

# GUIDELINES ON EQUINE INFLUENZA

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These guidelines discuss the principles of disease prevention and control for Equine Influenza (EI) and apply to studfarms of all types and sizes. Not to take appropriate steps to follow them, in consultation with attending veterinary surgeons and, where appropriate, expert advice, will undoubtedly increase the risk for introduction of EI onto the studfarm and increase the risk of spread of EI within and from the studfarm. This will potentially compromise animal health and welfare and the successful activities of studfarm businesses, racing and other equine events.

## The Disease

Equine Influenza (EI) is a highly contagious, rarely fatal, respiratory disease of horses, ponies and other equine animals, caused by the equine influenza virus. Although historically there were two subtypes of the virus: H7N7 and H3N8, for more than 30 years now only the H3N8 subtype has been shown to be circulating and does so now as two distinct clades, known as Florida clades 1 and 2. EI viruses are distinct from the viruses that cause human and avian influenza. EI occurs all over the world with the known exceptions of Australia (where a major incursion occurred in 2007, followed by eradication), New Zealand and Iceland. A major outbreak of EI Florida Clade 1 occurred in north western Europe, including UK, Ireland, France and Germany, in late 2018 and into 2019, mostly involving unvaccinated horses but also some vaccinated horses.

## Notification Procedures

EI is listed in the World Organisation for Animal Health (OIE) Terrestrial Animal Health Code and countries are obliged to report the occurrence of disease according to the OIE Code. In UK, EI is not notifiable to Defra but it is notifiable to the British Horseracing Authority, under their Rules of Racing (Part 3, 30), when it occurs in horses on licensed racehorse premises, because of its potential to interrupt the racing calendar.

## Clinical Signs

Clinical signs of EI are highly variable, relating to infectious dose and immune status, the latter principally governed by vaccination status. In susceptible horses, clinical signs include fever and a harsh dry cough followed by a nasal discharge, in what can become 'explosive' outbreaks, rapidly spreading between individuals, with a short incubation period of 1-3 days. Depression, loss of appetite, muscular pain and weakness can occur. Epidemic coughing is always a worrying sign as this is not so commonly seen in association with the other, more common, upper respiratory viral infections of horses.

Clinical signs usually abate within a few days, but complications associated with secondary opportunist bacterial infections (e.g. pharyngitis, sinusitis, pneumonia) sometimes occur. Rarely, some cases progress to pleuropneumonia and may die or require euthanasia on humane grounds. Young foals appear most susceptible to fatal pulmonary complications, showing severe respiratory distress and failure. Foals have died during the 2019 outbreak in UK. Most infected adult horses recover in seven days to two weeks but in others, especially if not rested, recovery may be prolonged to as much as six months, before they regain their normal health and fitness.

Many fully vaccinated horses that are challenged by field infection show mild or no clinical signs at all. Infected vaccinated horses that do show signs are usually less severely affected than unvaccinated horses and recover more quickly and shed less infectious virus into the environment. Secondary pulmonary complications occur less commonly in challenged vaccinated horses. Clinical experience from outbreaks and evidence from scientific research shows that horses, especially younger ones that receive 6-monthly booster vaccinations, are better protected than those being revaccinated at longer intervals.

## Transmission of Disease

EI virus is highly infectious, spreading effectively through close contact between animals but it also has the potential to transmit over longer distances via wind-borne spread when viral aerosols are produced during coughing. Live EI virus can also be spread indirectly by people via their hands, clothing, equipment and tack etc., and by the sharing of horse transport and in stables that have not been adequately cleaned and disinfected between animals.

## Prevention

### Vaccination

Vaccination and a sensible biosecurity policy, in partnership, are the key to best prevention for EI infection.

Vaccination is of primary importance to help safeguard horse health and welfare and to help protect equine businesses. All equine animals in UK should be fully and properly vaccinated as it is our most effective tool in the prevention and control of EI. No vaccines against EI, nor any other infections, are 100% protective and influenza vaccines, for all species, including humans, are recognized to be unable to fully protect against the continual viral genetic changes ('genetic drift') that occur naturally. Nevertheless, it is clear that even during the 2018/2019 EI outbreaks reported throughout Europe, including UK, whilst infection did occur in the occasional vaccinated horse, clinical signs were either absent or much milder and infected animals recovered more quickly with fewer cases of secondary pneumonic complications. That being the case, viral shedding and aerosol spread to other horses would have been reduced. It was also clear that horses that were last vaccinated within 6-months of challenge, were at less risk of succumbing to infection, when challenged, than those that were last vaccinated at longer intervals.

It is recommended that all horses resident on all studfarms are fully vaccinated at least in accordance with the datasheet requirement of the specific EI vaccine, as recommended by the attending veterinary surgeon, but recognising that younger animals intended for racing will need to comply with racing's regulatory requirements for EI vaccination. This will usually include a primary course of 2 doses with an interval of 21 - 92 days between doses, followed by first booster 150 - 215 days after the second primary dose with at least annual boosters thereafter (vaccination schedule recommendations to be confirmed after proposed EI vaccination harmonisation is finalised). As noted above and following experience in the 2018/2019 outbreak, booster vaccinations are now recommended every 6 months rather than annually (9 calendar months if entering BHA administered property). See Appendix 8 for vaccine details (appendix to be amended after EI vaccination harmonisation is finalised).

It is recommended that in order to provide optimal antibody levels in colostrum that pregnant mares are booster vaccinated for EI approximately 4-6 weeks prior to their predicted foaling date, with their tetanus vaccine booster, using a combined vaccine. Foals that receive adequate maternal antibody should not commence their own vaccination programmes until they are at least 6 months of age when maternally derived antibody from colostrum has adequately declined and will not interfere with the foal's immune response to vaccination.

