

National Stakeholder Meeting

Surveillance of canine leptospirosis in Yangon region

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ECOMORE II



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WP MYANMAR

Outlines

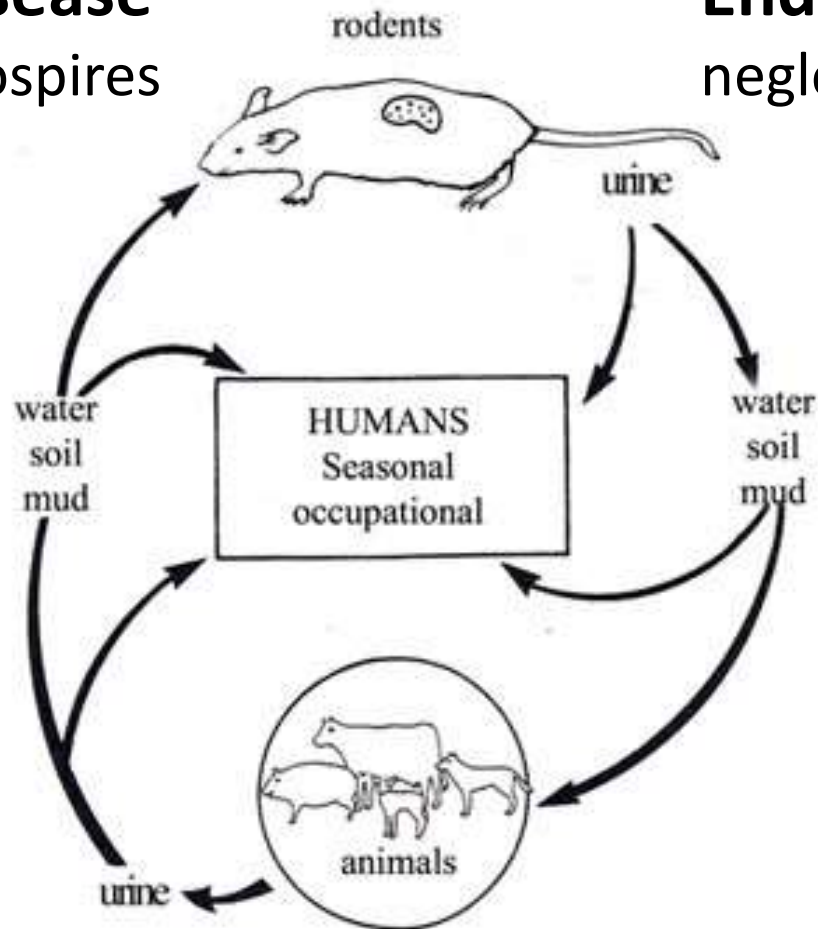
- **Veterinary Survey:**
 - Involvement of veterinarians
 - Lab work
 - Possible surveillance with dog sentinels



A brief overview of leptospirosis in dogs

Leptospirosis is a **bacterial disease** due to a spirochete called Leptospire (>250 pathogenic serovars)

A **zoonosis**, humans and dogs share some pathogenic serovars, many other animals can be affected



Endemic in Asia Pacific region but neglected worldwide (OIE, WHO)

Preventable disease

(vaccination against 1, 2 or 4 serovars)

Treatable disease

(amoxicillin, tetracyclin...)

Canine leptospirosis – a veterinarian's perspective

Box 1: Clinical presentations of canine leptospirosis^{3,4}

- **Peracute disease** (rare): death, following short-lasting signs of shock (disseminated intravascular coagulation).
- **Acute disease** (uncommon): pyrexia; muscle tenderness; endotoxic shock with coagulopathy and vascular injury; death.
- **Subacute disease** (most common form recognized clinically): pyrexia, mucosal petechiation; anorexia; signs of renal failure including vomiting, polyuria, polydipsia, sometimes anuria; jaundice; sometimes diarrhea; reluctance to move because of vasculitis causing muscle damage.
- **Chronic** (uncommon): jaundice with chronic active hepatitis; anterior uveitis.
- **Clinically inapparent** (probably the majority of cases).



