Report into outbreak of Neurological Equine Herpes Virus (EHV-1) in Mainland Europe February 2021
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1: INTRODUCTION

The outbreak of the neurological form of Equine Herpes Virus (EHV-1) in Spain in February 2021 resulted in the deaths of 18 horses in mainland Europe and confirmed related cases in 10 countries: Belgium, Denmark, France, Germany, Italy, Qatar, Spain, Slovakia, Sweden and Switzerland.

There may also have been other fatalities or career-ending after-effects directly or indirectly related to the outbreak, but these were not reported to the FEI.

During the FEI enforced six-week shutdown of all international events in mainland Europe from 1 March to 11 April, aimed at minimising the spread of the virus, 12 European nations had to cancel planned events: Austria, Belgium, Estonia, France, Germany, Italy, Netherlands, Poland, Portugal, Slovakia, Spain and Sweden.

In order to further prevent the spread of the virus, the FEI also blocked a total of 3,836 horses in the FEI Database, meaning that these horses were not permitted to enter any FEI Events until they had fulfilled the necessary health requirements as determined by the FEI Veterinary Department.

The FEI pledged to have a comprehensive and fully transparent investigation into every aspect of the outbreak. This Report covers the full findings of that investigation, which was conducted internally at FEI Headquarters and incorporates multiple external reports.

The investigation, which focused on venues where there were related cases, has shown that there were systemic failures in a number of areas and these are detailed in the Report.

The purpose of this Report is to:

- establish a comprehensive and factual picture of the outbreak;
- evaluate what was done correctly – by all involved parties – to minimise transmission of the virus;
- identify where there were failings;
- look at the enhanced biosecurity protocols put in place that allowed safe resumption of international competition in April 2021;
- look at the enhanced biosecurity protocols voted in at the FEI Hybrid General Assembly 2021 as part of the FEI Veterinary Regulations for global implementation on 1 January 2022;
- the way forward, including evaluation of potential mandatory global vaccination protocols.

This document is the first phase of the full Report, which will be produced in three parts:

**Part 1** - The outbreak, covering the series of events, causes, roles and responsibilities, and analysis.

**Part 2** - Return to competition (to be published in advance of the FEI Sports Forum 2022); This section of the Report will focus on the implementation of the Return To Competition measures, including the EHV-1 By-Laws and sanctioning system and measure their effectiveness. This section will also cover the elements of these that were subsequently incorporated into the FEI Veterinary Regulations 2022 approved at the FEI Hybrid General Assembly in November 2021.

**Part 3** – Way forward, including potential global vaccination protocols (to be presented at the FEI Sports Forum).

What this Report aims to achieve is a review of what went wrong, what the FEI – and the community – did and/or could have done to minimise the impact and spread of the virus as
rapidly as possible, lessons learned and how to prevent an outbreak of this nature ever happening again.

2: SUMMARY

The FEI Veterinary Department was first notified by the onsite FEI Veterinary Delegate in the afternoon of 20 February 2021 that 11 horses had fever at the CES Valencia Spring Tour (ESP). Later the same day, the number had increased to 20.

The FEI Headquarters was also advised of four cases of suspected Equine Herpes Virus (EHV-1) in horses that had left the Spanish venue on 14 February 2021 and become sick shortly after returning to their home country (France). At least one of these horses was showing neurological signs.

However, as part of its investigation, the FEI was subsequently made aware that there were several febrile horses on-venue at Valencia as early as 14 February 2021, almost a week before any information was passed on to the FEI Veterinary Department on 20 February 2021.

From the start of the outbreak, the FEI initiated a series of regular meetings with world leading epidemiologists to conduct a full risk assessment of the further spread of the disease.

This ongoing interaction formed the basis of the FEI Veterinary Epidemiology Working Group, which was formalised during the second week of March 2021. Its brief was to monitor the evolution of the EHV-1 outbreak and provide specialist advice on its management and preventive measures for the future.

In line with that risk mitigation approach, National Federations at the FEI Hybrid General Assembly in November 2021 voted on strengthened biosecurity rules as part of the FEI Veterinary Regulations. While the biosecurity rules were already strong, there was an increased need for control of compliance, which is now covered under Regulations that provide protection against many diseases.

The importance of compliance with the Regulations cannot be overestimated. The High Health/High Performance Status of FEI horses confers major privileges in terms of international movement, but with that comes obligations. Together, we must all deliver our part in order to maintain those privileges, not lose our position in the industry and risk external legislation from individual National Governments or international legislative bodies.

A sanctions system has been in place since 1 November 2021 (with October 2021 used as an educative period) as part of the FEI’s EHV-1 By-Laws applicable in mainland Europe from 31 May 2021 to 31 December 2021. The strengthened biosecurity rules came into force worldwide on 1 January 2022 and will be followed by global implementation of sanctions on 1 July 2022 to ensure compliance.

EHV is an endemic disease worldwide and is notifiable in only a few countries in mainland Europe. A survey conducted by the FEI, which was sent to National Head Veterinarians (NHVs) and National Federation (NF) offices in NFs where no NHVs have been appointed, resulted in 73 replies from 136 National Federations (53.6%). The results showed that neurological EHV-1 is a reportable disease in 22 countries and notifiable in 15.

There are concerns that, should the disease become notifiable in more countries, it could lead to reduced reporting, meaning that outbreaks could become more difficult to manage.

1 A notifiable disease is any disease that is required by law to be reported to Government authorities.
3: DESCRIPTION OF DISEASE CAUSED BY EHV-1 INFECTION

Equine Herpes Virus is found in many parts of the world and cases and outbreaks can be seen at any time of year. Certain strains of the virus can cause severe illness in horses, which can result in their stables being placed under quarantine for several weeks so that horses cannot travel and are unable to compete.

Although there are nine strains of the virus, Equine Herpes Virus-1 (EHV-1) and Equine Herpes Virus-4 (EHV-4) are those most commonly seen. Affected horses may suffer respiratory disease, neurological disease and abortion in pregnant mares. Young foals are also at risk and can die from the infection. The outbreak that impacted mainland Europe in February 2021 was the neurological form of the EHV-1 strain.

Recovery rates from Equine Herpes Virus are variable. It depends on the severity of the clinical signs and whether the horse has suffered secondary infections.

Slowing down movement and interaction between horses and horse people is crucial, as this is how this virus is spread. If everyone adheres to the measures, including in their home stables, with isolation and reporting any sick animals to their veterinarian, the opportunities for transmission are minimised and the length of an outbreak is reduced.

A detailed factsheet regarding the Equine Herpes Virus, including the different strains, how it is transmitted, clinical signs to look out for, what to do if you suspect your horse has Equine Herpes Virus, and other biosecurity measures are available in Annex 1 (EHV factsheet).

4: SCIENCE BEHIND THE OUTBREAK

This section includes details of the collaboration between world leading epidemiology experts and the FEI during the outbreak, the creation of the FEI Veterinary Epidemiology Working Group, and laboratory work, including gene sequencing of the virus.

Virus strain identified: In early March 2021, the Valencia strain of the virus was identified by both Labeo (France) and Synlab Vet Laboratory Services (Germany), the latter in a research cooperation with the School of Veterinary Medicine at Cardenal Herrera University (CEU UCH) in Valencia, as a A2254/N752 genotype which commonly circulates in Europe.

A2254/N752 genotype is more common than the G2254/D752 genotype and is less often associated with neurological disease than the G2254/D752, which is more frequently associated with hyper-virulent disease expression, meaning that the disease is extremely contagious.

Gene sequencing of the Valencia strain by Ghent University found that it was not a novel virus but was similar to strains previously found in Europe.

FEI Veterinary Epidemiology Working Group

Expert support: From the start of the outbreak, the FEI initiated a series of regular meetings with world leading epidemiologists to conduct a full risk assessment of the further spread of the disease.

This ongoing interaction formed the basis of the FEI Veterinary Epidemiology Working Group, which was formalised during the second week of March 2021. Its brief was to monitor the evolution of the EHV-1 outbreak and provide specialist advice on its management and preventive measures for the future.

The Group, which still meets for updates, was composed of leading EHV experts Professor Ann Cullinan (IRL), Dr Richard Newton (GBR), Dr Gittan Gröndahl (SWE), Professor Anne Couroucé (FRA), the FEI Veterinary Director Dr Göran Åkerström and FEI Senior Veterinary Advisor Dr
Caterina Termine, supported by Dr Jenny Hall, Chair of the FEI Veterinary Committee and (as of 17 November 2021) a member of the FEI Executive Board.

The key areas that the Group worked on were:

- assisting the FEI Veterinary Department and Veterinary Committee in evaluating information associated with the EHV-1 outbreak;
- providing advice for the duration of the outbreak;
- advising on return to competition protocols;
- encouraging reporting of infectious disease cases in all National Federations;
- identifying any gaps in knowledge where research was required.

**FEI Veterinary Epidemiology Working Group reports**

Reports and recommendations from the Group (all available below) were published on a weekly basis throughout the outbreak on the dedicated EHV-1 hub.

**18 March 2021**

The FEI Veterinary Epidemiology Working Group, whose individual members had been working with the FEI since the start of the EHV-1 outbreak, held its first formal meeting on 18 March 2021 to discuss virus gene typing, the evolution of the outbreak, return to competition protocols and preventive measures.

The Group discussed epidemiological links between events where positive cases had been reported, and further known transmission of the disease at horses’ home stables. The need for improved network tracing was identified, which would require the FEI being granted greater jurisdiction at FEI events in the event of an EHV outbreak.

The Group noted that EHV is an endemic disease worldwide and is notifiable in only a few countries. Concern was raised that should the disease become notifiable in more countries it could lead to reduced reporting, meaning that outbreaks could become more difficult to manage.

**Expected future risks**

Regarding the evolution of the outbreak, the Group agreed that the following risk factors could be expected within the following two weeks:

- Transport of horses (potentially causing raised stress levels) may result in further recurrence of the virus and more confirmed cases.
- Circulation of active virus was expected to continue because this virus often moves more slowly through groups of horses compared to a virus such as Equine Influenza. Therefore, it may take some time for more recently infected groups of horses to be released from isolation.
- Efforts must be focused on both preventing the incursion of virus positive horses at events and contingency planning to mitigate the impact of such an incursion, should it occur.

**Resumption of Competition**

The Group determined that safe resumption of competition must involve two key areas: conditions for entry and the management of horses within the venue.

Recommendations include:

- health certificates issued before the horse travels;
- pre-movement testing;
- enhanced examination on arrival;
- restrictions on event size;
- good separation between horses;
- routine health monitoring.

Many rules are already in place to support these measures.
**Laboratory analysis of samples**
Several laboratories in Europe had analysed PCR positive samples from horses that returned from competitions in Spain. The virus identified did not have the N752D amino acid substitution in the DNA polymerase that had been shown in the past to be associated with neurological disease. Work on identifying the clade or genetic group to which this virus belongs was ongoing and would assist in tracking the spread of the virus and differentiating it from many other strains of EHV-1 in circulation.

The Group’s next meeting was scheduled for **25 March 2021**.

**25 March 2021**
The FEI Veterinary Epidemiology Working Group held the second of its weekly meetings on 25 March, with the key focus of the meeting on fine-tuning the Return To Competition protocols to allow for a safe resumption of international sport in mainland Europe.

The Group reviewed the required biosecurity measures, focusing particularly on PCR testing, examination on arrival, stabling and temperature monitoring.

**Resumption of Competition**
It was agreed by the Group that there was no evidence indicating that it would be unsafe to return to international competition in mainland Europe as planned on 12 April 2021, provided the mandated enhanced preventive measures were implemented. However, the Group would continue to monitor the evolution of the outbreaks on a daily basis.

