Globalisation of movements & spread of equine infectious diseases

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This presentation is divid ections:

1. Global moveme
2. Global di ation

Understanding disease risks requires understanding of both factors

58 Million Horses in the World (estimate)

- Transport is a major factor in the spread of equine disease
- High value horses are transported
- How many high value horses are there?
- How many are transported ?

(Int' comparisons EFTBA 2008)

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SECTION 1: Horse Movements

Global Thoroughbred Breeding: BIG industry.....

	Americas	Asia	Europe	TOTALS
Mares	82, 008	56, 737	33, 893	172, 638
Foals	50, 975	36, 400	31, 315	118, 690
Stallions	5, 045	1, 669	2, 331	9, 045

(Int' comparisons EFTBA 2008)

Global Racing.....BIG Business !

	Americas	Asia	Europe	TOTALS
Races	72, 647	54, 801	31, 670	159, 118
Betting (€x1,000)	11,604,093	44, 942, 072	32, 089, 610	88, 635,775

(Int' comparisons EFTBA 2008)

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And grow and grow....

- 2006 Asian Mile Challenge brings together races from Melbourne, Dubai, Hong Kong and Japan
- 2007 The Breeders' Cup meeting is run over two days with three races on Friday
- Three more races added to Breeders' Cup meeting and Singapore Turf Club add Kris Flyer Sprint to their international night.
- Wesley Ward sends over two American 2yo winners at Royal Ascot

And it continues to grow.

- 2010 Dubai opens state of the art racecourse at Meydan
- 2011 Kenilworth announce they will be allowed to run the first international race in South Africa in January 2012

Even in economic recession....

In the top 20 racing countries there were a total of (2006):

- 138,667 races,
- 200,141 individual starters,
- £1.7 Billion prize money
- £66 Billion betting turnover
- 6,977 stallions,
- 158,734 mares
- 102,224 foals

REASONS.....

- **Prize money - four Hong Kong International Races are worth over 5 Million Pounds**
- **Dubai World Cup night is worth 16.6 Million pounds**
- **Capital Appreciation /breeder exposure**
- **Potential sale**
- **Change of training/medication regime**
- **Business & pleasure**

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Its all about money…

Top trainer in Britain 2010:

- Richard Hannon with **£3,218,575**

Top British based trainer overseas 2010:

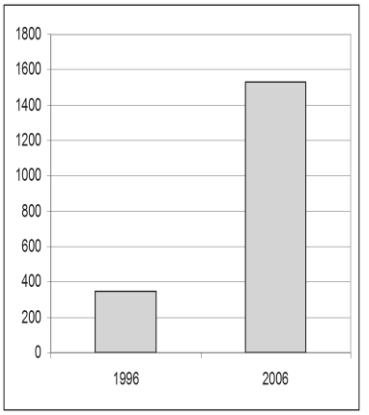
- John Gosden **£2,503,945**

28 trainers (including three with jumpers) earned over £100,000 abroad and three won over £2 Million.

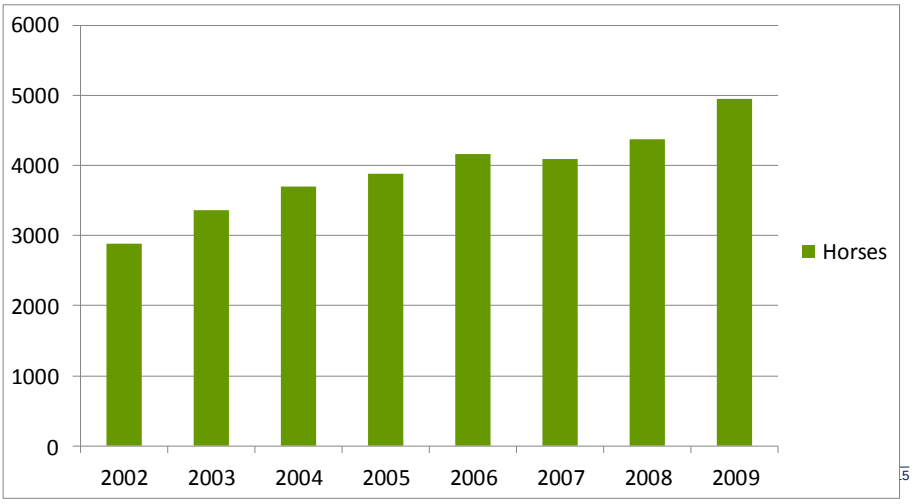
International Events organized by the 10 leading national host nations 1996 and 2006 (FEI 2007)

1996: 350 International Events

2006: 1530 International Events



Growth in Shipments 2001-2009 (major international shipper)



