Update from Equine Surveillance Panel

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EQUINE INFLUENZA

- Equine influenza viruses of avian origin
- 2 stable lineages, H7N7 and H3N8
- H7N7 considered extinct
- H3N8 first isolated in Florida in 1963
- Almost worldwide
- Unrecorded in Iceland and New Zealand

H3N8 - the most important infectious disease of horses

Mobile equine population

Highly contagious virus

Explosive in naïve populations

Cancellation of events

Disruption to Industry

- 1992 Hong Kong $1billion
- 1986 South Africa $70million
- 2007 Australia more than $1billion

Equine Influenza 2010-2012

- 2010 – Europe, the USA and Brazil
- 2011- Europe, USA, Mongolia and China.

  Fatalities reported in France and Mongolia.
- 2012- Chile and Europe.

Equine Influenza Surveillance

- Drivers
- Methods
- Findings
- Problems
- Solutions

Way Forward ???

Primary Surveillance Driver

Vaccine Efficacy – Assessment and update

- **1979 cancellation of race meetings due to influenza**
- **1980/81 mandatory vaccination introduced**
- **1989 vaccination breakdown – epidemic**
- **Formal surveillance**
- **1995 Expert Surveillance Panel (ESP)**

Expert Surveillance Panel (ESP)

- **Meets annually at OIE**
- **OIE reference laboratories (4)**
- **WHO (3)**
- **Other laboratories monitoring EI**
- **Review influenza activity and virus strains**
- **Recommendations re vaccine composition**
- **Publication in the OIE Bulletin**