There were no new reported outbreaks of EHV-1 linked to Spain and the figures remained static at 31 outbreaks in a total of 10 countries. Updates from National Federations showed that the outbreak appeared to be well-contained. The reported case numbers were reducing and there had been no reports of disease transmission to tertiary premises in the previous week.

**Financial Backing**
The Group was advised that the FEI would provide financial support for the ongoing scientific work around laboratory analysis of positive samples for gene typing.

Plans were being drawn up for data collection in order to further research the outbreaks. In addition, it was agreed to source data to determine whether mandatory vaccination had reduced EHV outbreaks in France

**Additional Support**
Internal medicines specialist Dr Anne Couroucé, who was assigned by the French National Federation to support the veterinary work in Valencia, was now supporting the Group with her expertise.

The Group’s next meeting was scheduled for **30 March 2021**.

**30 March 2021**
The FEI Veterinary Epidemiology Working Group held the third of its weekly meetings, focusing on the current situation with the virus in mainland Europe, mandatory EHV vaccination in France for racehorses and the elements that need to be considered when declaring an EHV outbreak.

There had been no reports of new neurological cases linked to Spain in the previous week and the Group agreed that the situation remained under control. The FEI was following up on a number of cases in Luxembourg to see if these were linked to Spain, but otherwise there was no change from last week.

The laboratories had advised that, to date, there was no evidence that this was a novel virus.
In summary, the situation was similar to the previous week with no new tertiary premises involved. The Luxembourg cases were to be followed up. All agreed that the situation remained under control.

The Group supported the Return To Competition measures taken and welcomed their publication. (These will be published as an Annex in Part 2 of this Report.)

Mandatory EVH vaccination programme in France
Mandatory EHV vaccination was introduced in 2018 for racehorses in France and for trotters the following year, although trotter broodmares have been under mandatory EHV vaccination since 2015. The French trotting governing body, Le Trot, believes that there are less abortions, just sporadic cases. As of 2021, racehorses and trotters in France must be vaccinated as yearlings.

The Group was advised that it was still too early in the programme to have reliable data, but that some background figures should be available soon.

The FEI Veterinary Director had requested information from the US Equestrian Federation (USEF), which imposed mandatory vaccinations in 2018 on a national basis.

Criteria on how to declare an outbreak of EHV
To support the FEI’s position when declaring an outbreak of EHV, the Group discussed the elements that need to be considered when declaring an outbreak. It was agreed that this required further discussion and it would be included on the agenda for the following week’s meeting.

The Group’s next meeting was scheduled for 7 April 2021.

7 April 2021
The FEI Veterinary Epidemiology Working Group held the fourth of its weekly meetings.

The Group discussed the current situation with the virus in mainland Europe and globally available vaccines, and reviewed the list of laboratories recommended by National Head Veterinarians that can conduct PCR testing in line with the FEI’s Return To Competition measures. There was also discussion on the turnaround time for test results, depending on the capacity of the laboratory and other factors such as public holidays.

Current situation
There were no known new outbreaks linked to the Spanish events and, in the view of the Group, there were no indications that it would not be safe to resume competition in mainland Europe as planned on 12 April 2021, provided the mandated biosecurity measures are in place.

Vaccination
The Group discussed the situation in the USA, where vaccination is mandatory at a national level, and France, where it is proposed to make it mandatory for sport horses. However, a National Federation can only impose mandatory vaccination at national level.

The FEI Veterinary Director was continuing to meet with the pharmaceutical industry to discuss vaccines. There had been some reported interruptions in the supply chain, but the availability of EHV vaccines within Europe would be substantially improved by the following month.

Return To Competition
The Group was advised that the Return To Competition measures had been well received, and had generated many questions, including requests from Organisers to approve stabling solutions for their events. The Group agreed that there was scientific merit in getting additional expertise in the methods of stabling horses, particularly with regard to configuration, in order to minimise exposure for the future.
Stable-side EHV-1 testing

The Group discussed the efficacy of stable-side EHV-1 testing systems. A number of companies had contacted the FEI about supplying these machines. The OIE Reference Laboratory at the Irish Equine Centre had offered to provide proficiency testing kits for these systems.

The Group continued its discussion on the elements that need to be considered when declaring an EHV outbreak and this would be included as an agenda item for the next meeting.

The Group’s next meeting was scheduled for 15 April 2021.

(The Group continued to meet regularly after the Return To Competition protocols were implemented on 12 April 2021. Reports from these meetings are included in Part 2 of this Report.)

The report from the Group’s 15 and 20 December meetings are included below as they are relevant to Part 1 of this Report.

15 December 2021

The Group met online to hear presentations from Dr Federico Nieto León, the FEI Veterinary Treatment Team Leader in Valencia during the outbreak, and Dr Eduard Jose Cunilleras, Associate Professor in Equine Medicine at the University of Barcelona (UAB).

Dr Nieto recounted his experience as a treating veterinarian during the outbreak and management of horses at the competition site in Valencia. He arrived at the venue on 27 February 2021, a week after the start of the outbreak, and led a team of 12 treating veterinarians.

There was discussion about the management of pyrexic horses, when an outbreak should be declared, and protocols that could be implemented to improve the management of any future outbreaks at events. There was absolute consensus on the importance of isolating and testing pyrexic horses.

Dr Cunilleras, whose research focuses on equine internal medicine and infectious diseases, is analysing data collected from the outbreak in Valencia. He presented data regarding the demographics of the outbreak and treatment protocols, using information collected from the Valencia competition site and the university equine clinics of Valencia, Barcelona and Madrid.

20 December 2021

The FEI Veterinary Director presented the first part of the EHV-1 Report to the Group for their feedback. This section of the Report was then presented to the FEI Board in February 2022 prior to publication.

5: KEY RISK FACTORS FOR EHV-1 OUTBREAKS

There are well-known factors that affect the risk of an outbreak of EHV-1.

Transmission of EHV-1

EHV-1 spreads relatively slowly within a population, but can be more rapid if many horses are coughing or snorting, spreading aerosols with virus up to five metres. Indirect spread can also occur by shared equipment such as tack, feed bowls and buckets and by people via their hands and clothing. Also dogs, particularly if they are loose, can spread virus indirectly.

At Tours, horses stay for weeks and even months. The atmosphere is often relaxed and it is not uncommon that horses and humans have several direct contacts that could allow a virus to spread. It is likely that some equipment is shared.
Size of horse population and time spent onsite
Large numbers of horses of different origins gathered in one place over a long time increases the risk for transmission.

Number of horses sharing the same airspace
The risk that EHV is transmitted increases with the number of horses that share the same airspace and is aggravated by poor ventilation. Tent stables, particularly those with closed walls, are often not well ventilated.

Predisposing factors

- Transport - Many horses travelling to the Tours on the Iberian Peninsula travelled very far and for many days. For example, from northern Germany to Valencia, the distance is around 2,000 kilometres and it would take at least two days to travel. Transport induced stress is a pre-disposing factor for horses to become ill from herpes virus.

- Age of horses - Horses cope with transport very differently, but it is likely that young inexperienced horses could be more affected. Many young horses compete at the Tours on the Iberian Peninsula.

- Horse management - The impact of transport and also the overall biosecure management may be further aggravated by inexperienced athletes and their entourage.

Preventive measures

- Examination on Arrival - Examination on Arrival is mandatory at all FEI Events. It has become obvious that until the introduction of the FEI HorseApp, which allows FEI HQ to monitor the arrivals process both in real-time and retrospectively, the Examination on Arrival was often not correctly conducted at FEI Events. The main purpose of this examination is to identify horses with a suspected infectious disease, as well as to establish identity and vaccination status, and it is therefore crucial as a preventive biosecurity measure.

- Temperature monitoring - Increased body temperature is the most common early clinical sign in EHV-1 infections. Monitoring of arrival and daily body temperatures are important preventive measures as they give athletes/grooms and veterinarians an early warning that a horse may have an infectious disease and allow measures to be taken, such as early isolation of the febrile horse.

If these preventive measures are not enforced, the opportunity to prevent or minimise an outbreak is missed.

Under FEI Veterinary Regulations Article 1029.2 in force at the time of the outbreak: *While Horses are present on the Event venue, their temperature should be taken at least once daily and recorded by the PR. Any change in the health status of the Horse should be immediately reported to the VD.* This Article shows that, while this measure was not mandatory at the time of the 2021 outbreak, it was strongly recommended.

As a result of the outbreak and to further strengthen biosecurity, this was changed in the EHV-1 By-Laws implemented in mainland Europe from 12 April to 31 December 2021 and now covered as a mandatory requirement worldwide in the FEI Veterinary Regulations from 1 January 2022.

Minimising nose-to-nose contact - Nose-to-nose contact can be minimised by setting up one-way systems on all venues, particularly in stable areas, having at least 2.40 m high partition walls between stables (boxes) and banning grooming and preparation of horses in the aisles.
Basic hygiene - As the world has learned during the Covid-19 pandemic, basic hygiene measures such as hand washing are crucial to prevent transmission of virus and other micro-organisms.

Record keeping - In accordance with FEI Veterinary Regulations Articles 1018.3 and 1018.4, Organising Committees must maintain a record of where horses have been stabled during the Event, and must record contact details and determine communication methods for all Persons Responsible (PRs) and veterinarians present at the Event.

Education - The FEI Veterinary Regulations, prior to the additions voted in at the FEI Hybrid General Assembly 2021, already included biosecurity protocols on disease outbreaks and, particularly, the prevention of outbreaks. Biosecurity had also been introduced into the FEI education system five years ago following identification of the need for improvements. This was initially focused on National Head Veterinarians (NHVs), with the creation of a toolbox for preventing and handling EHV outbreaks, which then became the first online course on FEI Campus in 2017.

Vaccination - There is no scientific evidence to support that the EHV vaccines currently available in mainland Europe would protect individual horses against neurological EHV-1. It is also not evident that the vaccines available in mainland Europe would create a protective herd immunity.

In order to have a science-based decision making process on whether to mandate vaccination against EHV-1, the FEI has commissioned a leading expert within the field, Professor Lutz Goehring, to conduct a review project on whether mandatory EHV vaccination could be effective in preventing outbreaks of neurological disease at international equestrian sports events. The results of this scientific project will be presented at the FEI Sports Forum 2022.

6: TIMELINE OF THE OUTBREAK

14 February 2021
A total of 57 horses from nine countries - Belgium, France, Germany, Israel, Monaco, Slovakia, Spain, Switzerland and Sweden - left the showgrounds at Valencia (ESP) without the required EU health certificates. Other horses also departed from Valencia on this date, but with the necessary documentation.

16 February 2021
Four of the 20 French horses that had left Valencia two days earlier tested positive for EHV-1 at their home stables in France. At least one of these horses was showing neurological signs. This was not notified to the FEI until 20 February 2021.

17 February 2021
A report received from FEI Veterinary Team Leader Dr Federico Nieto León (sent to the FEI in Spanish on 19 March) stated that there were four febrile horses on the Valencia venue on 17 February. The FEI was unaware of these cases until receipt of the Team Leader’s report in March.

19 February 2021
Several sources have since informed the FEI that there was knowledge at Valencia on 19 February 2021 that there were horses with fever on the venue and that there was a photograph circulating among the French athletes onsite of a neurological EHV-1 case in France in a horse that had left Valencia on 14 February 2021. However, there was no communication on this to the regional authorities, to the FEI or to others at the venue.

