Outcome of the Conference
“Towards the elimination of rabies in Eurasia” Joint OIE/WHO/EU Conference

WHO (HQ-MZCP) / OIE Inter-country Workshop on Dog and Wildlife Rabies Control in the Middle East

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Background
Aim of the Conference
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=> Seek answers to questions: how to proceed towards the eventual elimination of this zoonosis, in Eurasia and all over the globe?

=> Bring together veterinarians, scientists, wildlife experts, clinicians and public health officials:
   - to share their experience in modern rabies control,
   - to agree on the strategies for the prevention and control of the disease in reservoir animal species, and
   - to examine the threat posed by classical rabies virus and the emerging bat lyssaviruses
The conference addressed the following topics:

1- Epidemiology
   => Up-to-date information: regional reports from Western Europe, Eastern Europe, Central Asia, Middle-East and Far East Asia

2- Pathogenesis

3- Rabies prevention and control strategies
   => in dogs, in wildlife, bat rabies, human rabies prevention

4- Advances in technologies, diagnosis and vaccines
Summary on main topics discussed

1- EPIDEMIOLOGY

[Map of the world with red and gray regions]
Epidemiological information on Rabies distribution

• Western Europe:
  Rare in domestic animals and wild carnivores
  Bat rabies observed
  Reporting of human post exposure prophylaxis is inconsistent
  Data on domestic animal rabies prophylaxis is difficult to collect

• Eastern Europe:
  Sporadic
  31% in domestic, 69% in wild animals
  Rare in humans
  Vectors: red fox, raccoon dog

• All Countries have national reference labs, appropriate legislation, rabies is a notifiable disease
Epidemiological information on Rabies distribution

- **Central Asia:**
  - Serious problem: Info on control effectiveness needed.
  - Lacking of national programs assessment
  - Main carriers are unidentified
  - Low rate of vaccinated carnivores

- **East Asia**
  - 50% of all human cases around the world (29 000 deaths in 2006)
  - Endemic in many countries
  - Failure to immunize domestic dogs (vaccination <5%)
Animal rabies status in the Middle East
Epidemiological information on Rabies distribution

• Middle East: (Cont)

Some countries are facing increase of the problem

Considerable death rates in some countries

Dogs are the main source of human infection

Diagnosis capabilities of laboratories are relatively weak

Mass vaccination is not implemented
Epidemiological information on Rabies distribution

• Middle East: (Cont)

Animal rabies control consists of the vaccination of dogs and cats, the elimination of stray animals, public awareness…

The elimination of stray dogs and other animals by shooting and poisoning is still implemented in some countries

Certain countries are facing increasing problem due to wildlife rabies (KSA, Oman, Yemen, POT, Iran and Turkey)

The red fox and the golden jackal are main vectors in wildlife

Coordinated action to confront rabies public health and economic problems should be undertaken by affected countries with assistance of IOs under countries specific conditions
Summary on main topics discussed

2- PATHOGENESIS
•Pathogenesis

Inflamatory response in the nervous system of mice infected with a street isolate of rabies viruses

Role of virus-induced Neuropeptides in the brain in the pathogenesis of rabies

Pathogenic rabies virus alters host protein expression in the central nervous system: Implications for Neuronal Dysfunction
Summary on main topics discussed

3- Rabies prevention and control strategies (Eurasia)

• 1- Can rabies be eradicated?
  – Rabies is an acute progressive encephalitis
  – Distribution encompasses all continents
  – Agents consist of at least 11 species or genotypes
  – Susceptible natural hosts include all mammals
  – Regional and local disease resurgence
  – Political and economic instability, environmental perturbation presents a challenge to a strict eradication
1- Can rabies be eradicated?

