension Equine Colic

Photo of gastroscopy with score $\frac{3}{4}$ squamous ulcer by Dr. Micheal Porter, DVM, PhD, Florida

Reef, Virginia B. "Ultrasound of the nonacute abdomen: gastrointestinal tract." (2012): 19-27.

Thank you!





What's in Your Pasture? A Guide to Toxic Plants

DR. LIZ HENDERSON, DVM

When and Where Does Poisoning Occur?

- First grazing of the Spring After herbicide treatment
 - After application of nitrogen fertilizer Yard clippings
 - Unfamiliar/new pastures Anytime there is limited
 - desirable forage present ***
 -
 -
-

CATEGORIES

• **HIGHLY TOXIC** Ingestion of <5% of BW can result in serious injury or death

• **MODERATLY TOXIC** Ingestion of 5-25% of BW can result in serious injury or death

• **MILDLY TOXIC** Under certain environmental conditions these plants can be toxic

COCKLEBUR

- Likes to grow wet areas with sandy soils
- Seeds and seedlings are toxic
- Can cause a severe drop in blood sugar
- Often a very rapid onset of clinical signs
- Clinical Signs:
 - Inappetence, depression, colic, weakness, incoordination, seizures, blindness, coma





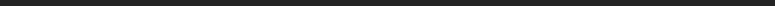
JIMSONWEED

- Likes to grow in sandy areas
- Highly unpalatable with a strong odor
- Clinical signs:
 - Muscle weakness, Tremors/muscle twitching, incoordination, paralysis, cardiac/respiratory insufficiency



MILKWEED

- Loves to grow in pastures
- Typically highly unpalatable
- Horses are more effected than other species
- Clinical signs
 - Depression, decrease respiratory rate, staggering, tremors, colic, diarrhea



NIGHTSHADE

- Immature berries are the most toxic
- Clinical signs
 - Depression, muscle weakness, decrease heart rate and respiratory rate, diarrhea, hind limb paralysis



RED MAPLE

- Dry/wilting leaves are toxic
 - Drought/storm
- Horses often show signs 1-2 days after consumption
- Oxidizes RBC- leads to a hemolytic anemia
- Clinical signs:
 - Weakness, increased heart rate and respiratory rate, jaundice, brown urine/blood, fever, death





WHITE SNAKE ROOT

- Prefers to grow in partial shade/ wooded areas
- Toxin excreted from the body only in milk (lactating animals may be less affected, but can transfer toxin to foals)
- Clinical signs:
 - Depression, lethargy, muscle tremors, throat paralysis
 - Cardiotoxic: cardiac arrhythmias, death



YEW

- VERY toxic- consumption of 0.1% of BW can kill a horse
- Mostly ornamental plant , some native
- Clinical signs:
 - Sudden death is the most common clinical sign
 - Cardiotoxic: pronounced decrease in heart rate, diarrhea, tremors, convulsions

WATER HEMLOCK



- Found primarily in wet areas in early spring
- Toxin concentrated in the roots
- Quick onset
- Clinical signs:

Salivation, muscle fasciculations, seizures, coma, death

POISON HEMLOCK

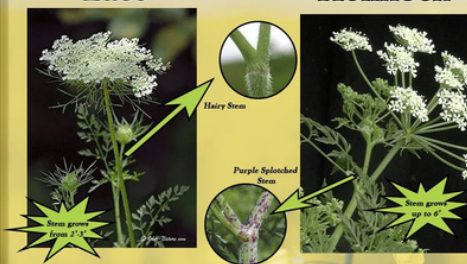


- Often found in roadside ditches
- Clinical signs:

Salivation, trembling, ataxia, paralysis, decreased respiratory rate, decreased/irregular heart rate, death

How to Spot the Difference

Queen Anne's Lace	Poison Hemlock
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Protect Yourself!

MODERATELY TOXIC

- Black locust
 - Bracken fern
 - Hoary alyssum
 - Horsetail
 - Oaks
 - Prunus sp.
-

MILDLY TOXIC

- Alsike clover
- Buttercups
- Pigweed
- Sorghum
- St. Johnswort
- Tall fescue
- Wild parsnip

What to do if you Suspect Toxicity?