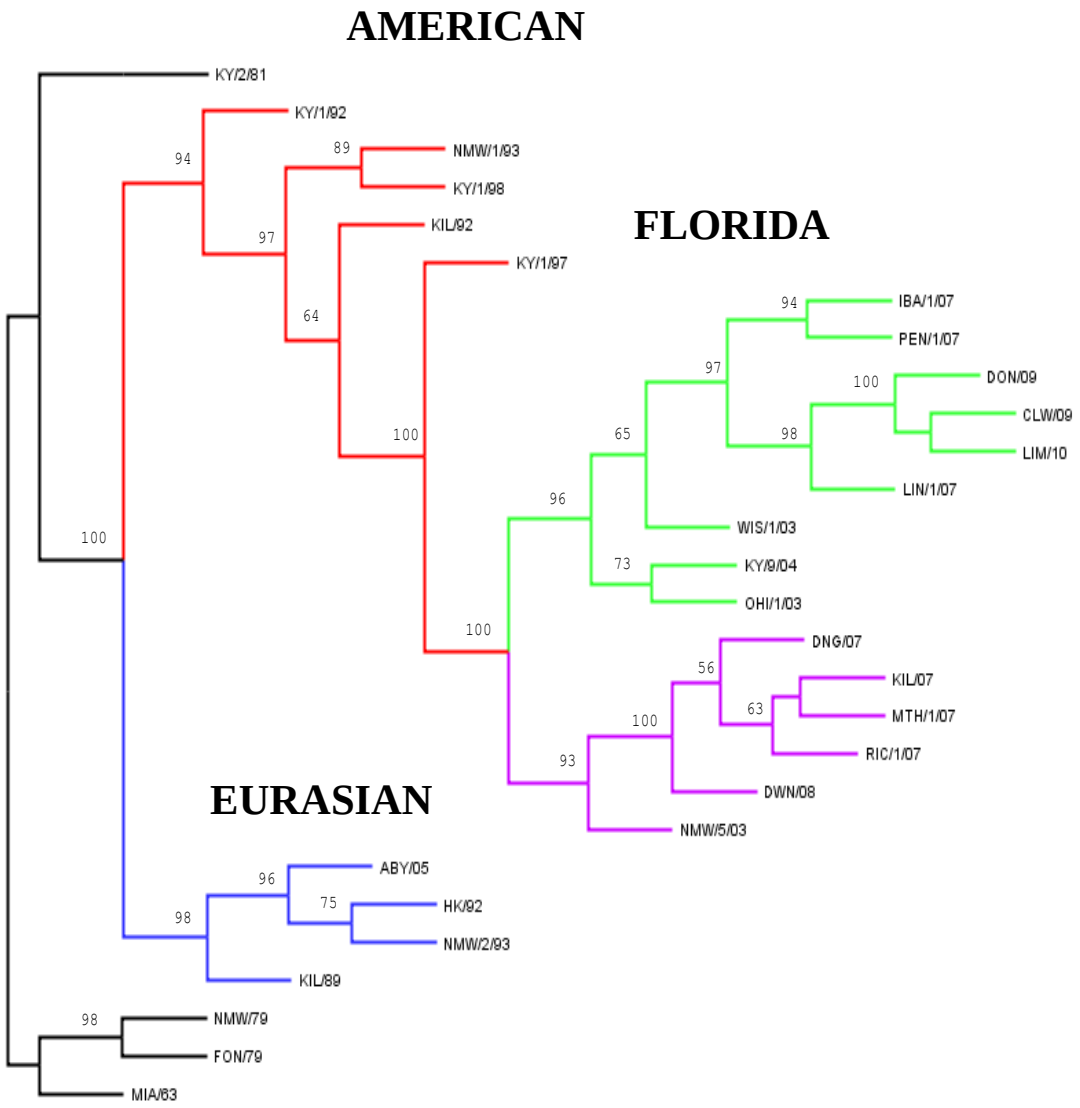
Criteria for updating vaccines

- Field infection in well vaccinated horses
- Antigenic analysis

  HI with ferret antisera

  Antigenic cartography
- Genetic analysis

  Sequence of HA
- Experimental challenge



CLADE 1

CLADE 2

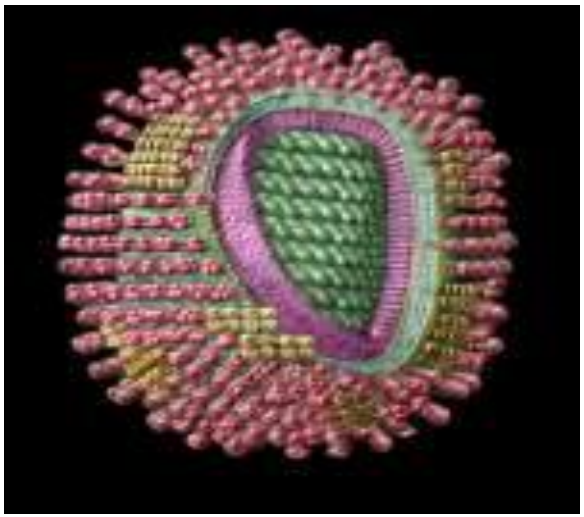
- Very few Eurasian viruses 2003-2012
- Clade 1 viruses prevalent in the USA and associated with outbreaks in Asia (2007), South Africa (2003) and Australia (2007).
- Clade 2 prevalent in Europe and associated with outbreaks in Mongolia (2008/11), China(2007/08/10) and India (2008/09).
- 2009/10 increase in Clade 1 in Europe
- 2011 only Clade 2 in Europe

Vaccine Breakdown

- Post importation
- Horses in training
- Many different vaccines
- With both clades

OIE ESP Recommendations 2010 - 2012

- No H7N7
- No H3N8 European lineage
- Inclusion of representative from each of the Florida sublineage clades



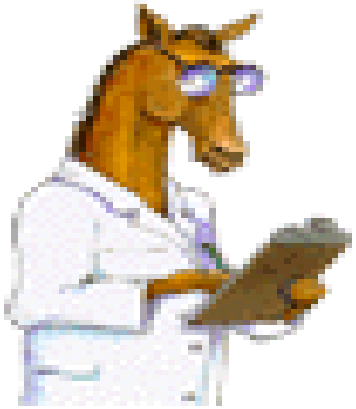
Surveillance Problems and Solutions

Geographical bias (EU and USA) –

- Increase Participation (Japan, China and Argentina)
- Role of OIE (training/twinning)

Industry Engagement

- Equestrian Bodies (FEI, IMHC, OIE)
- Vaccine companies (IFAH)



Meeting of ESP with International Federation of Animal Health

- **Rate of update of recommendations**
  Two strain substitutions in eight years
  Regulatory perspective on removing strains
- **Basis for the recommendations**
  Relevance of antigenic characterisation with ferret antisera
  Proposed collaboration on evaluation of horse antisera
  ESP to increase investigation of vaccine breakdown in field.
  Challenge experiments (mouse model)
- **Rate of update of vaccines**
  Regulatory authorities
  Revision of legislation
  Provision of viruses by OIE

