The outbreak of plague in Madagascar continues, with an overall reduction in the case fatality rate. On 12 October 2017, 61 new cases and no deaths were reported from six districts. Between 1 August and 12 October 2017, a total of 684 cases (suspected, probable and confirmed) including 57 deaths (case fatality rate 8.3%) have been reported from 35 out of 114 districts in the country. Of these, 474 cases (69.3%) were clinically classified as pneumonic plague, 156 (22.8%) were bubonic plague, one case was septicaemic plague, and 54 cases were unspecified. At least fifteen healthcare workers have contracted plague since the beginning of the outbreak.

Of the 684 cases reported, 63 (9.2%) were confirmed, 271 (39.4%) were classified as probable and 350 (51.2%) remain suspected. To date, 11 Yersinia pestis strains have been isolated, which were sensitive to antibiotics recommended by the National Program for the Control of Plague.

Eighteen (81.2%) out of 22 regions in the country, including traditionally non-endemic areas, have been affected. Antananarivo Renivohitra District has been the most affected.

Plague is known to be endemic on the Plateaux of Madagascar (including Ankazobe District where the current outbreak originated) and a seasonal upsurge (predominantly the bubonic form) usually occurs early every year between September and April. Unlike the usual endemic pattern, the plague season began early this year, and the current outbreak has affected major urban centres, including Antananarivo (the capital city) and Toamasina (the port city).

There are three forms of plague, depending on the route of infection: bubonic, septicaemic and pneumonic (for more information, see the link [http://www.who.int/mediacentre/factsheets/fs267/en/]).
As this is a rapidly changing situation, the reported number of cases and deaths, contacts being monitored and the laboratory results are subject to change due to enhanced surveillance, contact tracing activities, ongoing laboratory investigations, reclassification, and case, contact and laboratory data consolidation.

Distribution of cases confirmed, probable and suspected of plague in Madagascar, 1 August - 12 October 2017
Current risk assessment

While the current outbreak was triggered by the occurrence of one large epidemiologically linked cluster, cases of pneumonic plague without apparent epidemiologic links have since been detected in regions across the country, including the densely populated cities of Antananarivo and Toamasina. Due to the increased risk of further spread and the severe nature of the disease, the overall risk at the national level is considered very high. The risk of regional spread is moderate due to the occurrence of frequent travel (by air and sea) to neighbouring Indian Ocean islands and other southern African countries, and the observation of a limited number of cases in travellers. This risk is mitigated by the short incubation period of pneumonic plague, implementation of exit screening measures, and scaling up of preparedness and operational readiness activities in neighbouring Indian Ocean islands and other southern African countries. The overall global risk is perceived to be low.

The risk assessment will be re-evaluated by the three levels of WHO based on the evolution of the situation and the available information.

Strategic approach to the prevention, detection and control of plague

WHO recommends the implementation of proven strategies for the prevention and control of plague. These strategies include (i) coordination of the response, (ii) enhanced surveillance, (iii) laboratory confirmation, (iv) contact identification and follow-up, (v) case management, (vi) infection prevention and control, (vii) safe and dignified burials, (viii) social mobilization and community engagement, (ix) logistics, (x) risk communication, (xi) vector control, (xii) partner engagement, (xiii) research and (xiv) resource mobilization.

2. Actions to date

Coordination of the response

- A high level coordination forum to provide strategic and policy directions to the plague outbreak response has been established, chaired by the Prime Minister. Similarly, the Country Humanitarian Team of the United Nations System established a strategic coordination platform for partners, chaired by the Resident Coordinator.
- The health response is coordinated by the Ministry of Public Health, co-led by WHO and supported by agencies and partners directly involved in the health response. The health sector response is organized into four major committees: (i) surveillance, (ii) community response, (iii) case management, and (v) communication; with the logistics committee crosscutting all committees.
- Since the declaration of the outbreak, WHO (Country Office, Regional Office for Africa (AFRO) and Headquarters (HQ) are providing direct technical and operational support to the country, and collaborating closely with partners in order to ensure rapid and effective response to this outbreak.
- WHO has classified the event as a Grade 2 emergency, based on its internal Emergency Response Framework. Accordingly, WHO has established its Incident Management System (IMS), as well as repurposed/mobilized internal and external resources.

Surveillance

- A total of 1,800 community health workers have been trained to strengthen early warning and surveillance. A total of 340 medical doctors and students have been trained as supervisors.

Laboratory

- Diagnostic capacity for plague is available at the Institut Pasteur de Madagascar (IPM). Since 27 September 2017, IPM distributed 1,918 rapid diagnostic tests (RDTs) to Toamasina (205), the Centers Hospitaliers d’Antananarivo (619) and the Plague Department of Ministry of Public Health (282).

Contact identification and follow-up

- On 7 October 2017, a total of 75 trainers had been trained on contact tracing activities. Mobilization of community health workers and recruitment of supervisors for contact tracing is ongoing. A total of 968 community health workers will be trained.
Case management
- Red Cross is setting up a 60-bed treatment facility.
- The protocol for case management is under review, based on results of sensitivity testing and availability of antibiotics.
- Médecin du Monde is setting up five isolation and treatment centres for the management of plague cases in Antananarivo.
- MSF deployed 70 personnel to support the response in Toamasina.

Infection prevention and control
- WHO, with the support of other partners, adapted a tool for rapid assessment of infection prevention and control (IPC) in the health facilities.
- WHO is deploying experts to carry out a rapid IPC assessment in health facilities, build capacity of healthcare workers and support rapid implementation of IPC measures to avoid contamination of healthcare workers and prevent hospital acquired infections.