- Contact a veterinarian
 - If you identify a plant source, remove all animals from that area to prevent further toxicity
 - Prevention is always better than treatment ***
-

EQUINE INFECTIOUS RESPIRATORY DISEASES

Dr. Phil Burns, Elkhorn Veterinary Clinic

HISTORY

- As long as there have been horses there has been respiratory diseases in horses
 - Earliest recorded is in Sicily Italy in 412 BCE
- EIV like equine respiratory disease recorded since 13th century.
 - Often preceded human influenza outbreaks.
- The Great Epizootic of 1872 in which a virulent form of Equine Influenza sickened more than 90% of Equidae in North America which paralyzed the nation and upended everyday life.
- Equine Respiratory Disease is the 2nd most common disorder to limit performance horses only behind musculoskeletal disease in importance!



THE PLAYERS

- **VIRAL:**

- Equine Herpes Virus 1 and 4 *
- Equine Influenza Virus *
- Equine Rhinitis Viruses ERAV,ERBV
- Equine Adenovirus
- Equine Viral Arteritis (EVA)
- Hendra Virus

- **BACTERIAL:**

- Streptococcus equi, **STRANGLES** *
- Streptococcus zooepidemicus
- Corynebacterium pseudotuberculosis
- Rhodococcus Equi

PARASITES

- Parascaris equorum, Ascarids, Roundworms *
- Dictyocaulus arnfieldi, Lungworm

EPIDEMIOLOGY - where in the world



ALL AGENTS ARE FOUND
WORLDWIDE

Except the Hendra Virus that is only
in Australia

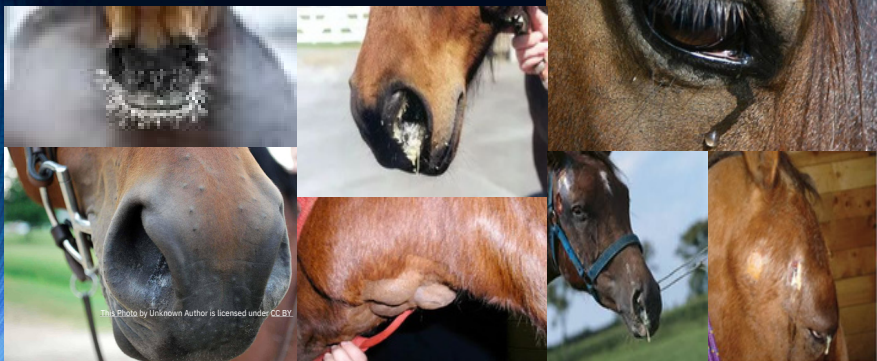
VIRUS – TARGET POPULATIONS

EHV1, EHV4 HERPES VIRUS	EH1 and EH4 targets all ages but is higher incidence in young populations with EH4 a primary disease of foals
EIF, Equine Influenza Virus	Highest incidence in 2- to 3-year-old populations but again any age in stress can pick up *Rare Zoonotic Dx.
ERAE, ERBV Equine Rhinitis Viruses	All ages but again the naïve younger populations under stress most common
EAdV1, Equine Adenovirus	Generally subclinical respiratory disease in horses except in Arabian foals with PSCID.
EVA, Equine Viral Arteritis (1953)	All ages, of special concern in breeding animals. Higher prevalence in Standardbred and Warmblood populations
Hendra Virus (1994)	*Zoonotic Dx, Rare but highly lethal infection, all ages at risk if exposed.

BACTERIAL TARGET POPULATION

Streptococcus Equi-equi, STRANGLES	All ages but younger and aged or immune compromised populations are at higher risk.
Streptococcus Zooepidemicus	Opportunistic commensal bacterial, normal flora, usually affects horse under the age of 3 years.
Corynebacterium Pseudotuberculosis False Strangles, Dryland Distemper, Pigeon Fever	All ages except it appears that under 6 months is not seen.
Rhodococcus Equi	Primarily a disease of foals up to 6 months of age.

