

The Online R-FETPV 1st Module : Basic Epidemiology and Surveillance Data Analysis

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Part 1 of 4: Goals and foundation of a disease outbreak investigation for animal disease



Prakit Srisai



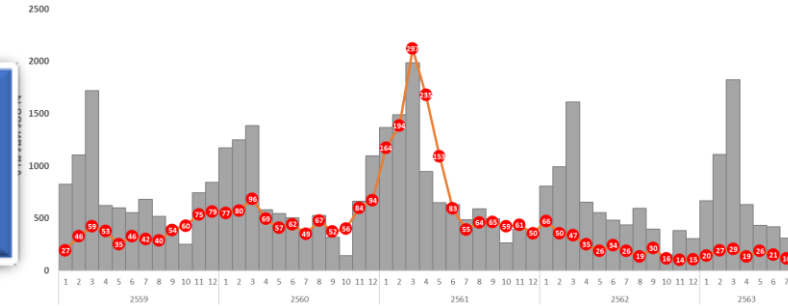
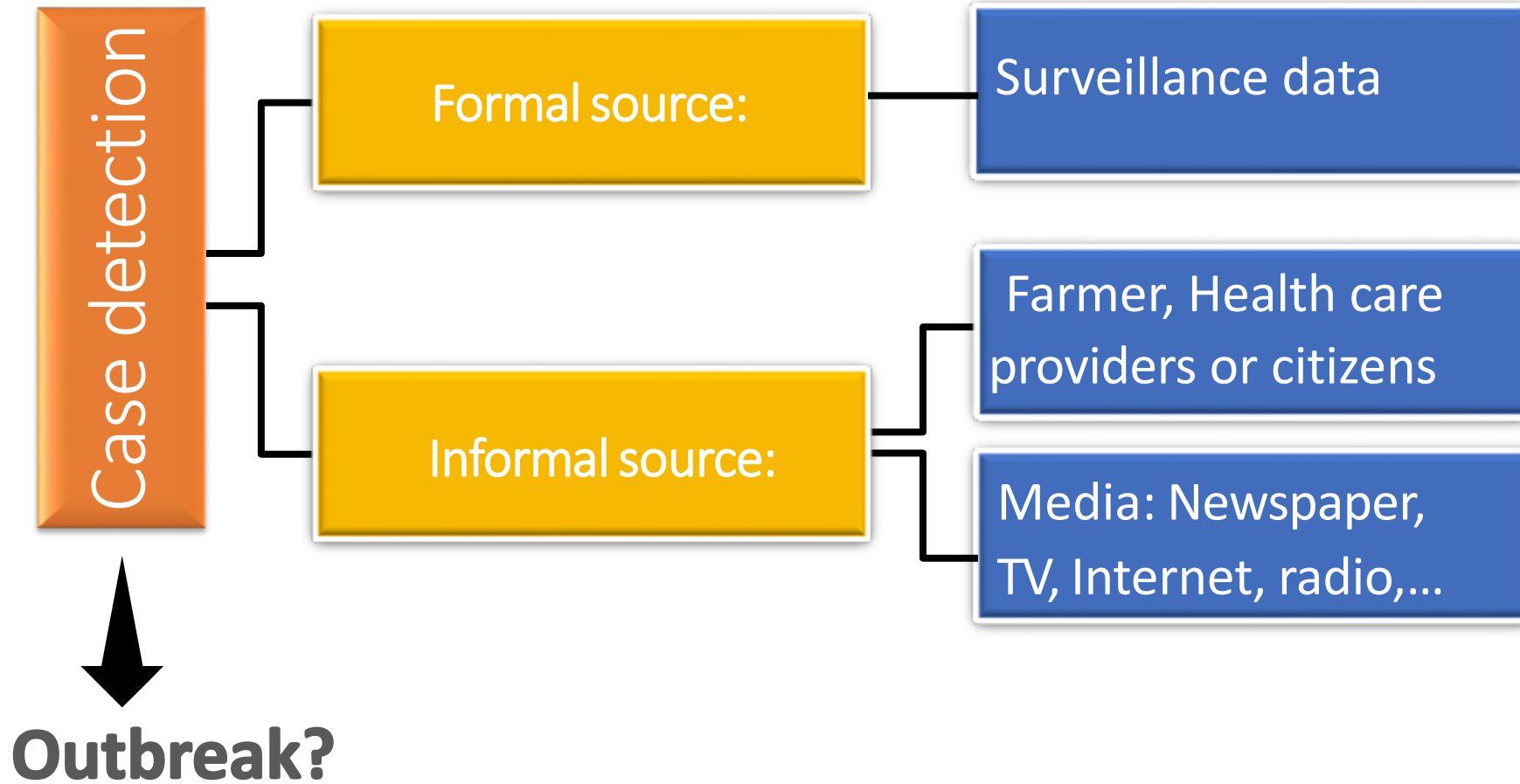
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Content/Outline

