From the field to the laboratory

Kathrin Summermatter, Urs Pauli, Christian Griot
Institute of Virology and Immunoprophylaxis
National Exotic Disease Reference Laboratory
CH-3147 Mittelhäusern
Everything is a risk nowadays...
250 000 Killer-Enten im Anflug
ca. 250 000 000

Seit Dezember 2003
- Virus nur in Vögeln gefunden
- Menschen und Tiere am Virus gestorben
- Ausbrüche seit April 2005

Die liebsten Winterplätze der Enten
- Basel
- Biel
- Bern
- Luzern
- Zürich
- St. Gallen
- St. Moritz
- Chur
- Interlaken
- Locarno
- Sitten
- Montreux
- Genf

KREUZLINGEN
ERMATINGEN

RUSSLAND
MONGOLEI
SÜDKOREA
THAILAND
VIETNAM
KAMBODSCHA
MALAYSIA
INDONESIEN
TAYWAN
JAPAN
CHINA
MONGOLEI
SÜDKOREA
THAILAND
VIETNAM
KAMBODSCHA
MALAYSIA
INDONESIEN
TAYWAN
JAPAN
CHINA

500 km
Overview

- First responders
- Disease awareness
- Risk aspects
First responder

- Livestock owner

  ↓

  Field veterinarian

- Disease awareness of
  - livestock owner
  - Field vet
Disease awareness

- Depends strongly on the disease present
  - within the country
  - In countries with borders to CH
  - In Europe

<table>
<thead>
<tr>
<th></th>
<th>FMD</th>
<th>BT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer</td>
<td>+</td>
<td>++++</td>
</tr>
<tr>
<td>Field vet</td>
<td>++</td>
<td>++++</td>
</tr>
<tr>
<td>Last case CH</td>
<td>1980</td>
<td>2006-2009</td>
</tr>
</tbody>
</table>

Indicator(s): Suspect cases submitted to IVI
Media Interest
Livestock owners asking questions
Improvement of disease awareness

- Information leaflets
- Teaching at the 2 vet schools
- Media (eg „farmers weekly“)
- On going: WNF, AHS

  - Effectiveness?
FMD in Bulgaria, January 2011
Suspect cases submitted to IVI

![Graph showing the number of cases submitted to IVI from 1999 to 2009, with a significant increase in 2007 and 2008. The graph includes categories for Bluetongue, MKS, KSP, and ASP ab 2006.]
Risk

- RECOGNIZE (Hazards)
- CONTROL (safety measures)
- EVALUATE (Assessment)

\[ \text{likelihood} \times \text{consequences} \]
Two risk aspects

• RA in the field

• RA in the laboratory
What is a hazard?

**Hazard** is a source that has the potential for causing harm.
A = Assessment

What is a risk? Is hazard = risk?

Hazard is not a risk without a specific environment or situation
Risk is the combination of the likelihood* and the consequences** of an undesirable event related to a specific hazard.
RA in the field

1. Hazard identification
   • Examination of the animal (hazards: animals bites, kicks, exposure to infectious agents, noise etc)
   • Use of sharps
   • Use of anesthetics
   • Culling of animals
   • Taking samples
   • Packaging of the samples
   • Transport of the samples
   • Disinfection of premises (chemical hazards)

   • Risk for the people involved, risk for the environment
How are the samples arriving in your lab?
RA in the field

2. Assessment of hazards

- What is the likelihood of exposure and what are the consequences?
  - Infection
  - Needle stick
  - Exposure to chemicals etc.
  - Direct exposure to the pathogen and the infected animal in the field

- Depending on the animal species and the disease the likelihood of exposure is higher and also the consequences

- Work with PPE cumbersome and not all PPE used in the laboratory can be used in the field
Turkey, January 2011
RA in the field

Mitigation measures:
- Personal protective equipment
- Proper technical equipment eg. for culling

Training of veterinarians
  mandatory courses for district veterinarians
(FMD) Outbreak simulation exercise 2011
Training program since 11/2010

- Entry to the infected premise (how to gown, where to put the material, how to set up the biosafety barriers between contaminated and non-contaminated zones)

- Exit of the infected premise (how to safely remove PPE, how to bring out samples, how to transfer material and dead animals to the non-contaminated area, disinfection and decontamination etc.)

- Sampling- packaging– transport
Nosos
Simulation FA 03
MKS Simulation 03

Ici se déroule un exercice du service vétérinaire suisse

Hier findet eine Übung des schweizerischen Veterinärdienstes statt
RA in the laboratory

Here we are all good at!

In the laboratory the following elements need to be considered:

⇒ Type of samples (pathogen load, organs, known or unknown pathogen etc.)
⇒ Type of activity (homogenization, use of sharps, use of robots, aerosols etc.)
⇒ Safety measures
RA in the laboratory

1. Hazard identification
   • Unknown samples
   • Unpacking of the samples
   • Aliquoting of samples
   • Transfer – transport of samples within the lab
   • Analysis of samples with different methods
RA in the laboratory

2. Assessment of hazards
   • What is the likelihood of exposure and what are the consequences?
     o Infection
     o Needle stick
     o Exposure to aerosols due to the methods etc.
   • No direct contact to animals, laboratory equipment, contact to samples.
   • Specific PPE available
RA in the laboratory

4. Mitigation measures:
   • Personal protective equipment
   • Proper technical equipment eg. for culling
   • Training of laboratory staff
   • Exercise
Likelihood of exposure
Summary

- Open for discussion