

EMERGING AND ZOOONOTIC EQUINE DISEASES

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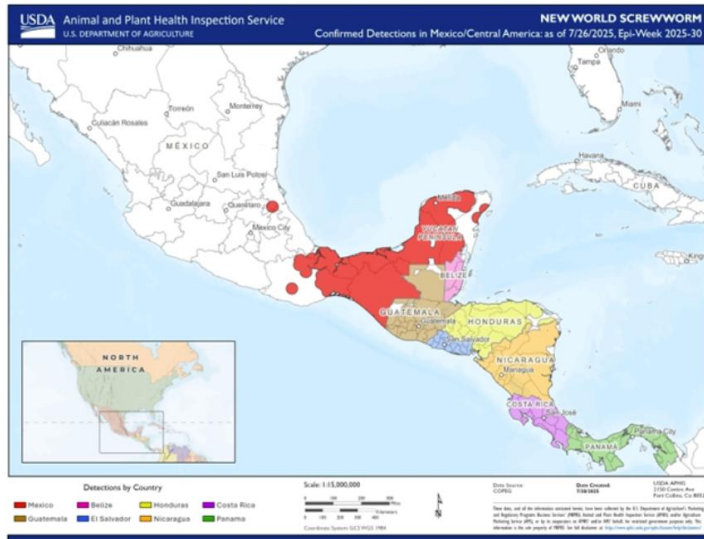
New World Screwworm (NWS)

- Parasitic fly native to the Americas
- *Cochliomyia hominivorax*
- First appeared in U.S. in 1800s; eradicated in 1960's
- Isolated outbreak in southern FL in 2016 which affected deer
- November 2024: cow in southern Mexico identified with NWS; suggests NSW moving northward
 - USDA banned livestock imports from Mexico in 2025



Orange eyes
Metallic blue or green body
3 dark stripes along back

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Map of recent detections of New World Screwworm in Central America and Mexico as of June 2025 shows the following countries: Mexico, Guatemala, Belize, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama.

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Female screwworm flies lay bright white eggs in fresh wounds or mucous membranes of warm-blooded animals



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Screwworm larvae (maggots) feed on living tissue, causing severe wounds, intense pain, and sometimes death



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Deep burrowing is a distinctive feature of screwworms, as larvae of other fly species are surface feeders.



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This method of feeding is different than other fly species which consume the decaying tissues of dead animals



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1. The adult screwworm fly is attracted to the smell of an open wound and lays her eggs on the edges of it. 2. Within a few hours the eggs hatch into larvae, which burrow in to the wound to feed. This worsens the wound and attracts more flies, which lay more eggs. 3. The larvae feed for about 1 week and then fall off and burrow into the ground to pupate. 4. After at least 7 days, an adult fly emerges.

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Screwworm Information

- Most often feed on livestock, deer, canines, felines, feral hogs, rabbits, and sometimes birds
- Can be transmitted to people if traveling in endemic areas, are around livestock, and have an open wound.
- **Currently NWS is not present in the United States and is considered a reportable foreign animal disease**



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Clinical Signs of Screwworm

- Open, enlarging non-healing wound
- Presence of maggots in wounds
- Foul odor
- Evidence of pain
- Irritation
- Head shaking
- Lethargy and/or depression



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Diagnosis of Screwworm

- Visual inspection of wound(s) with identification of maggots
- Send larvae to specialist for official identification



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Treatment of Screwworm

Based on recommendations
of veterinarian, state and
federal animal health officials

- Surgically remove and destroy eggs and larvae
- Clean wound with antiseptic
- Systemic antibiotics if wound infected
- Administer approved or authorized topical or systemic larvicidal/insecticidal treatments
- Treat environment
- Quarantine animals



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Environmental Decontamination

- Collect larvae expelled into environment and safely discard them into tightly sealed tubes with alcohol (to kill the larvae) and place the tubes in a Ziploc bag before throwing in the trash
- Spray surfaces of holding/quarantine areas with approved larvicidal insecticide
- Wash sprayed surfaces with warm soap and water to prevent animal exposure to insecticide residue
- Monitor the premises for screwworm flies at least weekly for a full month after the quarantined animal(s) have been released

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Prevention of Screwworm

- Regular inspection of wounds
- Use of insect repellents
- Maintain clean environment
- Contact state veterinarian if suspicious of screwworm infection



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Consequences to Equine Industry

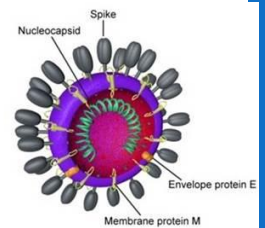
- Health issues
- Transport restrictions
 - Shows
 - Sales
 - Breeding



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Equine Enteric Coronavirus

- First diagnosed in VT in 2014
- Vector
 - Unknown
- Seasonal
 - Winter
- Transmission
 - Fecal-oral
- Age
 - Horses >2 y.o.