- Goal and reason of investigating outbreaks
- Steps of outbreak investigation
 - Preparing for a field outbreak investigation
 - Confirm outbreak and diagnosis

Receiving a report and collecting initial information



Example; you have a call from a farmer who notify you about the calf death



Outbreak investigation

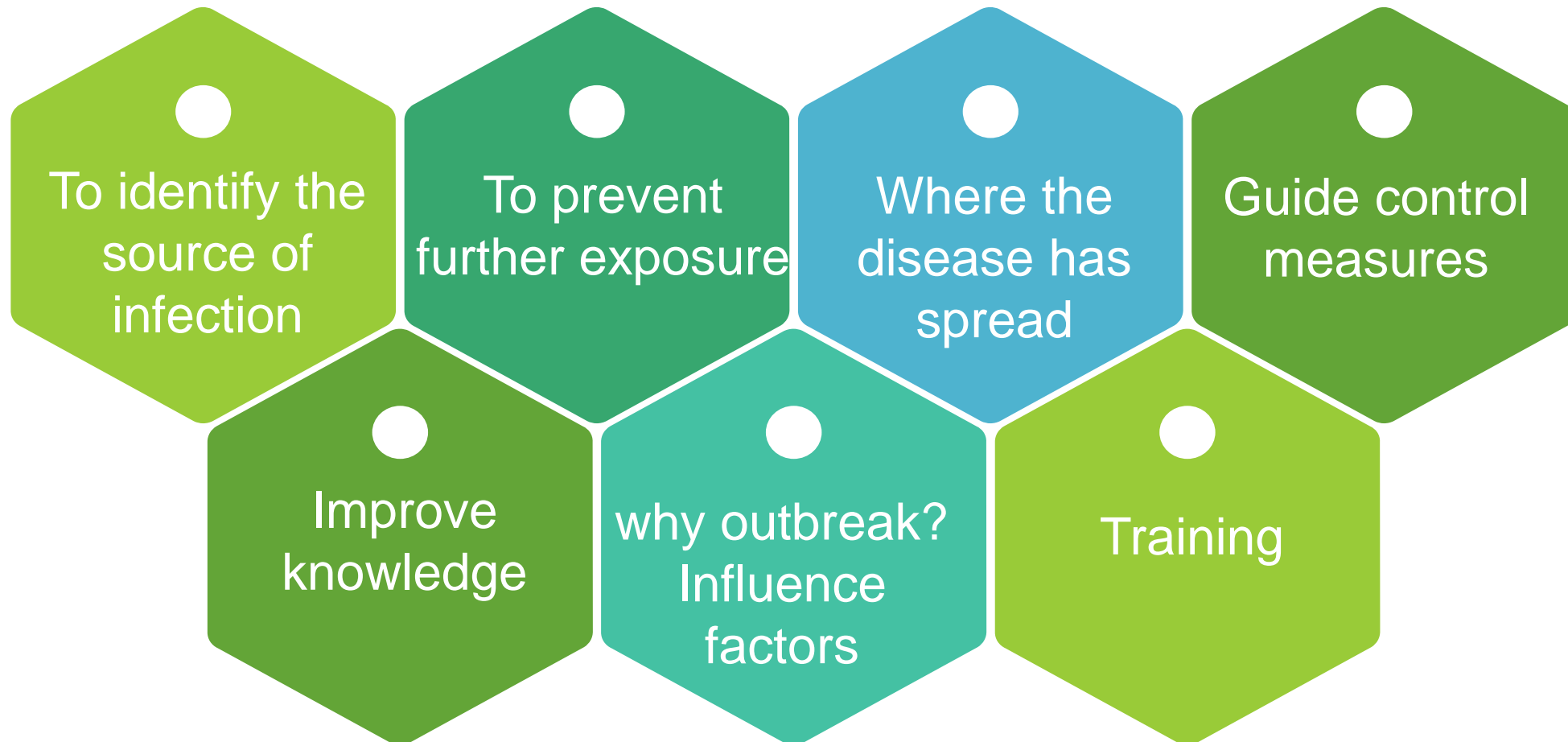
- **Systematic procedure** to identify causes and sources of epidemics— it should answer (at least):



