



Food and Agriculture Organization
of the United Nations



LSD epidemiological investigation

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Train-of-trainer program for field veterinarians on LSD (TCP/RER/3605) - Kiev, Ukraine, 31 May – 1 June 2018




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Steps of the epidemiologic investigation

1. Is it really an outbreak?
2. Get to the field
3. Verify the diagnosis
4. Identify the cases: case definition & active finding
5. Descriptive epi (who, what, when, how many, curve)
6. Build a hypothesis
7. Adjust your hypothesis
8. Implement control and prevention measures
9. Communicate (partners, peers, press)
10. Analytical epidemiology

2

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Epi investigation structure 3

1. Background

- History of the alert
- Index case/outbreak description
 - Who reported
 - When reported
 - What happened
- Time line of events- graphic
- Geographic area- description, map

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epi inv cont' 4

2. farm/herd/site

- Susceptible population
- Other animals, in and around the farm
- Sketch of farm; groups, buildings, facilities
- Animal movements inside the farm
- Animal movements to and from farm
- Other relevant movements, events

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epi inv cont' 5

3. findings

- Clinical signs
- Morbidity # and % per group and total- table
- Suggested spread dynamics
- Samples collected- table
- Results and conclusions until now

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epi inv cont' 6

4. Actions taken

- To date to contain the outbreak
- Considered to prevent further spread

5. summary and discussion

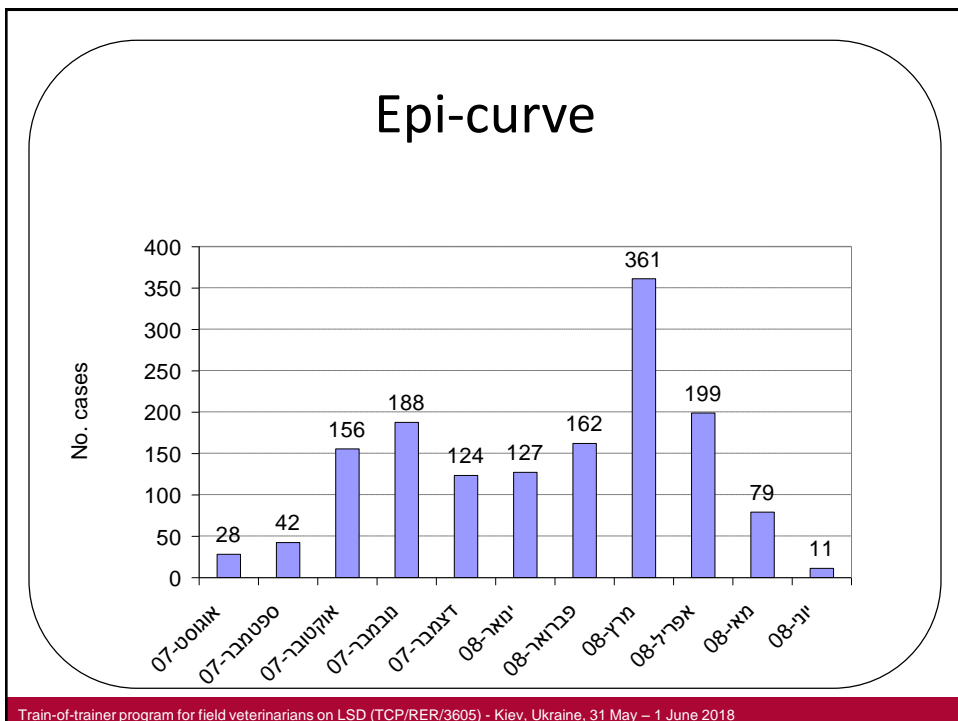
6. acknowledgment

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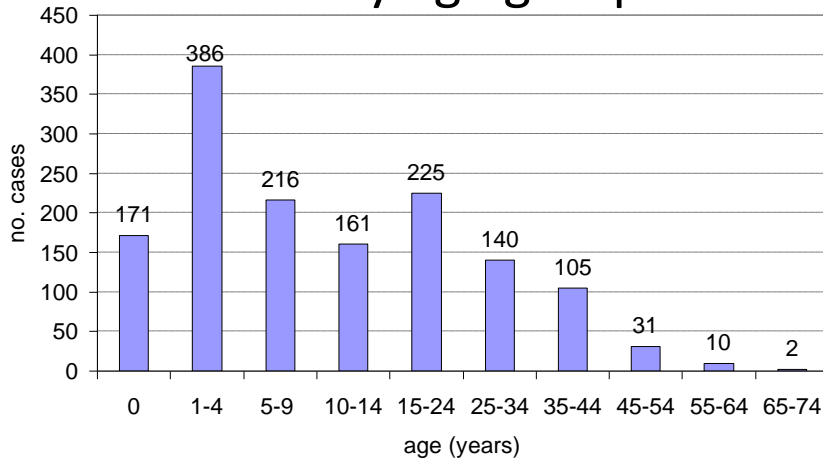
Case Definition 7

- clinical case (a probable case) is defined as having;
 - ✓ Few, numerous, generalized nodules
 - ✓ fomite, saliva, cough
 - ✓ Lameness
 - ✓ ...
- confirmed case is a clinical case with:
 - ✓ either laboratory confirmation
 - ✓ epidemiological link to another case (two epi'-linked clinical cases are considered confirmed).

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Distribution curve- Cases by age groups




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Laboratory tools

10

- **Identification of the etiology of the epidemic illness:**
Detection of the epidemic agent in clinical specimens
(diagnostic tests)
- **Identification of the source and mode of transmission of the epidemic agent:** Detection of the epidemic agent in environmental samples (ex. food, water, soil, fomites etc.) and characterization of the isolates in clinical and environmental samples (**pathogen-related markers**)
- **Identification of outbreaks** by continuous monitoring of pathogen profiles (Ex. PulseNet)

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Limitations of lab testing of

11

- Sampling done in proper place, at proper time
- Right collection and transport of samples
- Lab results must be supported by epidemiological study


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12

Implementing Control and Prevention Measures

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13

Communicating the Findings

an oral briefing
written report

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14

