The French surveillance network of equine mortality causes: a new way of monitoring major diseases

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Context

Autopsy is recognized as one of the activities that can effectively contribute to the surveillance of major diseases in animal populations

Anses - Laboratory for equine diseases, located in Normandy
Regional surveillance of the major equine diseases since 1986
Several thousands post-mortem examinations

How to evolve towards a national surveillance?

Creation of a national network of necropsy centers (Resumeq) in 2015
Purpose = qualitative surveillance of equine mortality through the centralization of autopsy data in a national database and their overall epidemiological analysis
Objectives

The French surveillance network of equine mortality causes (Resumeq)

➢ Qualification of the causes of equine deaths (natural or from euthanasia)

➢ Ranking of the causes of deaths

➢ Monitoring of their evolution over time and space

➢ Main warning objective = early detection of emerging diseases (diseases with high mortality rate)

Its ambition today

to collect all autopsy results produced in France

In order to

obtain a complete and accurate picture of equine mortality
Event-based surveillance system

Diversity of participants and structures involved

Institutional organization
Specific tools to guarantee the quality of the data

Standardized autopsy protocols

**Complete** protocols

- National veterinary schools
- Veterinary laboratories

**Simplified** protocols

- Veterinary clinics

Data Standardization ➔ Quality data that can be valued

Thesaurus for the anatomo-pathological terms

A single word for one lesion

Thesaurus for the causes of deaths

A single word for one cause of death
Centralization of data – Web interface for data entry

**Individual Data**

- Name
- Type of race
- Sex
- Gestation
- Principal activity at the time of death
- Cause of death

**Temporal Data**

- Date
- Reason for euthanasia

**Clinical Data**

- Respiratory diseases before death
- Digestive diseases
- Neurological diseases
- Systemic diseases
- Renal/Urinary diseases
- Non-determined diseases
Centralization of standardized data – Web application

Epidemiological Context

Spatial Data

Autopsy Protocols

Major Lesions
Centralization of standardized data – Web application

- Lexicon: Help with the entry of lesional data
- Qualification of the Cause of Death
- Confidence Index
2018
34 members

- 18 Laboratories
- 4 Veterinary Schools
  (5 locations)
- 11 Veterinary Clinics
Interactive web application - R shiny

Visualization of data analysis results by the network contributors

Spatial distribution of the cases of equine autopsy

> 1000 cases mainly located in the north west

Ranking of the causes of death

Foals 1-6 months

- Rhodococcosis: 26%
- Interstitial Pneumonia: 14%
- Ascariasis: 11%
- Septicemia: 17%
- Infectious Enterocolitis: 10%
- Non infectious digestive diseases: 6%
- Osteoarticular affections: 8%
- Miscellaneous: 8%
Identification of threatening causes of death

 ✓ Local level
   ex: Rhodococcosis, Abortion

 ✓ Regional level
   ex: Acorn poisoning

 ✓ National level
   ex: West Nile Virus
Conclusion

First results ➔ Interest of this surveillance at a national level

Main limit = Geographical coverage / representativeness ➔ To be improved at a national level

Future

Joint valuation of autopsy data from different countries ➔ Surveillance of equine mortality causes at a European level
Conclusion

Development of an International/European network

Advantages

Monitoring of equine mortality at a higher level

Vision of the variations of the main equine diseases between countries

Ability to warn of dangers at an international level

Exchanges between pathologists / epidemiologists on equine diseases

That can be extended to exchanges in other disciplines (virology, parasitology, etc) between institutions / organizations
Difficulties /constraints

Willingness of countries to share their data

Determination of the conditions of data collection, of data sharing and of data valuation
- data property, data access, data confidentiality, etc

Need to adopt a common/similar standardization
- Data, autopsy protocols, thesaurus

Need to adopt a common language
Conclusion

Development of an International/European network
To be considered and built on the long term

But collaboration can be initiated right now with immediate benefits
independently the feasibility of building a European network

We are open to share the experience of our young network with others

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Thank you for your attention