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Clinical Signs of Coronavirus

- Fever 102-104°F
- Anorexia
- Depression/lethargy
- Colic
- Loose manure → diarrhea
- Typically resolve in 1-4 days
- Infectious for 14-21 days



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Diagnosis of Coronavirus

- Fecal PCR testing
- CBC/Chem
 - Leukopenia
 - Neutropenia
 - Lymphopenia
 - Hypoalbuminemia



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Treatment of Coronavirus

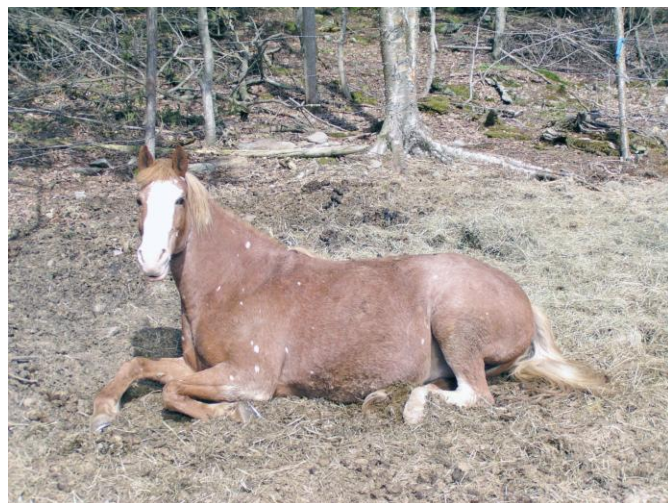
- Supportive care
 - IV fluids
 - Banamine
 - Gastroprotectants
- Antibiotics
 - Oxytetracycline
 - Resembles PHF
 - Use until fecal dx results
- Isolate 2-3 weeks
- Biosecurity



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Prognosis for Coronavirus

- Morbidity
 - 20-57%
- Mortality
 - Rare
 - Increases with
 - Dehydration
 - Decreased perfusion
 - GI damage
 - Neurologic signs



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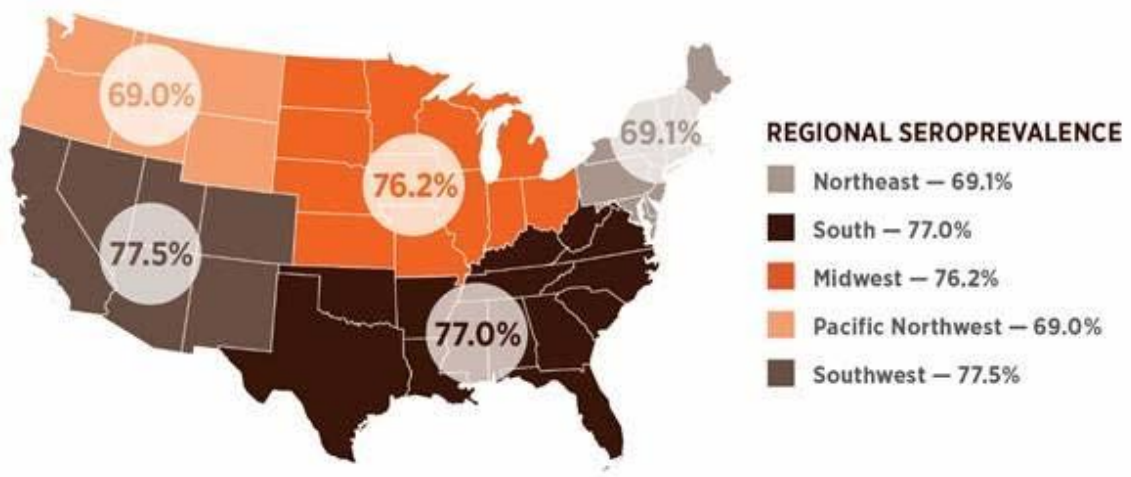
Equine Leptospirosis