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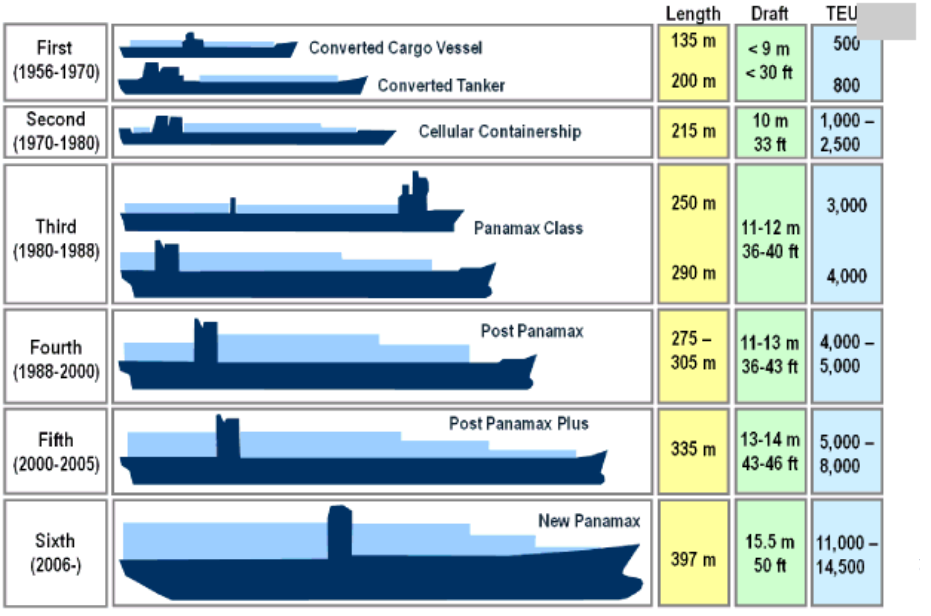
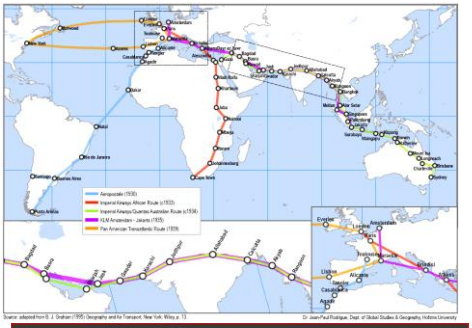
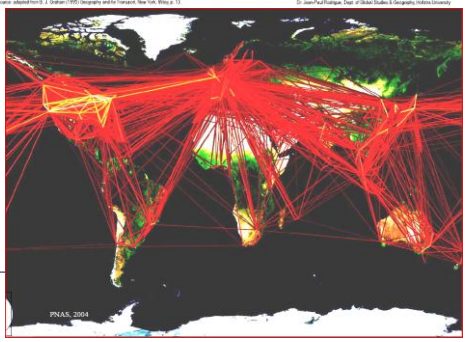
Growth in major international shippers 2001-2009



Early Intercontinental Air Routes, 1930s ..



and today…



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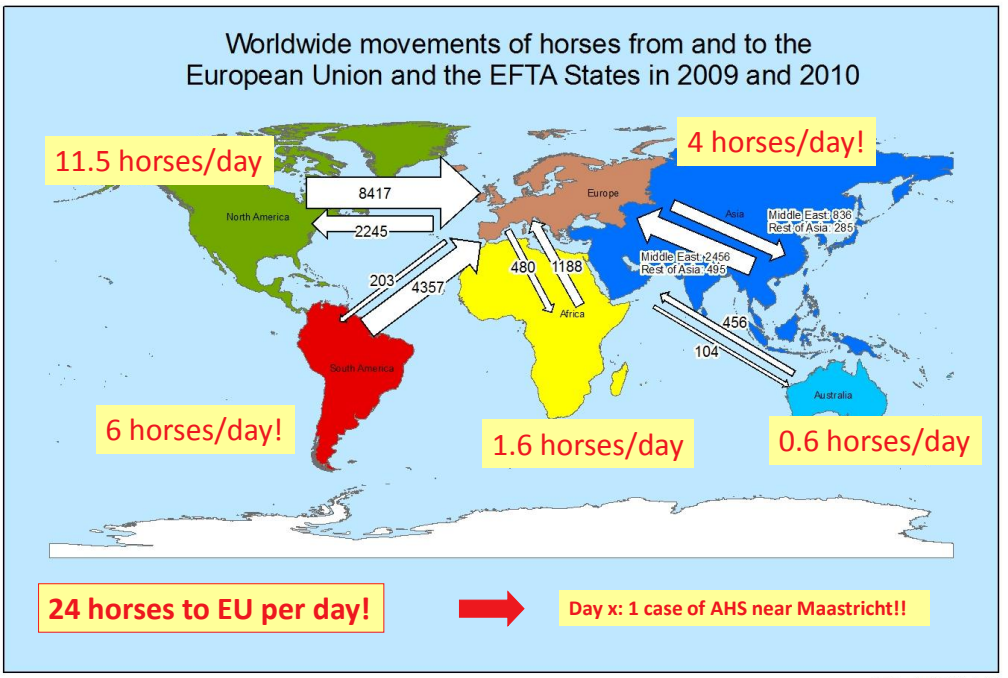

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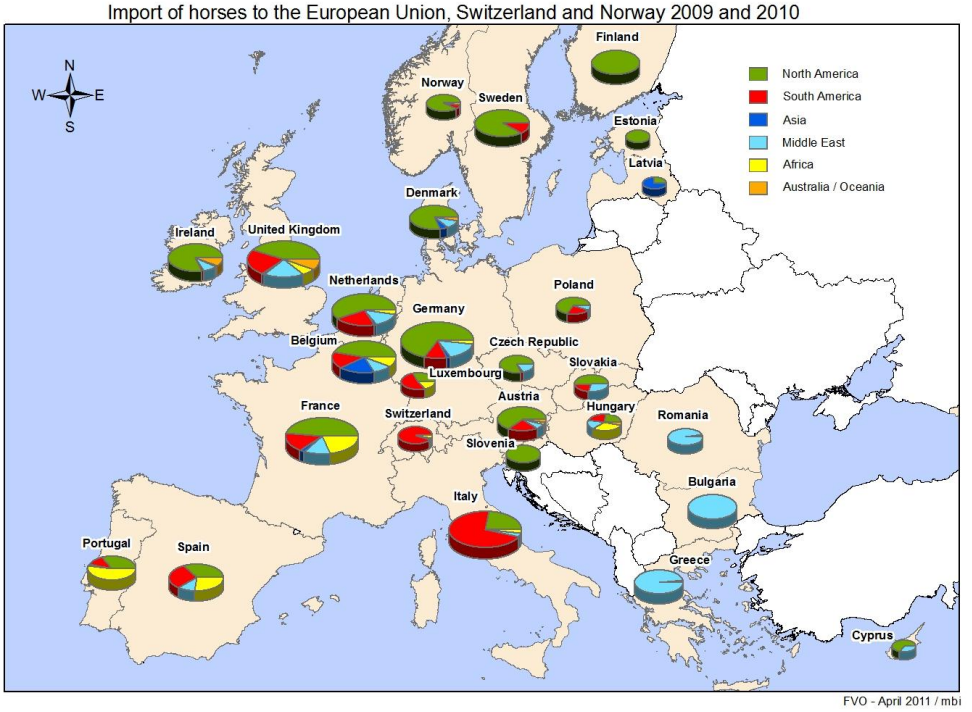
Import of horses to the European Union, Switzerland and Norway 2009 and 2010