20 February 2021
First notification of sick horses to FEI Veterinary Department: The FEI Veterinary Department was informed by the onsite FEI Veterinary Delegate in the afternoon of 20 February
that 11 horses had fever at the CES Valencia Spring Tour (ESP). Later the same day, the number had increased to 20.

A horse with neurological symptoms was taken from the venue to CEU Equine Hospital in Valencia. Test results on this horse had not been returned at this stage.

**Cancellation:** Combined with the information of the four positives in France, the FEI concluded that this was an outbreak of the neurological form of EHV-1 and immediately told Organisers and onsite Officials to cancel the rest of the event in Valencia in accordance with FEI General Regulations, Article 109.

A meeting was held onsite following the FEI request to cancel the event, and the advice that the National Veterinary Authorities should be informed.

**Iberian Peninsula:** The FEI informed the Organisers of the other Tours on the Iberian Peninsula of the situation and instructed them not to accept any horses that had been competing at Valencia.

**21 February 2021**

The Valencia Organisers emailed the regional branch of the Spanish Veterinary Authority at 10:55 (see Annex 2) to inform them of suspected infectious disease at the venue that could be Equine Rhinopneumonitis and that the number of febrile horses “exceeds normal”. The Organisers awaited instructions from the Authorities.

The same morning, the FEI Jumping Director was advised that competition was still ongoing in Valencia, despite the fact that the FEI had insisted the previous day that the rest of the event be cancelled. He immediately informed the FEI Veterinary Director, who contacted CES Valencia by telephone and email at 10:46 insisting that the event be stopped immediately. Despite this, the Grand Prix started at 12 noon, as scheduled, and was not stopped until the FEI Veterinary Director sent an additional email to the Ground Jury, Organising Committee and Veterinary Delegate at 12:06 (see Annex 3) warning that the FEI would take disciplinary action unless the event was cancelled immediately.

Following subsequent representation from some athletes requesting that the Grand Prix be restarted, the Veterinary Delegate emailed the FEI Veterinary Director seeking permission for the remaining 15 horses to be allowed to jump. This request was rejected by the FEI, with the Veterinary Director warning that the situation was very serious, that any movement of horses on the venue would risk further spread of the virus, and reiterating that any further competition would be a violation of FEI Rules.

Later that evening, the Veterinary Delegate advised the FEI Veterinary Department by telephone that there were 40 horses with fever in Valencia.

**Biosecurity contingency plan:** The FEI Veterinary Department requested the onsite FEI Veterinarians to supply the Organising Committee’s biosecurity contingency plan (isolation protocols etc.) as required by Article 1018 of the 2021 FEI Veterinary Regulations.

The FEI followed up with the two FEI Veterinarians onsite at that point on the situation with horses in Valencia and this was then continued on a daily basis.

The FEI Veterinary Delegate and venue Veterinary Services Manager remained on venue to treat horses, where necessary, and implement a mitigation plan for containing the outbreak in accordance with the FEI Veterinary Regulations. The FEI followed up with these two veterinarians onsite and this was then continued on a daily basis.

A total of 131 horses from 11 countries left the venue without the required health papers on 21 February.
With the information available, the FEI established that there was potential disease transmission between horses that had been at the venue in the period between 1 and 20 February 2021.

The FEI commenced identification of the more than 700 in-contact horses that had participated at Valencia since 1 February 2021.

**22 February 2021**

**Local Authorities took over Valencia venue:** The regional branch of the Spanish Ministry of Agriculture (MAPA) formally took over the Valencia venue.

A total of 52 symptomatic horses were tested by the Official Veterinary Services.

**Tracing & blocking of in-contact horses:** Within less than 48 hours of being informed of the outbreak, the FEI traced and blocked in the FEI Database all 752 horses that had participated in Valencia, meaning that these horses were not permitted to enter any FEI Events until they had fulfilled the necessary testing requirements.

The FEI confirmed the identification of the Valencia horses to the Organisers of the other Tours on the Iberian Peninsula, and instructed them not to accept these horses.

All athletes that had participated with horses in Valencia since 1 February 2021 received a communique (see Annex 4) outlining the FEI measures blocking the in-contact horses and the actions that they personally needed to take to help prevent the further spread of this virus.

**23 February 2021**

**Health certificates:** The FEI contacted the National Federations (NFs) of athletes who had left the venue with their horses without the necessary health certificates and asked these NFs to contact their national veterinary authority.

**Horse/Athlete lists:** The FEI contacted the organisers of events in other parts of Europe with lists of horses and athletes that had been in Valencia.

**Expert support:** The FEI initiated a series of regular meetings with world leading epidemiologists to conduct a full risk assessment of the further spread of the outbreak. This ongoing interaction formed the basis of the FEI Veterinary Epidemiology Working Group, which was formalised during the second week of March 2021.

The FEI followed up on test results from on-venue horses in Valencia.

**24 February 2021**

**Official notification of outbreak by Spanish Authorities:** The Secretariat of Sanidad e Higiene Animal y Trazabilidad (the regional branch of MAPA) published an official notification of the EHV-1 outbreak, Confirmación Rinoneumonitis equina en concurso hípico en Valencia (see Annex 5).

Following discussions with the FEI, the Spanish Equestrian Federation was in direct contact with the Spanish Ministry to ensure that a team of FEI supporting Veterinarians would be allowed onsite in Valencia to supplement the OC Treating Veterinarians already onsite.

The FEI monitored the health situation of horses on all Jumping Tours on the Iberian Peninsula.

**In-contact follow-up:** The FEI continued to follow up with Event Organisers in mainland Europe to ensure that no in-contact horses from Valencia were onsite at their venues and, if they were, that they were in isolation and under strict biosecurity measures.
25 February 2021

Urgent request for help: The FEI was alerted by athletes in Valencia that conditions onsite had deteriorated and they needed urgent assistance, including pharmaceuticals for the sick horses.

DG Santé: The FEI contacted the Directorate-General for Health and Food Safety of the European Commission, DG Santé, to update them and request support with Ministry contacts in Spain.

Treatment and release protocols: The FEI requested the Spanish National Federation to contact the Ministry for information on treatment protocols for sick horses, management of the outbreak, and plans for release of healthy horses. The Spanish Federation provided immediate help.

26 February 2021

First recorded death: The FEI was advised that a horse had been euthanised at the veterinary hospital in Valencia due to EHV-1 that evening.

Of the horses still on the venue, a total of 72 horses showed clinical signs of EHV-1. Of the 47 horses that had been tested, 17 were confirmed positive for the virus.

Additional Veterinarians: The FEI requested – and received – agreement from the Spanish regional veterinary authorities to allow five additional veterinarians onsite to treat the affected horses in Valencia. Once the necessary approval had been received, the French and German National Federations – in liaison with the FEI – appointed additional veterinarians to Valencia. Following discussions with the Spanish National Federation, an initial five additional Spanish veterinarians were provided. More were subsequently brought onsite to handle treatment of sick horses.

Three horses were transferred to the Valencia veterinary hospital with neurological symptoms, but one was recovering well and was expected to return to the venue.

The FEI also received information that there may have been additional numbers of horses displaying neurological signs, but did not have confirmation at that stage.

Related outbreaks: The FEI was informed of two possible further outbreaks in Belgium that traced back to Valencia.

26 February 2021

Vejer de la Frontera: A horse (subsequently named Horse A) was moved from the showground to the isolation stables at Vejer de la Frontera after developing a fever. Although this was the first known case on the Sunshine Tour venue, it is believed that viral transmission occurred on venue between this horse and one of the horses that had been in Valencia.

27 February 2021

Second recorded death: Confirmation was received by the FEI of a second related equine fatality, also at the Valencia veterinary hospital.

The Equine Hospital of the University of Valencia (CEU) sent a team of veterinarians to assemble a veterinary intensive care unit onsite as there were no more available isolation units at the hospital in Valencia and at UAB Barcelona.

Arrival of veterinary support: The Spanish National Head Veterinarian, Dr Ignasi Casas Vaque, together with the assigned leader of the FEI veterinary support team, Dr Federico Nieto León, arrived onsite.

The ESP NF arranged for Anna Maxenchs to help with organising the list of horses according to health status, and the movements of horses between zones or to/from hospital.
FEI Veterinary Manager: It was arranged for FEI Veterinary Manager Gonçalo Paixão to travel to Valencia the following day to establish improved lines of communication between the authorities, the Valencia Organisers and athletes.

EEF updated: The FEI Veterinary Director updated European Equestrian Federation President Theo Ploegmakers on the outbreak.

28 February 2021
Two deaths onsite in Valencia: Information was received by the FEI that two horses had been euthanised on-venue in Valencia, bringing the number of related deaths to four.

A total of 45 horses onsite in Valencia were asymptomatic and negative; 85 horses on the venue were a mix of symptomatic and negative, symptomatic and positive or asymptomatic and positive; nine horses were at the hospital in Valencia (CEU); and two horses were in the hospital in Barcelona (UAB). A further 15 asymptomatic and negative horses were at nearby stables.

Intensive care: The Equine Hospital of the University of Valencia (CEU) transferred all non EHV-1 related cases in the hospital to other clinics, increasing the CEU’s capacity to receive EHV-1 cases and provide a better intensive care environment. All horses in need of intensive care were transferred to the CEU.

Additional stabling: The FEI sourced extra stabling so that healthy/recovered horses in Valencia could be better separated from sick animals on venue to prevent further transmission. These were to be divided between the venue and the Valencia Equine Hospital in order to free up emergency treatment permanent stables.

Boosted onsite support: Two veterinarians, organised by the German National Federation, arrived onsite in Valencia to assist with treating the sick horses.

Emergency care: The French National Federation and the FEI coordinated a supply of inflatable support mats to assist recumbent horses to stand. Rescue nets and emergency slings were sourced from Switzerland.

Related outbreaks: The FEI was informed of outbreaks in Germany that traced back to Valencia.

Contact tracing: The FEI again directly contacted National Federations with horses that had participated in Valencia requesting confirmation that they had contacted all their athletes that were in Valencia, that their national veterinary authorities had been informed about the outbreak and the returning horses, and that the necessary isolation of returning horses and in-contact horses had been put in place and compliance was being controlled.

1 March 2021
FEI cancelled events in mainland Europe (see Annex 6, 1 March 2021): Following a detailed risk assessment conducted together with leading epidemiologist Richard Newton, the FEI cancelled international events in 10 countries on the European mainland with immediate effect and until 28 March 2021 due to the rapid evolution of the EHV-1 outbreak.

The decision covered events in France, Spain, Portugal, Belgium, Italy, Austria, Poland, Netherlands, Germany and Slovakia.

The decision applied to all FEI disciplines, but in order to prevent huge numbers of horses simultaneously departing the Jumping Tours on the Iberian Peninsula, in Italy and Belgium that had been ongoing for a number of weeks, these specific Tours were allowed to continue as individual “bubbles” on the condition that absolutely no new horses were allowed to enter the venues and no positive cases of EHV-1 were confirmed.
Oliva (ESP): The same day, the Organisers of the Mediterranean Equestrian Tour in Oliva (ESP) advised the FEI that it had decided to cancel the rest of its scheduled competitions.

Doha positive: The FEI received notification on the evening of 1 March 2021 that one of four horses that had travelled from Valencia to Doha (QAT) was showing clinical signs in the isolation stables and had tested positive for EHV-1. The horse was transferred to the isolation unit of the neighbouring veterinary clinic, together with a second German horse that returned an inconclusive result and required re-testing.

FRA NF: The French National Federation confirmed to the FEI that it had cancelled all its national events.