Leptospirosis can have multiple forms, non specific signs (icterus in ~ 20% of cases)
For these reasons, diagnosing leptospirosis is a **CHALLENGE** for vets!
Especially when laboratory confirmation is not available locally.

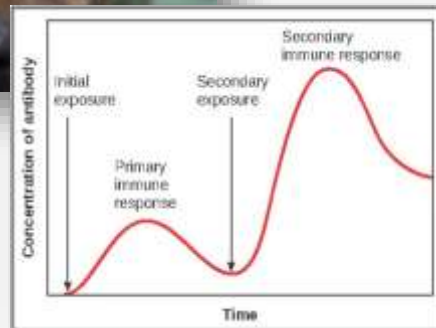
Dogs, sentinels of leptospirosis? (1/2)



1/ Dogs **have close contact with humans and rodents**, the main reservoir species of leptospirosis in urban settings



2/ Dogs are likely to **show clinical signs** when infected by pathogenic leptospire



3/ Incubation period in dogs is shorter than in humans

We hypothesize that dogs may be a relevant **SENTINELS** for human leptospirosis
Recruiting acute canine cases can be a **EARLY WARNING SYSTEM** for human cases

Dogs, sentinels of leptospirosis? (2/2)



Owned dogs at the **private practices**



Stray dogs rescued at the **animal shelters**

Primary-care level

The 2 populations may act as complementary sentinels for urban leptospirosis

Within the framework of leptospirosis surveillance, we will focus on:

Box 1: Clinical presentations of canine leptospirosis^{3,4}

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- **Chronic** (uncommon): jaundice with chronic active hepatitis; anterior uveitis.
- **Clinically inapparent** (probably the majority of cases).

Acute diseases are the **most common forms** of canine leptospirosis

Acute diseases in dogs fit perfectly with the « **early warning system** » for human leptospirosis

as we want to detect ASAP dog cases after infectious exposure

and subsequently warn Health Authorities

How canine leptospirosis suspicions will be reported? (1/2)

Private practice

Inclusion criteria:

- 1- The pet owner must have given his oral consent for case report
- 2- The pet owner must live in Yangon region.
- 3- Consultation at the practice must be between April 2018 and October 2019 included,
- 4- The sick dog must be aged 3 months or older.
- 5- The sick dog must show at least 3 signs out of 6, as mentioned in the table below:

	Yes	No
Vomiting		
Fever $\geq 39.8^{\circ}\text{C}$		
Oliguria / Anuria		
Icterus		
Hemorrhagic syndrome		
Absence of ticks		

If 3 signs or more out of 6 are fulfilled then tick yes

Dog shelters

Inclusion criteria:

- 1- The dog must have been captured between April 2018 and October 2019 included, within Yangon region
- 2- Estimate dog age must be 3 months or over
- 3- The sick dog must show at least 3 signs out of 5, as mentioned in the table below:

	Yes	No
Vomiting		
Fever over 39.8°C		
Icterus		
Lethargy		
Absence of ticks		

If 3 signs or more out of 5 are fulfilled then tick yes

Inclusion criteria focus on **ACUTE leptospirosis**,

Inclusion criteria are restrictive but we have a limited number of tests (1000) provided to YVDL, free of charge for vets,

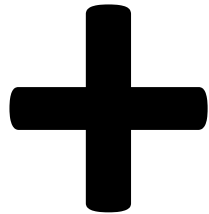
Inclusion criteria for not over recruiting among parvo or tick-borne diseases...

