Equine Influenza

Equine Influenza (EI) is a highly contagious though rarely fatal respiratory disease of horses, donkeys and mules and other equidae. The disease has been recorded throughout history, and when horses were the main draft animals.

Etiology:
EI is caused by two subtypes of influenza A viruses: **H7N7** and **H3N8**, of the family ***Orthomyxoviridae***. They are related to but distinct from the viruses that cause human and avian influenza.
These viruses are classified based on the relative numbers of haemagglutinin (H) and neuraminidase (N) glycoproteins in the lipid outer layer.

Classification: OIE, List B disease

Epidemiology:
Distribution: The disease is entrenched in most of the world, with the exceptions of Australia (where an important outbreak occurred in 2007), New Zealand, and Iceland.

Transmission: Highly contagious, EI is spread by **contact** with infected animals, which in coughing excrete the virus. In fact animals can begin to excrete the virus as they develop a fever before showing clinical signs. It can also be spread by **mechanical transmission** of the virus on clothing, equipment, brushes etc carried by people working with horses

Pathogenesis:
- ☒ The disease is principally one of inflammation of the upper respiratory tract.
- ☒ The virus is inhaled, attaches to respiratory epithelial cells with it haemagglutinin spikes, fuses with the cell and is released into the cytoplasm where it replicates.
- ☒ Initial viral infection and replication occurs mainly in the nasopharyngeal mucosa,
- ☒ 3-7 days after infection, virus can be recovered from cells throughout the respiratory tract.

Clinical Signs:
In fully susceptible animals, after an incubation period of 1-3 days, clinical signs include:
1. Fever and a harsh dry cough followed by a nasal discharge.
2. Depression, loss of appetite, muscle pain and weakness are frequently observed.
3. The clinical signs generally abate within a few days, but complications due to secondary infections are common.
4. Most animals recover in two weeks, the cough may continue longer and it may take as much as six months for some horses to regain their full ability.
5. If animals are not rested adequately, the clinical course is prolonged.
6. The disease is rarely fatal, complications such as pneumonia are common, causing long term debility of horses, and death can occur due to pneumonia, especially in foals

Diagnosis: Clinical signs are suggestive of EI, but defi nitive diagnosis is by serology or isolation of the virus

Differential Diagnosis:
Equine rhinopneumonitis
Equine viral arteritis
Equine rhinovirus and adenovirus infection
Pasteurellosis
Strangles

Public Health Risk:
There is little risk to public health. In experimental settings the virus has shown the ability to infect humans, and a few people in contact with infected horses developed antibodies to equine influenza viruses, but no humans exposed to the virus have become ill.

Treatment:
1. There is no specific treatment for influenza virus infection of horses and the treatment is largely supportive.
2. Good husbandry and nutrition may assist horses in mounting an effective immune response.
3. Pneumonia is more severely affected horses should be treated with broad spectrum antibiotics, such as:
    a. **Sulfonamides** (15-30 mg/kg, PO, IM or IV every 12 hours),
    b. **Ceftiofur** (2.2 mg/kg IM, every 12 hours)
    c. **Procaine penicilin** (20,000 IU per kg IM, every 12 hours)
    with or without **Gentamicin** (6.6 mg/kg IM every 12 hours) to avoid secondary infection.
4. Supportive treatment includes rest for 3 -4 weeks and provision of a dust free environment.

Prevention and Control:
Vaccination: Vaccination is practiced in most countries. However, due to the variability of the strains of virus in circulation, and the difficulty in matching the vaccine strain to the strains of virus in circulation, vaccination does not always prevent infection although it can reduce the severity of the disease and speed recovery times.

Control:
- ✓ When the disease appears, efforts are placed on movement control and isolation of infected horses.
- ✓ The virus is easily killed by common disinfectants, so thorough cleaning and disinfection is part of biosecurity measures in responding to the disease.
- ✓ Since the disease is most often introduced by an infected animal, isolation of new entries to a farm or stable is paramount to preventing the introduction of disease to a premise.