The FEI strongly recommended that all affected member Federations should also cancel their national events, although the cancellation of national events is outside the jurisdiction of the FEI.

Information collation: The FEI continued to collate further information about related outbreaks and the measures put in place at local level to handle any outbreaks.

2 March 2021
Doha risk assessment: In order to fully assess whether the CSI5* would be permitted to go ahead in Doha, the FEI Veterinary Department conducted a full risk assessment to evaluate the biosecurity measures already in place on-venue, focusing on the potential risk of viral transmission to healthy horses. As the four horses that had travelled from Valencia had been in isolation since 22 February, it was agreed to wait for the results of the PCR tests on all other horses on the venue, which were completely separated from the positive horse.

Internal medicine specialist: A veterinary internal medicine specialist, sent by the French National Federation, arrived onsite in Valencia.

Additional stabling: The temporary boxes purchased by the FEI arrived onsite in Valencia and were found to be too small (2.80m x 2.70m). The same day, in agreement with the onsite riders’ representative Carl-Walter Fox (SWE) and the OC’s Charo Torregrosa, the International Jumping Riders Club (IJRC) paid for 60 boxes to be delivered from the Vejer de la Frontera venue.

GER/CZE NFs: The German and Czech Equestrian Federations cancelled all events until 28 March 2021.

The FEI continued its follow up with National Federations and Organising Committees to evaluate their preventive measures and protocols in place for handling outbreaks.

3 March 2021
Valencia related deaths: There had been no more equine fatalities at the venue in Valencia since the previous weekend, but one horse died at a veterinary hospital in Barcelona and one died in Germany. Both of these horses had been in Valencia. There were no reports of any further related deaths, but this brought the total number of deaths in the outbreak to six.

A total of 83 on-venue horses in Valencia showed clinical signs and were being treated, but none of these horses were recumbent or required slings for support.

Fifteen horses were being treated in external clinics (13 in Valencia and two in Barcelona).

Improved communications: The FEI Veterinary Manager organised an onsite meeting in Valencia between Spanish Ministry Officials (MAPA), the Organisers, the OC veterinarians, an athlete representative and the FEI treatment team leader to help resolve issues. Agreement was reached on roles, treatment protocols and a new plan for separation of horses following requests from athletes and owners for their horses to be grouped together without infringing biosecurity protocols.
Athlete Representative: Carl-Walter Fox (SWE), the Athlete Representative in Valencia, who had been in constant contact with the FEI Veterinary Director since the start of the outbreak, initiated more detailed daily reports.

Doha negative test results: The FEI received early morning confirmation that all competing horses in Doha had tested negative for EHV-1. The FEI Veterinary Director had an online meeting with the Doha Organisers and FEI Officials onsite at Al Shaqab to further assess the situation.

Conditional go-ahead: Following further consultation with leading epidemiologist Dr Gittan Groendahl about the situation in Doha, the FEI agreed that competition could go ahead as scheduled for 4–6 March 2021 subject to a series of stringent conditions. However, the FEI reserved the right to cancel the event if there were any changes to the situation.

The conditions for continuation included maintaining strict isolation protocols for the four Valencia horses; twice-daily temperature checks for all competing horses; minimising all contact between horses; treatment boxes to be closed, and treating/testing of horses permitted in the horse’s own stable under supervision of an FEI Official; daily calls between the FEI, the Organisers, relevant onsite FEI Officials and athlete representative Kevin Staut. The conditions also included confirmation from the Organisers that no sanctions would be applied against individual athletes or teams if they chose not to compete in the GCT/GCL.

4 March 2021
Valencia related deaths: The FEI was informed of two related equine deaths, one in Germany and one in Barcelona, bringing the official and confirmed number of deaths in the outbreak to eight.

SWE NF: The Swedish Federation advised the FEI that a number of horses returning to Sweden from Valencia had tested positive for EHV-1 and were showing clinical signs.

FEI Jumping Director: The FEI Jumping Director Marco Fusté arrived onsite and held a meeting with the Organisers to resolve a number of issues. He then called a follow-up meeting between all parties to ensure the lines of communication remained open.

Treatment: The FEI Veterinary Director liaised directly with the Belgian National Federation and team veterinarian on the treatment of their horse in the isolation stables at Vejer.

Athlete Representative: The Athlete Representative onsite in Valencia reported that Covid-19 testing had been put in place on the venue.

Suspected neurological case at Spanish Sunshine Tour: In accordance with the FEI Veterinary Regulations Article 1078, the team leader of the three additional FEI Veterinary Delegates at the Spanish Sunshine Tour venue in Vejer de la Frontera (ESP) informed the FEI Veterinary Department that a horse had developed neurological signs of EHV-1, although it had reportedly tested negative to the virus. The horse had been in isolation two kilometres from the competition since 26 February 2021. This information was communicated in a phone call, and then followed up in writing in a final report sent to the FEI Veterinary Department on 7 March 2021.

Team Veterinarian: Also on 4 March 2021, a team veterinarian contacted the FEI Jumping Director by email to advise that he had seen cases of suspected EHV-1 with neurological symptoms on the Spanish Sunshine Tour venue.

Conditional go-ahead: Following a full risk analysis conducted by the Spanish Ministry (MAPA), the Spanish National Federation, the Organisers, FEI Officials, the Jumping Athlete Representative and the FEI, all parties agreed that – exceptionally and in order to ensure an orderly and biosecure departure of horses – competition at Vejer de la Frontera could continue until Sunday 7 March 2021 subject to a number of strict conditions. However, the FEI reserved the right to cancel the full event if the situation changed.
The conditions for continuation included the implementation of additional biosecurity measures and that any horses departing the venue had to have the required health certification. In order to prevent horses leaving without the necessary documentation, athletes were advised that sanctions could be enforced by their national veterinary authorities and the FEI. The local authorities agreed to bring in additional personnel to expedite issuing of health certificates.

The FEI Veterinary Director liaised directly with the Belgian National Federation and team veterinarian on the treatment of Horse A. In agreement with the Treating Veterinarians onsite and the team of FEI Additional Veterinary Delegates, the Belgian team veterinarian was put in charge of the treatment of the two horses with suspected neurological EHV-1 infection in the isolation stables.

The identity of the second horse (B) has not been confirmed, but it is likely to be a Spanish horse that was later hospitalised at the University of Barcelona. This horse had been isolated on request by the FEI Veterinary Department on 22 February 2021 after having arrived from CES Valencia.

**Biosecure highways:** The competent veterinary authorities of France, Germany and the Netherlands worked on creating biosecure highways to get sick or in-contact horses home from Spain and Portugal, having secured the necessary permissions from the Spanish Authorities.

**5 March 2021**

**Ninth related death:** The FEI was notified of another equine fatality at the clinic in Valencia, bringing the number of related deaths in the outbreak to nine.

**Valencia Athlete Representative:** The Athlete Representative in Valencia reported to the FEI Veterinary Director that supplies were continuing to be delivered to the venue, and that new stabling would be arriving onsite the following day. There was also a plan put in place, approved by the veterinary team, on where and how to exercise the healthy horses. The onsite veterinary team reported that the sick horses were improving.

**Cancellation of Spanish Sunshine Tour:** The FEI was informed in the afternoon of 5 March 2021 by the team leader of the three additional FEI Veterinary Delegates that a second horse at the Spanish Sunshine Tour venue had been put into isolation after developing mild neurological signs and a slightly elevated temperature.

As the FEI had also received evidence late that afternoon from the official laboratory in Madrid that the negative test on the first horse showing neurological signs in Vejer was inconclusive, the FEI arranged a meeting with the Organisers and onsite FEI Officials.

After a follow-up emergency internal meeting, the FEI informed the Organisers that the event was cancelled with immediate effect. The FEI again stressed that horses should not leave the venue without the necessary documentation from the Spanish Authorities.

**Additional Veterinary Delegates:** The FEI was informed that the Additional Veterinary Delegates appointed by the FEI had been blamed for having caused the cancellation. In a phone call with a representative of the Organising Committee, two of the Additional Veterinary Delegates were requested by the Organising Committee to leave the venue.

**Doha:** The FEI formally addressed its concerns about the four horses that had been in Valencia to the Veterinary Authority of Qatar and advised that, as agreed with the Doha Organisers, these horses must be transported back to Europe separately from the competing horses.

**Stopover stabling for returning horses:** The French Federation (FFE) established transit stabling in Le Mans and Lyons for horses travelling back from Spain, Portugal and Italy. The FFE, together with the FEI, arranged for 24-hour veterinary support in Le Mans and worked to provide the same service in Lyons.
**EEF support:** The European Equestrian Federation (EEF) provided its members with the Guidelines of the European College of Equine Internal Medicine (ECEIM) for dealing with returning horses from EHV-1 outbreaks and also the British Equestrian Federation biosecurity protocol.

The EEF contracted Dutch veterinarian and EHV expert, Professor Dr Marianne Sloet to provide guidance to the EEF and its member Federations and encouraged those in urgent need of veterinary advice to contact the EEF.

**SWE NF:** The Swedish National Federation confirmed to the FEI that it had cancelled all national events.

**6 March 2021**

**FEEVA support:** The FEI, supported by the Federation of European Equine Veterinary Associations (FEEVA), formally addressed the Secretariat of Sanidad e Higiene Animal y Trazabilidad (the regional branch of MAPA) proposing improved protocols for allowing in-contact horses to leave the venue in Valencia.

**Improvements:** The Athlete Representative reported that the daily onsite information meeting was well attended. The medical condition of the horses remained stable with less serious cases reported. While these were positive signs, the veterinary team stressed that it was important to be aware that the disease was yet not fully under control.

**Additional support:** Extra grooms were made available for teams requiring support to look after their horses. Additional truck drivers were being sought to help transport the horses home from Valencia.

**Biosecurity best practice:** A French team specialised in international quarantine stables provided recommendations on good biosecurity practice, including washing and disinfection of trucks and equipment to prevent further spread of the virus.

**Restricted movement:** Access to the individual zones in the Valencia stabling was further strengthened with the use of bracelets in order to prevent movement between different zones. A French team provided an onsite PCR lab to help with monitoring sick horses, which allowed a faster detection of the movement of the virus between horses and establish if there was a pattern.

**Additional stabling:** New stabling arrived on venue, allowing the horses to be divided into smaller groups. Additional stabling was available in the area and could be installed immediately if required.

**Spanish Sunshine Tour:** The FEI continued to address the Spanish Sunshine Tour Organisers about allowing additional Veterinary Delegates onsite to support the biosecurity measures on the venue and treatment of the affected horses in the isolation stables.

**Specialist treatment access:** The FEI, supported by FEEVA and the Asociación de Veterinarios Especialistas en Équidos (the Spanish branch of FEEVA), provided assistance to two individual athletes and their veterinarians to ensure that the two horses with neurological signs in the Vejer de la Frontera isolation stables would be allowed into specialist treatment clinics.

**Additional Veterinary Delegates:** The Additional Veterinary Delegate that had not been directly requested by the Organising Committee to leave the previous day, went to the venue to continue with health controls of departing horses. This individual was forced off the venue by a representative of the Organising Committee.
The FEI continued to address the Organising Committee about allowing the Additional Veterinary Delegates onsite to support the biosecurity measures on the venue and treatment of the affected horses in the isolation stables.

**FEEVA assistance:** The FEI, supported by FEEVA and the Asociación de Veterinarios Especialistas en Équidos (the Spanish branch of FEEVA), provided assistance to two individual athletes and their veterinarians to ensure that the horses with neurological signs in the Sunshine Tour isolation stables would be allowed into specialist treatment clinics.