CLINICAL SIGNS



VIRUSES – CLINICAL SIGNS

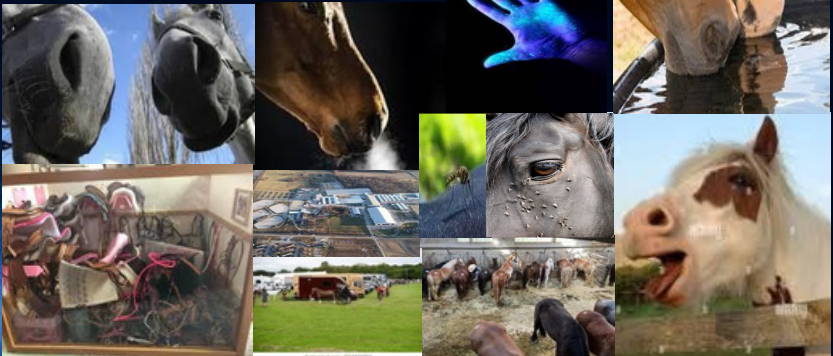
EHV1, EHV4 HERPES VIRUS		Can be subclinical EHV1 incubation 2-10 days with a biphasic fever. can cause abortions from 5-11 months in pregnancy Equine Herpes Myelopathy, neurologic dx. EH4 can cause abortions, severe pneumonia foals
EIF, Equine Influenza Virus	*LETHARGY *PYREXIA *NASAL DISCHARGE	Can be subclinical
ERAE, ERBV Equine Rhinitis Viruses	*CONJUNCTIVITIS	Can be subclinical
EAdV1, EAdV2, Equine Adenovirus	*LYMPH NODE ENLARGEMENT *PERIPHERAL EDEMA *COUGH	Usually subclinical. Exception noted in Arabian foals with PSCID EAdV2 can cause GI infections
EVA, Equine Viral Arteritis (1953)		Can be subclinical. Causes some mares to abort and fertility issues Stallions decreased fertility, hives
Hendra Virus (1994)		Peracute symptoms that rapidly progress to death, including High fevers, rapid HR, frothy nasal mucous, sweating, ataxia. 80 % 80% mortality.

BACTERIAL – CLINICAL SIGNS

Streptococcus Equi-equi, STRANGLES	*LETHARGY *PYREXIA *NASAL DISCHARGE *CONJUNCTIVITIS *LYMPH NODE ENLARGEMENT *PERIPHERAL EDEMA *COUGH	Classic submandibular lymph node swelling with thick mucopurulent drainage. Perimandibular lymph node swelling can lead to respiratory compromise. Bastard Strangles is when abscesses spread beyond the respiratory system.
Streptococcus Zooepidemicus		Emerging Zoonosis, Most common presentation is pneumonia or rhinitis, not an uncommon sequela to viral pneumonias. Strep zoo is part a horse's normal microbiota.
Corynebacterium Pseudotuberculosis False Strangles, Dryland Distemper, Pigeon Fever		External abscesses can occur anywhere on the body, swelling of the pectoral muscles, weight loss, lymphangitis. 8% of horses have internal infections with a case mortality of 40%.
Rhodococcus Equi		Lower respiratory tract chronic suppurative bronchopneumonia, Multisystemic infection. Often subclinical until more advanced pathology present due to walled off abscesses

Lower respiratory tract chronic suppurative bronchopneumonia
Multisystemic infection. Often subclinical until more advanced pathology present due to walled off abscesses

TRANSMISSION



VIRAL TRANSMISSION

EHV1, EHV4 HERPES VIRUS	*RESPIRATORY SECRETIONS- AEROSOLIZED OR DIRECT CONTACT. *FOMITES- FEED, WATER, TACK.	Incubation is 4-6 days average. Reproductive fluids or abortions can spread disease. Latent infection shed when stressed. EHV4 is the most common infectious disease of horses.
EIF, Equine Influenza Virus, H7N7, H3N8		Zoonotic risk very low but present, also dogs and cats. Incubation is 2 – 8 days. Highly contagious with short lasting immunity, 3 mo.
ERAE, ERBV Equine Rhinitis Viruses		Infect both upper and lower airways. Incubation 2-8 days. Latent carrier states.
EAdV1, EAdV2, Equine Adenovirus		Transmitted via feces as well as respiratory secretions. Incubation 7 to 10 days. Adenovirus is considered endemic in most Equine. Most horses have antibodies by 2 years of age.
EVA, Equine Viral Arteritis (1953)		Infected Stallions shed virus in semen, mares in vaginal fluids. Virus can survive -70 degrees and transfers through frozen semen. Incubation is 2-14 days.
Hendra Virus (1994)		Reservoir is the Flying Fox Bat. The exact mode transmission is not fully understood. The bats bodily fluids are infective as are secretions from an infected horse. Incubation is 5-21 days.