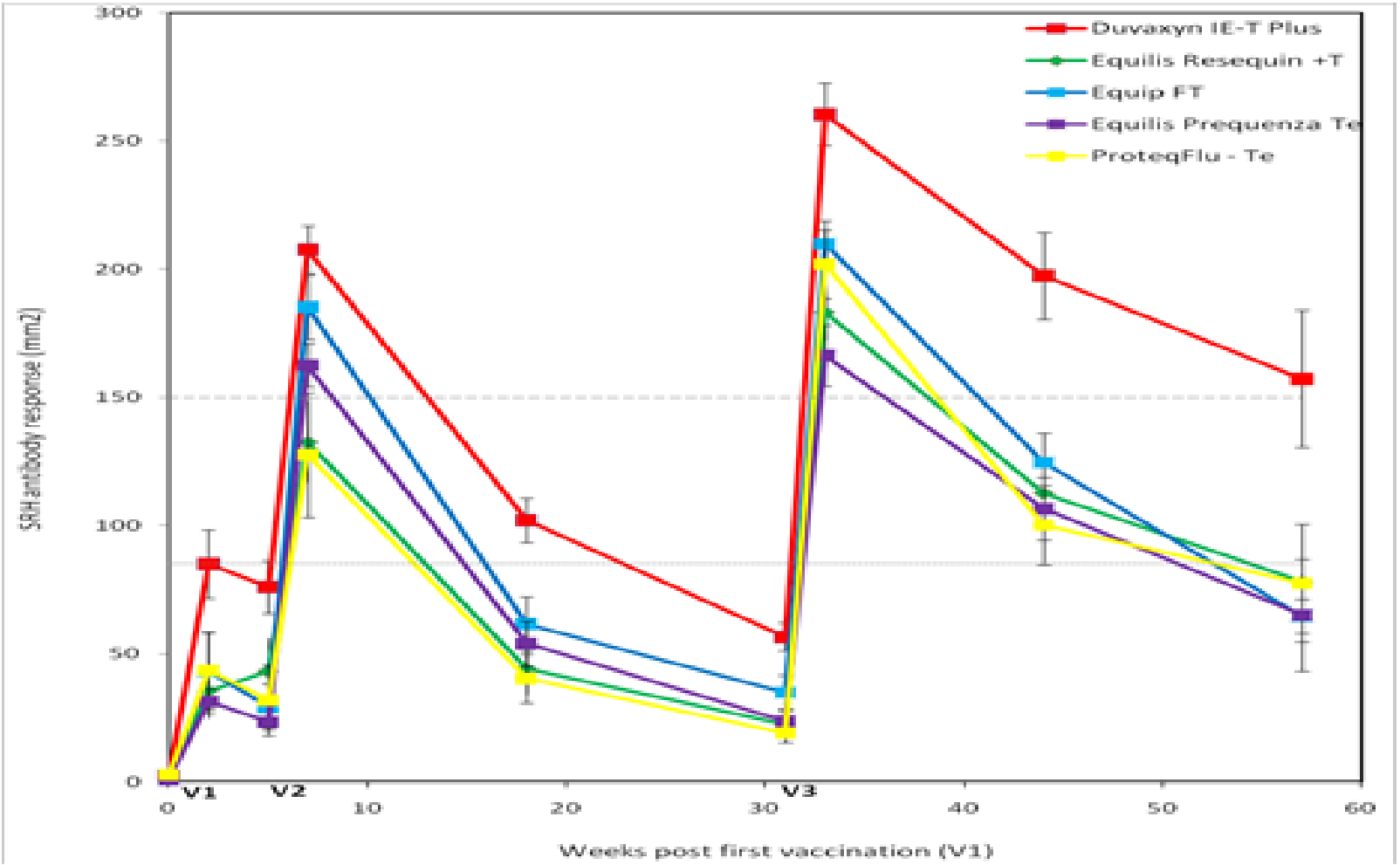
ESP recommendations

- 1995 Inclusion of American and Eurasian
- 2004 Update the American
- 2010 Inclusion of both clades

Vaccine Composition

Vaccine Brand	**OIE H7N7 Unnecessary**	**OIE 2009 H3N8 European Unnecessary**	**OIE 2004 update H3N8 American Clade 1 SA/03 or Ohio/03 like**	**OIE 2010 Include H3N8 American Clade 2 Richmond /07 like**
ELANCO	Prague /56	Suffolk /89	Nwmkt /1/93	**No**
MSD	Prague/56	Nwmkt /2/93	Nwmkt /1/93	**No**
Pfizer	Nwmkt/77	Borlange /91	Kentucky/98	**No**
Merial	No	Nwmkt/ 2/93	**Ohio/03**	**No**

Gildea et al (2011) Vaccine 29 (49) 9214-23



Future Challenges and Direction

- Global participation
- Develop procedures to characterise viruses that determines their impact on vaccine efficacy in the target population – monitor horses
- Work with equine and vaccine industries
- Broaden our remit – vaccination regimes ?



Thank you