Inclusion criteria differ between private practices and animal shelters,

Can be modified during the pilot study according to the veterinarian feedbacks

How canine leptospirosis suspicion will be reported? (2/2)

Day 0



Carine CASE REPORT FORM – Owned dogs

Carine CASE REPORT FORM – Stray dogs

Date of testing	Sample type	Test result	Comments
00/00/0000			
00/00/0000			

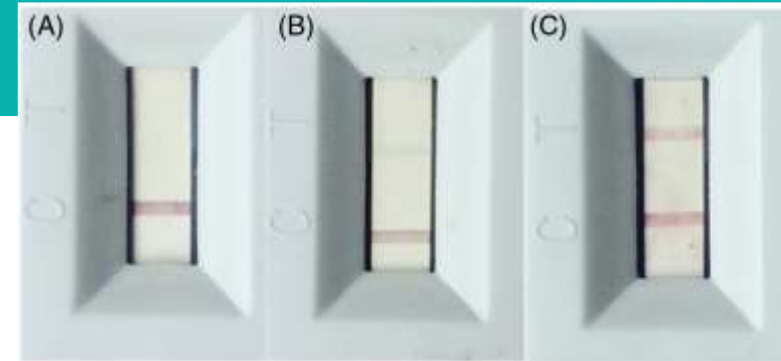


Day 10-14

Good collection practices will be addressed in a training led by YVDL before the project starts
Proper sample shipment will be managed by YVDL

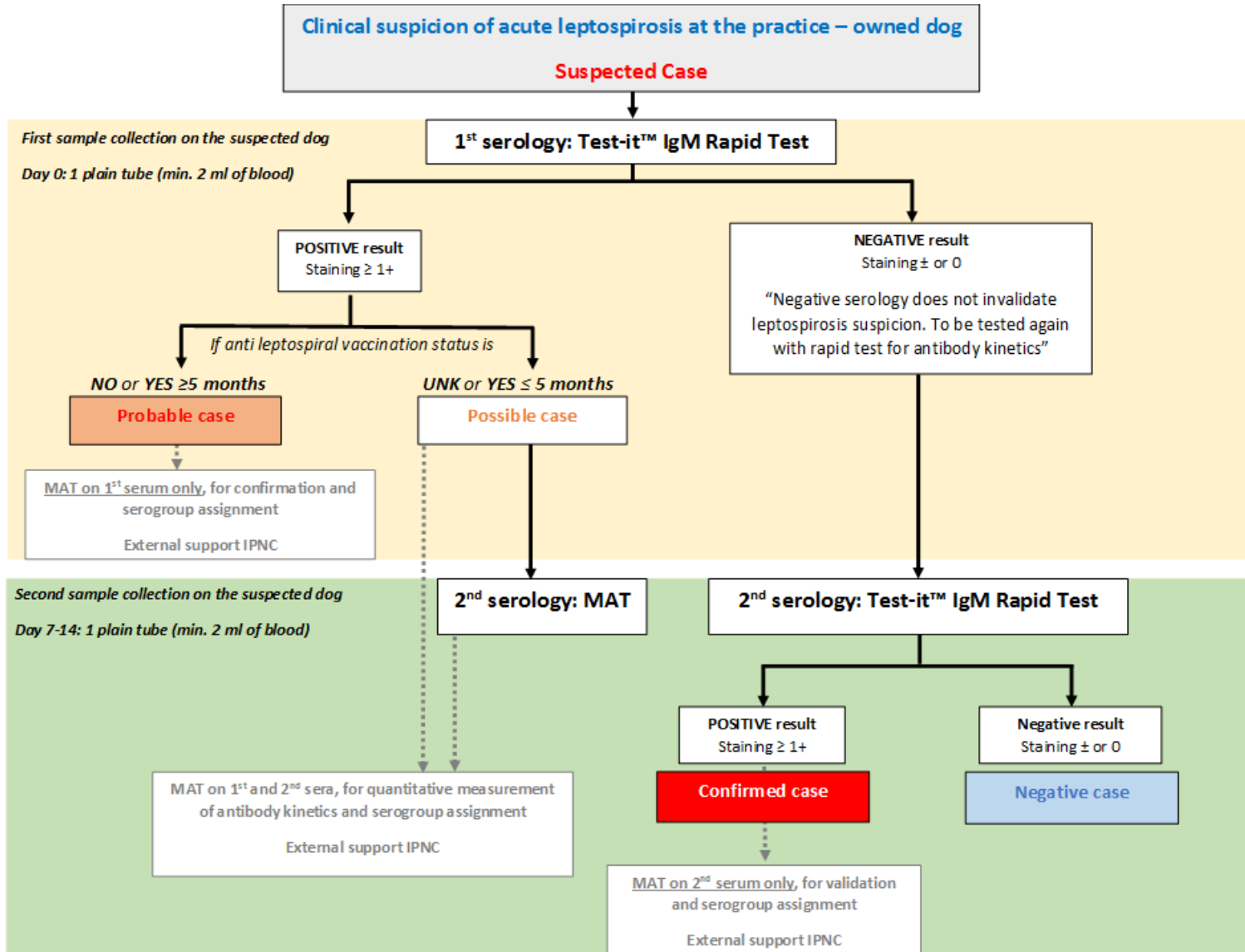
How samples will be processed at the YVDL? (1/2)

