



INTERNATIONAL COURSE ON PLAGUE : LABORATORY DIAGNOSIS AND SURVEILLANCE

Date : 11 – 16 July, 2022

Location : Institut Pasteur de Madagascar,
Antananarivo, Madagascar

Financial Support

World Health Organization
Institut Pasteur
Institut Pasteur de Madagascar

Organizers

Institut Pasteur de Madagascar
Pasteur Joint International Research Unit on Plague
World Health Organization

Partners

Malagasy Ministry of Public Health (MoH)

Directors of the course

Dr Minoarisoa Rajerison, Head of the Plague Unit, Institut Pasteur de Madagascar
Dr Javier Pizarro-Cerda, Head of the *Yersinia* Unit, Institut Pasteur à Paris
Dr Eric Bertherat, EPP/WPE - Emerging and Zoonotic Diseases, World Health Organization, Geneva

Course coordinators

Dr Voahangy Andrianaivoarimanana, Plague Unit, Institut Pasteur de Madagascar
Dr Soanandrasana Rahelinirina, Plague Unit, Institut Pasteur de Madagascar
Dr Beza Ramasindrazana, Plague Unit, Institut Pasteur de Madagascar
Dr Anne Sophie Le Guern, *Yersinia* Research Unit, Institut Pasteur à Paris

Application deadline

April 25, 2022

Contacts

Motivation letter and CV to rvolana@pasteur.mg and rbeza@pasteur.mg

Requirements

Health workers, technicians/biologists/scientists involved in plague diagnostics and management from Africa, Europe and Asia will be selected. Priority will be given to participants from countries, which declared human plague cases to the World Health Organisation(WHO), those having natural plague foci that need to be surveyed, and countries with high risk of plague introduction.

Bursary

Course expenses of selected participants will be covered by the organizers. This includes: flight cost, accommodation during the 2-days of self-isolation (<https://madagascar-tourisme.com/Fr-fr/border-reopening/>) and during the period of the course, ground transportation from Hotel to IPM.

Participants should be prepared for any unexpected costs that may arise such as visa application, insurance, covid-19 test before travel and upon arrival (<https://madagascar-tourisme.com/Fr-fr/border-reopening/>).

Context

Plague is an acute communicable disease caused by *Yersinia pestis*. It is primarily a flea-borne zoonosis and humans are affected accidentally. Following the re-emergence of plague during the 1990s in several countries, plague has been categorized as a re-emerging disease. The pneumonic plague outbreak in urban areas in Madagascar in 2017 highlighted a number of technical issues and prompted laboratory diagnostic teams to enhance molecular techniques and propose a new algorithm to confirm suspected plague cases. Under International Health Regulations (IHR), countries were required to report cases of human plague which present a risk for public health to the WHO, such cases must fulfill the plague case standard definition.

The updated version of this plague case definition was released on June 2021, and can be considered as the reference standard for notification under the IHR and should be used to the extent possible in epidemiological surveillance and field investigations.

Description of the course

The one week course training will cover laboratory activities, lectures and debates. During this course, participants will be trained on different plague diagnostic tools with a special emphasis on the role of molecular biology (real-time PCR and/or conventional PCR) now considered as a confirmation tool for plague surveillance and diagnostic. Other techniques such as microscopy, immunofluorescence assay, Rapid Diagnostic Test (RDT) for *Y. pestis* antigen F1 detection, bacteriological culture with *Y. pestis* strain isolation will also be taught. Throughout the lecture sessions, participants will be also informed on other diverse topics related to plague.

The course will be delivered in English and facilitated by the team of the Pasteur Joint International Research Unit on plague of the Institut Pasteur International Network as well as national and international experts.

Expected results

At the end this course, participants will acquire skills on plague diagnostics, reinforce their capacity in plague surveillance and develop international partnerships and networks.

COURSE AGENDA

MONDAY, JULY 11

- 9h00** Opening ceremony
- 10h00-10h30** Plague surveillance: epidemiological situation
- 10h30-11h00** **Welcome drinks**
- 11h00-11h30** Presentation of plague and the pathogen *Yersinia pestis* (virulence factors)
- 11h30-12h00** International Health Regulation & Plague case definition
- 14h30-15h00** Biosecurity and biosafety for laboratory systems
- 15h00-16h00** Diagnostic tools: F1RDT, IF, Gram, PCR, culture, *Yersinia pestis* phage, antibiogram, serology
- 16h00-18h00** Rapid test and direct examination: theory and practice

TUESDAY, JULY 12

- 8h00-11h30** Bacteriology culture: Theory and practice
- 11h30-16h00** Molecular biology: Theory and practice

LECTURES

- 16h00-16h30** Quality Management: Diagnostic system - External quality assessment
- 16h30-17h00** Diagnostic system infrastructure within the health care system in Madagascar
- 17h00-17h30** Plague National Control Program (Madagascar)

WEDNESDAY, JULY 13

- 8h00-16h00** Lab work

LECTURES

- 16h00-17h30** Epidemiological tools: Sequence typing and Evolution of *Yersinia pestis*
- 17h30-18h00** Plague and treatment: case management and Clinical trials

THURSDAY, JULY 14

8h00-16h00 Lab work

LECTURES

16h00-17h30 Outbreak and Diagnostic: Lessons learned from recent pneumonic plague outbreak, Madagascar 2017

17h30-18h00 Plague surveillance in Madagascar

FRIDAY, JULY 15

8h00-16h00 Lab work

LECTURES

16h00-17h00 Vector prevention and control: insecticide resistance

17h00-17h30 Reservoir of plague: prevention and control

SATURDAY, JULY 16

8h00-9h30 Lab work–Final Evaluation

9h30-10h00 Questions/Answers

10h00-11h30 Debate: importance of diagnostic in epidemic and pandemic preparedness

11h30-12h30 Closing ceremony

FRIDAY, JULY 15



8h00-10h00 Lab work

10h00-10h30 **COFFEE BREAK**

10h30-12h30 Lab work

12h30-14h00 **LUNCH**

14h00-16h00 Lab work

16h00-16h30 **COFFEE BREAK**

16h30-17h00 Vector prevention and control: insecticide resistance R. GIROD /
M. HARIMALALA

17h00-17h30 Reservoir of plague: prevention and control S. RAHELINIRINA

SATURDAY, JULY 16



8h00-9h30 Lab work–Final Evaluation

9h30-10h00 Question/Answers M. RAJERISON

10h00-11h30 Debate: importance of diagnostic in epidemic and
pandemic preparedness J. P. CERDA /
M. RAJERISON

11h30-12h30 Closing ceremony