Equine Vaccination and Parasite Control:
Current Recommendations

Amanda M House, DVM, DACVIM
Assistant Professor
University of Florida CVM

Overview

• General overview
• Physical examination
• Why vaccinate?
• How do I vaccinate?
• What diseases should I vaccinate for?
• Parasite Control

Annual Physical Examination

• Important part of wellness program
• Know normals for your horse
• Veterinary-client-patient relationship
• Critical for emergency situations – your vet knows your horse

Why Vaccinate?

• Critical component of a horse health maintenance program
• Primes the immune system for a quick response when exposed to infection
• Prevent life-threatening diseases
• Minimize or eliminate contagious diseases that affect performance or herd health

Why Vaccinate?

Prevent some FATAL diseases

• Rabies
• Tetanus
• Encephalomyelitis (EEE/WEE)
• West Nile Virus

Aids in the Prevention of Others:

• Rhinopneumonitis (Equine Herpesvirus)
• Influenza
• Strangles
• Botulism
• Potomac Horse Fever
• Rotavirus
• And more….
Vaccination can NOT guarantee disease prevention in all cases

• Vaccination should be used in conjunction with good nutrition, parasite control, pasture management, and minimizing stress in your herd

How do I vaccinate?

• No standard vaccination program for every horse, but ALL horses should receive EWT, Rabies, and WNV vaccination

• Work with your veterinarian on what is best for your horse/herd

• A primary series of vaccine and a booster dose should be given prior to exposure

How?

• Most vaccines are given IM (in muscle)

• Some are available to give IN (intranasal)
  – Influenza
  – Strangles

Adverse Reactions

• Are uncommon

• Muscle soreness

• Swelling

• Fever

• Lethargy

• Swollen legs, vasculitis, colic

Vaccine Reminders

• Safety and efficacy data are not available on the concurrent use of vaccines

• Administration of killed and MLV vaccines at same site may inactivate the MLV

Maternal Antibodies

• Protect the foal but inhibit the foal’s response to vaccination – maternal antibody interference

• Adequate passive transfer leads to similar antibody titers in the foal as are in the mare at the time of foaling
Maternal Antibody Advantage

- Take advantage of maternal antibodies and boost all mares 4-6 weeks prior to foaling
- Ensure foal consumes adequate colostrum

Vaccination of Foals

- Start most foals at 5-6 months of age
- Foals in the SE region should start a 3-dose series for EEE and WNV at 3-4 months old
- For most diseases give 3 dose series instead of 2

What should I vaccinate for?

- ALL HORSES
  - Tetanus
  - Encephalomyelitis
  - West Nile Virus
  - Rabies
- MOST/PERFORMANCE
  - Influenza
  - Equine Herpesvirus
- SOME
  - Strangles
  - Potomac Horse Fever
  - Botulism
  - Rotavirus

Clinical Signs of Tetanus

- Muscle stiffness
- Sawhorse stance
- Third eyelid prolapse
- Lockjaw
- Flaring nostrils
- Hypersensitive to touch

Tetanus

- Caused by *Clostridium tetani*
- Present in intestine, manure, and soil
- Spores can exist for years in soil
- Spores enter through wounds, lacerations, umbilicus
- Not contagious
- Mortality rate is high
- All horses should be vaccinated annually
- Tetanus toxoid vaccine is safe and provides good protection
- Tetanus antitoxin is for previously unvaccinated horses
  - Risk of liver disease
- Risk of liver disease
When to vaccinate - Tetanus

• Not typically seasonal, vaccinate any time of year
• Most horses in spring, in combination with EEE/WEE
• Boost if wound or surgery >6 months from last dose

Encephalomyelitis

• Often referred to as “sleeping sickness”
• Vaccines available for Eastern Equine Encephalomyelitis (EEE), Western Equine Encephalomyelitis (WEE), and Venezuelan Equine Encephalomyelitis (VEE)
• Viruses are transmitted by mosquitoes

Encephalomyelitis

• WEE seen throughout North America
• EEE seen mostly in the East and Southeast, prevalent in Florida
• VEE not in US for many years – reportable foreign disease

Clinical Signs of Encephalomyelitis

• Result from inflammation of the brain and/or spinal cord
• Fever
• Depression
• Staggering gait (ataxia)
• Paralysis
• Seizures

Abnormal Mentation
Abnormal Gait - Ataxia

Encephalomyelitis

- EEE/VEE – mortality rate 70-90% die
- WEE – mortality rate about 50%
- Vaccination is safe and generally very effective against these diseases

When to Vaccinate – EEE/WEE

- ALL horses should be vaccinated annually in the spring, prior to mosquito season
- In Florida, recommend boosting every 4 months for EEE/WEE
- Foals should receive first dose at 3-4 months of age, and 2 additional doses one month apart

Vaccination Recommendations

- Adult horses >3 years of age.
  - Vaccinate a minimum of two times yearly
  - Vaccinate first in February or very early March
  - Revaccinate in August/September
  - Your veterinarian may recommend vaccination 3X year based on the local activity. Some counties/townships have continuous activity
    - Citra
    - Volusia
    - Ocala National Forest
    - Panhandle
    - Some areas outside of Jacksonville

