Outbreak Scenario (wk 3 module)

NEW ZEALAND
FOREIGN AFFAIRS & TRADE

- Welcome to week 3
- Overview of outbreak investigation
- Event 4: Meeting village "A" representative
- Event 5b: Case definition
- Event 5c: Data gathering (mapping)
- Event 6: Tracing
- Event 7: Case-control study
- Outbreak report
- Summary

Welcome to week 3

"**Welcome to week 3 (Epidemiological investigation) module.**

Please watch the introductory video below.

Click ▶ to play the video."

Epidemiological Investigation module

Art Subharat and Cord Heuer

NEW ZEALAND FOREIGN AFFAIRS & TRADE

OIE

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

ah.w animal health works

Australian Government
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Overview of outbreak investigation

"**An outbreak investigation is a special activity to be conducted by the veterinary service. Basically, it combines standardised data collection with epidemiological analysis method to better understand the behaviour of disease of interest.**

Let's watch the video record below for the overview of the theory behind outbreak investigation.

Click ▶ to play the video."

Background

An outbreak is a *series of disease events clustered in time and space*.

May involve a single herd, a district or an entire country

- Covid-19, Foot-and-mouth disease, African swine fever

May be subtle and/or subclinical

- Increasing somatic cell count (SCC) may indicate an outbreak of subclinical mastitis that started weeks previously
- A rise in sero-prevalence may not be associated with noticeable clinical disease (e.g. leptospirosis after a major flood in New Zealand 2004)

We ask the questions:

- what is the problem?
- can something be done to control it?
- can future occurrences be prevented?

CONTINUE

Key terms for outbreak investigation

References: OIE Terrestrial Animal Health Code

Case

an individual animal infected by a pathogenic agent, with or without clinical signs.

Epidemiological unit

a group of animals with a defined epidemiological relationship that share approximately the same likelihood of exposure to a pathogenic agent. This may be because they share a common environment (e.g. animals in a pen), or because of common management practices. Usually, this is a herd or a flock. However, an epidemiological unit may also refer to groups such as animals belonging to residents of a village, or animals sharing a communal animal handling facility. The epidemiological relationship may differ from disease to disease, or even strain to strain of the pathogenic agent.

Outbreak

the occurrence of one or more cases in an epidemiological unit.