BACTERIAL TRANSMISSION

Streptococcus Equi-equi, STRANGLES	*AEROSOLIZED *DIRECT CONTACT-NOSE TO NOSE *INDIRECT CONTACT – WATER, FEED TACK, OWNERS STALLS	Incubation is 3 to 8 days. **Persistent carriers are reservoir in equine population with bacteria in their guttural pouches. Highly Contagious!! Rare zoonosis
Streptococcus Equi Zooepidemicus		Zoonotic Potential, Incubation is 1 to 3 days in horse. Human or horse transmission can occur up to a few weeks later.
Corynebacterium Pseudotuberculosis False Strangles, Dryland Distemper, Pigeon Fever		Transmission occurs through wounds, present in environment, soil, etc. Biting insects, (flies). Immunity is long lasting once recovered. Can infect a wide range of species including rarely humans.
Rhodococcus Equi		Inhalation of dust particles with bacteria. Endemic on certain farms or regions. Manure is a prime vector of spread. The disease has a slow undetectable course until often advanced and advanced. Zoonotic in immune compromised people and BAD.

DIAGNOSTICS



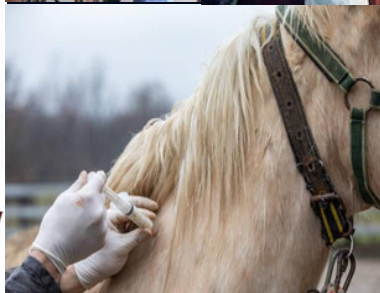
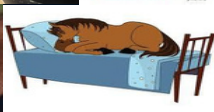
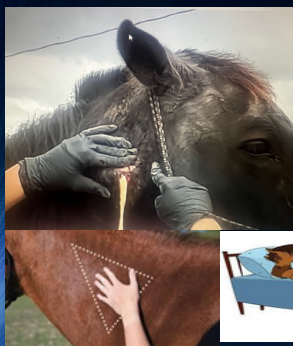
VIRAL DIAGNOSTICS

EHV1, EHV4 HERPES VIRUS	HISTORY PHYSICAL EXAM SAA CBC PCR – NASAL SWABS, BLOOD TITERS	Test aborted fetus or membranes if involved.
EIF, Equine Influenza Virus, H7N7, H3N8		
ERAE, ERBV Equine Rhinitis Viruses		
EAdV1, EAdV2, Equine Adenovirus		
EVA, Equine Viral Arteritis (1953)		PCR or virus isolation of bodily fluids, including semen from infected stallions.
Hendra Virus (1994)		PCR or virus neutralization testing from bodily fluids including CSF.

BACTERIAL DIAGNOSTICS

Streptococcus Equi-equi, STRANGLES	HISTORY PHYSICAL EXAM SAA CBC PCR – NASAL SWABS, BLOOD TITERS CULTURE	Gold standard is guttural pouch flush/culture/PCR to determine carrier states. Direct culture of abscesses. Ultrasound in bastard strangles cases.
Streptococcus Equi Zooepidemicus		Culture of abscesses when present.
Corynebacterium Pseudotuberculosis False Strangles, Dryland Distemper, Pigeon Fever		Direct culture of abscesses. Ultrasound for internal abscesses.
Rhodococcus Equi		Trans tracheal wash culture, Ultrasound, Radiographs,

TREATMENT



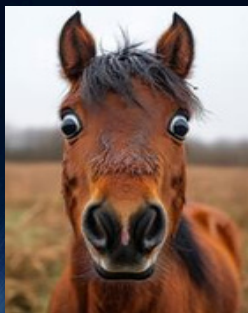
VIRAL TREATMENTS

EHV1, EHV4 HERPES VIRUS	ISOLATION * ENVIROMENT HYGEINE *SUPPORTIVE CARE *MONITORING TEMPS *NSAIDS *STERIODS *ANTIBIOTICS TO PROTECT AGAINST SECONDARY BACTERIAL INFECTIONS WHEN WARRENTED. *REST *ANTIVIRALS	Monitoring for neurologic complications and treating accordingly
EIF, Equine Influenza Virus, H7N7, H3N8		
ERAE, ERBV Equine Rhinitis Viruses		
EAdV1, EAdV2, Equine Adenovirus		
EVA, Equine Viral Arteritis (1953)		Along with mentioned treatments work to decrease swelling and inflammation.
Hendra Virus (1994)		Extreme caution in treatment of horses, PPE.