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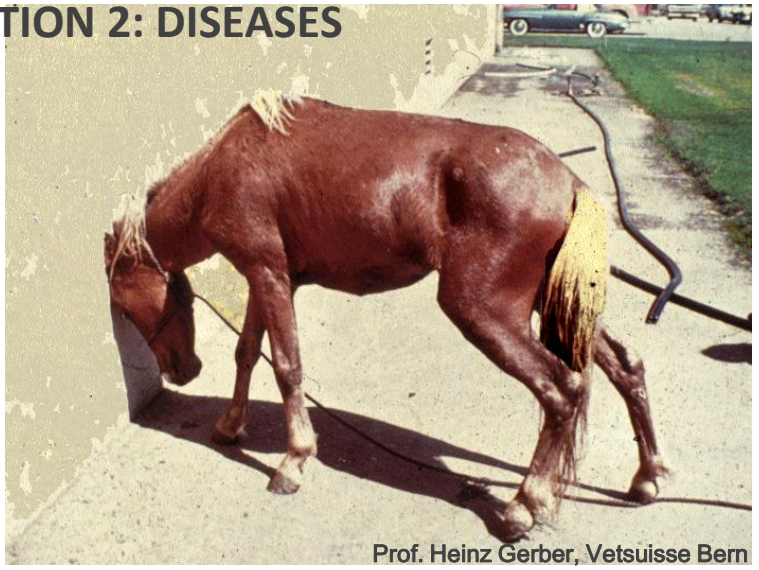
Horse movements

Increased international & intercontinental movements carry inherent risks of transfer of infectious disease

4,720 USDA Horse imports 2008

Port of Entry	Total	Febrile on arrival	% febrile
New York (mainly from Holland)	2062	236	11.4%
Miami (mainly from Argentina and Holland)	1600	106	6.6%
Los Angeles (from all over Europe and Australia and New Zealand)	1058	127	12%

SECTION 2: DISEASES



Spread of equine diseases - Main risks to biosecurity

Importation of live animals, meat & meat products, biological products (semen, embryo's, plasma)	**Legal Illegal Food companies Travellers**
Animal movement	
Animal to animal spread	
Change in epidemiology (lack of knowledge?) Extension of the range of disease vectors and/or change in vector competence	
Migrating birds or other wild animals	

Each category has disease spread potential




Insect-Vectors with disease spread potential

Flies


Ticks

Gnats


Mosquito's

Pan-American Games, Guadalajara, Mexico October 2011

VENEZUELAN EQUINE ENCEPHALOMYELITIS IN MEXICO

1. To advise you of an outbreak of Venezuelan Equine Encephalomyelitis (VEE) in Mexico

Purpose and background

2. On 19 August Mexico notified the World Organisation for Animal Health (OIE) that it has confirmed two cases of VEE in horses in the region of Veracruz.

3. This means that in accordance with Commission Decision 2004/211/EC[1] the Mexican authorities cannot currently certify exports of horses to the EU.