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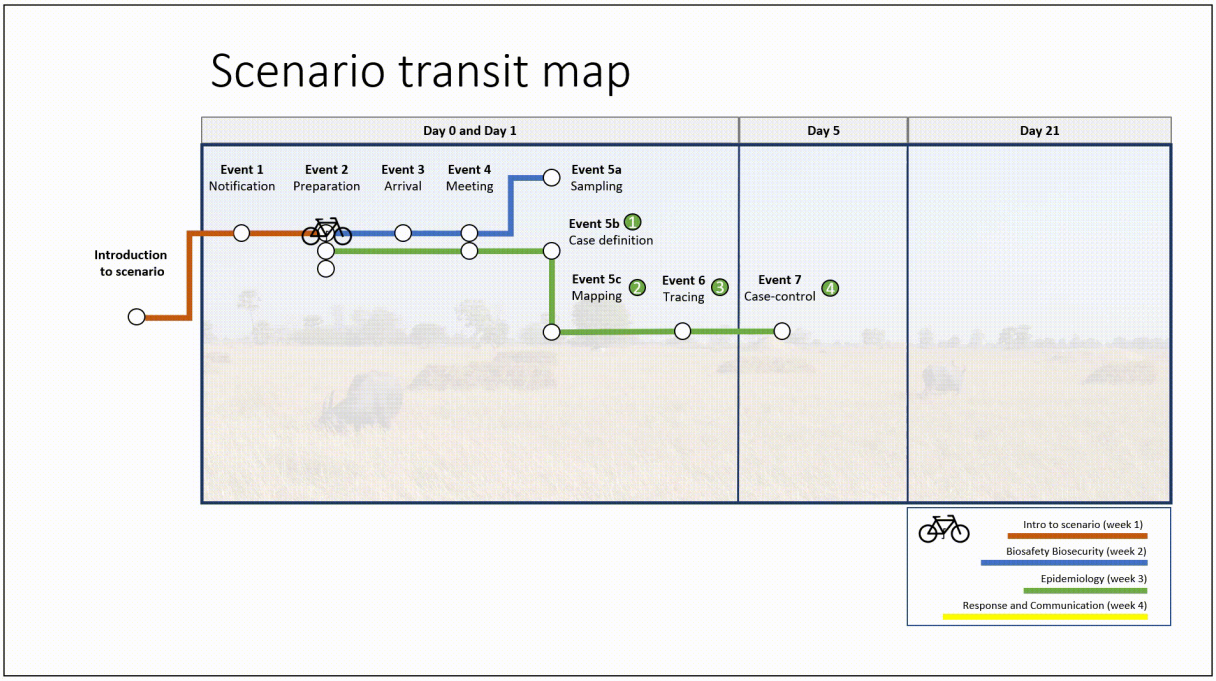
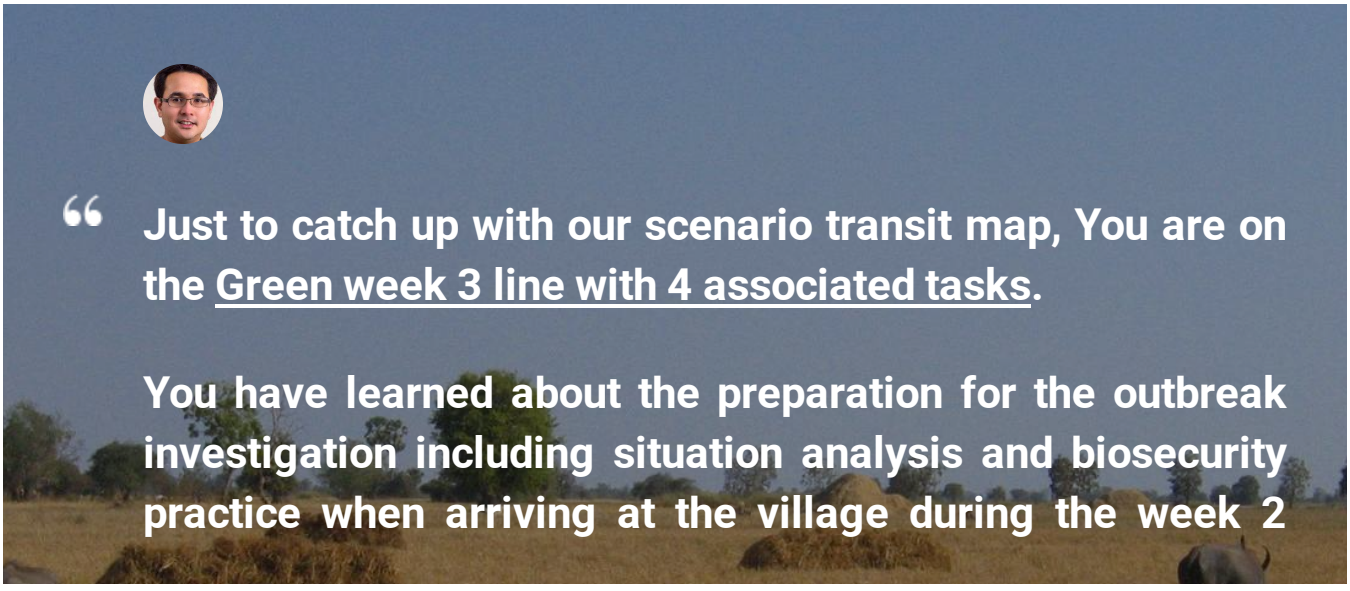
Event 4: Meeting village "A" representative





> Just to catch up with our scenario transit map, You are on the Green week 3 line with 4 associated tasks.
>
> You have learned about the preparation for the outbreak investigation including situation analysis and biosecurity practice when arriving at the village during the week 2

module. So, we will go straight to the village meeting event (Event 4).