1. What is the problem?
2. What immediate steps can be taken to deal with the problem?
3. How can future occurrences be prevented?
4. What was the likely source of infection and have other herds become infected?

Goal and Reasons for investigating outbreaks

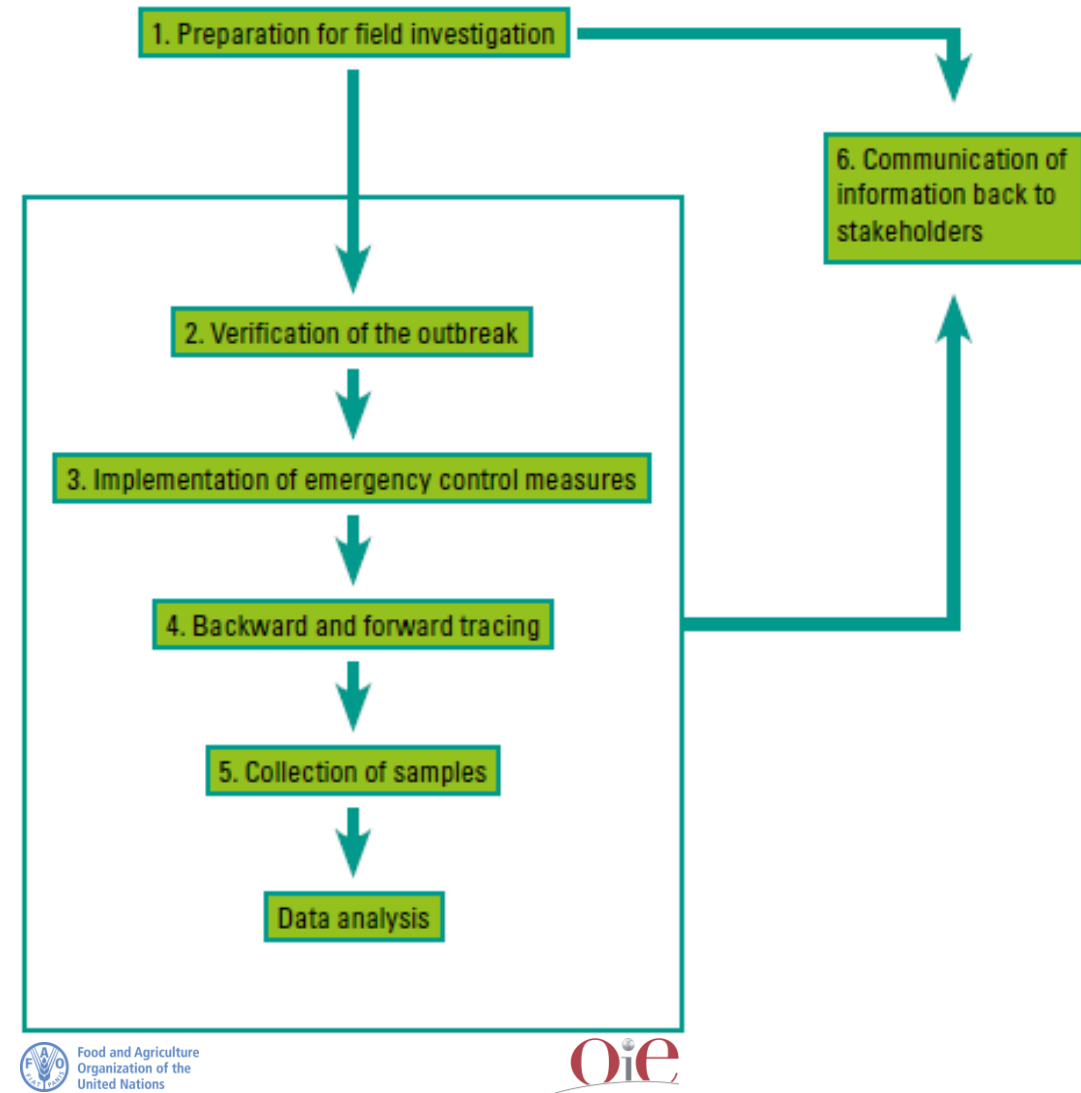
Stop a current outbreak and to avoid future outbreaks or epidemics