**Doha:** The Veterinary Authority of Qatar confirmed to the FEI that the four in-contact horses that had been in Valencia and were still in isolation in Doha, would not be flying home to Europe from Qatar with the other horses, and would be remaining in isolation until at least 15 March 2021.

**7 March 2021**

**Valencia Athlete Representative:** The Athlete Representative reported a very smooth daily meeting, where the onsite veterinary team distributed a short-term rehabilitation plan for the horses over the next seven days. The consignment of extra stabling organised by Katharina Offel was now onsite and 18 of these boxes were provided to the Hospital Veterinario CEU clinic, which was treating the horses.

**Spanish Sunshine Tour:** The FEI continued to follow up on the condition and veterinary care of the two horses that had developed neurological signs in Vejer de la Frontera.

The FEI Veterinary Director requested an update from the primary Veterinary Delegate on the remaining horses on venue.

**IJRC support:** The International Jumping Riders Club (IJRC) published information for those with horses travelling back from Spain, reminding members of the importance of cleaning and disinfection of stables prior to departure, and of transport vehicles, to minimise the risk of further transmission of the virus. The Club listed transit stabling options in addition to the two stops in Le Mans and Lyons organised by the FFE. Details were made available on the IJRC website.

**8 March 2021**

**Tenth related death:** The FEI was notified that a horse had been euthanised at the clinic in Valencia, bringing the number of related deaths to 10.

**Offers of help:** Offers of help for horses in Valencia continued to flood in, including offers of truck drivers to assist with transporting horses to their home countries.

**Valencia related case:** The FEI was notified of a case of EHV-1 in Milan (ITA) related to Valencia.

**Doha athlete communique:** Athletes with horses that had returned from Doha were advised to take biosecurity protocols - including isolation - or equivalent measures as requested by their National Federation (see Annex 4).

**Gorla Minore:** The Organisers of the Jumping Tour in Gorla Minore (ITA) advised the FEI of the cancellation of the remaining three weeks of competition. This was done due to low entry numbers. There were no sick horses at the Italian venue.

**9 March 2021**

**Eleventh death:** The FEI was advised of a further equine fatality at the clinic in Valencia, bringing the number of related deaths to 11.

**Onsite numbers:** There were 138 horses still onsite in Valencia, 10 of which were still being treated, but none of these had neurological symptoms. There were 14 horses in the University Hospital in Valencia (CEU) and one horse in the University Hospital in Barcelona (UAB).
A total of 78 horses on-venue in Valencia had tested positive by this time under the official testing programme conducted by the Spanish Veterinary Authorities).

**Belgian positive:** The FEI received notification of a confirmed positive for EHV-1 in a horse in Belgium after returning from the Spanish Sunshine Tour in Vejer de la Frontera (ESP). This horse, which was placed in isolation immediately on return to its home stables in Belgium, was a close in-contact to the first horse that developed a fever on the Vejer de la Frontera venue. This first horse was put into isolation on 26 February 2021, displayed neurological signs on 4 March and, although it tested negative to EHV-1, that result was inconclusive. A second horse on the venue developed neurological signs on 5 March 2021 and was also transferred to the isolation stables.

**Horses blocked:** As a result of the confirmed positive in Belgium, all horses that had participated in the Spanish Sunshine Tour since 9 February 2021 were blocked in the FEI Database and athletes were advised of the necessary biosecurity measures that had to be implemented prior to return to competition (see Annex 4).

**Press conference:** The FEI held an online press conference with media (see Annex 7) that had covered the outbreak in Europe, giving an overview of the outbreak and outlining next steps, including that there would be a comprehensive and fully transparent investigation into every aspect of the outbreak, the way it was handled and the measures that would need to be taken for a safe return to competition.

**SUI NF:** The Swiss National Federation confirmed to the FEI that it had cancelled all national events until 29 March 2021.

**10 March 2021**

**Twelfth death:** The FEI was informed that a horse had died in the Veterinary Clinic in Valencia following colic surgery. This brought the number of related deaths to 12.

**New Belgian positives:** The FEI was advised of new EHV-1 positives in Belgium (4) and France (6) in horses that had returned from the Spanish Sunshine Tour at Vejer de la Frontera (ESP). These new positives included the first horse (Horse A) that displayed neurological signs on 4 March 2021 in the isolation stables at the Sunshine Tour, which tested positive after its return to Belgium. The day’s confirmed positives were in addition to the positive in Belgium the previous day (9 March), meaning an overall total of 11.

All 2,053 horses that had participated in the Spanish Sunshine Tour since 9 February 2021 had been blocked in the FEI Database on 9 March 2021 and athletes were advised of the necessary biosecurity measures (see Annex 4) that had to be implemented prior to return to competition. Athletes were also advised not to participate in any training sessions or national competitions with their horses, nor any breeding activities.

**Doha:** The FEI was notified that precautionary testing of a horse that had returned to its home stables in Belgium after competing in Doha (QAT) had come back positive to EHV-1. The horse was not displaying any clinical signs and a re-test had been done. A second horse in the same stables had tested negative.

**Horses blocked:** As a result, the FEI blocked all 85 horses that were competing in Doha and any other horses that may have been in contact with them. Athletes were advised to implement strict biosecurity protocols - including isolation - or equivalent measures as requested by their National Federation.

**11 March 2021**

**Valencia departures:** The first group of horses to leave Valencia departed the venue at 5am following agreement between the French and Spanish Ministries. These horses were quarantined in biosecure stabling outside Paris.
A separate plan for the remaining horses to depart the Valencia venue was agreed with the regional branch of the Spanish Ministry of Agriculture (MAPA).

**Spanish Sunshine Tour:** A protocol was agreed with the Vejer Organisers for athletes wishing to keep their horses onsite at the Spanish Sunshine Tour venue for the required 21-day isolation period.

**Doha:** The FEI was notified that the re-test on one of the horses returning from Doha (QAT) had come back negative for EHV-1. However, all 85 horses remained blocked in the FEI Database until they had completed the necessary biosecurity measures.

**Online forum:** The CHIO Aachen Campus hosted a live online forum to answer questions about the EHV-1 outbreak. Speakers were Dr Friedrich-Wilhelm Hanbuecken, Professor Dr Karsten Feige, and German National Federation Secretary General Soenke Lauterbach. The Dutch National Federation had previously hosted a similar webinar, which attracted an audience of close to 4,000.

**12 March 2021**

**Extended shutdown:** The FEI imposed a further two-week extension of the shutdown of all international events in mainland Europe until 11 April 2021 due to the ongoing outbreak (see Annex 6, 12 March 2021). The FEI had previously announced a 28-day shutdown on 1 March 2021.

The move, aimed at minimising the further spread of the very aggressive strain of the virus, was unanimously approved at an emergency FEI Executive Board meeting the same day. The extended lockdown applied to all FEI disciplines and was put in place based on detailed scientific risk assessment conducted by world leading epidemiologist Dr Richard Newton and the FEI Veterinary Department.

The extended lockdown applied to all countries that had international events scheduled in the period to 11 April 2021—Austria, Belgium, Spain, Estonia, France, Germany, Italy, Netherlands, Poland, Portugal and Sweden. However, the FEI again strongly recommended that all National Federations in mainland Europe also cancel their national events in order to minimise horse movement.

**Cancellation of FEI World Cup™ Finals:** The continued shutdown meant cancellation of the Longines FEI Jumping World Cup™ Final and the FEI Dressage World Cup™ Final, originally scheduled to be held in Gothenburg (SWE) from 31 March to 4 April 2021. This was the second year in a row that the FEI World Cup™ Finals had been cancelled following the loss of the 2020 Finals in Las Vegas (USA) to the Covid-19 pandemic.

**Community monitoring:** The FEI stressed the importance of the community working together to contain the virus so that competition could resume as soon as possible, and requested National Federations to monitor extremely carefully and keep the FEI Veterinary Department updated on the situation in their country, particularly reporting any suspected and confirmed cases.

**Valencia:** The group of 10 horses that travelled to France from Valencia (ESP) arrived safely at the quarantine stables outside Paris.

**POL NF:** The Polish National Federation confirmed to the FEI that all its national events had been cancelled until 12 April 2021.

**13 March 2021**

**Valencia:** All horses on-venue in Valencia were now off medication. These horses were being monitored by the two OC Veterinarians and an FEI Treating Veterinarian. There was also an FEI Treating Veterinarian supporting the work at the Valencia equine hospital, which was still treating 10 horses.
A group of eight Belgian horses departed from the Valencia venue on the morning of 13 March. Paperwork for the Dutch, German and British horses was in the process of being prepared.

**Doha:** The FEI was notified that a horse in France was showing clinical symptoms and had tested positive for EHV-1 after returning from Doha. This was a close in-contact of the horse in Belgium that, after returning to its home stables, had initially tested positive, but negative on a re-test. All 85 horses from Doha were already blocked in the FEI Database until they had completed the necessary biosecurity measures.

**14 March 2021**

**Spanish Sunshine Tour:** After returning to Belgium from Vejer de la Frontera, Horse A was reported to be recovering well. A large number of horses in Belgium that had participated in the Spanish Sunshine Tour were screened for EHV-1. Three horses returned positive results and were displaying mild clinical signs, but no neurological symptoms.

The Organisers confirmed to the FEI that horses were departing the venue in Vejer de la Frontera in a correct and biosecure way. A total of 73 had already left the showgrounds by 14 March 2021, and the required paperwork was already in place for more than 50% of those still onsite.

**Dedicated EHV-1 clinic:** A group of Belgian veterinarians set up a dedicated clinic in Belgium with 25 boxes for isolating and treating EHV-1 positive horses.

**15 March 2021**

**Doha:** Following confirmation of the two positive tests in Jumping horses that had participated in Doha (QAT), one in Belgium and one in France, the FEI blocked all 19 Dressage and 17 Para Dressage horses that had competed in Al Shaqab at the end of February. These horses had flown back separately from the Jumping horses, but a negative PCR test had to be provided to the FEI before these horses were unblocked in the FEI Database.

**FRA NF:** The French National Federation confirmed to the FEI that it would extend the shutdown of all national competitions until 11 April 2021. Other National Federations were also looking at prolonging the lockdown on their national events.

**16 March 2021**

**Valencia related deaths:** The FEI was notified of five new deaths - two in Belgium and three in Germany (including a neonatal foal), where it was also confirmed that five mares had aborted foals at the same stables. This brought the total number of related deaths in the outbreak to 17.

**Valencia departures:** Horses continued to leave the Valencia venue, including three from Denmark, seven from Sweden and 12 from both the Netherlands and Spain. There were still 10 horses in the Valencia veterinary clinic, none of these were in intensive care.

**Slovakia positive:** The FEI was notified of a confirmed positive for EHV-1 in a horse that had returned from Valencia and was tested at its home stables in Slovakia.

**Oliva:** The FEI was advised that two horses had tested positive for EHV-1 at their home stables in Belgium and another horse in Switzerland after returning from the Mediterranean Equestrian Tour (MET) in Oliva (ESP). Although the two horses in Belgium were subsequently negative in re-tests, all 856 horses that had participated in Oliva since the start of MET II on 9 February 2021 were blocked in the FEI Database and athletes were advised of the necessary biosecurity measures that had to be implemented prior to return to competition (see Annex 4, 14 March 2021).

**POR NF:** The Portuguese National Federation informed the FEI that it had cancelled all national events until 12 April 2021.
17 March 2021
Valencia departures: A total of 84 horses had left the Valencia venue by this date and a further 22 were scheduled to leave on 18 March 2021. This left 35 horses onsite, with four still in the Valencia veterinary hospital, and seven at a nearby private stable.

