

## Equiflunet pages

### Veterinary Surgeons

Equine influenza is endemic in the UK and is a major cause of respiratory disease in horse populations around the world. It has been responsible for substantial economic losses in performance horses, with major outbreaks such as the one in Australia in 2007 costing the racing industry an estimated \$1 billion AUD.

These pages are designed to aid veterinary surgeons when faced with a potential influenza outbreak. You will also find information on a Horserace Betting Levy Board (HBLB) funded equine influenza surveillance scheme, which provides free advice and diagnostic testing for equine influenza to all practices who register.

### Equine influenza

Equine influenza is a major cause of respiratory disease in horse populations around the world. Current viruses belong to the subtype **H3N8** and, like human influenza viruses, undergo **antigenic drift** due to the gradual accumulation of mutations in the surface glycoproteins. In particular, changes in the viral **haemagglutinin (HA)** help the virus avoid immunity acquired from previous infection or vaccination. As a result, vaccine strains need to be updated regularly.

### Clinical signs

In unvaccinated horses the classic signs of equine influenza include a **harsh dry cough, pyrexia** and **laboured breathing**. This is typically accompanied by lethargy, depression and a loss of appetite. Horses may also develop a mild serous or mucoid **nasal discharge**. The infection will usually spread very rapidly through a naive horse population with close to 100% infection rate.

Horses that have only partial protection, either due to irregular vaccination or the use of out-dated vaccine strains, will typically show signs of milder, non-specific respiratory disease.

### Complications

Damage to the epithelium and cilia of the upper respiratory tract caused by the virus leaves horses with increased susceptibility to secondary opportunistic infections. The development of secondary bacterial infections is a very important complication of equine influenza. Prolonged pyrexia, lethargy and malaise are usually accompanied by a more profuse mucopurulent/purulent nasal discharge.

In compromised horses this can lead to the development of pneumonia and even death. This increased susceptibility typically lasts for 50-100 days post infection. It is critical to recognise this and not over stress or over work horses during this period as they run a higher risk of developing complications.

## **Actions during an outbreak**

### **Diagnosis**

Obtaining a positive diagnosis for flu is important in deciding how to manage the yard and instigating appropriate isolation procedures, as well as how to best manage the individual animal. It is also important to know if a horse has suffered from equine influenza as it will affect the length of time required for recovery post-infection, in order to prevent secondary complications.

### **Barrier nursing**

If you suspect a horse has influenza, it is important to isolate the individual with appropriate barrier nursing in place. The virus spreads extremely quickly, so if it is appropriate it is sensible to isolate all in-contacts as well. The virus can survive for limited periods outside of the host, so fomite transmission via clothing, tack and other inanimate objects such as brushes is also possible and must be considered when it comes to nursing methods. The virus is fairly labile so normal detergents are sufficient to kill it.

The virus can be spread easily and very quickly from horse to horse, with close to a 100% infection rate to be expected in a group of unvaccinated individuals. Most horses exposed to the virus will show signs within a period of 1 to 5 days.

### **Sampling**

#### **Which horses need to be sampled?**

- Any unvaccinated horse with typical influenza signs
- Vaccinated horses with non-specific respiratory signs
- Unvaccinated in-contact horses