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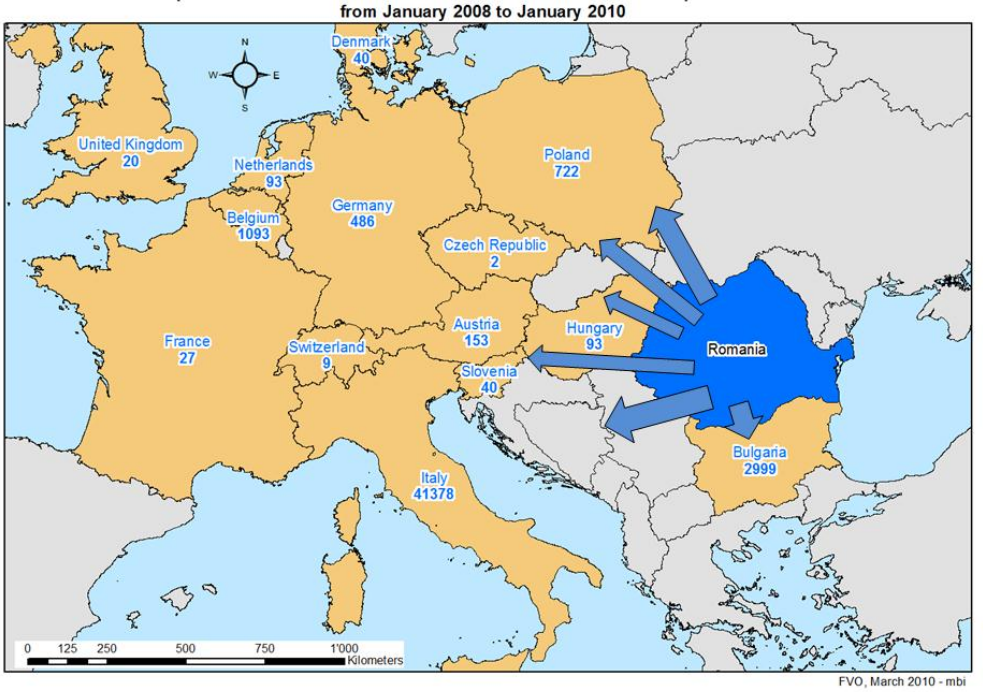
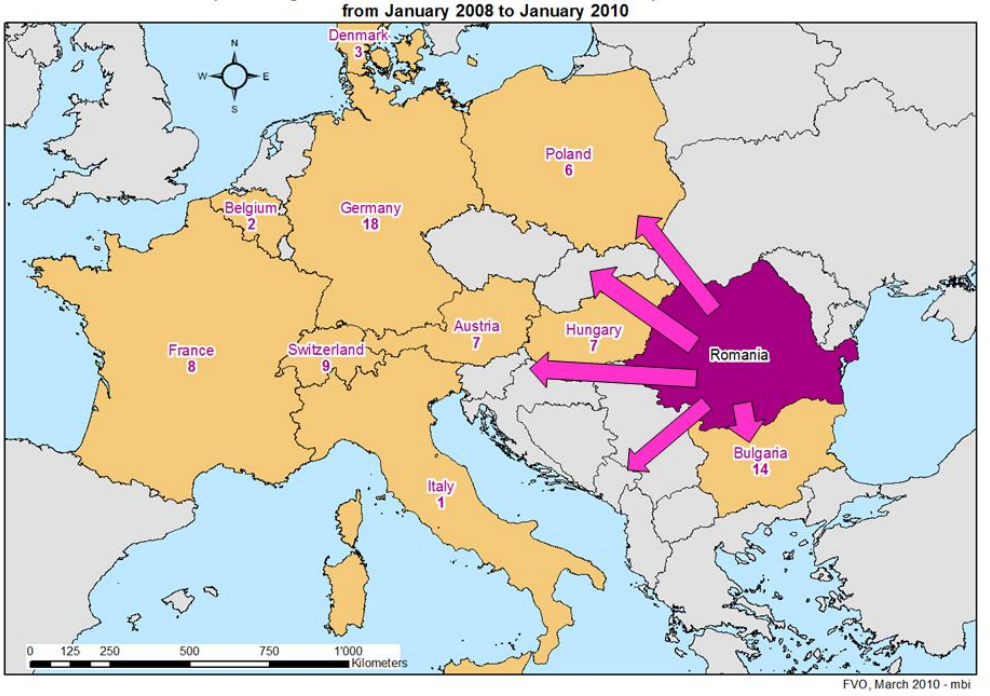
Spread in Equine Infectious Anemia from Rumania

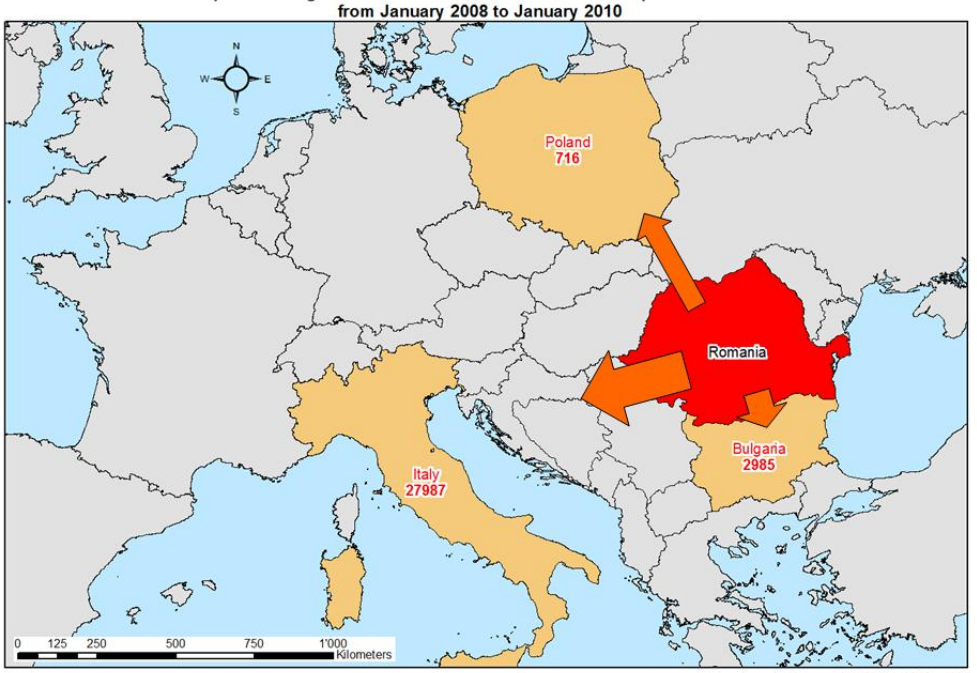
Export of the total number of horses from Romania to other European countries from January 2008 to January 2010



Export of registered horses from Romania to other European countries from January 2008 to January 2010



Export of slaughter horses from Romania to other European countries from January 2008 to January 2010