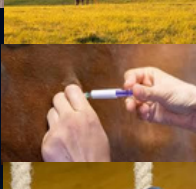
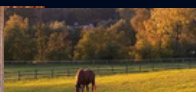
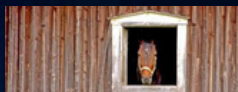
BACTERIAL TREATMENTS

Streptococcus Equi-equi, STRANGLES	ISOLATION	Selective treatment with antibiotics depending upon course of disease. Often better outcomes to let organized abscesses break and drain with hot packing, reserve antibiotics for high fever ongoing cases or respiratory distress individuals.
Streptococcus Equi Zooepidemicus	* ENVIROMENT HYGIENE SUPPORTIVE CARE *ANTIBIOTICS WHEN INDICATED *NSAIDS	Treatment choices dependent on course of disease, whether a pneumonia presentation or organized abscesses.
Corynebacterium Pseudotuberculosis False Strangles, Dryland Distemper, Pigeon Fever		Cleaning of abscesses and flushing and hot packing. Often prolonged antibiotic treatments required
Rhodococcus Equi		Prolonged courses of antibiotics generally required. Careful monitoring as drugs may cause acute inflammatory reactions Hyperimmune plasma

HOW DO WE KEEP OUR HORSES SAFE ???



PREVENTION



Every horse deserves great preventive care. Especially yours!

Home Equine Services Call Us

The Equine Veterinary Clinic Equine Wellness Program

In our area, most equine-related preventive care plans.

Our veterinarians use best strongly shown the value of preventive medicine and its role in keeping your horse healthy. Each service provided in our Equine Wellness Program has been carefully selected to ensure that your horse receives the highest quality essential preventive care available.

2024 Equine Wellness Program Fee is \$595*

*Not a percentage of total bill. Some services are not included.

Don't delay!

Start saving immediately on your horse's preventive care

PREVENTION

EHV1, EHV4 HERPES VIRUS	- OVERALL WELLNESS CARE * OBSERVATION – KNOWING YOUR HORSE * VACCINATIONS WHEN WARRANTED * FOLLOWING HEALTH TRAVEL REGULATIONS * ISOLATION PROTOCOLS FOR OUTBREAKS OR BRINGING IN NEW HORSES INTO A HERD/STABLE * CLEANING PROTOCOLS * GOOD VENTILATION AND AIR QUALITY * MINIMIZING STRESS * LIFE BALANCE OF EXERCISE AND REST	
EIF, Equine Influenza Virus, H7N7, H3N8		
ERAE, ERBV Equine Rhinitis Viruses		
EAdV1, EAdV2, Equine Adenovirus		Genetic screening in Arabian horses for PSCID
EVA, Equine Viral Arteritis (1953)		Test all breeding stallions for EVA antibodies before breeding seasons in endemic areas. Test all imported semen.
Hendra Virus (1994)		Identifying and avoiding turning horses out into pastures that have bat roosts that are large hollow trees.

PREVENTION

Streptococcus Equi Equi, STRANGLES	- OVERALL WELLNESS CARE * OBSERVATION – KNOWING YOUR HORSE * VACCINATIONS WHEN WARRANTED * FOLLOWING HEALTH TRAVEL REGULATIONS * ISOLATION PROTOCOLS FOR OUTBREAKS OR BRINGING IN NEW HORSES INTO A HERD/STABLE * CLEANING PROTOCOLS * GOOD VENTILATION AND AIR QUALITY * MINIMIZING STRESS * LIFE BALANCE OF EXERCISE AND REST	Self imposed Quarantine
Streptococcus Equi Zooepidemicus		
Corynebacterium Pseudotuberculosis False Strangles, Dryland Distemper, Pigeon Fever		
Rhodococcus Equi		Especially a concern in foals and breed-farms where environmental awareness and proactive surveillance is vital to detect before obvious clinical disease

A FEW MORE IMPORTANT WORDS...

EQUINE ASTHMA IS THE MOST COMMON RESPIRATORY DISEASE OF HORSES.

PARASITES ARE A MAJOR RESPIRATORY INFECTION IN YOUNG HORSES AND IMMUNOLOGICALLY NAÏVE OR COMPROMISED POPULATIONS.



QUESTIONS ?

Common Tick-Borne Disease in Horses

DR. WALKER HYCHE

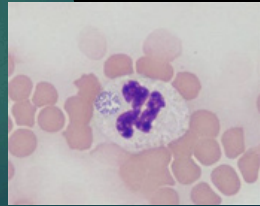
Intro



Diseases

► Anaplasmosis

- Bacteria: *Anaplasma phagocytophilum*
- Clinical signs: fever, lethargy, lack of appetite, edema, petechiae
- Diagnosis: Blood smear, PCR, Snap Test



Diseases

► Lyme Disease

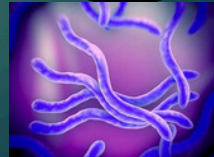
- Bacteria: *Borrelia burgdorferi*
- Clinical signs: lethargy, lameness, uveitis, edema, incoordination
- Diagnosis: Cornell Blood Titers, Snap test



Borrelia burgdorferi

Sample Dilution	Antibodies to*		
	OspA	OspC	OspP
1:400	1658	1997±	408
1:2	4554±	2542±	312
ve iff	>2000	>1000	>1250

ues represent median fluorescent intensities (MFI).
upper detection range of the assay is at around 20,000
d is indicative of very high antibody concentrations.
ative values.