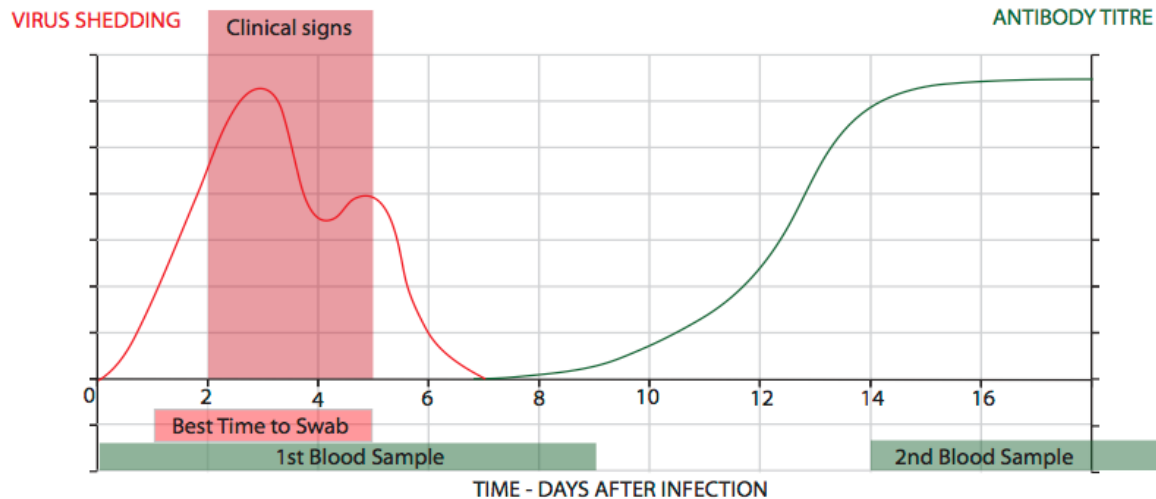
#### **Which Samples?**

Both nasopharyngeal swabs and paired clotted blood samples (serum) taken not less than 14 days apart can be used for diagnosis.

#### **When to sample?**

*Nasopharyngeal swabs:* to maximize the chances of obtaining sufficient virus samples need to be taken no longer than 2-3 days after clinical signs first appear. If it is too late to swab the affected horse it can still be fruitful to take swabs from in-contact animals as shedding begins before clinical signs.

*Paired clotted blood samples:* can be taken further into the disease process because they can still pick up significant antibody increase even if virus excretion is too low to detect with a swab. To obtain a meaningful diagnosis based on a significant rise in antibody levels, two samples not less than two weeks apart are always required.



## Surveillance scheme

### Monitoring virus changes

The HBLB equine influenza surveillance scheme was set up to monitor **genetic** and **antigenic** changes in equine influenza viruses circulating in the UK. It provides **free advice** and **free diagnostic testing** for equine influenza to all practices registered with the scheme. It also provides a means for rapid communication with veterinary practitioners in the face of an outbreak.

The information that is collected from **nasal swabs** and **paired blood samples** allows comparison of currently circulating viruses with those used in commercial vaccines. These data are used to determine whether current strain recommendations should be updated or not.

### Vaccine strains

Official recommendations for vaccine strains are made annually by the **OIE** (World Organisation for Animal Health). For more information about current recommendations please go to <https://www.oie.int/en/our-scientific-expertise/specific-information-and-recommendations/equine-influenza/>

### Influenza in dogs

In the USA equine influenza has also infected dogs. After its emergence in 2003, the disease spread rapidly between states and has now adapted to transmit efficiently in the dog. Since then avian-origin H3N2 influenza has also become endemic in dogs in the USA. Although neither canine influenza H3 subtypes have been reported anywhere outside the US, cross-species transmission of the equine virus from horses to dogs has been observed elsewhere.

In the UK there have been two confirmed outbreaks of H3N8 equine influenza in foxhounds, both retrospectively diagnosed by the Animal Health Trust. Equine influenza was also diagnosed in dogs in Australia following the large outbreak in horses in 2007. Most of those horses had no protection and could therefore shed

large quantities of virus. Dogs kept in close contact with infected horses seroconverted to equine influenza.

Clinical signs in dogs include:

- Persistent harsh cough (despite treatment with antibiotics)
- Nasal discharge
- Fever
- Increased respiratory rate and effort
- Rapid spread within a group of dogs

These signs usually appear two to five days after exposure to the virus. Where there is the possibility of respiratory disease in dogs being due to equine influenza infection, such as after close contact between dogs and infected horses, diagnostic tests to detect virus in horses can be applied to respiratory samples taken from affected dogs. However, as canine influenza has not been diagnosed as an active transmissible disease in dogs in the UK, there is currently no vaccine available for it.