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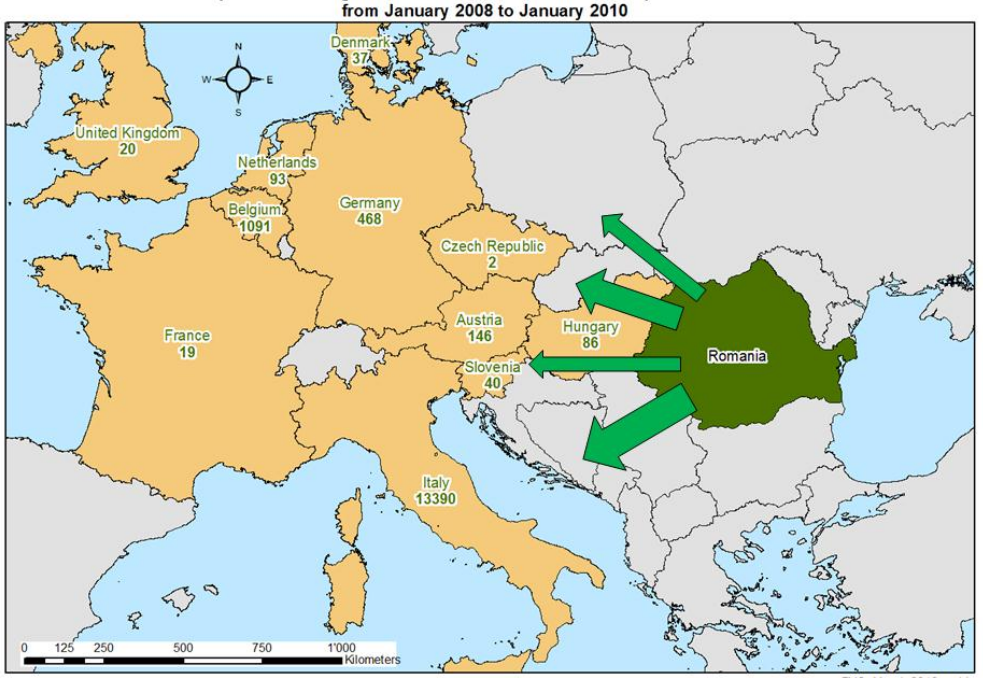
Export of breeding horses from Romania to other European countries from January 2008 to January 2010



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Equine infectious Anemia (EIA)

- Viral infection of equids
- Incubation: 1-3 weeks up to 3 month
- Infected Equids carry the virus for lifetime & are a potential risk for the spread of the disease
- Compulsatory notifiable disease (OIE, ADNS)

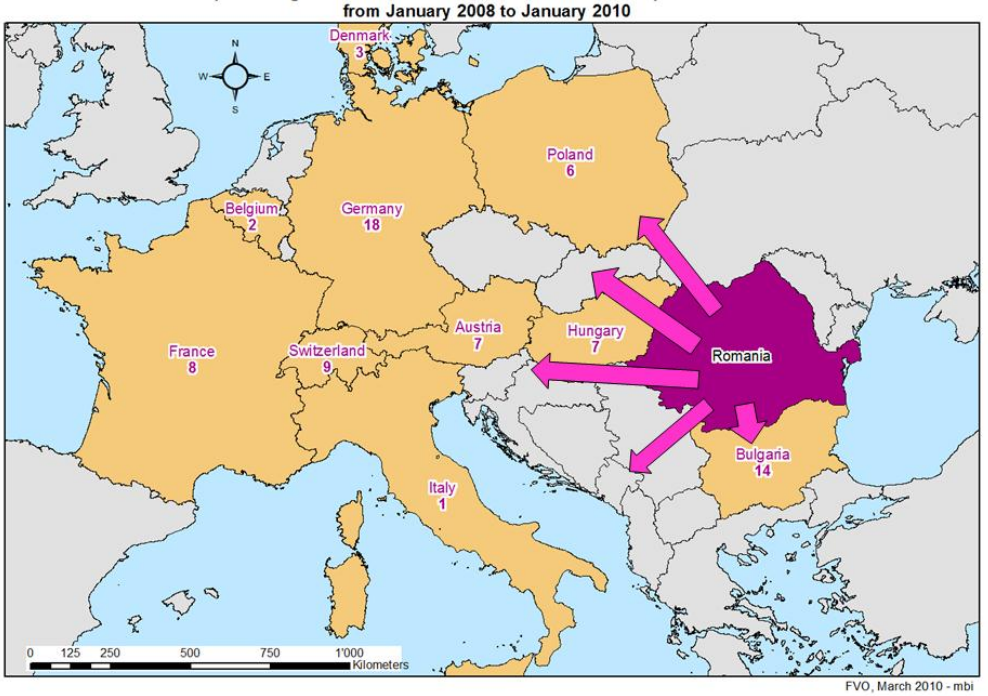
Equine infectious Anemia (EIA)

- Local transmission: blood suckling horse flies & *in utero* infection
- Long distance spread: Movements of infected horses and their genetics, use of contaminated needles or blood products

EIA situation Rumania (2010)