Vaccination Recommendations

- ALL New Arrivals into Florida
  - Vaccinate 4-6 wks before shipping
  - If not vaccinated before shipping:
    - Give full initial series (two doses, 3 wks apart) if minimally vaccinated for EEE
    - Give one dose if vaccinated 4-6 months previously
  - If NO EEE vaccine history, consider placing on 3X/year for at least three years
  - If vaccinated annually increase to 2X/year

Vaccination Recommendations

- Young horses 1-3 years old
  - Must be vaccinated three times per year
  - Vaccine Schedule
    - January, February
    - June, July
    - September, October
West Nile Virus

- Another mosquito transmitted virus
- Causes inflammation of the brain and spinal cord
- Not contagious from horse to horse

Clinical Signs of West Nile Virus

- Can vary
- Fever
- Muscle tremors
- Incoordination/ataxia
- Hypersensitive
- Facial nerve or other paralysis

West Nile Virus

- Mortality rate about 33%
- Associated with inability to stand, prolonged recumbency

When to Vaccinate - WNV

- Multiple vaccines available
  - Fort Dodge/Pfizer West Nile Innovator – killed
  - Bf’s Veterna
  - Merial’s RecombiTek – recombinant vaccine
  - Intervet’s killed chimeric vaccine
- Annual vaccination recommended
- In Florida and SE states with larger mosquito populations, may boost every 6 months

Rabies

- 100% FATAL in all cases
- Virus affecting the nervous system
- Horses are exposed through infected wildlife
- Horses can infect people

Rabies in Horses

- From 2005-2006, rabies cases in horses and mules increased 12.8% (Blanton et al)
  - But decreased by 20% in 2007 (42 horses in US)
- Since 2006, 8 horses in Florida have died from rabies
- FATAL in all mammals with clinical signs
  - 2 human survivors with no vaccination
- Death occurs in 3-7 days once signs develop
Common Risk Factors for Horses

• Live in an endemic area
• No vaccination
• Horse lives outside 24 hours/day
• Young > old
• No breed or gender predisposed
• Typically affects one horse on a farm

Clinical Signs of Rabies

• Can look like anything!
• Behavioral changes, blindness
• Ataxia and incoordination
• Fever
• Hypersalivation
• Paralysis
• Colic

Rabies in a Horse

Other Diseases Can Look Similar

Rabies: CDC Reported Cases

Rabies Vaccination

• The National Association of State Public Health Veterinarians recommends vaccination for all livestock in frequent contact with humans, and specifically horses that travel interstate
• The AAEP considers Rabies a CORE vaccine for all horses
When to vaccinate - Rabies
- Incubation period 2-9 weeks
- Death in 3-5 days once signs develop
- Vaccinate once a year
- Vaccine is safe and effective

Equine Influenza
- Incubation period 1-3 days
- High fever (1-5 days)
- Young horses are at risk!
- Spread by aerosolized droplets, infected fomites – highly contagious

Equine Influenza – Clinical Signs
- Cough (several weeks) and fever
- Lethargy, depression, reduced appetite, muscle soreness
- Nasal discharge
- Most horses recover in 10-14 days with supportive care

When to Vaccinate - Influenza
- Intranasal vaccine every 6 months
- Intramuscular vaccine every 4-6 months
- Start foals at 6-9 months of age

Equine Herpesvirus (EHV)
- EHV-1: Abortion, neonatal death, neurologic disease, respiratory disease
- EHV-4: respiratory disease
- Also known as “Rhinopneumonitis”

Equine Herpesvirus - Respiratory
- Clinical signs are identical to influenza
- Incubation time 2-10 days
- Shed virus for 2-3 weeks
- Adults 2-4 times a year
- Weanlings and yearlings every 3 months
Equine Herpesvirus – Neurological Form

• Vaccines are NOT effective at preventing disease
• Outbreaks can occur with the first signs
  – FEVER
  – +/- Respiratory signs
  – Monitor stressed horses closely

Equine Herpesvirus – Abortion

• Abortion is caused by EHV-1
• Pregnant mares: booster 5,7,9 of pregnancy

Strangles: *Streptococcus equi* spp. *equi*

• Transmission: Ingestion or inhalation of infected discharge
  – Horse-horse contact or fomites
  – Highly contagious
• High morbidity, low mortality
• Incubation period 3-5 days

Strangles – Clinical Signs

• Cough, fever, lymph node enlargement
• Respiratory distress due to retropharyngeal lymph node enlargement
• Complications
  – Purpura
  – Metastatic (“Bastard”) strangles

Vaccination for Strangles

• Previously affected farms
• May lessen disease severity
• Vaccine reactions
  – Purpura
  – Abscesses if IM vaccines become contaminated
• Annual booster
• Intranasal vaccine
Strangles Vaccination in an Outbreak

- Generally not recommended
- Can consider for healthy horses with no signs and NO contact with sick horses
- Consider serology prior to vaccination – Contraindicated if >1:1,600

Management Practices

- Quarantine and monitoring of new horses
- Isolation facility and protocol
- Requirements prior to introduction of new horse
- Separation of groups of horses according to use, susceptibility to infection

Management Practices

- Vector control
- Management of sick horses
- Keep good records!