- *Leptospira*
 - Spirochetal bacteria
- Reservoir
 - Cows, dogs, opossums, rats, skunks
- Transmission
 - Reservoir sheds bacteria in urine
 - Ingestion of contaminated feed or water
 - Inhalation of organism
- Age
 - Older horses more susceptible



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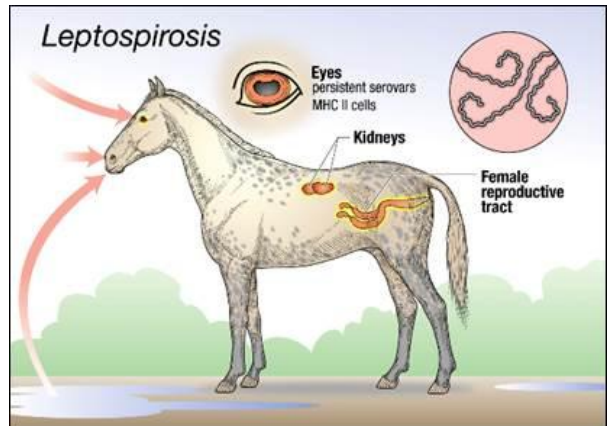
Regional Percentage of Equines Exposed to Leptospirosis



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Clinical Signs of Leptospirosis

- Kidney damage
- Abortion
- Equine Recurrent Uveitis
 - AKA Moon Blindness
 - 2 ways for Lepto to cause ERU
 - Direct damage to eye
 - Local immune response to bacteria
 - ERU can occur months to years after Lepto infection



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Clinical Signs of ERU

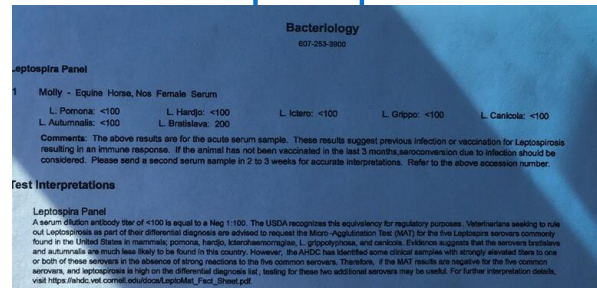
- Blinking
- Tearing
- Cloudiness of eye
 - Surface
 - Interior
- Sudden blindness
- Rapid cataract development



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Diagnosis and Treatment of Leptospirosis

- Bloodwork
 - Antibody titers (positive > 100)
 - *L. pomona, hardjo, ictero, grippo, canicola, autumnalis, bratislava*
- Tetracycline antibiotics
 - Oxytetracycline IV
 - 1 week
 - Minocycline PO
 - 6 weeks



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Prevention of Leptospirosis

- Limit horse's access to wildlife and stagnant water
- Vaccination
 - Lepto EQ Innovator
 - FDA approved



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Zoonotic Potential of Leptospirosis

- Most widespread zoonotic disease in the world
 - Recent increasing prevalence
- Source of infection
 - Direct or indirect contact with infected urine
- Clinical signs
 - Often absent
 - 5-10% of humans develop severe multi-systemic disease



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Equine Lyme Disease

- *Borrelia burgdorferi*
 - Spirochetal bacteria
- Transmission
 - Ixodes tick
- Regional
 - Mid-Atlantic
 - Northeast
 - 35% exposed



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Clinical Signs of Lyme Disease

- 10% of infected show signs
- Multi-systemic
 - Musculoskeletal
 - Joints
 - Muscles
 - Neurologic
 - Ophthalmologic



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Clinical Signs of Lyme Disease

- Lameness
 - Associated with larger joints
 - Frequently shifts limbs
 - Generalized stiffness
- Behavioral changes
 - Unwillingness to work
 - Musculoskeletal pain
 - Increased irritability



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Diagnosis of Lyme Disease

- History of tick exposure
- Rule out other causes of lameness
- Response to treatment
- Bloodwork
 - Lyme Multiplex Assay



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Lyme Multiplex Assay

- Tests 3 different Lyme antibody levels
- OspA
 - Positive >2,000-28,000
 - Indicates vaccination
- OspC
 - Positive >1,000-10,000
 - Early infection
- Osp F
 - Positive >1,250-26,000
 - Chronic infection

