



Encephalitis Viruses In Florida Horses:

“West Nile virus”
“Eastern equine encephalitis virus”

Maureen T. Long, DVM, PhD, DACVIM-LA
Fern-Audette Associate Professor Equine Studies
Department of Infectious Diseases and Pathology
August 2010




Encephalitis Virus Lifecycles

Vector or Transmitter of Disease



Dead-end hosts



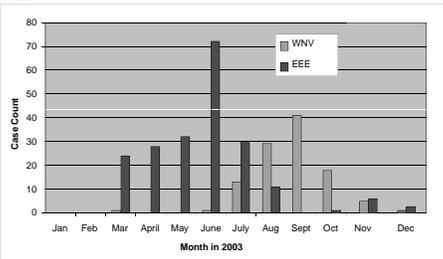
Natural Host








Peak Seasonal Activity

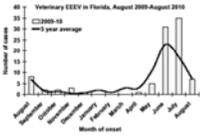


Month	WNV Case Count	EEE Case Count
Jan	0	0
Feb	0	0
Mar	0	25
Apr	0	30
May	0	35
June	70	10
July	35	15
Aug	10	40
Sept	0	20
Oct	0	10
Nov	0	5
Dec	0	2




Why are we concerned in August?

- **Very cold winter**
 - Limited early activity, limited predictability
- **Rapid onset of activity late**
 - Very hot, consistent rain



Florida Department of Health




Not only a Florida Problem

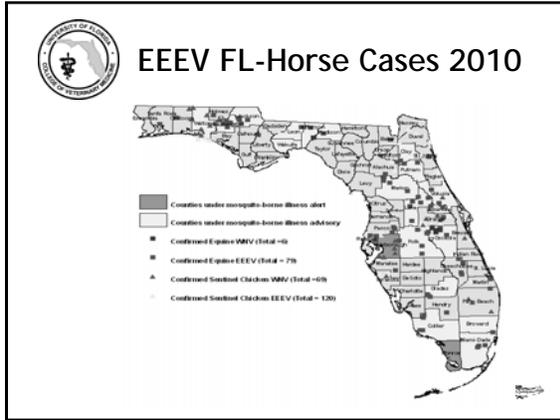
- **EEEV outbreaks in NE, upper Midwest (Michigan)**
- **Increased WNV activity picked up with surveillance**





Confirmed EEE-All Cases



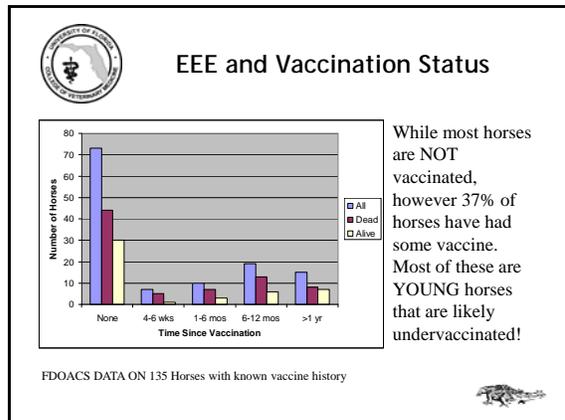
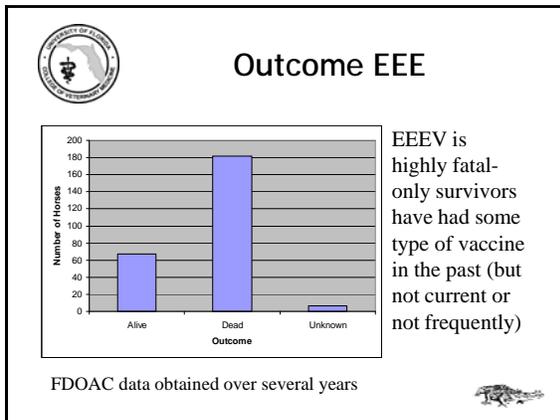
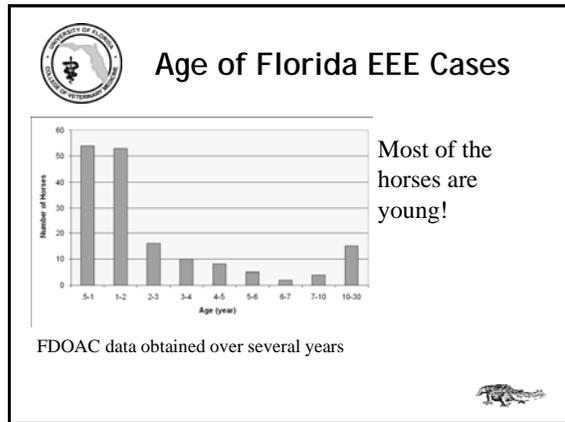



EEEV Disease

Severe change in mental state—nonresponsive, coma-like seizures. Usually have an initial fever.

EEEV Disease

Horses become unable to stand and die or need to be put to sleep.