Management and Internal Parasites

- Parasites can cause extensive internal damage
- Effects range from dull hair coat and unthriftiness to weight loss, colic, and death

Equine Internal Parasites

- Over 150 species can affect the horse
- The most common are:
  - Large Strongyles
  - Small Strongyles
  - Ascarids (roundworms)
  - Tapeworms
  - Bots
  - Pinworms
  - Lungworms
  - Threadworms

Clinical Signs of Internal Parasites

- May have none at all
- Dull, rough hair coat
- Loss of condition
- Poor performance
- Unthrifty
- Lethargy/depression
- Colic
- Diarrhea
- Pot belly (young horses)
Major Internal Parasites

- Large Strongyles
- Small Strongyles (Cyathostomes)
  - Seasonally transmitted
  - Winter in Florida
- Roundworms (Ascarids)
  - Year round infection
- Tapeworms

Resistance

- When a greater frequency of individuals in a population can tolerate doses of a compound than in a normal population of the same species and is heritable
- Treatment with dewormers selects for resistant genetic alleles over time (because susceptible worms die)

Refugia

- Critical to limit resistance
- Refugia are the parasites not exposed to the drug at the time of treatment (eggs and larvae on pasture), certain stages in treated horses (depending on drug/dose) and those in untreated horses
- Provide a pool of sensitive parasites

Resistant Small Strongyles on SE horse Farms (Kaplan et al 2004)

- 1274 horses tested from 44 large farms in GA, SC, FL, KY and LA
- Resistance testing only for small strongyles
- Percent of farms found to harbor resistant worms:
  - 97.7% for fenbendazole
  - 0% for ivermectin
  - 53.5% for oxibendazole
  - 40.5% for pyrantel pamoate

Diagnosis of Internal Parasites

- Fecal Egg Counts (FEC) can be very helpful!!!
  - Negative fecal does not always mean no parasites
- FECRT (Fecal Egg Count Reduction Test)
  - Monitors response to dewormer, recheck fecal 14 days after deworming – should be reduced >90% if parasites are sensitive to dewormer
  - Monitor multiple horses on farm at same time
  - Some parasites are difficult to diagnose - tapeworms

What do Fecal Egg Counts Mean?

- FEC <200 epg – low egg shedder, horse less likely to have any ill effects of parasite
- FEC 200-500 – moderate egg shedder
- FEC >500 epg – high egg shedding into environment
- FEC do NOT correlate directly with actual intestinal worm burden, but does give an estimate of how much horse is contaminating the environment.
  - 20% of your horses shed 80% of the worm eggs!
Dewormers

- None are 100% effective
- Use a broad spectrum product as basis for control (ivermectin, moxidectin)
- Be sure to treat for tapeworms 1-2 times per year
  - Double dose Strongid®
  - Product containing praziquantel

Deworming

- Consult your veterinarian
- Rotating dewormers too frequently will promote resistant parasites
- Don’t neglect management!

FL Parasite Control Program Recommended by Dr. Kaplan

- **Oct 1** - Perform FEC on ALL horses. Treat all horses with Ivermectin or moxidectin (+praziquantel)
- **Dec 1** – Treat horses that were treated with ivermectin in October with oxibendazole and/or pyrantel. All horses with FEC > 500 epg. +/- treat horses with FEC 200-500 epg.
- **Jan 1** – Treat ALL horses regardless of FEC, use ivermectin/praziquantel or moxidectin/praziquantel; perform FEC all horses

FL Parasite Program Cont’d.

- **April 1** – Treat only high shedders if moxidectin was used in January. Treat with oxibendazole, pyrantel, or power pack
- **May-September** – NO TREATMENT necessary. Too hot for transmission.
- Monitoring FEC is critical for this program

Recommendations for Foals and Yearlings (< 18 mos)

- Critical to perform FECRT on all drugs used in foals and monitor egg reappearance
- Ivermectin or moxidectin at least every 6 months for large strongyles
- For roundworms – resistance has been documented to ivermectin/moxidectin
  - Start treatment at 2 months old with ivermectin or benzimidazole, pyrantel
  - Monitor ERP – may be as short as every 4-6 weeks and require retreatment.
  - Larvical treatment for small strongyles between 6 mo – 2 yrs in late spring

In Summary

- Consult your veterinarian
- Remember basic good management and horse health care
- Semi-annual physical exams, vaccination, and fecal examination
- http://extension.vetmed.ufl.edu/equine-extension/
Thank you AMHA!

- Any Questions?

PLEASE JOIN US!

- 2012 HEALTHY HORSES CONFERENCE
- Saturday, April 28, 2012 AT UF LA Hospital
- Lectures and demonstrations – lameness evaluation, infectious disease, neck pain and more!
- Register online at: http://conferences.dce.ufl.edu/equine/
- Includes continental breakfast and hot lunch!