Let's watch the video again to remind you about this event.

ⓘ Note: Page 12-13 of the OIE SEACFMD field outbreak investigation manual provide information about preparing for a field outbreak investigation for your reference.

Click ▶ to play the video

CONTINUE

"A key feature of epidemiological investigation is the measurement of disease cases in relation to a population at risk.

The population at risk is the group of animal, healthy or sick, that is susceptible and would be counted as cases if they had the disease.

Usually, we would exclude the animal that is immune to the disease of interest (either by vaccination or previous infection) or biologically impossible (e.g. male cattle would not be susceptible to mastitis or metritis)"

According to the Event 4 video, what would be the population at risk for FMD in this village "A" (considering that there is no previous history of FMD and no FMD vaccination practice in this village) .

- ◯ An approximate of 200 cattle
- ◯ An approximate of 75 pigs (with some piglets)

- ◯ An approximate of 600 goats
- ◯ All of the above.

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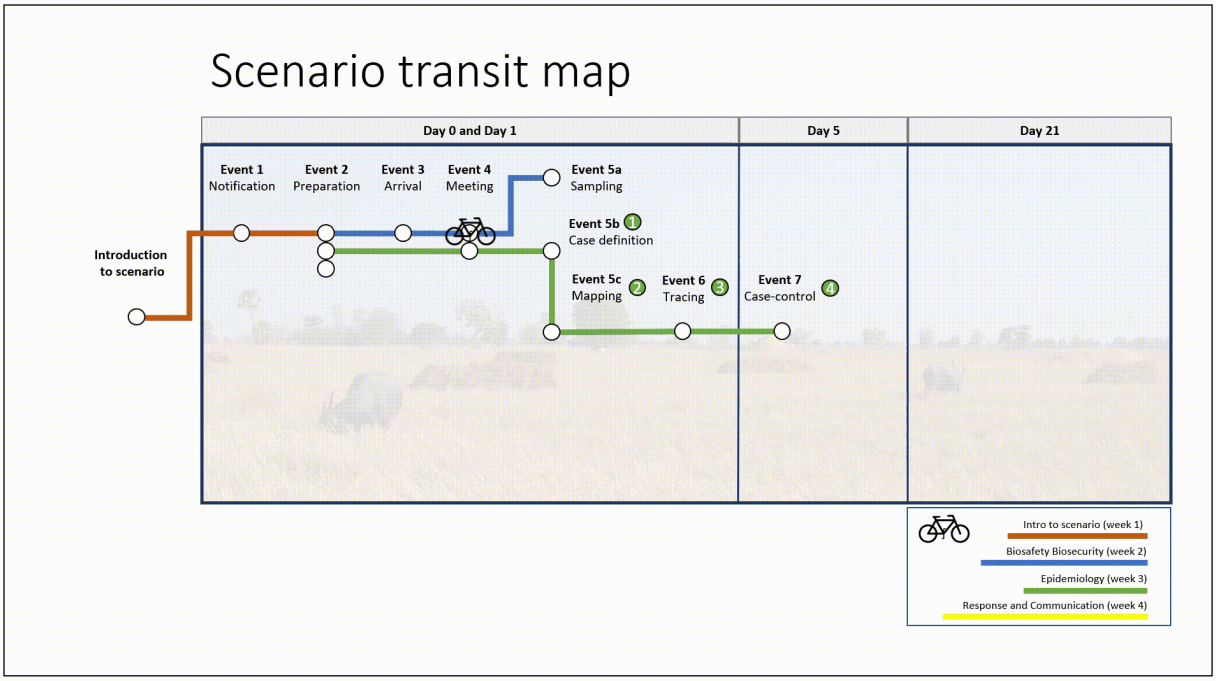
CONTINUE

Event 5b: Case definition



"Once a disease outbreak is suspected, identifying the specific nature of the illness is an important early step.You have to confirm that the suspected disease outbreak is truly an increase in occurrence over the expected (usual) level or amount.

