Conclusions and Recommendations

Influenza activity in 2012
During 2012, individual animal cases and outbreaks of equine influenza were reported by Argentina, Chile, France, Germany, Ireland, United Kingdom (UK), and United States of America (USA).

Sources of viruses characterised during 2012
Equine influenza A (H3N8) viruses were isolated and/or characterised from outbreaks in Argentina, Chile, France, Germany, Ireland, the UK, Uruguay and the USA. In quarantine stations equine influenza viruses were isolated and/or characterised from horses recently imported from Uruguay into Dubai, and from Belgium into Japan.

Field data
Equine influenza virus infections were confirmed in both vaccinated and unvaccinated horses. Vaccination breakdowns were observed in Thoroughbred yearlings in Kentucky, sport horses in France and racehorses in Ireland, as well as the horses imported into Dubai, and into Japan. Over 150 fully vaccinated horses were affected in three linked outbreaks in the Calvados area of France.

The viruses identified in the vaccine breakdowns belonged to both the Florida clade 1 and clade 2 lineages. Horses vaccinated with different vaccines were affected, including those updated in accordance with the 2004 recommendation to incorporate an A/eq/South Africa/04/2003-like virus. These vaccines had not been updated in accordance with the recommendations of 2010 and 2011 to include a virus from clade 2 for optimum protection.

Fatalities associated with influenza A virus infection were reported in France and Uruguay.

Characterisation of viruses isolated in 2012
Viruses isolated/identified in 2012 from outbreaks/cases in Argentina, Chile, Dubai, France, Germany, Ireland, Japan, the UK, Uruguay, and the USA were characterised genetically by sequencing of the haemagglutinin 1 (HA1) gene. Viruses isolated in Argentina, Dubai, Germany, Ireland, the UK, and the USA were also characterised antigenically by the haemagglutination inhibition (HI) assay using post-infection ferret antisera.

Genetic characterisation
All HA1 sequences obtained from viruses were of the American lineage (Florida sublineage). The viruses identified in Argentina, Chile and the USA were characterised as clade 1 viruses, as was a virus associated with an outbreak in Germany. All other viruses identified in France, Germany, Ireland and the UK were characterised as clade 2 viruses. The virus detected in a Belgian horse in a Japanese quarantine facility was characterised as a clade 2 virus. Influenza A viruses isolated in the quarantine facility in Dubai from horses imported from Uruguay were characterised as clade 1 viruses.

Novel HA amino acid substitutions were observed in viruses of both clades compared with isolates from 2011.
Antigenic characteristics

HI data and antigenic cartography analyses of HI data available for viruses isolated in 2012 indicate that the two clades of the Florida sublineage continue to co-circulate and evolve but are currently antigenically closely related to the recommended vaccine strains of that lineage.

Conclusions

No Eurasian viruses were isolated in 2012. Viruses isolated and characterised were from both clade 1 and 2 of the Florida sublineage. There was evident lack of vaccine effectiveness, against both clade 1 and clade 2 viruses. The detection of clade 1 and clade 2 viruses in quarantine facilities in Dubai and Japan illustrates the ongoing risk of international spread of influenza by infected vaccinated horses, the need for optimum protection and the requirement for vaccines to be updated with strains from both clades

Level of surveillance and updating of vaccines

The panel continues to emphasise the importance of increased surveillance and investigation of vaccination breakdown in different countries. Rapid submission of viruses to reference laboratories is essential if antigenic and genetic drift is to be monitored effectively on a global basis.

Vaccines should contain epidemiologically relevant viruses.

The updating of vaccines in a timely manner is necessary for optimum protection.

Recommendations

It is not necessary to include an H7N7 virus or an H3N8 virus of the Eurasian lineage in vaccines as these viruses have not been detected in the course of recent surveillance and are therefore presumed not to be circulating.

Vaccines for the international market should contain both clade 1 and clade 2 viruses of the Florida sublineage. Clade 1 is represented by A/eq/South Africa/04/2003-like or A/eq/Ohio/2003-like viruses. Clade 2 is represented by A/eq/Richmond/1/2007-like viruses.

A panel of viruses covering both clades is available from the OIE Reference Laboratories.

Manufacturers producing vaccines for a strictly national market are encouraged to liaise with reference laboratories. This will ensure utilisation of reference reagents in the selection of viruses for inclusion in vaccines that induce cross-reactive responses that are immunogenically relevant to the equine influenza viruses circulating nationally.

Reference reagents

Freeze-dried post-infection equine antisera to A/eq/Newmarket/1/93 (American lineage H3N8) and A/eq/South Africa/4/2003 (Florida clade 1, sublineage of the American lineage) are available from the European Directorate for the Quality of Medicines (EDQM). These sera have been assigned Single Radial Haemolysis values through an international collaborative study and can be used as primary reference sera for the assay.

Recent virus strains and small quantities of ferret sera for antigenic characterisation are available from the OIE reference laboratories.
List of Participants

Representing the OIE reference laboratories

Prof. Ann Cullinane
Head of the Virology Unit
Irish Equine Centre
Johnstown, Naas
Co. Kildare
IRELAND
Tel.: +353-45 86.62.66
Fax: +353-45 86. 62.73
acullinane@equine-centre.ie

Dr Thomas M. Chambers
Maxwell H. Gluck Equine Research Center
Department of Veterinary Science
University of Kentucky
108 Gluck Equine Research Center
Lexington, Kentucky 40546-0099
UNITED STATES OF AMERICA
Tel.: +1-859 257 47 57
Fax: +1-859 257 85 42
tmcham1@uky.edu

Prof. Klaus Osterrieder (instead of Kerstin Borchers)
Institute of Virology
Veterinary Medicine
Free University of Berlin
Philippstrasse 13
10115 Berlin
GERMANY
Tel.: +49-30 20.93.65.63

Dr Debra Elton
Animal Health Trust
Centre for Preventive Medicine
Lanwades Park, Kentford
Suffolk CB8 7UU
UNITED KINGDOM
Tel: +44-1638 75.10.00
Fax: +44-1638 55.56.59
debra.elton@aht.org.uk

Representing the WHO laboratories

Professor Derek Smith
WHO Collaborating Centre for Modelling, Evolution, and
Control of Emerging Diseases
University of Cambridge
UNITED KINGDOM

Dr Nicola Lewis
WHO Collaborating Centre for Modelling, Evolution, and
Control of Emerging Diseases
University of Cambridge
UNITED KINGDOM

Otros huéspedes

Professor Xiaojun Wang
Harbin Veterinary Research Institute, CAAS
427 Maduan Street,
Harbin, 150001
P.R. CHINA

Dr Takashi Yamanaka
Epizootic Research Center
Equine Research Institute
Japan Racing Association
1400-4 Shiba, Shimotsuke
Tochigi, 329-0412
JAPAN

Dr María Barrandeguy
Responsable del Laboratorio de Virus Equinos
Instituto de Virología
CICVyA INTA
ARGÉNTINA

Dr Louise Treiberg Berndtsson
Statens Veterinärmedicinska Anstalt
751 89 Uppsala
SWEDEN

Dr Adam Rash BSc
Animal Health Trust
Centre for Preventive Medicine
Lanwades Park, Kentford
Suffolk CB8 7UU
UNITED KINGDOM