Risk assessment, Preparedness, Prevention, and Response (PPR) framework for Yellow fever in Rwanda

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Abstract

Background Yellow fever (YF) is a zoonotic arboviral disease that is mainly transmitted by *Aedes aegypti* and *Ae. albopictus* mosquitoes. It mainly infect both, human and non-human primates including the endangered mountain gorillas. Despite that Yellow fever is a vaccine preventable disease, according to the World Health Organization, it is still endemic in 47 countries; 72% of those countries are in Africa and 28% in Central and South America. **Methodology** We deployed several transdisciplinary research methods for the implementation of this risk assessment and situation analysis as well as developing national preparedness, prevention, and response strategy for YF in Rwanda. These methods included epidemiological and entomological surveys, health system analysis, and stakeholders and expert consultations. This was supported with in-depth desk and literature review analysis. **Results** We have identified high risk of Yellow fever emergence and outbreaks in Rwanda. The main underpinning sources of this risk are including the confirmed presence of the main vector of the disease; *Aedes aegypti.* More importantly, the lack of vector surveillance for Aedes mosquitoes, surveillance for the disease among human or animals at risk in the country despite the ongoing transmission in the region including countries with open-borders and free movements with Rwanda. Additional important sources of risk include limited vaccination coverage and requirement for travelers to and from endemic countries. Accordingly, we have developed a preparedness, prevention, and response (PPR) framework for Yellow fever in Rwanda. **Conclusion** In addition to strengthen the implementation of the developed preparedness, prevention, and control measures, the One Health authority should invest in the establishment and operation of integrated surveillance and response system that comprehensively monitors the indicators of humans, animals, and environmental health. Additional support should be given to operational research to generate evidence that informs policymaking, and guide the strategic planning and implementation of cost-effective interventions.

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