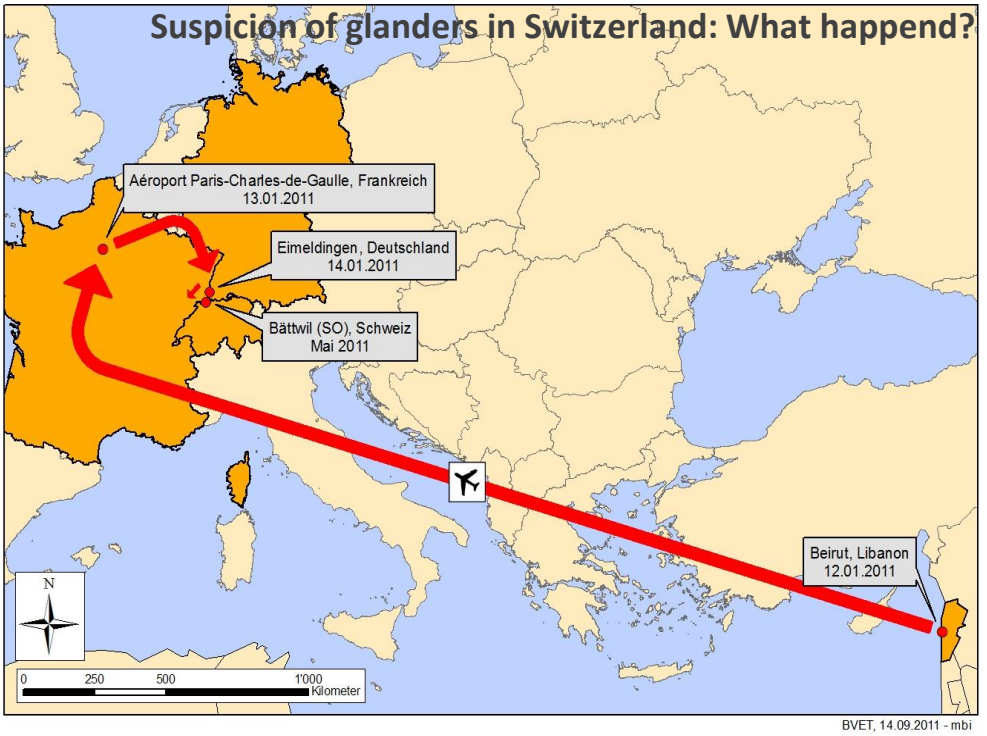
- Number of EIA outbreaks at 10th April 2010: 5936
- Number of EIA cases at 10th April 2010 : 11622
- All positive cases came from private holdings, no registered horses
- no cases in competition horses, breeding or riding centres

Export of registered horses from Romania to other European countries
from January 2008 to January 2010

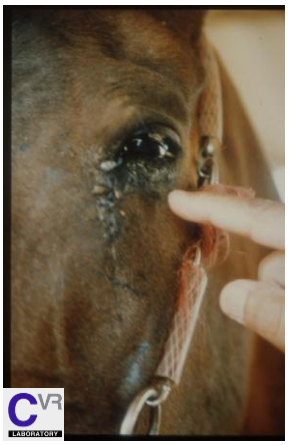


Introduction of EIA from Rumania

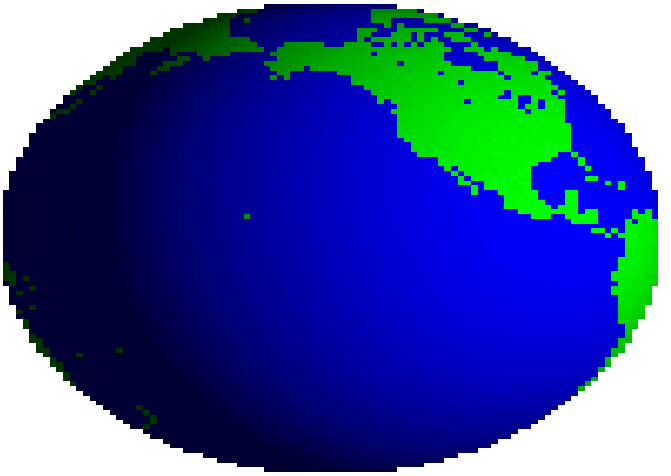
- **Ireland 2006**: 38 EIA cases after import of infectious plasma
- **Great Britain 2010**: 2 EIA cases after import of horses (via Belgium)
- **Belgium 2010**:3 EIA cases after import of horses
- **France 2010**: 1 EIA case after import of horse (via Belgium)
- **Germany 2010**: 33 EIA cases after import of horses



Glanders can be introduced at any time into free countries or zones by latent infected equines



Global equine disease distribution



Criteria for listing diseases:

World Organisation of Animal Health (OIE):

- International spread
- Zoonotic Potential
- Significant Spread within Naïve Populations
- Emerging Diseases

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THEY HAVE NOT GONE AWAY !

Equine diseases

· African horse sickness
· Contagious equine metritis
· Dourine
· Equine encephalomyelitis (Eastern)
· Equine encephalomyelitis (Western)
· Equine infectious anaemia
· Equine influenza
· Equine piroplasmosis
· Equine rhinopneumonitis
· Equine viral arteritis
· Glanders
· Surra (*Trypanosoma evansi*)
· Venezuelan equine encephalomyelitis

WARWICK BAYLY
Washington State University

M Baylis, 2007

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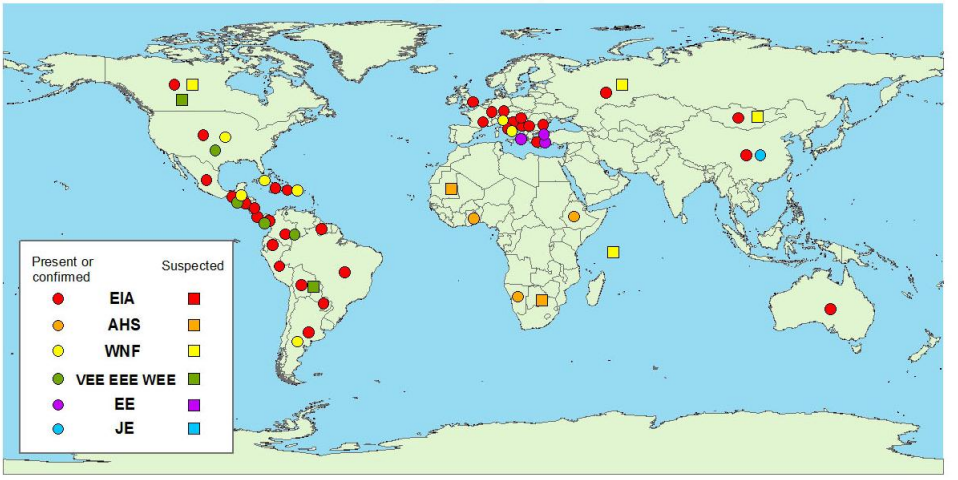
Top 17 most dangerous disease threats by USDA