Serology/Immunology		
Serology Laboratory Director Dr. Bettina Wagner - 807-253-3900		
Lyme Dis. Equine - Multiplex		Result
Item		
1	Molly - Equine Horse, Nos Female Serum	OSPA: 577 Negative OSPC: 1392 Positive OSPF: 1544 Positive
2	Belle - Equine Horse, Nos Female Serum	OSPA: 176 Negative OSPC: 173 Negative OSPF: 71 Negative
Best Interpretations		

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Treatment of Lyme Disease

- Tetracycline antibiotics
 - Oxytetracycline
 - Minocycline
 - Successful tx if titers decreased by 50%
- 3 options for positive titer with no signs
 - Repeat titer in 4 weeks
 - Vaccinate against new exposure
 - Treat proactively then vaccinate



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Prevention of Lyme Disease

- Vaccination
 - Canine vaccine
 - Horses do mount protective titers
- Protocol
 - Sign waiver
 - 3 vaccines, 1 month apart
 - Booster every 6-12 months



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Equine Anaplasmosis

- *Anaplasma phagocytophilum*
 - Bacteria
 - Formerly equine granulocytic ehrlichiosis
 - *Ehrlichia phagocytophila*
 - *Ehrlichia equi*
- Infects WBCs
- Transmission
 - Ixodes tick
- Seasonal
 - Late fall to early spring
- Incubation 1-3 weeks



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Clinical Signs of Anaplasmosis

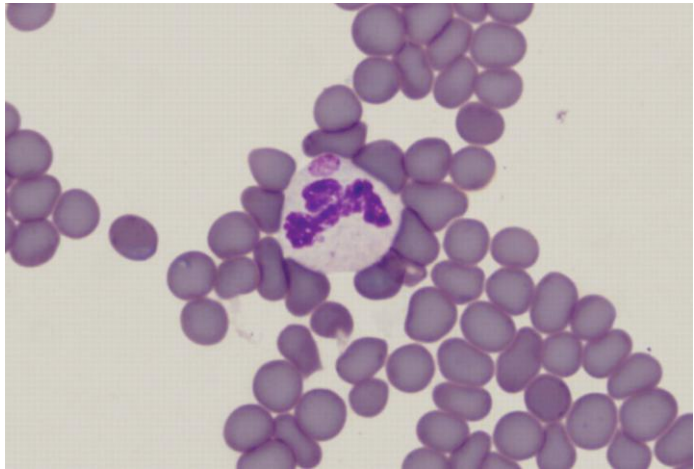
- Fever
 - Lasts up to 12 days
- Anorexia
- Depression/lethargy
- Ventral edema
- Orchitis
- Petechiation
- Icterus
- Ataxia



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Diagnosis of Anaplasmosis

- Season and clinical signs
- Bloodwork
 - Leukopenia
 - Anemia
 - Thrombocytopenia
- Cytology
 - >3 inclusion bodies (morulae) in WBCs
 - False negatives
- PCR
 - More sensitive (less false neg)



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Treatment of Anaplasmosis

- Tetracycline antibiotics
 - Oxytetracycline
- Corticosteroid
 - Dexamethasone
 - Helps with ventral edema and neurologic signs



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Prevention of Anaplasmosis

- Decrease tick exposure
 - Daily tick checks
 - Apply tick repellent
- No vaccine
- Recovered horses
 - Immunity for up to 2 years
 - Not carriers



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Differentiating Anaplasmosis from PHF

- Similar clinical signs
- Similar CBC results
- PHF causes more
 - Laminitis (15-25% of cases)
 - Colic (5-10% of cases)
 - Severe diarrhea (10-30% of cases)
 - Mortality up to 30%



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Human Concern for Anaplasmosis in VT

- Tick → human
- 2nd most common tick bite illness
- Substantially increased VT #s
 - ~150 cases in VT in 2016
 - 572 cases in VT in 2022
 - Highest annual incidence in U.S.
- Human hospitalization 34%
 - Lyme 3%



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Other Zoonotic Diseases

- Rabies
 - High mortality viral disease
 - Encephalitis
 - Spread through saliva
 - Vaccination required by law
- WNV and EEE/WEE (encephalomyelitis)
 - Birds/rodents to mosquitos
 - To horses and humans
 - Fever, neurologic



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