POL NF: The Polish National Federation confirmed to the FEI that all its national events had been cancelled until 12 April 2021.

18 March 2021
Related French positives: The FEI received notification from the International Collating Centre (ICC) of eight horses in two separate premises in France that had tested positive for EHV-1. A further five horses were showing clinical signs. The ICC report stated that these two outbreaks were related to a competition in Spain. The FEI followed up to establish the venue or venues.

Spanish Sunshine Tour departures: A total of 218 horses had left the Spanish Sunshine Tour showgrounds by this date, with other departures planned over the following days. This left just over 150 horses that were completing their 21-day isolation period onsite in Vejer de la Frontera.

19 March 2021
Valencia Veterinary Treating Team Leader report: The FEI received a detailed report from the leader of the FEI Veterinary Treating Team Dr Federico Nieto León providing full information on the progress of the disease in Valencia, treatment of horses, stabling and other outbreak management matters (see Annex 8).

Valencia departures: The last of the German horses left the Valencia venue. Other horses from Hong Kong and China had also departed.

Related cases: The FEI was notified of four new EHV-1 positives in horses in Denmark that had returned to their home stables from Valencia, two of which were showing neurological symptoms. The horses were in full isolation.

The FEI followed up on a reported EHV-1 positive in a horse that was tested at its home stables in Scotland after returning from Vilamoura. Neither the positive horse nor any of its stable companions that had travelled back from Portugal were showing any clinical signs and had been isolated since their return.

SWE NF: The Swedish National Federation confirmed to the FEI that it had extended the shutdown of all national events until 11 April 2021.

20 March 2021
FRA NF: The French National Federation confirmed to the FEI that the eight horses in two separate premises in France that had tested positive for EHV-1 had returned from Valencia (ESP).

21 March 2021
DEN NF: The Danish National Federation provided a very thorough brief to the FEI about its horses that had participated at the Tours in Valencia or Vejer de la Frontera. Both groups of horses were in isolation back at their home stables.

22 March 2021
Valencia report: The FEI received a report from a Valencia Ground Jury Member detailing their observations of events from 19 February 2021 until leaving the Spanish venue on 25 February 2021 (See Annex 9).

Related German positive: The FEI received notification from the International Collating Centre (ICC) that a horse had tested positive to EHV-1 at its home stables in Germany following its return from Valencia.
**Valencia departures:** A total of 41 horses remained in Valencia, 34 of which were onsite at the venue and seven at a nearby private stables.

**Doha:** The FEI was notified that the four horses that had been in isolation in Doha (QAT) had returned safely to Europe.

**German abortions:** The German National Federation advised the FEI of a further three mares that had aborted foals at the same stables where two adult horses and one neonatal foal had already died and five mares had aborted previously.

**ESP/BEL NFs:** The Spanish and Belgian National Federations notified the FEI that they had cancelled all national events until 12 April 2021.

**FEI IT:** The FEI IT Department continued to unblock horses in the FEI Database as the necessary biosecurity protocols were fulfilled.

**23 March 2021**  
The FEI Veterinary Committee met to review draft proposals for a safe Return To Competition in mainland Europe following the EHV-1 outbreak.

**Valencia departures:** Horses continued to leave the venue. The Danish horses left on 22 March 2021, and the first of a group of Swedish horses were due to leave the following day. A further group of British horses were scheduled to leave on 29 March.

**24 March 2021**  
**FEI consultation session:** The FEI hosted a two-hour stakeholder consultation session to review comprehensive draft Return To Competition protocols. The measures were aimed at, in the short term, minimising the risks associated with the restart of FEI competitions in mainland Europe on 12 April 2021 and, in the long term, increasing biosecurity knowledge, skills and awareness among all FEI stakeholders in order to prevent a recurrence of the devastating EHV-1 outbreak. (*This will be covered in full detail in Part 2 of this Report.*)

Additional biosecurity guidelines were made available in a new section on the EHV-1 hub, including best practice for setting up isolation units, monitoring and managing horses in isolation and correct cleaning and disinfection measures (see Annex 10).

**Valencia departures:** Plans for the departure of the last horses from Valencia continued. Four horses were still in the Valencia veterinary clinic, but all were expected to be cleared fit to leave within the week. Paperwork for these horses was being processed.

**Spanish Sunshine Tour:** As some additional athletes/owners had decided to remain onsite, there were 171 horses completing their 21-day isolation period at the venue.

**25 March 2021**  
**No new cases:** There were no new reported cases of EHV-1 linked to Spain. The figures remained static at 31 outbreaks in a total of 10 countries.

**GER/SUI NFs:** The FEI was informed that both Germany and Switzerland would lift the EHV-1 restrictions to allow national competitions to restart as of 29 March 2021.

**27 March 2021**  
**Valencia departures:** A group of 10 horses from Sweden and seven British horses left Valencia. Three more were due to leave the following day (28 March) and a further 12 on Monday 29 March 2021. Subject to negative PRC results, the final four British horses were scheduled to leave on Wednesday 31 March 2021.
28 March 2021

Eighteenth death: The FEI was notified that a horse which had been recovering in Valencia, had been euthanised at a clinic in Barcelona. This brought the total number of related deaths in the outbreak to 18.

Unblocking of horses: Unblocking of horses by the FEI IT and Veterinary Departments continued, following confirmation that the required isolation period had been completed and receipt of a confirmed negative PCR test.

External veterinary support: The FEI drafted in additional external veterinary support to process the PCR test results received for blocked horses.

30 March 2021

The FEI published the Return To Competition measures that allowed for a safe resumption of international sport in mainland Europe on 12 April 2021 following the six-week shutdown to control the spread of the neurological form of the Equine Herpes Virus (EHV-1).

The measures focused on six key areas:

1. pre-event venue preparation by Organisers
2. athlete pre-event preparation
3. examination on Arrival
4. onsite at Event Venue
5. departure from Events
6. jurisdiction

The Return To Competition measures, which had been comprehensively reviewed at a stakeholder consultation session the previous week and fine-tuned by both the FEI Veterinary Epidemiology Working Group and the FEI Veterinary Committee, had also been approved by the FEI Board.

(Part 2 of this Report will focus on the implementation of the Return To Competition measures, including the EHV-1 By-Laws and sanctioning system, and the elements of these that were subsequently incorporated into the FEI Veterinary Regulations approved at the FEI Hybrid General Assembly in November 2021.)

1 April 2021

The EHV-1 Relief Fund was launched to provide financial assistance for those affected by the outbreak. The Fund was created by Emile Hendrix, Peter Charles and Frederick Goltz, and had the support of the FEI, European Equestrian Federation, International Jumping Riders Club, Jumping Owners Club and Equestrian Organisers. Riders Help Riders, the fundraising campaign set up by German event organiser and sports marketer Axel Milkau, also joined forces with the Fund. Collectively, this group set themselves up as the Sponsors of the Fund.

Administration of the Fund was managed by the FEI and the Sponsors were committed to full transparency and created an oversight committee to manage distribution of the funds.

21 June 2021

EHV Relief Fund raised over €270,000: The EHV Relief Fund, set up to reimburse veterinary expenses to Athletes and Owners impacted by the outbreak, raised a total of €272,413 and was wound up following disbursement of all monies.

Applications to the Fund amounted to a total of €354,476 and, thanks to the generosity of donors – with donations ranging from €1,000 to €100,000 – 76.8% of costs were covered. Claims received ranged from more than €24,000 to less than €650.

Recipients of funding praised the solidarity demonstrated by the creators of the Fund and the donors.
One of the Fund’s founder members, Frederick Goltz, commented: “The EHV-1 outbreak in Spain was desperately traumatic for all those impacted and we were happy to be able to help ease some of the financial challenges through the Fund. We owe a huge thank you to everyone who donated so generously and showed the true spirit of our sport.”

FEI President Ingmar De Vos also praised the creation of the Fund. “We are happy to have been able to support this great initiative from a financial and administrative perspective, and congratulate everyone on making it happen. The financial support provided to the athletes through this Fund has been crucial to them and has also once again demonstrated the great solidarity within our equestrian community.”

7: INDIVIDUAL VENUES

CES VALENCIA

Venue plan

Map from www.cesvalenciatour.com

STABLES

- 120 Tented Stables
- 80 Permanent Stables (3,5m x 3,5m)
- 320 Tented Stables – The height to the roof varies and is reported to be lowest at Aisle G. The width of most aisles is between 3-4 metres. Aisle G and C were 6-7m. The walls between the stables (boxes) are standard.
MAIN STABLE TENT

Fig. 1 (provided by Dr Nieto)

FEI VETERINARIANS

Week 4, 15-21 February 2021
- One Veterinary Delegate
- One Veterinary Services Manager
- One Treating Veterinarian

Note: During the period of planned FEI Events on the venue (28 January 2021 to 14 March 2021), the veterinary roles were manned by the same three veterinarians. Two of the veterinarians have had the veterinary roles at almost all the 28 shows that have been organised since 2019 on the venue.

ANALYSIS

How was the virus introduced to the CES Valencia venue?
It is important to note that it has not been possible to establish the index case in this outbreak.

While the reasons why the virus spread so rapidly are largely unknown, there were clear risk factors present that facilitated the rapid spread.

In all probability, there has been more than one source of large viral loads, but the two most likely are:
- horses that came onsite shedding virus;
- reactivation of latent virus in any horse during the event.
The first reported case is a French horse that tested positive for EHV-1 and had neurological signs on 16 February 2021. The horse was one of 57 that had left the venue on 14 February 2021. The German horse that later tested positive in Doha (QAT) on 1 March 2021, competed in Valencia up to and including 12 February 2021 before leaving for Doha via his home base in Germany.

These cases, together with the four febrile horses on the venue on 17 February 2021 and the increase to 12 horses with fever in Valencia by the afternoon of 20 February 2021, strongly indicates that the first horses were infected in the first and second week of February 2021 and that the outbreak was already established on the venue by 17 February 2021.

Gene sequencing of the Valencia strain by Ghent University found that it was not a novel virus but was similar to strains previously found in Europe.

**WHY DID THE VIRUS SPREAD SO RAPIDLY AT CES VALENCIA?**

There are a number of factors that could have contributed to the rapid spread of the virus:

**Size of horse population and time spent onsite**

More than 700 horses and their entourage were present on venue between the end of January 2021 and 21 February 2021, providing multiple opportunities for a virus to spread. This is a large horse population and in many cases the horses spent several weeks onsite. Considering the incubation time of up to 14 days there was plenty of time for the virus to spread within the population.

If sick horses are not separated from healthy horses quickly enough, the risk of transmission is increased as the sick horses shed virus and therefore contribute to the viral load on the premises.

**Number of horses sharing the same airspace and effects of construction**

According to Fig. 1, the outbreak started in the tented stables that have more than 400 boxes. The walls were closed, resulting in reduced ventilation/air circulation. The large number of horses sharing the same airspace increased the risk of viral transmission. With the large number of infected horses, the escalating virus load in the shared airspace meant that the outbreak became increasingly difficult to manage.

The rapid spread in Aisle G of the large stabling tent is noteworthy as the height of the roof is lower over that aisle. This smaller airspace may have caused an increased concentration of virus particles compared to other parts of the stable tent. Horses in the aisles on either side of G were substantially less affected, possibly due to the rapidly increased incline of the roof which provided a greater airspace above these horses.

**Direct and indirect contacts**

With many Athletes and their entourage spending time competing, socialising and, in many cases, living on the venue, at the time of the outbreak, CES Valencia was no different to other Tours from the perspective of increased virus transmission risk by direct and indirect contacts.