Vaccination

- **Consult your veterinarian**
 - Our cost analysis of EEEV and WNV demonstrates NO savings to owners overall if self vaccinating.
 - Cost lost if horse become sick through missed vaccinations and inappropriate vaccinations
 - Many larger farms did not “pay” less to perform their own vaccinating
- **NOT every horse is the same**
 - Foals, young horses, adults, stallions and broodmares all have different activities, different immune responses
 - One should expect different guidelines




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

- **Adult broodmares**
 - Similar as other adult horses but vaccinate mare 30 days before foaling to boost colostrum for foal.
 - Remember to vaccinate mares that are shipped in to foal in Florida!!




Vaccination Recommendations

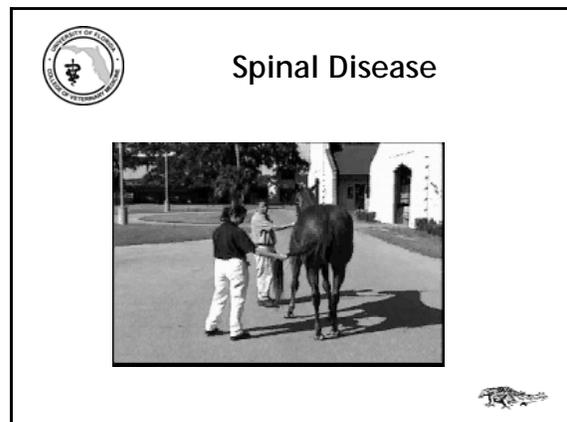
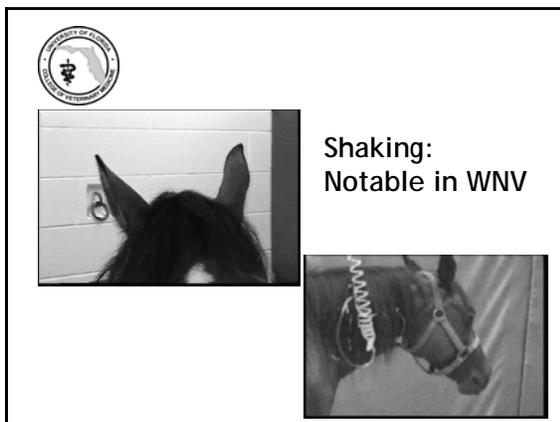
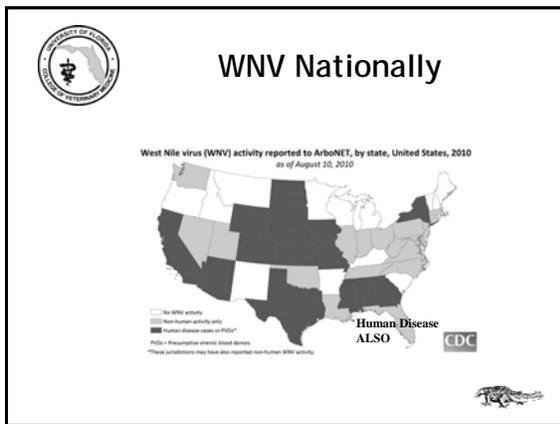
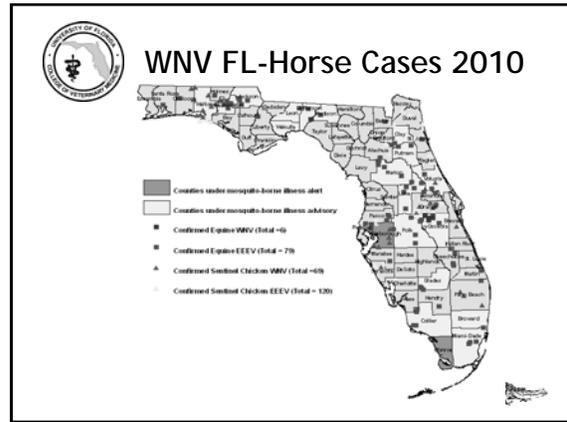
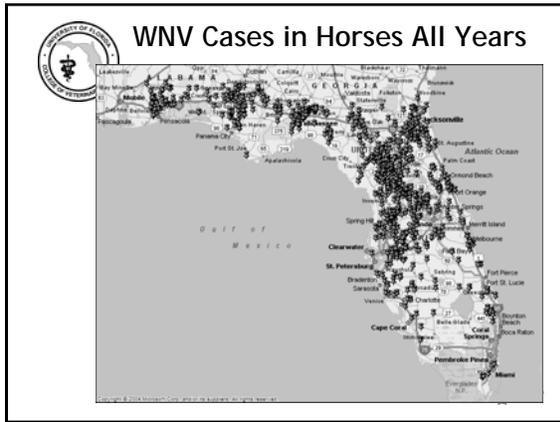
- **Young horses 1-3 years old**
 - Must be vaccinated three times per year
 - Vaccine Schedule
 - January, February
 - June, July
 - September, October
 - Do NOT base yearling schedule on foal vaccine schedule!




