The role of close collaboration of veterinary and medical authorities in early detection of zoonotic diseases outbreaks

World Health Day
Ensuring Health & Sustainability in Europe:
Doctors and Veterinarians emphasize "prevention is better than cure"

Brussels, 7 April 2014
«Αν δεν υπάρχει υγεία, όλα τα υπόλοιπα αγαθά σε τίποτα δεν ωφελούν» Ιπποκράτης

"If there is no health, all other goods gain nothing" Hippocrates
Zoonoses are diseases that:

- can be transmitted from wild and domestic animals and from their products to humans and
- are public health threats worldwide.
• About 75% of the new diseases that have affected humans over the past 10 years have been caused by pathogens originating from an animal or from products of animal origin.

• Many of these diseases have the potential to spread through various means over long distances and to become global problems.
Early detection and surveillance of the warning signs of infectious diseases is one major key towards successful control of diseases, in both humans and animals.
Due to the animal origin of these diseases, prevention and control strategies are fundamental and require combined efforts of different sectors and in particular the close collaboration of veterinary and health authorities.
Since public health officers and veterinarians are the key professionals

• to recognize and
• report outbreaks

Enhanced communication:

- expedite a local response
- identify whether unusual diseases or outbreaks involving animals and humans were related or separate events
- permits early detection of zoonoses diseases outbreaks
• Concept of One Health

• Achieving One Health is truly one of the critical challenges facing humankind today
Examples

Close collaboration of veterinary and medical scientists

✓ successful restrain of an outbreak (rabies cases in animals and the preventive measures for humans, *Brucella melitensis* outbreak in the area of Thasos and the measures adopted,...)

But

❖ Lack of feedback from the ‘other’ profession may lead to difficulties in early detection and reaction to an outbreak.
• **Communication networks** between veterinary and health authorities at

• **central level** (Dept of Zoonoses & Dept. of Animal Infectious and Parasitic Diseases of the AHD/GVD, State Veterinary Labs) and HCDCP (Ministry of Health) and

• **local level** (Prefectural Veterinary Authorities (PVA) and Regional health authorities)

• Joint working groups (rabies, WNF,...)

• Joint manual for rabies control
VA & PH collaboration – Rabies I

- Greece was rabies free since 1987 until Oct. 2012
  - Last animal rabies case 1987
  - Last human rabies case in 1970
- Central Vet. authorities were aware of rabies cases in the neighboring countries for years ➔ passive surveillance programme in animals
VA & PH collaboration – Rabies II

– red flag: rabid fox 300m from the Greek-FYROM border in Nov 2011 ➔ intensify of surveillance by the Vet.Authorities

– 1st laboratory confirmed rabies animal case in October 2012 (Kozani, W. Macedonia)

(National Reference Laboratory for Rabies, Department of Virology, Athens Center of Veterinary Institute, MRDF)
RABIES SITUATION IN GREECE
(19/10/2012 - 31/03/2014)

FAT/PCR Positive: 47

39
5
2
1

Source: NRL for Rabies, Department of Virology, Athens Center of Veterinary Institute, MRDF
VA & PH collaboration – Rabies III

- Working group on the characterization of rabies affected areas
  - Epizootic & epidemiologic data
  - Veterinary surveillance in the area (Dept of Zoonoses, NRL for Rabies, PVA)
  - Geophysical characteristics
  - Red fox ecology
  - Distance around foci where positive animals were found
  - Vaccinations/ surveillance of stray animals

- **High risk**: regional units with 1 rabies (+) animal, and regional units within a 50 km perimeter
- **Medium risk**: Epirus & Thessaly (6/74 regional units)
- **Low risk**: areas that do not belong to the former 2 categories
High risk areas for exposure to rabies, Greece last update 26/03/2013

High risk
18/74 = 51.141 km² or 38.7% of country surface
Est. population at risk: 2.915.905 (28%) 2011 census
VA & PH collaboration
Brucellosis-

- **Spring 2008**: cluster of brucellosis cases in the isl. of Thassos
- Thassos had been under a veterinary eradication programme for *Brucella* since 1998
- No reports of animal cases since 2005