A good case definition ensures that the disease of interest is consistently defined across space and over

time.

Complete the Verification of outbreak & case definition lesson. Click here to enter the lesson."

CONTINUE

"Task 1: Develop a case definition for the introduced scenario.

- How would you define a probable FMD case?
- How do you differentiate between FMD and similar disease (differential diagnosis)?

Post your answer on our week 3 forum. Click here"

ⓘ Hint: You could use the following resource to help create your case definition.

FAO case definition of livestock disease

https://www.oie.int/en/animal-health-in-the-world/animal-diseases/Foot-and-mouth-disease/

CONTINUE

Quiz

What clinical signs are typically associated with FMD in cattle?

- Drooling
- Vesicles/lesions in the mouth, foot and udder
- Lameness
- All of the above

SUBMIT

What is the expected incubation period for FMD in cattle?

- [ ] 5 - 8 days
- [ ] 8 - 10 days
- [ ] 2 - 14 days
- [ ] None of the above

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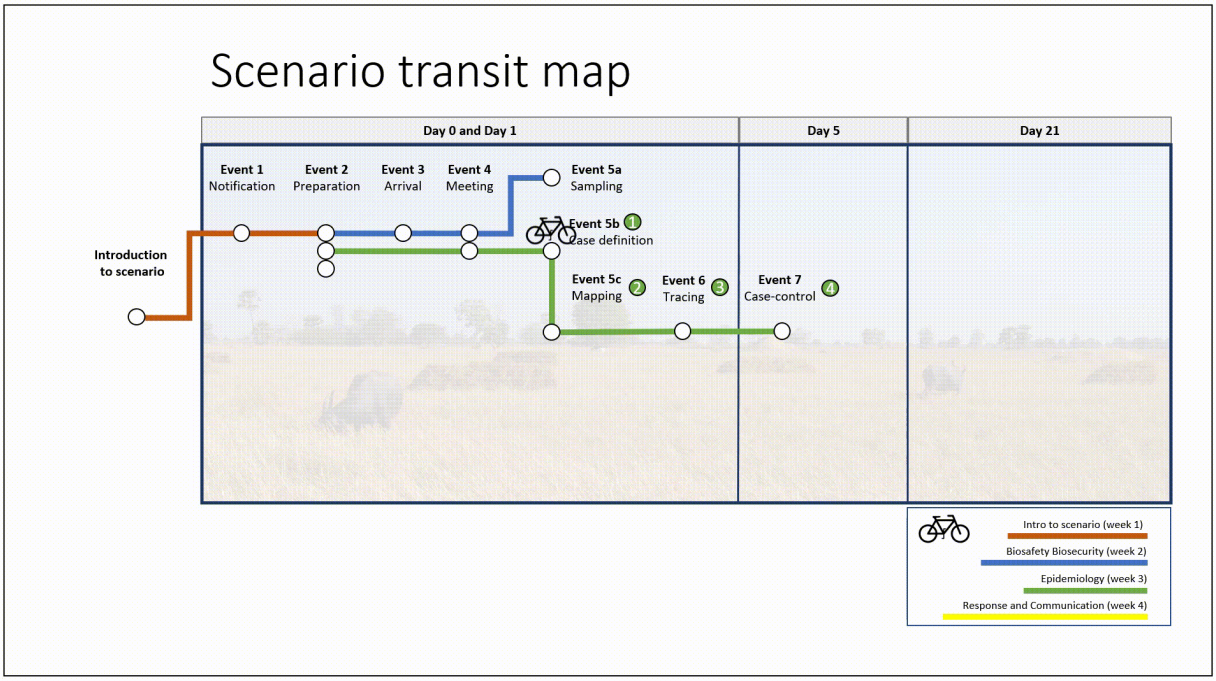
CONTINUE

Event 5c: Data gathering (mapping)