Vaccination Recommendations

<p>Broodmare vaccinated 30 days before foaling:</p> <ul style="list-style-type: none"> • First vaccine 5-6 months of age. • Second vaccine 6-7 months of age. • Third vaccine 9-10 months of age 	<p>Broodmare NOT vaccinated 30 days before foaling:</p> <ul style="list-style-type: none"> • First vaccine 4 months of age. • Second vaccine 5 months of age. • Third vaccine 7 months of age • Fourth vaccine at 9 months of age
--	--





Intermittent Weakness & Paralysis



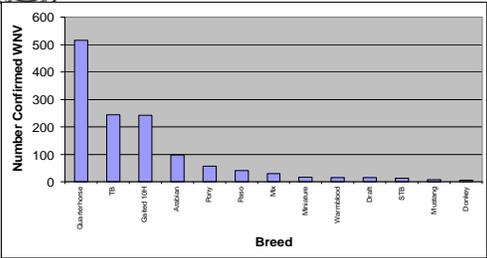


Other





Confirmed WNV Breeds

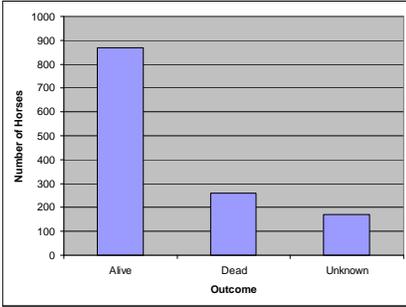


Breed	Number Confirmed WNV
Quarterhorse	520
TB	250
Colonial	250
Andalusian	100
Pony	80
Paint	60
Mex	40
Morgan	30
Warmblood	20
Draft	15
STB	10
Musky	5
Dorsey	5

N=1300



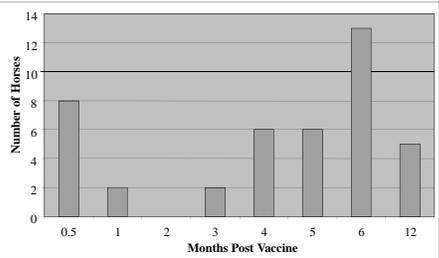

Outcome WNV



Outcome	Number of Horses
Alive	880
Dead	250
Unknown	170




WNV & Vaccination



Months Post Vaccine	Number of Horses
0.5	8
1	2
2	0
3	2
4	6
5	6
6	13
12	5

***8/15 horses with 3 injections: >6 mos between 2nd and 3rd




Vaccination Recommendations

- **WNV Killed Vaccines (There are two)**
 - Same as EEEV for adult horses
 - Same as EEEV for NEW arrivals
 - With vaccine history
 - Without vaccine history
 - Bear in mind WNV may be more up to date than EEEV in horses from other places
- Same EEEV in broodmares
 - Colostral immunity is still the best way to protect foals less than 6 months of age
- Same as EEEV in horses 1-3 years






Foal Vaccination Recommendations

<p>Broodmare vaccinated 30 days before foaling:</p> <ul style="list-style-type: none"> • First vaccine 5-6 months of age. • Second vaccine 6-7 months of age. • Third vaccine 9-10 months of age 	<p>Broodmare NOT vaccinated 30 days before foaling:</p> <ul style="list-style-type: none"> • First vaccine 4 months of age. • Second vaccine 5 months of age. • Third vaccine 7 months of age • Fourth vaccine at 9 months of age
--	--




Modified live WNV Vaccines

- **There are two:**
 - Adult horses: once per year
 - Young horses 1-3 years of age: once per year
 - Foals
 - Once at five-six months, again at 9 months
 - Put yearlings on regular spring schedule




Other forms of mosquito control

- **Mosquitoes feed in the barn and outside of barns**
 - EEEV mosquito more likely to feed on pasture horses
 - Stalling will affect incidence
 - WNV mosquito feeds in and outside of the barn
 - Need to rid barn of mosquitoes




Water

- **Clean streams are not a problem**
- **Ponds with no movement are**
- **EEEV and WNV mosquitoes like dirty water**
 - Leaves in the bottom of water bucket
 - Scoop daily!
 - Not enough to disturb the “top” of the water
 - Dunks are great (BT) as are fish but must CLEAN containers




Debris and Manure

- **Mosquitoes like rot**
 - Clean pastures
 - Burn wood piles
 - Get rid of mechanical and natural debris
 - Old cars, tires, tractors, boats
 - Clean off farm equipment that has debris on it
 - CLEAN GUTTERS and DRAINS




FANS and Screens

- **One small fan that does not move air actually attracts mosquitoes-big animal lots of smells dispersed**
- **If you have fans, must run, must create AIR FLOW to prevent mosquitoes from landing and biting**
 - Put on bigger blades, have them on all stalls, use large aisle fans
- **Screens on stall windows**
- **Consider fogging when horses are out**





Mosquito Control

- **Regional and county mosquito control**
 - Best in the country
 - Will come and help rid locales of mosquitoes
 - Emphasis on destruction of mosquito habitat



Summary

- **EEE is a disease of young horses**
 - WNV will become a disease of young horses
- **Shared characteristics of EEE and WNV**
 - Some are distinctive to each syndrome
 - Distinctive peak activity
 - Reflect vector/ecology and risk
- **Farm Management is JUST AS IMPORTANT as VACCINATION!**