1. High Pathogenic AI (F)
2. Foot-and-Mouth Disease
3. Rift Valley fever (F)
4. Exotic Newcastle Disease
5. Nipah and Hendra virus (F)
6. Classical swine fever
7. African swine fever
8. Bovine spongiform encephalopathy (?)
9. Rinderpest
10. Japanese encephalitis (F)
11. African horse sickness
12. Venezuelan equine (F) encephalitis
13. Contagious bovine pleuropneumonia
14. Ehrlichia ruminantium (Heartwater)
15. Eastern equine encephalitis (F)
16. Coxiella burnetii (F)
17. Akabane virus

Zoonotic diseases: (F) fatal (?) possible

Worldwide equine vector-borne disease outbreaks based on WAHID and ADNS data.
January 2010 - May 2011



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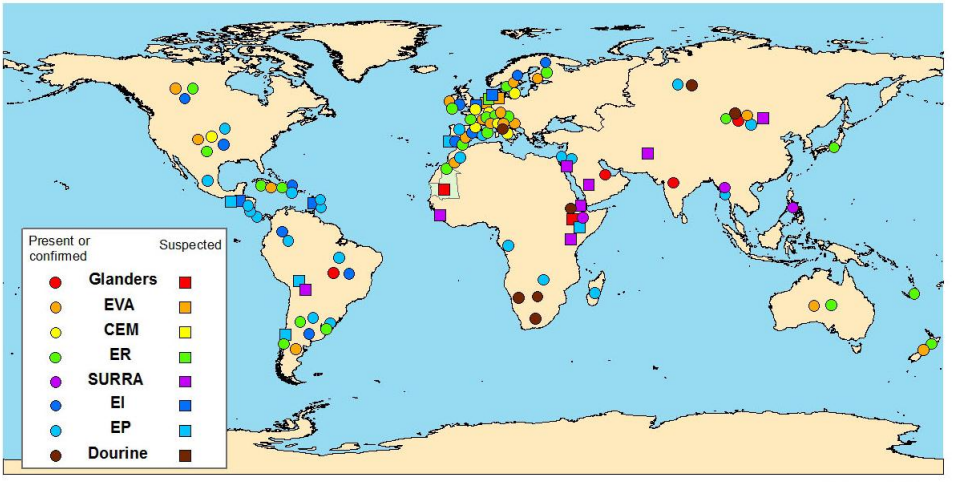
Worldwide other equine OIE-notifiable disease outbreaks based on WAHID and ADNS data.
January 2010 - May 2011



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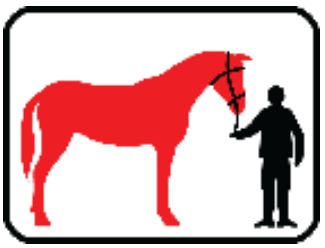
Responsibility starts with prevention



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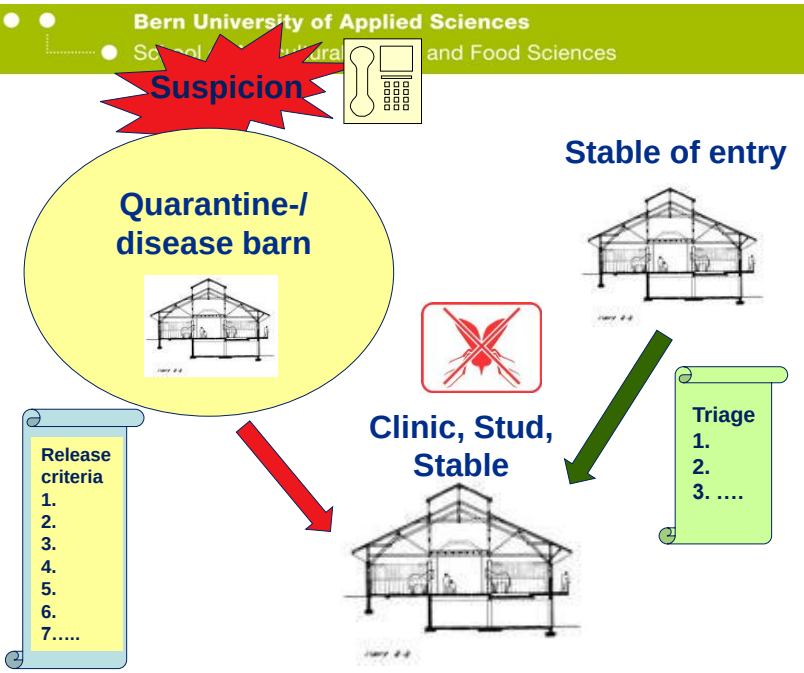
Emergency plan

Objective:

- **Minimise likelihood of the occurrence of an event**
- **Minimise negative consequences of an event**



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Equine diseases: vaccine availablity

Disease	Commercially available vaccines	Licensed in (not exhaustive)
African Horse Sickness	Modified Live Vaccine (MLV)	South Africa Vaccination prohibited in most countries
Venezuelan equine encephalomyelitis	Killed & MLV	USA
Equine encephalomyelitis (Eastern)	Killed & MLV	USA
Equine encephalomyelitis (Western)	Killed	USA
West Nile Virus	Live canary pox vaccine, Live chimera, killed, DNA-vaccine,	Europe, USA, India
Equine rhinopneumonitis	Killed, MLV	Europe, USA,
Equine influenza	Killed, MLV intranasal	Europe, USA, Australia
Equine viral arteritis	Killed MLV	Some European countries North America In many countries vaccination is not allowed

Equine diseases: prevention & control

- **No vaccine available**:
  Equine piroplasmosis, Equine infectious anaemia, Glanders, Surra, Dourine, Contagious equine metritis
- **Existing vaccines for routine use:**
  - Equine encephalitides (VEE, EEE, WEE & WNF)
  - Equine Influenza
  - (Equine rhinopneumonitis, Equine viral arteritis)

How about African Horse Sickness?