## Biosecurity

Sensible biosecurity measures based upon a specific risk assessment performed in consultation with the attending veterinary surgeon and, where necessary, others with expert knowledge of equine contagious disease control, are essential to minimize the risk of introduction of infected horses and aerosol or mechanical transfer of infective virus to non-infected horses.

Effective quarantine for new horse arrivals is of major preventive importance. It is clear that during the 2018/2019 EI outbreaks reported throughout Europe, including UK, many reported cases of EI followed the introduction of new horses into stables, some from abroad, some from sales and others from stables elsewhere in UK. Ideally, in-coming horses should be held at a separate location, with dedicated staff, for 10-21 days, during which time they are monitored daily for any clinical signs of all infectious diseases (e.g. raised rectal temperature, nasal discharge, coughing, diarrhoea, skin lesions, inappetence, depression). If these occur, they can be investigated, treated, recovered and proven to be of no further risk of transmission, in isolation, before they are introduced to the main stables. If multiple horses are involved, the whole batch is quarantined and monitored in this manner before being released 'into the herd'. For studfarms without separate facilities, an appropriately separated yard or a section of stables should be designated as a quarantine area, under the supervision of the attending veterinary surgeon, with designated staff with appropriate protective clothing and work practices.

If contagious disease is diagnosed in quarantine, the stables and paddocks become an isolation unit (see Appendix 6). For studfarms with only a few horses, introduction of EI means that the whole unit needs to be 'isolated' until the infection has taken its course and the horses are recovered and confirmed to be free of disease and no longer constitute a risk of spread to other horses.

On studfarms, pregnant mares, mares with foals at foot and non-pregnant mares should be managed separately, with separate staff and there should be designated quarantine facilities, staff and protocols for incoming horses and for when contagious infections occur, to avoid their spread.

Vaccination and biosecurity measures may help to avoid an epidemic developing and spreading. However, EI infected horses can shed infectious virus before they show clinical signs so significant spread may occur before the first case is diagnosed. Horses may show minimal clinical signs and therefore specific testing (see diagnosis) should be performed without delay, if EI is considered a risk, irrespective of clinical signs.

## Prevention

Vaccinate all equine animals against EI on the premises.

Quarantine all incoming horses on arrival and monitor for signs of illness/infection.

Isolate all infected horses until confirmed free of disease and no longer a risk of spread to other horses.

Separate staff looking after horses in quarantine and isolation must understand and be equipped to follow appropriate hygiene and biosecurity protocols, as recommended and monitored by the attending veterinary surgeon, with expert advice, where necessary.

## Diagnosis

Confirmation or rule out of equine influenza virus infection can be performed relatively quickly (same day if samples can be delivered to a prepared laboratory in good time) with the specific polymerase chain reaction (PCR) test. Upper respiratory tract sampling should be performed using special long nasopharyngeal swabs taken by a veterinary surgeon, in a satisfactory manner and placed into specific viral transport media. The PCR test determines whether specific EI viral RNA is present in the test sample, consistent with EI virus infection.

Confirmation or rule out of a specific immune response (antibodies) to EI can be made by the testing of blood (serum) samples collected during the early phase (acute sample) of the infection and then from the same horse 10-14 days later, when the animal is recovering (convalescent sample). A 4-fold or greater rise in specific EI antibody level (titre) in the second blood sample compared to the first (seroconversion) confirms an immunological response to EI infection and suggests a diagnosis of EI if the horse has not been recently vaccinated. However, this test relies on taking two blood samples 10-14 days apart and the interpretation of results for horses that have been fully and recently vaccinated may not be easy to interpret.

Therefore, for the most timely confirmation and rule out of the virus at the time that clinical signs are present or when there is any suspicion of upper respiratory infectious disease, the specific nasopharyngeal swab PCR test is required. Nevertheless, serological (antibody) blood testing may also be helpful in assessing the development of immunity and recovery and/or risk of transmission, in particular circumstances.

## Control of Infection

Firstly, as soon as clinical signs or risk are suspected, all equine animals on the premises should be swabbed (see diagnosis) to confirm or rule out EI infection and to clarify those that are actively shedding virus. It may then be possible to manage infected/shedding and non-shedding horses into isolated groups to minimise the risk of spread to those that are not yet infected. On studfarms, in particular, not yet infected pregnant mares and mares with foals at foot should be managed separately from the infected group, to try to avoid infection of their foals, who may become more seriously ill (see clinical signs). Stallions should be housed and managed separately from mares and, if not yet infected, biosecurity measures should be in place to avoid their direct or indirect contact with infected mares or other horses.

Vaccinated horses should be additionally vaccinated, if they have not been booster vaccinated within the last 6 months and even if they have, there is research evidence to suggest that additional vaccination may be helpful in controlling an outbreak of EI.

The health and welfare of infected animals should be specifically addressed by the attending veterinary surgeon until recovery from all clinical signs and repeat swabbing confirms no further shedding of virus, demonstrating that all horses are no longer actively infected.

## Treatment

There is no specific treatment for EI itself, but the attending veterinary surgeon should be consulted and will treat the clinical signs, where necessary, to speed recovery, to minimise viral shedding and to avoid progression to secondary complications. Appropriate early treatment for horses with pulmonary complications is an urgent priority.

## Confirmation of Freedom from Disease

Following infection with EI, freedom from disease risk is confirmed when all clinical signs have resolved and repeat nasopharyngeal swabbing confirms negative PCR tests, i.e. there is no evidence of further shedding of virus. As a guide, most horses stop shedding virus about 10 days after initial uncomplicated infection.