"After developing a working case definition. You will have to accumulate data to describe the outbreak. Data need to be compiled by your own observation (clinical examination of sick animal its environment) and interviewing the animal owners. This step is critical for various reasons:

1. **By becoming familiar with the data, you can learn what information is reliable and informative (e.g., the same unusual exposure reported by many of the people affected) and what may not be as reliable (e.g., many missing or "don't know" responses to a particular question).**
2. **You provide a comprehensive description of an outbreak by showing its trend over time, its location, and the animal populations affected by the disease.**

This description lets you begin to assess the outbreak in light of what is known about the disease (e.g., the usual source, mode of transmission, risk factors, and animal populations affected) and to develop causal hypotheses."

Generally, following key initial epidemiological information are required:

Click + to display information

Signalment –

Species, sex, age, breed

Exposure and management

Type of housing, feeding, vaccination status, grazing practice, sell/purchase activity etc.

Time

Date of onset of any clinical signs, dates of movement of birds, date of recovery, date of death, date of other important events relevant to the outbreak.

Space

Location where cases occurred, other locations visited e.g. grazing locations, location of water bodies etc.

"Complete the Describing outbreak lesson

Click here to enter the lesson."

CONTINUE

"You have learned how to verify and describe outbreak (individual/place/time) and have a working case definition. You are now ready to start gathering information and perform active case finding on this Village A.

Firstly, you need to collect the village information by interviewing the village head and/or village animal health worker. Once you have obtained background village information, you can start to collect information from FMD affected household by interviewing animal owner."

CONTINUE

Epicollect5 data collection tool

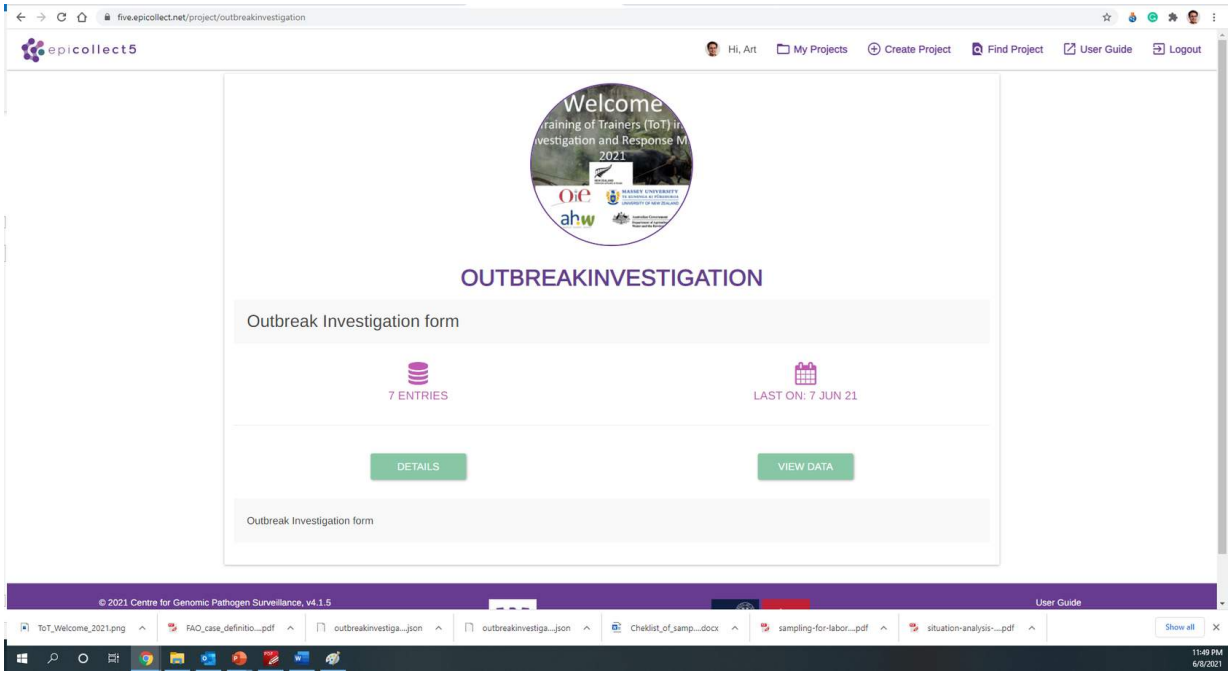
"I hope you agree that we need to gather information effectively and thoroughly. Conventionally, we may develop an outbreak investigation form and fill the data in paper format.