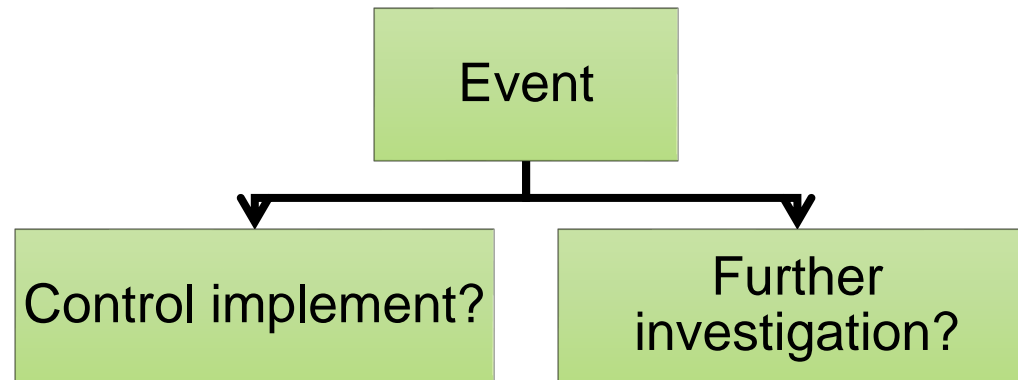
Steps in outbreak investigation

Receiving a report and collecting initial information

1. Preparing for a field outbreak investigation
2. Verifying that you actually have a problem (Confirm outbreak and diagnosis)
3. Define case and start case-finding
4. Descriptive data collection and analysis
5. Develop hypotheses
6. Analytical studies to test hypotheses
7. Special studies, e.g., environmental and laboratory studies
8. Communicate conclusions and recommend control measures
9. Implement control measures
10. Follow-up the control implementations



Implement control measures VS investigation



Source/Mode of Transmission		
Causative Agent	Known	Unknown
Known	Investigation + Control +++	Investigation +++ Control +
Unknown	Investigation +++ Control +++	Investigation +++ Control +

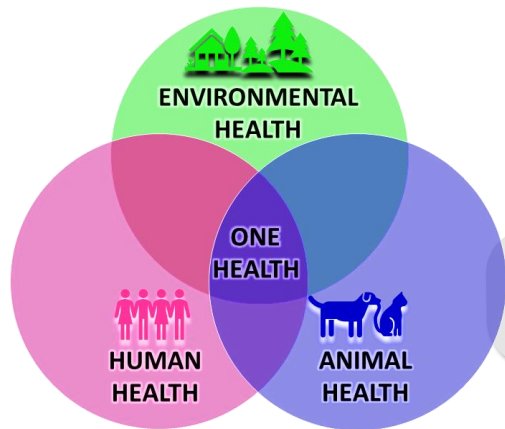
1. Prepare for investigation:

Team meeting



- ✓ Basic background information in relation to outbreak
- ✓ Is this event the outbreak?
- ✓ Objective of OI, Methodology to answer the objectives
- ✓ List of data need to be collected? How to collect data?

- Computer/Notebook
- Camera
- Telephone, address list
- Line group, what app, ...