**Predisposing factors**

Many horses had been transported long distances, including from Scandinavia that would take at least three days, and there were also many young horses. The Tour in Valencia, just like other Tours, had very experienced as well as less experienced Athletes participating, potentially meaning that there may have been less awareness of biosecure horse management and the impact of long distance travelling.

**Lack of preventive measures**

According to information received by the FEI, Examination on Arrival was not correctly conducted at CES Valencia.

Although there is no record, it is unlikely that all athletes or their entourage were monitoring their horses’ daily body temperatures in Valencia.
Although there was no requirement in the rules at the time of the outbreak, there was no one-way system in place nor any restrictions on access to other parts of the stables, both of which would have helped minimise direct contact and potential spread of the virus.

**Biosecurity contingency plan and resources**

Since 2018, FEI Veterinary Regulations Article 1018 requires every OC to have a biosecurity contingency plan with protocols describing how to separate horses with clinical signs of infectious disease from the other horses. Despite numerous requests, the first of which was sent by email on 20 February 2021 (see Annex 11), the FEI never received such a plan from CES Valencia.

Between 20 and 26 February 2021, there were only two veterinarians available to treat the many sick horses. It is unclear whether either these two individuals or the OC requested assistance from other veterinarians.

The FEI was informed that there was an inadequate number of isolation boxes and the OC did not provide a number to the FEI. Under the rules in place at the time of the outbreak, for this number of horses there should have been at least six isolation boxes. There were only two in place in 2021.

**Reporting and decision making**

Several sources have informed the FEI that there was knowledge onsite at CES Valencia on 19 February 2021 of the neurological EHV-1 case in France of a horse that had left the venue on 14 February 2021, however there was no official communication on this to the regional authorities, to the FEI or to those at the event.

As reported by Dr Nieto, there were already four horses on venue with fever on 17 February 2021, with an additional two febrile horses on 19 February 2021. The report also states that two of the febrile horses were sampled for infectious disease on 19 February 2021, but returned negative on 22 February 2021.

Despite the fact that there were six horses on venue with fever on 19 February 2021 and the knowledge of the neurological case in France, no action was taken to isolate any of the onsite sick horses nor to immediately inform the FEI as required under Article 1078 of the FEI Veterinary Regulations.

As detailed in the FEI Veterinary Manager’s report (see Annex 12), he was informed by telephone of the outbreak by the Veterinary Delegate in the afternoon of 20 February 2021, after the competitions were over for the day. The FEI Veterinary Manager advised the Veterinary Delegate to isolate the sick horses, to stop all movement of horses on the venue, to immediately inform the competent authority and to cancel the rest of the event.

After immediately informing the FEI Veterinary Director, the FEI Veterinary Manager followed up the phone call with an email to the Veterinary Delegate, Ground Jury and Organising Committee with further advice on the application of Article 109.12 of the FEI General Regulations to cancel the event (see Annex 3).

In the same email, the FEI Veterinary Manager reiterated that the event should be cancelled until all the isolation and monitoring protocols were in place, in order to ensure the safest biosecurity standards and protect the welfare and safety of the horses at the venue.

The following morning, Sunday 21 February 2021, the number of febrile horses had increased to around 35, but competitions continued despite an urgent phone call from the FEI Veterinary Director and a follow-up email to the Ground Jury telling them to cancel the rest of the event immediately. However, competition stopped only after the FEI Veterinary Director sent an additional email to the Ground Jury, Organising Committee and Veterinary Delegate warning that the FEI could take disciplinary action unless the event was cancelled immediately.
Jurisdiction
During the Period of the Event a venue is under FEI jurisdiction and the Ground Jury is responsible for maintaining FEI rules and regulations onsite. (FEI General Regulations, Appendix A – Definitions: Period of an Event: commences one hour before the beginning of the first Horse Inspection and terminates half an hour after the announcement of the final results in the relevant Discipline.)

Although FEI jurisdiction has since been extended, at the time of the outbreak, this meant that after the competitions had been cancelled on Sunday 21 February 2021, the onsite horses and athletes were no longer under FEI jurisdiction. The Spanish Veterinary Authorities took over jurisdiction of the venue on 22 February 2021.

Separation of horses into sub-groups
On 24 February 2021, the Spanish Veterinary Authorities provided CES Valencia with a formal plan for the management of the outbreak, including testing of horses and separation of horses into sub-groups. However, the plan proved difficult to implement for a number of reasons and was therefore delayed.

According to Dr Nieto’s report, separation of horses into sub-groups, which would have slowed down and eventually stopped transmission of the virus, was not done earlier due to:
- Different level of collaboration/resistance among the parties.
- Lack of authority and consequent inability to execute the measures adopted.
- Lack of clarity as to who should implement the measures imposed by the authorities.
- The administrative system used by the authority was based on disease management on single farms, not the multifactorial conditions in Valencia with so many parties involved.
- There was resistance among some athletes to separate their horses, with the main reason being shortage of grooms to take proper daily care of separate groups of horses. There were also concerns over the size of the alternative stabling offered.

Medical care of horses
On 25 February 2021 the FEI received urgent appeals for assistance from horse owners and athletes. An FEI request to the Spanish regional veterinary authorities to allow five additional veterinarians onsite to treat the affected horses was agreed on 26 February 2021, allowing extra resources to be put in place in close collaboration with the National Federations of Spain, France and Germany.

The Veterinary Clinics of the Universities of Valencia, Madrid and Barcelona worked closely with Dr Nieto’s team. The most severe cases were referred to these clinics. Detailed information is found in Dr Nieto’s report (see Annex 8).

Further spread of the virus
A large number of horses left CES Valencia on 21 February 2021, many of them without the attestation of their health status as required by EU legislation. There is also unconfirmed information that this included some febrile horses with long journeys ahead of them. At this point, 21 February 2021, neither the FEI nor the Spanish Veterinary Authority had jurisdiction over the horses.

Leaving without the required Health Attestation is a violation of European Union legislation. However, in this instance, the departure of 131 horses on 21 February 2021 from CES Valencia may have decreased the build-up of virus due to a reduced population on the venue, but resulted in spread of the virus to many premises across 10 countries.
SPANISH SUNSHINE TOUR - VEJER DE LA FRONTERA

Fig. 2

STABLES
2,026 stables in total
• 966 permanent stables
• 1,060 temporary stables
• Isolation stables located approximately 2km from the venue.

FEI VETERINARIANS, 3-7 MARCH 2021
• One Veterinary Delegate appointed by the Organising Committee
• Three FEI Additional Veterinary Delegates appointed by the FEI (group operational 4-5 March 2021)
• One Veterinary Services Manager (plus assistant – listed as Permitted Treating Veterinarian in the FEI Database)
• Two Treating Veterinarians (one according to the Schedule, however two are named in the report from Dr Romero, team leader of the three FEI Additional Veterinary Delegates)

ANALYSIS

Why were there no positive results for EHV-1 when horses were sampled at the Sunshine Tour?
No horse tested positive after having been sampled on the venue. The results were either negative or inconclusive. According to information from several sources, there was an unwillingness to test horses specifically for EHV-1.

Was the EHV-1 strain at the Sunshine Tour the same as at CES Valencia?
Yes. Although the Valencia EHV-1 strain was not detected in samples taken onsite at the Sunshine Tour, gene sequencing in laboratories in Belgium and France on samples taken from horses after their return from Vejer de la Frontera confirm that this was the same genotype of EHV-1 as in the sick horses at CES Valencia. This includes subsequent samples taken from Horse A, in addition to other horses in Belgium, Denmark, France and Spain.

How was the virus transmitted from CES Valencia to the Sunshine Tour?
It is likely that at least one of the horses that left Valencia for the Sunshine Tour between 7 February 2021 and 13 February 2021 carried the virus strain and transmitted it to one or more horses at the Sunshine Tour. It is evident that the virus strain was transmitted between horses.
on the Valencia venue during the second week of February and likely also during the week before.

The horses that had arrived from CES Valencia were considered in-contact horses by the FEI Veterinary Department, and isolated on 22 February 2021 in accordance with FEI Veterinary Regulations Articles 1029 and 1078. Before being isolated, these horses had been stabled and competed for one to two weeks at the Sunshine Tour.

According to information received by the FEI, Examination on Arrival was not correctly conducted at the Sunshine Tour.

Although there is no record, it is unlikely that all athletes or their entourage were monitoring their horses’ daily body temperatures at the Sunshine Tour.

**How was the virus transmitted between horses at the Sunshine Tour?**

Horse A was housed in Stable D1 and put in isolation on 26 February 2021 with fever. Horses from at least two other Athletes, also housed in Stable D1, were infected with the same strain of EHV-1 as Horse A, but this was not established until they were tested on their return home. One of these horses subsequently developed clinical signs of neurological EHV-1. The horses of one of these Athletes were stabled in the aisle next to Horse A. The other Athlete’s horses were stabled more than 30 metres away from Horse A in Stable D1.

There is no information that any of the horses that had arrived from CES Valencia were in Stable D1. However, the FEI was informed that horses were moved from D1 to other stabling areas.

D1 was a stable tent with 111 temporary boxes separated by seven aisles. Each aisle had its own dedicated entrance and exit on one long side of the tent. The other three sides of the tent were closed.

One-way systems were not in place in the aisles of D1. The partition walls were of normal height and horses could have nose-to-nose contact over the box walls with up to five other horses.

**Isolation stables**

The reports from the FEI Additional Veterinary Delegates describes how the isolation stables were managed and gives examples of how basic hygiene protocols were not followed. As an example, Personal Protective Equipment (PPE) was not used. This gives a possible explanation on how the infection may have transferred indirectly within the isolation stable. The details in the Veterinary reports are supported by information from the Athletes of horses A and C.

**Emergency medical supplies and preparedness**

The FEI was informed that one member of the Veterinary Treatment team brought some of their own emergency medical supplies, including a sling system.

Nearby veterinary clinics, including a University hospital, were unable to accept either Horse A or C for treatment. This situation would not have occurred with a carefully constructed and prepared contingency plan as required by the FEI Veterinary Regulations Article 1018. Despite requests for the Organising Committee's biosecurity contingency plan, this was not supplied to the FEI Veterinary Department.

**Regional Veterinary Authority**

As there were no test results positive for EHV-1, due to the above factors, the regional veterinary authority was not in a position to declare an outbreak.

According to the reports from the FEI Additional Veterinary Delegates, the support and presence of the regional veterinary authority for the required issuing of health papers - pledged during a meeting with the FEI, Organising Committee, Spanish National Federation and the authority - did not materialise.
Fig. 3

STABLES
Permanent wooden outdoor stables: 385
Tented stables: 675
Isolation boxes: 20 (divided into 2 different tents)

ANALYSIS
The biosecurity measures on venue at Oliva, the close cooperation with the Organising Committee and its veterinary team, and the rigorous testing protocols put in place, meant that there was no sign of viral transmission onsite.
ANALYSIS

How did EHV-1 infection reach Doha?
Four horses that were on site in Doha had participated in Valencia in the first two weeks of February 2021, but departed from the Spanish venue more than a week prior to the outbreak being declared.

During the track and trace exercise conducted by the FEI for horses that had participated in Valencia since 1 February 2021, these four horses were identified but were already in Doha. The Doha organisers were requested to immediately isolate and test these horses. One horse was positive for EHV-1 and a second horse returned an inconclusive result and required re-testing. The other two horses tested negative but were kept in isolation as they were in-contact horses.
Why did the FEI conclude that it was safe for competition to continue in Doha?