Social mobilization, community engagement and risk communications
- The President of Madagascar participated in a press conference organized for the handover of WHO materials to the Government of Madagascar. The American Ambassador, Representatives of USAID and United Nations agencies were in attendance.
- Orientation of local media houses have been conducted in eight districts. Meanwhile, broadcast of health education messages, including television and radio spots are ongoing, with support from UNICEF.

Logistics
- The Ministry of Public Health, USAID and UNICEF have established a storage depot for all materials.
- A distribution plan for medicines, disinfectants and personal protective equipment (PPE) for three districts (Majanga, Antserabe and Fianarantsoa) has been finalized.
- WHO has delivered 150 000 sets of PPE, 1 300 000 doses of antibiotics and 125 000 vials of antibiotic to the Ministry of Public Health and partners. The consignment of drugs includes those used for curative and prophylactic care, and is enough to treat up to 5 000 patients and protect up to 100 000 people who may be exposed to the disease. The medicines are being distributed to health facilities and mobile health clinics across the country.
- USAID has donated 18 000 respirator masks, 100 000 simple masks and 10 vehicles to support operations of the Department of Public Health.

Resources mobilization
- The joint response plan between the Government of Madagascar and its partners has been adjusted to US$ 9.5 million, in view of the multisectoral response to the urban plague outbreak.
- To date, WHO has provided US$ 1.5 million, UNICEF US$ 0.5 million, the International Federation of the Red Cross US$ 250 000, UNDP US$ 300 000, and UNFPA US$ 331 000. In addition, other organizations have provided assistance in kind: China has provided medicines worth US$ 200 000.

Partnership
- In support of the Ministry of Public Health and the other national authorities, WHO and the Global Outbreak Alert and Response Network (GOARN) partners have initiated deployment of emergency response teams. By 8 October 2017, 30 international experts (in various fields including leadership and coordination, epidemiology, data management, laboratory, case management, communication, resource mobilization, staff wellbeing, planning, logistics, and administration and finance) have been deployed. The WHO Country Office has also repurposed its staff towards the response to the outbreak.
WHO and the GOARN continue to mobilize partners to provide technical, human and logistical support to the country, and work closely with the United Nations Clusters, stakeholders and donors to ensure appropriate support for the response.

**Operations preparedness/readiness**

- Seven countries have been identified as high risk for plague outbreak by virtue of having trade and travel links to Madagascar. These priority countries include South Africa, Mozambique, Tanzania, Mauritius, Comoros, Seychelles, and Reunion. WHO, in coordination and collaboration with major partners (UNICEF, CDC, ECDC, MSF, etc.), is providing preparedness/readiness support to these countries. The key readiness actions being implemented in each priority country, include: increasing public awareness on plague; setting up active surveillance for the disease; preposition of equipment and supplies, including RDTs, PPE, and antibiotics; contingency and response planning for any imported cases; and in-country technical assistance through guidance and training on laboratory diagnosis, sample collection and shipment, and safe burials.
- WHO has deployed two epidemiologists to support Seychelles to strengthen in-country preparedness and readiness.

**IHR Travel measures**

- On 3 October 2017, WHO issued advice for international travellers to Madagascar.
- As of 8 October 2017, WHO and the Ministry of Public Health initiated measures to avoid international spread of plague. These measures include exit screening of departing passengers at the International Airport through temperature screening, interview with and provision of treatment to symptomatic passengers and prophylactic antibiotics to passengers at risk.
- Some of the neighbouring countries, namely Comoros, Mauritius, and South Africa have put in place measures to protect their population, including entry screening, information provision to passengers on how to seek medical care in case of symptoms and other preparedness measures.
- Based on the available information to date, the risk of international spread of plague appears very low. WHO advises against any restriction on travel or trade on Madagascar based on the available information.
- International travellers arriving in Madagascar should be informed about the current plague outbreak and that plague is endemic in Madagascar (see WHO advice for travellers mentioned above).
- WHO has produced and shared with high risk countries a draft guidance note on International Health Regulation 2005 (IHR) requirements related to travel to support preparedness and readiness activities at points of entry, especially airports and seaports.
- On 11 October 2017, the Ministry of Health of Seychelles announced additional measures restricting the travel of passengers coming from Madagascar. WHO is in contact with the Seychelles authorities to confirm this information and to seek the public health rationale and scientific evidence under the IHR (2005).
The most critical needs at this stage include rapidly improving effectiveness of the control interventions. A functional contact tracing system urgently needs to be set up, as well as strengthening infection prevention and control (IPC) measures in the treatment centres and health facilities. Effective risk communication and coordination are vital. In addition, preparedness and readiness in neighbouring regions and countries, including at the points of entry, should be enhanced.

Proposed ways forward include:

- Moving faster in operations at the community level.
- Supporting the Ministry of Public Health to strengthen coordination of outbreak response at all levels.
- Providing adequate supplies of personal protective equipment and rapid diagnostic test kits to operational level.
- Mobilizing additional human resources to strengthen capacity at operational level.
- Immediate implementation of the contact tracking system.
- Improving community-based surveillance systems to facilitate early detection of cases.
- Developing appropriate messages for the public, taking into account the socio-cultural context, to promote preventive actions, encourage early identification of cases and alleviate anxiety.
- Urgently providing technical and operations support for preparedness and readiness to the seven identified high risk countries.
Annex 1: Timeline of reported events during the plague outbreak in Madagascar, 11 September - 10 October 2017