Sera from suspected cases will be tested with Test-It™



- **IgM-oriented test** for detection of acute cases,
Se=0.82 (95% CI 0.71-0.89) ; Sp=0.91 (95% CI 0.78-0.96) (Gloor et al, 2017)
- **Affordable test** for a sustainable surveillance,
- **Rapid result** (10 min.) to bring a prompt feedback to veterinarians for case management and prevention of zoonotic transmission,
- **YVDL will validate** this test and design guidelines for its future use as a bedside test in private practices.

How samples will be processed at the YVDL? (2/2)



Test-it™ is a non-quantitative test,

YVDL will perform cross-validation of Test-It™ with another commercial rapid test **during the pilot phase.**

Sera will be stored at YVDL at -80°C and send to Institut Pasteur de Nouvelle-Calédonie for external support, according to the Material Transfer Agreement.

MAT will be performed at IPNC for:

- Cross-validation of results,
- Quantification of titers for antibody kinetics,
- Identification of the serogroup for epidemiological purposes,
- Opportunity for YVDL staff training.

What are the critical data collected from suspected dogs?

- Critical data to be collected with the standardized CRFs:



This is a screenshot of a 'Case CASE REPORT FORM - Owned dogs'. It features a header with a logo, a title, and a date field. Below the title, there are several sections of text and input fields, including a large table with multiple columns and rows. The form is designed for data collection from private practices.

For owned dogs at the private practices:

- Date of symptom onset?
- Date of consultation?
- Leptospirosis vaccination status? Y/N
- Localization of pet owner household?



This is a screenshot of a 'Case CASE REPORT FORM - Stray dogs'. It features a header with a logo, a title, and a date field. Below the title, there are several sections of text and input fields, including a large table with multiple columns and rows. The form is designed for data collection from animal shelters.

For stray dogs at the animal shelters:

- Date of capture?
- Place of capture?



GIS project
Human and dog cases

Main outcomes

- **Monitor in time and space** leptospirosis cases among dogs in Yangon
 - Is there a specific time in the year « at risk for leptospirosis infections » among dogs?
 - Are there specific areas in Yangon region « hot spots » for leptospirosis infections?
 - Is this monitoring can feed a early warning system for human leptospirosis in Yangon region?
- In a clinician's perspective, **Veterinarians can now test their leptospirosis suspicions** free of charge,
- **Raise awareness about canine leptospirosis** among veterinarians and their customers,
- Opportunity for veterinarians to be **public health key actors.**



ECOMORE II

Protocol for passive surveillance of canine leptospirosis in Yangon region, Myanmar

ECONomic development, ECOSystem MODifications,
and emerging infectious diseases Risk Evaluation 2
(ECOMORE 2)



ECOMORE II



Thanks for your attention