Need public awareness
human rabies prevention
wildlife rabies control
canine rabies elimination
Laboratory base surveillance and guided via epidemiological insights
Mass vaccination of the primary reservoirs

WITH RENEWED COLLABORATED VIGOUR
Summary on main topics discussed

4- Advances in technologies, diagnosis and vaccines

• Immune evasion, a critical strategy for rabies virus
• Cell culture rabies vaccine: Immunogenecity of a candidate vaccine for humans
• Factors influencing the antibody response to vaccination against rabies
• Attaining raccoon rabies management goals: History and challenges
• Intake and stability of rabies vaccine
• Immunogenecity of the ERA G 333 rabies virus strain in foxes and raccoon dogs
• Canine adenovirus based vaccine rabies
• Development of an edible rabies vaccine in maize using vnukovo strain
• Genetically engineered colorimetric single-chain antibody fusion protein for rapid diagnosis of rabies virus
• Use of rabies virus as a transneuronal tracer of neuronal connections: Implications for the understanding of rabies pathogenesis
Conclusions
Eurasia rabies conference

Rabies is a major zoonotic disease which is under-reported (at human and animal level)
Dogs are considered as the main reservoir as transmitter of rabies to humans
The involvement of wildlife on all major continents, and the distribution and abundance of bats as reservoir hosts, rabies is not a candidate for true eradication at this time using a classical definition.

Nevertheless, global collaboration, expertise, leadership, technology transfer, vision, good veterinary governance, in compliance with international standards are needed

Laboratory based surveillance, combined with active health education and enhanced public awareness, and the strategic utilization of potent inexpensive vaccines in animals is highest priority in preventing human deaths and are basic requirements for effective rabies prevention and control.

Human rabies can be eradicated by eliminating exposures, proper timely application of modern post-exposure prophylaxis.
Recommendations of the Eurasia conference:

- **Rabies** should be considered as a **priority** by all governments and financial cooperative institutions

- **Active contribution of VS** to the goal of **eliminating human rabies at the animal source** with the appropriate financial support (public budget/Ministries of Health)

- **Strengthening of Good governance of VS** of veterinary services by the active participation of all countries in Eurasia in the **PVS** initiative of the OIE => capacity and ability to control major animal diseases including zoonoses such as rabies.

- Design and implementation of comprehensive and sustainable **national programmes for rabies elimination**.  
  **Harmonisation of control/ elimination programme strategies between neighbouring countries** until rabies has been eliminated.
Recommendation of the Eurasia conference (cont)

- **Public awareness and education on rabies** should be a priority and be increased through the exchange of information, experience and cooperation between medical, veterinary and environmental authorities.

- **Improvement of surveillance and reporting of rabies (including bat rabies).**
  
  => maintain or establish an effective mechanism for collating, processing, analysing and disseminating rabies data => strong involvement of OIE Delegate

- **Rabies diagnostics**: use only the techniques as specified by OIE and WHO.

- OIE Reference Laboratories and WHO Collaborating Centres should work together on programs of **international harmonisation of laboratory methods for diagnosis and control of vaccines**.

- The exchange of experts, twinning and training programs should be encouraged to **improve diagnostic capability and vaccine quality** in laboratories throughout Eurasia.
Recommendation of the Eurasia conference (cont)

- Oral and parenteral vaccinations are strongly recommended particularly for wildlife and canine rabies control. **Massive depopulation of animals is not recommended**. Complementary approaches including animal birth control (ABC) for dogs should also be considered.

- Rabies vaccines must adhere to OIE and WHO international quality, efficacy and safety **guidelines**. Cost-efficiency must be considered.

- Evaluation of vaccination campaigns in reservoir species should be pursued to include rabies surveillance and post-vaccination monitoring.

- Rabies **prophylaxis** in **humans** should be undertaken as prescribed in currently available documents by the **WHO** (WHO Expert Consultation on Rabies, technical report series 931: 2005, [www.who.int](http://www.who.int)).
The OIE, WHO, FAO and EU should support the establishment of annual international rabies conferences rotating between Europe, Asia and Africa.

The Conference recommends the following order:
- Rabies in Africa Conference (2008) followed by
- Rabies in Eurasia Conference (2009) and
- Rabies in Asia Conference (2010).

A Middle Eastern country to host in 2009 or 2010?
Thank You

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