LUMPY SKIN DISEASE: A CASE-CONTROL STUDY DESIGN

Philippines

PRESENTED BY:
Dr. Joanna Marie David, Dr. Anthony Bucad, and Dr. Kiara Garcia
How to investigate the outbreak?

LSD suspect cases → Report → Epidemiological Investigation; Clinical and Post-mortem Examination

- Sample Collection
  - *Implementation of initial disease control measures*
- Laboratory Confirmation

- International Notification
- Disease Control and Management
Case definition and define controls

### Case Classification

<table>
<thead>
<tr>
<th>Case Type</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Suspect Case</td>
<td>Animal showing two or more of the following clinical signs:</td>
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<tr>
<td></td>
<td>a. Loss of appetite</td>
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<td>b. Ocular discharge</td>
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<td></td>
<td>c. Nasal discharge</td>
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<td></td>
<td>d. Enlarged lymph nodes</td>
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<td></td>
<td>e. Mouth ulcer</td>
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<td>f. Multiple nodules on the skin 1-5cm in diameter</td>
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<td></td>
<td>g. Abortion</td>
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<td>h. Mastitis</td>
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<td></td>
<td>i. Orchitis</td>
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<tr>
<td>Confirmed Case</td>
<td>A suspected case with detection of presence of viral agent thru VNT or PCR</td>
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<tr>
<td>Epidemiological Unit</td>
<td>Farming household</td>
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</tbody>
</table>
Case definition and define controls

**CASES**

- Farming households in Neverland with sick cattle that showed clinical signs/lesions suggestive of the LSD (such as multiple nodules on the skin measuring about 1 - 5 cm in diameter) with an index case confirmed thru PCR.
- Disease onset between June 2021 to August 2021
Case definition and define controls

**CONTROLS**

- Farming households with no LSD cases located within the same village in Neverland
- With production activity between June 2021 to August 2021

*Data on cattle for both Cases and Controls shall be gathered from the registry of the Local Government Units as reported to the National Agency.*
Stakeholder involved

- Cattle raisers/producers
- Local veterinarians and/or Animal technician
Source and transmission

- Sample size
- Questionnaire
  - **Who:** farming HH
  - **How:** field survey
  - **When:** September 2021
- USD 30,000
- Data Analysis and Interpretation
**Questionnaire**

Outbreak Investigation for Lumpy Skin Disease  
(*Philippines*)

Name of the Farm: ____________________________

Owner: _____________________________________

Address:  
- Barangay: ____________________  
- Mun/city: ____________________  
- Province: ____________________  
- GPS: ____________________  
- Long: ____________________  
- lat: ____________________

Contact details: ____________________________

Date of interview: __________________________

Type of farm:  
- Commercial: [ ]  
- Backyard: [ ]  

Population: ____________

<table>
<thead>
<tr>
<th>Species and Age of Animal</th>
<th>Type of Animal (Dairy, Meat, Breeder, Draft)</th>
<th>Breed of Animal</th>
<th>No. of Heads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 1 year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3 years</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>More than 3 years</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Buffalo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheep</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Others (please specify)</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
# Transport of Live Cattle

1. Source of stocks:
   - Farm source
   - Address

2. a. Do you practice isolation of newly arrived stocks?
2. b. If yes, how long? [ ] no. of days

3. a. Do you sell live animals in the market?
   - Yes
   - No

3. b. What do you do with unsold animals?
   - [ ] return to farm
   - [ ] slaughter
   - [ ] others (please specify)
### Indirect and Intrauterine (feed, water, body fluid, skin lesions, semen, milk); Vectors; and Season

<table>
<thead>
<tr>
<th>Housing</th>
<th>Shed</th>
<th>Corral</th>
<th>Open field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding Management</td>
<td>Feeds</td>
<td>Cut-and-carry</td>
<td>Grazing:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Owned land</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Common pasture area:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>How often for the past 12 months?</td>
</tr>
<tr>
<td>Water Source</td>
<td>Owned (e.g. deep well)</td>
<td>Ration</td>
<td>Communal water source (e.g. river)</td>
</tr>
<tr>
<td>Observable presence of</td>
<td>Flies (stableflies, horseflies)</td>
<td>Ticks</td>
<td>Others (please specify)</td>
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<td></td>
<td></td>
<td></td>
<td>During what season:</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Warm, humid</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Cold</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>All throughout</td>
</tr>
<tr>
<td>Breeding Practice</td>
<td>Natural</td>
<td>Owned bull</td>
<td>Service bull</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Artificial Insemination</td>
<td></td>
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<td></td>
<td></td>
<td>Who performs the procedure?</td>
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<td></td>
<td></td>
<td>Where do you source the semen?</td>
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</tr>
</tbody>
</table>
### Iatrogenic

**Vaccination and medication practice**

- Owner or Farm Staff
- Local Animal Technician/Veterinarian
  - How often do you clean and disinfect equipment (syringes, surgical tools, etc.)
  - After every animal
  - After every HH
  - After every cluster HH
  - After every village
  - Others (please specify)

### Vaccination

**Do you provide vaccination to the animal/s?**

- Yes
- No

If Yes, what vaccines do you give?

- goat pox
- sheep pox

What type of vaccine?

- Live
- Killed

Other vaccines available __________________________
Evaluation

Consequences of LSD infection of animals are identified as follows:

1. Decrease in milk production and mastitis
2. Fertility problems and abortions
3. Emaciation and damaged carcasses
4. Damaged skins and hides
5. Costs related to:
   a. Veterinary treatments
   b. Deaths
   c. Surveillance and control measures
Study size

- Surveillance area: 80 km radius from each outbreak (assuming that there is a movement control)
Summary/discussion

• Cases were selected in terms of relevance, specificity, and practicality while controls were determined from the population that gave rise to the cases.

• Overmatching, misclassification and selection bias were considered during selection

• Case-control study could be applied on rare diseases by providing information on a wide range of exposures that may play a role in the development of the disease.
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THANK YOU!

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