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Cases (N=58) n (%)</th>
<th>Controls (N=63) n (%)</th>
<th>Odds ratio</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>55 (56)</td>
<td>19 (30)</td>
<td>3.03</td>
<td>1.48-6.31</td>
</tr>
<tr>
<td>Contact with farm animals (sheep, goats, cattle or pigs)</td>
<td>27 (28)</td>
<td>3 (5)</td>
<td>11.64</td>
<td>3.35-61.3</td>
</tr>
<tr>
<td>Visit to area with farm animals</td>
<td>29 (26)</td>
<td>17 (27)</td>
<td>1.50</td>
<td>0.72-3.22</td>
</tr>
<tr>
<td>Visit to breeding flocks</td>
<td>27 (29)</td>
<td>7 (3)</td>
<td>16.2</td>
<td>3.82-413.2</td>
</tr>
<tr>
<td>Manure handling</td>
<td>16 (17)</td>
<td>14 (22)</td>
<td>2.50</td>
<td>1.18-5.45</td>
</tr>
<tr>
<td>Goats' manure</td>
<td>27 (24)</td>
<td>10 (16)</td>
<td>2.23</td>
<td>1.02-5.08</td>
</tr>
<tr>
<td>Occupation relative to animals</td>
<td>26 (27)</td>
<td>0 (0)</td>
<td>1.78</td>
<td>0.55-5.09</td>
</tr>
<tr>
<td>Animal breeding</td>
<td>22 (22)</td>
<td>0 (0)</td>
<td>1.04</td>
<td>0.64-1.66</td>
</tr>
<tr>
<td>Fresh cheese consumption from a local producer</td>
<td>85 (92)</td>
<td>3 (5)</td>
<td>196.7</td>
<td>30.0-447.3</td>
</tr>
</tbody>
</table>
• HCDCP worked closely with the Prefectural Public Health Directory and the Prefectural Veterinary authorities to identify the aetiological agent of the outbreak

• Local PVA tested herds in the area for *Brucella spp.* during the second half of May 2008

• 1:1 case–control study was conducted in the island

• Consumption of locally produced raw cheese was a risk factor for *Brucella melitensis* infection and that cheese consumption from a specific breeder of the island
Measures implemented

• Instructions to the public on how to prevent infection from *Brucella*.
• Instructions to local breeders and producers on correct practices and the risks associated with raw cheese consumption.
• The veterinary services of the Prefecture moved on to a massive vaccination programme among young and adult female goats and sheep and to the slaughter of male animals which tested positive for *Brucella* spp..
• Measures in the positive farm
West Nile Virus - I

- WNV emerged in Greece in 2010 causing a large encephalitis outbreak in Central Macedonia
- Aug 2010: outbreak in horses
- Since then cases have been reported every summer

WNV infections reported to Hellenic CDC by week of onset of symptoms, Greece, 2010-2013
VA & PH collaboration - West Nile Virus - II

WNV equidae, transmission period 2012
Source: Dept of Animal Infectious & Parasitic Diseases, Animal Health Directorate.

All the tests were performed in the Dept of Virology in Athens Center of Vet. Institutes.
VA & PH collaboration - West Nile Virus - II

- Dept of Animal Infectious & Parasitic Diseases and the Dept. of Virology of Athens Center of Vet. Institutes.
  - Perform passive and active surveillance on equidae for WNV encephalitis
  - Serosurveys
  - Wild bird surveillance (Thessaloniki Center of Veterinary Institutes)
- Attempts to organize an early warning system

- WG on vector borne disease affected areas
  - PH (epidemiology, ID)
  - Blood safety authorities
  - VPA
  - Entomology
  - MoH

- Determines the criteria
  - for classification of an area as affected by WNV
    • blood safety measures
  - for de-classification as not affected
  - for the end of transmission period
VA & PH collaboration - Avian influenza A(H5N1)

- Winter 2006: animal cases of A(H5N1) in wild water fowl in North Greece
- WG on avian influenza
  - 24hr/7d communication with central and peripheral level
  - PH guidance for human exposure (hunters, vets, public)
  - PH guidance for PPE (vets, culling personnel etc)
  - Lab collaboration
  - Communication at the European level

**Figure 1**
Avian influenza A/H5N1 cases in birds and potential human cases in Greece, February-March 2006

Source: G. Spala et al, *Eurosurveillance*
In order to improve the effectiveness of surveillance and management of zoonotic diseases

- Early detection and rapid joint risk assessment
- greater communication
- collaboration between veterinarians, physicians, and public health officials at all levels

are needed
• Both the veterinary community and the medical community, may each currently feel that they provide to the other an adequate level of access to information

but

• Yet both communities probably feel that early and specific information is not forthcoming from the other.

• This issue needs to be addressed in a direct fashion, and concrete steps need to be taken to solve whatever real problems or misperceptions exist.
Ways for the Strengthening of collaboration between veterinary and health authorities

• 1. Identify existing mechanisms for
   – Collaboration across sectors
   – Joint risk assessments

• 2. Identify remaining gaps

• 3. Develop plans for filling the gaps
• Glossary of epidemiological terms used in human and animal health
• Mapping of roles, responsibilities, expertise and activities zoonoses in MS
• List national, regional collaboration
• Outbreak investigation, surveillance/monitoring, existing projects
Communication Networks - regular meetings of networks

Information exchange

Linking existing information exchange platforms
• Prioritization of the diseases relevant for the animal-human health collaboration at EU level

• Negotiate alignment for future communication and collaboration
Veterinary services have a crucial role in controlling highly contagious diseases and zoonotic infections, which have implications for human health as well as animal health.

By working together, more can be accomplished to improve health worldwide.

The veterinary sector has the responsibility to assume a major leadership role in that effort.
• One Health calls for the collaborative efforts of multiple disciplines working locally, nationally, and globally to attain optimal health for people, animals, and our environment.
Thank you for your attention!

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