Treatment

- ▶ NSAIDs
- ▶ Tetracyclines



Prevention

- ▶ Prompt removal of ticks is best prevention
- ▶ Commercial sprays
- ▶ Pasture management
- ▶ Lyme vaccine?



Common Equine Metabolic Disorders

Dr. Tess Tucker

What is a metabolic disorder?

- Metabolism refers to the body's ability to process ingested substances into the products needed to sustain life.
- The diseases we will cover today are anomalies in the horse's ability to process essential nutrition at the cellular level and consequently produce clinical signs.



Today's focus

Equine Metabolic Syndrome (EMS)

Pituitary Pars Intermedia Dysfunction (PPID, Cushing's disease)

- Other metabolic disorders can include genetic diseases, metabolism issues, or toxin ingestion. Too broad for the scope of today's talk!

Equine Metabolic Syndrome

- Insulin dysregulation along with obesity, regional fat deposition, difficulty losing weight, hypothyroidism, and increased propensity to develop laminitis.
- Some breeds are more predisposed than others, but the genetic cause is not known.



Equine Metabolic Syndrome- Clinical signs

- “Easy- keeper”
- Fat deposits particularly over neck, withers, and tail
- Laminitis
- Decreased fertility



Equine Metabolic Syndrome- Testing

- Survey tests
 - Insulin, glucose, leptin, T4
 - Often recommend simultaneously testing for PPID
- Oral sugar test
- Glucose & insulin response test



Equine Metabolic Syndrome – Treatment

- Keep animal at an appropriate weight. Encourage exercise.
- Restrict non-structural carbohydrates in diet
 - Test hay
 - Look at pelleted feed
- Supplements
- When management isn't enough, pursue medical therapy.
 - Levothyroxine
 - Metformin
 - SGLT-2 inhibitor



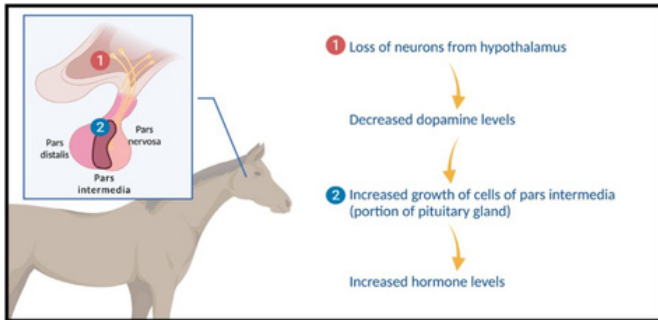
Equine Metabolic Syndrome – Prevention

- Management is key! Keep your horse at an appropriate weight.
- Be cautious turning your horse out on pasture rapidly or in high NSC periods (spring and fall)
 - Eliminate pasture all together



PPID

- Hormonal change in the brain



PPID - Clinical Signs

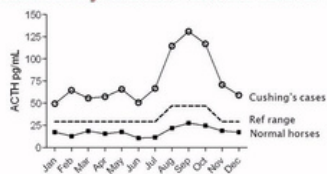
- Excess hair, failure to shed out
- Weakened immune system
- Poor muscle tone, weak
- Depressed mentation, quiet
- Increased drinking and urinating
- Increased sweating
- 'Potbelly' appearance or abnormal fat distribution
- Insulin dysregulation



PPID - Testing

- Test baseline ACTH
- Do a Thyrotropin- releasing hormone (TRH) stim test
 - Two part blood draw
- Seasonal rise in ACTH levels during the fall
 - Avoid testing in August and November
 - Can test in the fall, but factor in the seasonal rise on how it will influence results

Seasonal adjustment of reference interval



Craven and Durham 2012

PPID - Treatment

- Pergolide (brand: Prascend)
 - Cyproheptadine
- Capergolide (injectable)
- Beware of compounded formulations of pergolide
- Feed low NSC diet



Conclusion

- Metabolic disease is an abnormality in processing nutrition.
- EMS and PPID are two common conditions presenting in horses that can be managed by a combination of management and medication.