As the smartphone is common nowadays, we will make use of it to assist our disease investigation in this training exercise. The purpose is to introduce you to an application tool and its capability. You may adapt this for your future outbreak investigation.

Epicollect5 (https://five.epicollect.net/) will be used for collecting information as an example."

Click link provided below to explore further information about Epicollect 5

- This application is a free and easy-to-use mobile data-gathering platform.
- You can create your project and forms
- You can download project on device and collect data online or offline. For offline mode, you can upload your data to the server the next time you are online.
- You can view, analyse and export your data.



Epicollect5 set up

Download the app to your mobile by following the links below for Android and iOS

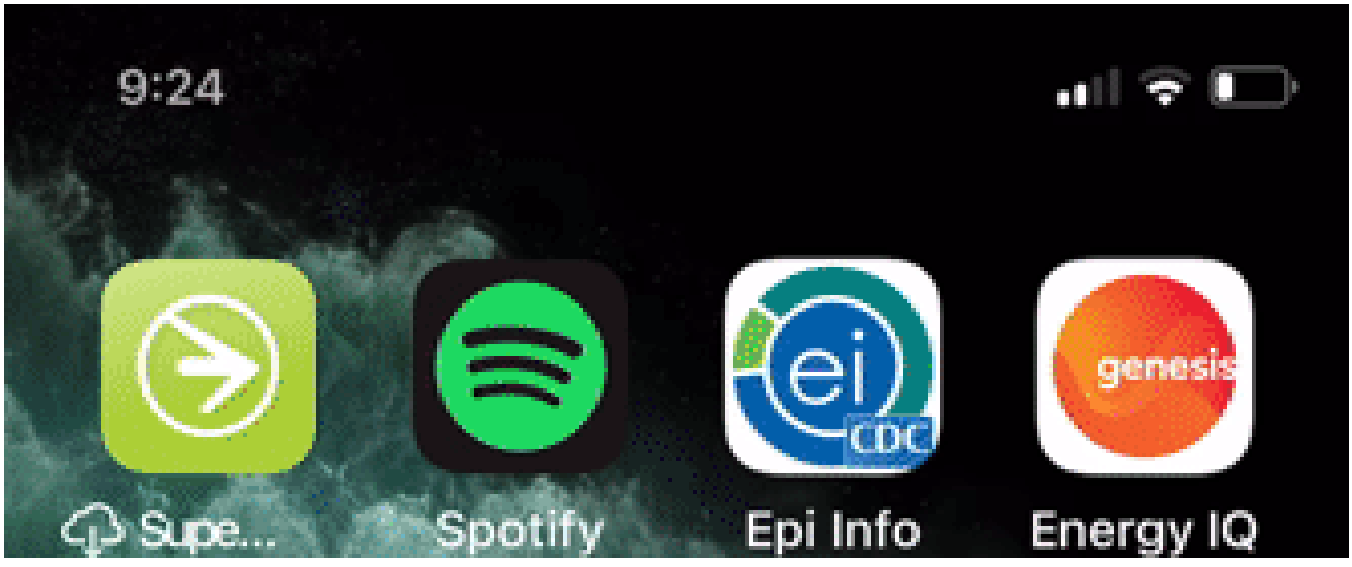
Android playstore: Click here

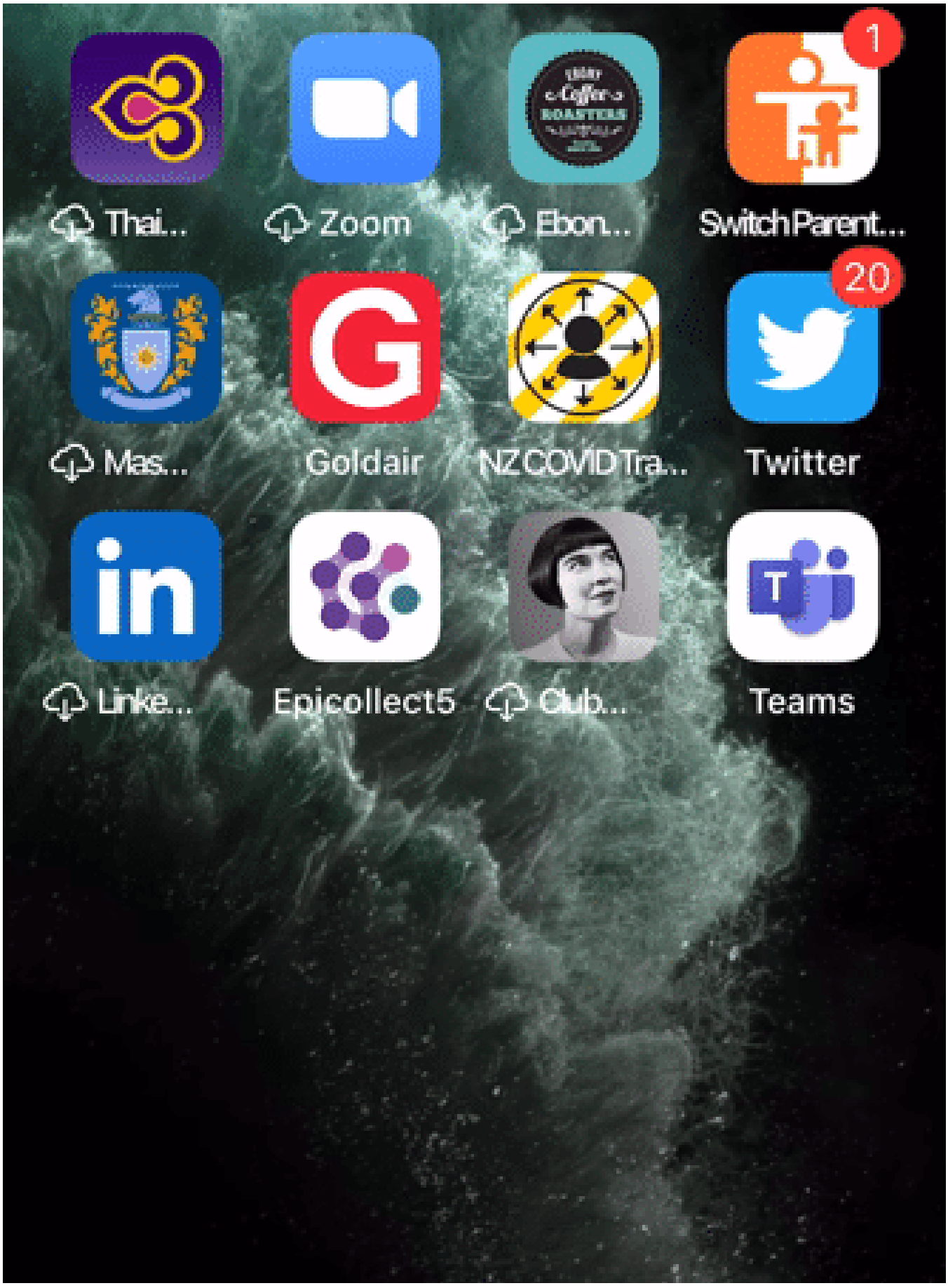
Apple iOS appstore: Click here

Once you create your login (recommend using a Gmail account if you have one), search for project "**Outbreakinvestigation**" There are 2 levels of information;

1. Fill in data for village-level.
2. Fill in data for household-level within the respective village.

Click ▶ to play demonstration video for data input at village-level

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