Following receipt of information on 1 March 2021 from the Doha organisers that one of the four Valencia horses showed clinical signs and had tested positive to EHV-1, the FEI Veterinary Department – together with a leading veterinary epidemiologist - conducted a full risk assessment to evaluate the biosecurity measures already in place on-venue. This risk assessment focused on the potential risk of viral transmission to healthy horses.

As the four horses that had travelled from Valencia had been in isolation in Doha since 22 February and the sick horse and its neighbour had been transferred to the isolation unit of the neighbouring veterinary clinic, it was agreed to wait for the results of the PCR tests on all other horses on the venue.

Testing on all samples was conducted by the official Qatari Veterinary Ministry laboratory.

Immediately after the FEI had received confirmation that all competing horses at the venue had tested negative for EHV-1, a further meeting between the FEI, Organising Committee and Senior FEI Officials onsite was held as part of the ongoing risk assessment.

The FEI would not have allowed competition to go ahead without this full risk assessment, including expert veterinary epidemiological advice. Permission was only granted subject to a series of stringent conditions and the FEI reserved the right to immediately cancel the event if there were any changes to the situation.

In order not to risk viral transmission to healthy horses, it was agreed with the Veterinary Authority of Qatar that the four that had been in Valencia would not fly home to Europe with the other horses, and would remain in isolation until at least 15 March 2021.

Related cases

After the return to their home stables, two other horses that had travelled on the same flying stable pallet from Doha, tested positive for EHV-1. One horse was asymptomatic but the second developed clinical neurological signs and had to be treated at a veterinary hospital. The French National Federation has informed the FEI that they had received information from the laboratory that it was the same virus strain as in Valencia. It is not known how the virus was transmitted to these two horses.

8: CONCLUSIONS

While it is not possible to pinpoint a single reason or single responsible person for this major outbreak of neurological EHV-1, the investigation has found that the outbreak was caused by several risk factors being present within a limited space and time, a lack of compliance with FEI Veterinary Regulations, lack of preparedness, in combination with poor decision making and lack of cooperation with FEI Headquarters once the outbreak had been confirmed.

The disease itself was not the problem, rather it was the management of it, and unfortunately there were factors – including human error – that allowed the virus to spread much more rapidly than it would have done if the mandated biosecurity protocols had been followed correctly and immediately.

Separation of sick horses

If sick horses are not separated from healthy horses quickly enough this allows sick horses to shed virus and therefore contribute to the viral load on the premises, potentially causing a much more rapid spread than is usually expected in this disease.

Notification to the FEI and to the Spanish veterinary authorities of the outbreak in Valencia came much too late. The disease had already spread within the onsite horse population and was further spread to other venues and countries by departing horses.
**External viral spread**

The fact that horses left the CES Valencia venue in an uncontrolled fashion and without the necessary health papers increased the risk of spreading the virus further. A workable biosecurity plan with clear separation of sick and healthy horses could have meant that athletes had confidence in the protocols in place and did not feel there was an urgent need to take their horses away from the venue as quickly as possible, therefore allowing for a controlled departure of horses.

While there can be no certainty, this could even have had an impact on the risk assessment and decision of the FEI to cancel international events for six weeks in mainland Europe.

Better monitoring of horses on arrival would also have mitigated against the spread of the virus on the CES Valencia venue.

**Biosecurity rules**

The FEI rules around biosecurity already in place at the time of the outbreak were fit for purpose, but the implementation of the Rules, compliance by Organising Committees and FEI Officials, some Athletes and their entourage and enforcement of the Rules by FEI Officials was insufficient at CES Valencia. As a result, the outbreak had already started to spread prior to the FEI Veterinary Department being officially informed on 20 February 2021.

Basic hygiene is a key tool in preventing outbreaks and minimising the spread of the virus if an outbreak occurs. This was the reason why, in 2017, the FEI Veterinary Department worked on increasing the biosecurity requirements in the FEI Veterinary Regulations that were implemented in 2018.

**Blocking of sick/in-contact horses**

The FEI has continued to strengthen its rules on biosecurity. Following an outbreak of EHV-1 (neurological form) at Lillestrøm (NOR) in 2019, a new provision was included in the FEI Veterinary Regulations 2020 (Article 1029.7) that allows the FEI to block sick and in-contact horses in confirmed or suspected cases of the neurological form of EHV-1. That rule has been critical for how the FEI was able to handle the 2021 outbreak, as it meant horses could be blocked in the FEI Database. Within less than 48 hours of being told of the outbreak, the FEI was able to trace and block all 752 horses that had been competing in Valencia since 1 February 2021, thereby minimising transmission.

**Risk assessment**

A risk assessment of the Tour venues, including biosecurity, stable security, safety and emergency protocols, was initiated by the FEI Veterinary Department in 2019 specifically aimed at evaluating whether specific Rules were required for the Tours. The FEI Veterinary Director and Veterinary Manager initiated a series of visits to Tour venues, starting with Valencia and Oliva in mid-February 2020, but the onset of the Covid-19 pandemic the following month resulted in further planned visits being postponed. These will be reinstated during 2022, subject to Covid-19 restrictions.

**Jurisdiction**

The investigation found that there was a serious gap in jurisdiction between the event being cancelled on 21 February 2021 and the Spanish veterinary authorities taking over jurisdiction the following day.

In hindsight, the FEI should have requested permission from the Spanish authorities to allow additional veterinarians onsite more rapidly. The FEI did not send help earlier because FEI HQ was not immediately informed how critical the situation was until alerted by an owner whose horse was seriously ill.
For an immediate solution to the issue of jurisdiction and as part of the EHV-1 By-Laws that came into effect in mainland Europe on 12 April 2021, an FEI Board Resolution was passed on 30 March 2021 to extend the FEI’s jurisdiction. This allowed:

- The FEI Secretary General to cancel competitions during an FEI Event if there is an EHV-1 outbreak
- The FEI to impose EHV-related requirements and restrictions against Athletes, Horses, FEI Officials, Organising Committees at any time, even if an FEI Event is over.

*(Full details of the EHV-1 By-Laws and Return To Competition measures will be provided in Part 2 of this Report.)*

Following the FEI shutdown of all international events in mainland Europe for six weeks, the Return To Competition measures included the following provision:

- If an outbreak is declared by the FEI, all sick and in-contact horses are under FEI jurisdiction until they are released. The biosecurity measures include submitting GPS coordinates of the horse’s location via the FEI HorseApp

The expanded FEI jurisdiction has now been incorporated into the FEI General Regulations 2022, following approval at the FEI Hybrid General Assembly in November 2021.

The amendments to the FEI General Regulations provide the FEI with the tools to assist local veterinary authorities in dealing with a major outbreak where a notifiable disease is involved. This expanded jurisdiction also allows the FEI to assist the National Federation in handling the outbreak, even when the FEI event has been cancelled.

In addition, the biosecurity requirements have also been further strengthened in the 2022 FEI Veterinary Regulations (14th edition), which came into force on 1 January 2022 following approval by National Federations at the FEI Hybrid General Assembly in November 2021.

**Emergency response unit**

A further key requirement that the investigation has identified is the necessity to set up an emergency response unit that could be drafted in immediately an outbreak – of any disease – is confirmed at an FEI event. Potentially the unit could also be made available to National Federations in the event of an outbreak at a national competition.

This emergency response unit would include top veterinarians specialised in treating horses impacted by serious disease and collecting samples for testing with appropriate sampling material in line with the guidelines on serial sampling of horses at FEI events. It would also be important to include an individual dedicated solely to collecting data about the horses, their treatment, vaccination status and any other underlying health issues etc.

**Solidarity**

The solidarity shown by the equestrian community to get through this devastating virus was exemplary. There is a long list of those who dedicated huge amounts of time and resources to provide help, and appropriate thanks will be offered in Part 3 of this Report. But it is clear that we need to show that same level of collaboration even when there is no crisis. Each one of us needs to take our individual and collective responsibility to ensure that an outbreak of this magnitude never occurs again.

It is clear that mistakes were made, and everyone – including the FEI – has to take their share of responsibility where appropriate.

**Accountability**

Clearly there has to be accountability for actions or non-actions that enabled the rapid spread of the disease to a large number of horses. Based on the contents of this report, individual accountabilities will need to be established by the FEI prior to any further potential actions. If,
after a thorough analysis by the FEI Legal Department, any legal action is initiated, the findings of those legal processes will be made public in due course.

While the rules in place at the time were appropriate, it has become clear in the process of writing this report that the FEI’s oversight of those rules and ensuring their enforcement by the relevant parties was not optimal.

**Lack of preparedness**
Because an outbreak of this severity is very rare, there was insufficient preparedness in our community, despite the fact that the FEI Veterinary Regulations clearly define roles and responsibilities across all stakeholder groups.

As the international governing body, the FEI has to take its share of the blame for insufficiently educating our community. The FEI did not ensure that OCs, Officials, Athletes and their entourage were prepared to confront such a situation. The FEI did not have a structure in place to ensure enforcement. We, as a community, were not ready.

This has subsequently been much improved, including strengthening FEI jurisdiction to allow the FEI to take immediate action if Rules around biosecurity are not being enforced and horse health is at risk.

**Reinforced Rules**
The FEI has reinforced its Rules and improved education of OCs, Officials and Athletes. Enforcement is now controlled through use of the mandatory FEI HorseApp for examination on arrival, monitoring during the event, and checkout of horses prior to departure.

The FEI will conduct a minimum of one pre-event regulatory visit to specifically identified high-risk events, such as Tours where there are a large number of horses (more than 400) spending multiple weeks at one venue. The pre-event inspection will ensure that the required measures under the rules around biosecurity are in place. The FEI will also appoint and pay for a Foreign Veterinary Delegate to attend high-risk events, and any others deemed necessary. Where required, an FEI Headquarters representative will additionally visit venues to oversee compliance.

There will never be zero risk with EHV-1. It is endemic in multiple countries around the world and, as a virus that can remain dormant (inactive) in the body of a previously infected horse awaiting a trigger, this is not a disease that can be eradicated.

It is obvious that everything possible has to be done to avoid a similar outbreak. We now have the tools in place to do that, provided we work together as a community to ensure enforcement and compliance.

*Dr Göran Åkerström*  
**FEI Veterinary Director**

*Grania Willis*  
**Executive Consultant to FEI**
9: ANNEXES TO EHV REPORT PART 1

The below Annexes are published separately [here](#).

**ANNEX 1 – EHV FACTSHEET**

**ANNEX 2 – CES NOTIFICATION TO MAPA**

**ANNEX 3 – FEI EMAILS TO VALENCIA OC & OFFICIALS REGARDING CANCELLATION**

**ANNEX 4 – ATHLETE COMMUNIQUES REGARDING BLOCKED HORSES AND BIOSECURITY PROTOCOLS**

**ANNEX 5 – OFFICIAL NOTIFICATION BY ESP AUTHORITIES**

**ANNEX 6 – FEI UPDATES (PUBLISHED ON INSIDE.FEI.ORG)**

**ANNEX 7 – FEI PRESS CONFERENCE AUDIO FILE (9 MARCH)**

**ANNEX 8 – DR FEDERICO NIETO’S REPORT**

**ANNEX 9 – VALENCIA GROUND JURY MEMBER REPORT**

**ANNEX 10 – ADDITIONAL BIOSECURITY GUIDELINES (PUBLISHED ON INSIDE.FEI.ORG)**

**ANNEX 11 – EMAILS REQUESTING CES BIOSECURITY CONTINGENCY PLAN**

**ANNEX 12 - FEI VETERINARY MANAGER’S REPORT**