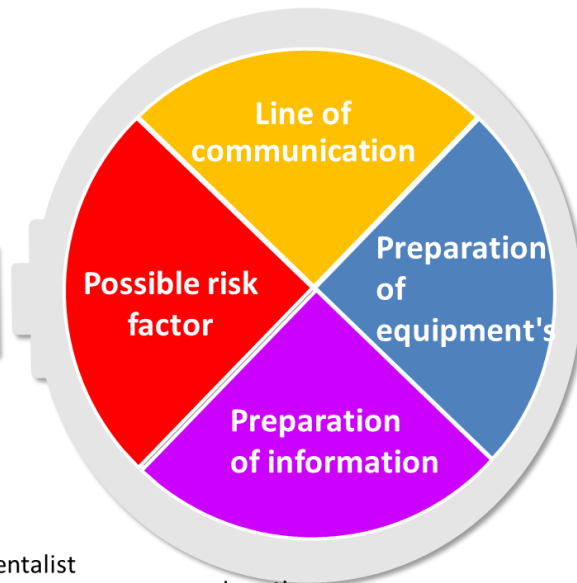
Team

- Who will lead (PI)
- Initial meeting
- Organize personal/family life

Team member and roles

Cooperate

- Authority organization
- Local administration
- Health sector?
- Community
- Others? military, environmentalist
- Interdisciplinary coordination



- Location
- Disease information
- Literature review

Tools

- Laboratory + specimen collection
- PPE, Disinfectant
- Questionnaires/ observation guideline
- Restraint equipment
- Medical supplies
- GPS recorder
- Transport methods
- Accommodation
- Money, health kit



Data collection tools: Questionnaire

Identification

Outbreak investigation document: FMD

Part 1 General information

Name Surname: Add: Moo: Village:

Age:years Gender:

Experience:years Edu: Farm location: X.....Y.....

Demographics

- Time
- Place
- Person
- Outcome
- Lab result

Part 2: Animal species and number of animal Cattle: Buffalo: Goat: Sheep: Others: (specify)

No.	Spp.	Sex	Age	Vaccine history	MM history	Date of onset	Salivation	Wound	Lethargy	Fever	Vesicle	Lameness	Neck swell	Swelling	Stiffness	Recumbency	Others	Death (Date)	Reporting date
1																			
2																			
3																			
4																			
5																			
6																			
7																			

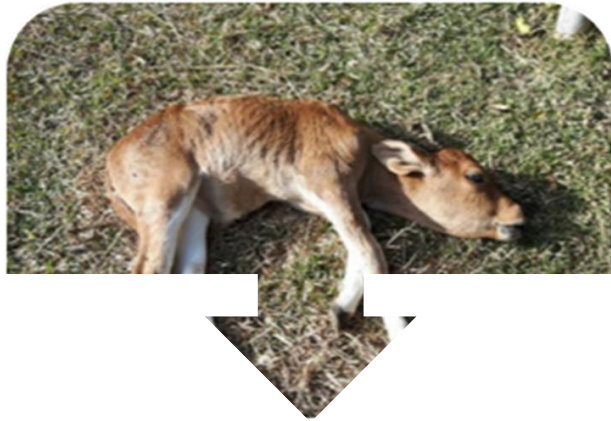
Factors

- Part 3: Risk factors
1. Farm management risk factors
 2. Individual animal management risk factors
 3. Employee risk factors
 4. Biosecurity risk factors
 5. Trace back information
 6. Trace forward information

Not only QNR but also other tools

- Participatory epidemiology
- Focus group discussion (FGD)
- Observation → observation guideline
- ...

Sample size



- To verify the diagnosis
- To identify probable risk factors of the FMD outbreak

Unmatched case-control

StatCalc - Sample Size and Power

Unmatched Case-Control Study (Comparison of ILL and NOT ILL)