Impact of an AHS outbreak

1989 Spain and Portugal

- 137 outbreaks;
- 104 farms; [illegible]uine deaths;
- 170,000 equines [illegible]ted, 82 died after vaccination
- Cost $1.[illegible]illion

PREVENTION IS BETTER THAN CURE!

NO safe & efficacious vaccine available!

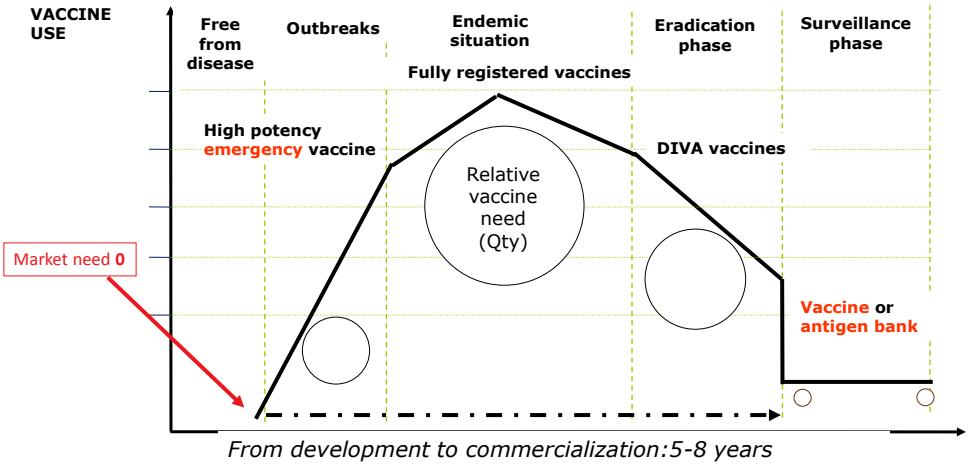
U.S.: Horse In[illegible]y (1998):

Inventory: 5.25 million[illegible]: Sales: $1.[illegible] billion; direct impact of $39 billion o[illegible]S economy (AHC report) & an overall impact of $102[illegible]

The horse industry supports 1.4 million equivalent full-time jobs.

UK: AHS could cost the UK **over £3.5 billion ($ 5.7 billion)**

Why is there no safe & efficacious vaccine against AHS commercially available?



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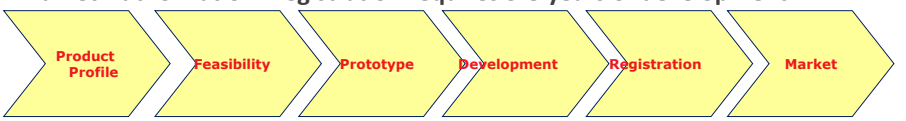
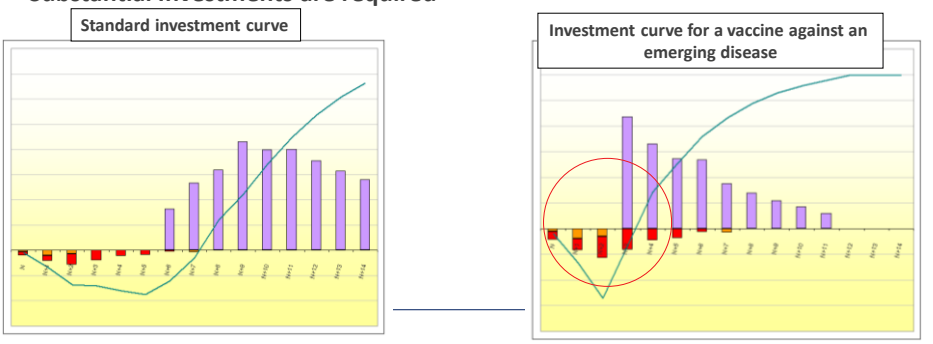
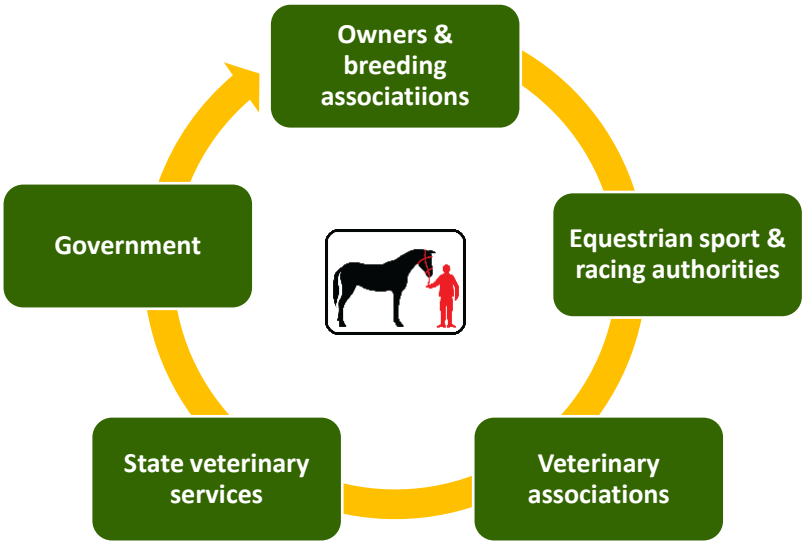
Why is there no safe & efficacious vaccine against AHS commercially available (cont)

Market Authorization: Registration requires 5-8 years of development



Substantial Investments are required




Owners & breeding associatiions
Equestrian sport & racing authorities
Veterinary associations
State veterinary services
Government


Merci