An epidemiological investigation should prioritise following questions:

- How long the disease has been present,
- Magnitude of the problem: count cases, define epidemiological units and population at risk,
- Possible sources of infection and
- What movements of animals, people, vehicles or other fomites could have spread the disease?

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Include following data into a LSD outbreak investigation 15

- Number of animals in the herd, number of suspected animals, estimated age of the lesion(s)
- Origin, age, sex, breed, production type and vaccination status of suspected animal;
- Contacts with other herds and use of communal grazing; contacts with wild ruminants


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Include following data into a outbreak investigation (2): 16

- Cattle movement records - new animals recently introduced into a herd and from where; Animals that have left the herd and to where;
- Movement of animal care staff and other visitors;
- Recent veterinary treatments and cattle health records;




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Include following data into an outbreak investigation (3):

- Artificial inseminator visits and use of a breeding bull;
- Milk collection vehicle;
- Animal trader/slaughterhouse transport vehicle visits and track the farms visited before and after;
- **Potential vector activity, presence of vector breeding sites such as lakes, rivers;**
- Record roads, other geographic and climatic data;
- A survey of the premises should be made – removal of potential vector breeding sites.

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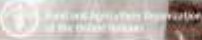


Steps for clinical examination

It is important to have a systematic approach to examining animals. Write down your findings as you examine animals. A prepared form may help you do this efficiently.

1. Take a **clinical history from the farmer**:
 - What clinical signs have they noticed?
 - When did the signs start?
 - Which animals have been affected? How many?
 - Which ones are the most recent cases?
2. Observe animals from a distance: look for lesions, nodules, lameness, any abnormalities
3. Carry out a clinical examination of as many animals as possible to fully assess the situation:
 - Take the animal's temperature
 - Examine for lesions
 - Enquire about milk yield if appropriate
 - Record your findings for each animal, including animal identity no.

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Challenge with LSD

19

Incubation time varies from 4-7 days up to 5 weeks

- When we see clinical signs we are between 1 week and 5 weeks behind!
- Expectation for other undetected outbreaks.....

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Lesions aging

20

- Lesion ageing is important for epidemiological investigations to establish a likely time period in which clinical signs first appeared, and from this, the likely time period in which infection took place, and when viral shedding could have begun.
- When carrying out lesion ageing in order to determine the likely date of infection of a group of animals, it is important to examine all animals, looking for the oldest lesions.



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21

Thanks for your attention!

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