Two-sided confidence level: 95%

Power: 90%

Ratio of controls to cases: 1

Percent of controls exposed: 42.9%

Odds ratio: 6.2

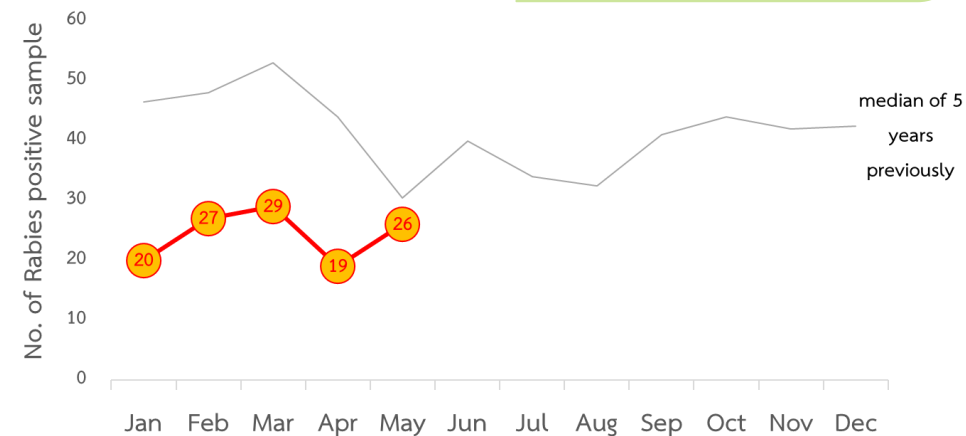
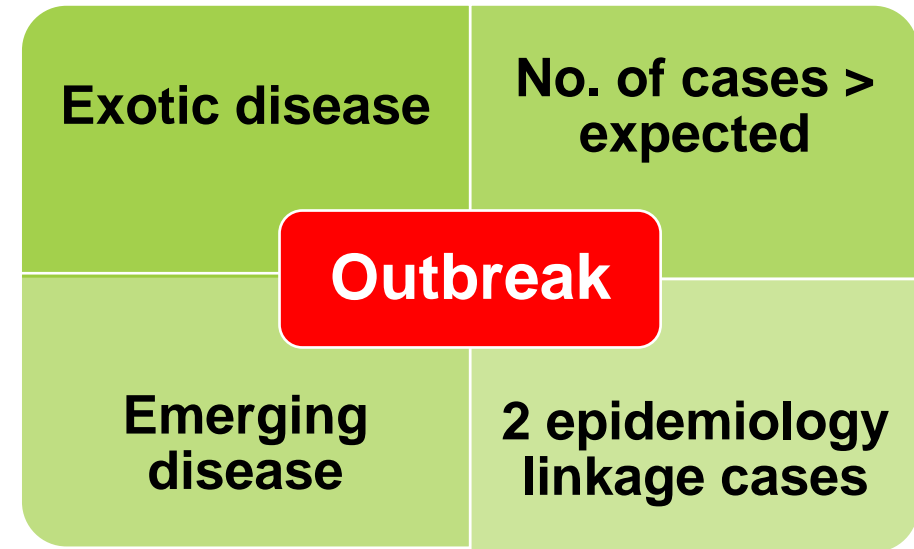
Percent of cases with exposure: 82.3%

	Kelsey	Fleiss	Fleiss w/ CC
Cases	32	30	35
Controls	32	30	35
Total	64	60	70

2. Confirm outbreak and diagnosis

What are the expected number of cases?

- Knowing the expected number of cases in the population over a given time period (mean+2SD or mean of previous 5 years)
- An increase in cases, not be
 - ✓ Changes in reporting
 - ✓ Changes in case definition
 - ✓ Increased local awareness of disease
 - ✓ Improved diagnostic tests
 - ✓ Change in population size or composition



2. Confirm outbreak and diagnosis

- Confirm Dx
 - ✓ Identify clinical signs
 - ✓ Diagnostic testing
 - ❖ Select test that is fit for purpose
 - ❖ Choose test with appropriate sensitivity and specificity
 - ❖ Understand limitations of test
 - ✓ How many sample we have to collect?
 - ✓ Contact laboratory for diagnosis testing preparation



RT-PCR, pathology, parasitology
Veterinary Research and Development
Center, Upper North-Eastern region



**FMD typing, vaccine matching type
by LP-ELISA**
Regional Reference Laboratory
for FMD in South East Asia



NS protein
Veterinary Research and Development
Center, Upper North-Eastern region



How many sample?



To be continue.....

**Part 2; goals and foundation
of a disease outbreak
investigation for animal disease**



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