

Report of the 5th Asian Elephant Endotheliotropic Herpesvirus (EEHV) Working Group Meeting

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Introduction

The Asian Elephant Endotheliotropic Herpesvirus (EEHV) Working Group was established in 2015 through a first meeting hosted by the Mandai Wildlife Group at the Singapore Zoo. The main purpose for the development of this working group was to establish a supportive network among elephant managers in Asia to improve and streamline research needs and treatment plans, as well as to build capacity with support from the western EEHV working groups. Up until 2019 the Asian EEHV Working Group met regularly with three subsequent meetings conducted again at Singapore Zoo (November 2016), as well as the Kasetsart University, Thailand (November 2017), and at the Assam Agricultural University, India (November 2019).

5th Working Group meeting

On November 13th, 2023, the 5th Asian EEHV Working Group meeting took place at the Faculty of Veterinary Medicine, Chiang Mai University, Chiang Mai, Thailand. Representatives from all Asian elephant range states (except Bhutan and Vietnam), participated, along with three representatives from non-range countries (Singapore, Japan, and Australia). The aim of the meeting was to receive updates of the EEHV situation across all Asian Elephant Range Countries, as well as to discuss and learn about new innovations and technologies developed in the last 3 years to fight this devastating disease.

As of the meeting date, a total 219 clinical endotheliotropic herpesvirus-hemorrhagic disease

(EEHV-HD) cases were confirmed in Asia using molecular techniques. Notably, Thailand has reported the highest number of confirmed cases ($n = 128$), followed by India ($n = 56$) and Nepal ($n = 13$). The variation in the number of confirmed cases is likely linked to the availability of laboratories, public awareness, and networking. Currently, only five elephant range countries – Thailand, India, Nepal, Indonesia, and Malaysia – have functional molecular laboratories for EEHV diagnosis. The gaps and needs of each Asian elephant range countries were identified.

Diagnosis

Most countries require either equipment, technical training, or essential chemical reagents. It is noteworthy that no EEHV serological tests are presently available in Asia, highlighting an urgent need for capacity building and training. Moreover, challenges such as difficulties in obtaining CITES permission for importing and exporting elephant samples for diagnosis pose obstacles for sharing the laboratory diagnostic services across the region. To address this limitation, there continues to be a need for more training and capacity building initiatives, alongside with awareness-raising campaigns.

Treatment

Most range countries have access to anti-viral drugs, especially the oral medication e.g. acyclovir. However, stocking the medication is challenging due to shelf life and associated cost. With increasing numbers of successfully treated EEHV-HD cases it becomes clear that having anti-viral drugs readily available can signific-

antly contribute to saving the lives of elephants in range countries. Other drugs i.e. famciclovir and ganciclovir are still difficult to obtain due to the unavailability in the country and the high cost of the drugs.

Research

The following research questions were raised during the meeting and could fulfil the gap for this fatal disease:

- Epidemiology of EEHV-HD of wild and captive elephants in each country, as well as the molecular epidemiology.
- Disease monitoring from sero-surveillance in captive elephants. Comparison of serology of EEHV-HD and sub-clinical EEHV.
- Herd immunity both cell-mediated immunity (CMI) and humeral immunity (HMI).
- Protective level / viral neutralising antibody.
- Immunity in calves vs. adults/ captive vs. wild/ calves with mother vs. calves without mother.

- Pathophysiology of this disease.
- Risk factors of this disease.
- Effective and other innovative treatment of this devastating disease.

This working group meeting has played a pivotal role in identifying existing gaps and emphasises the urgent need to prevent and manage EEHV-HD in the future, particularly in the Asian elephant range countries, which could safeguard the health and well-being of elephants across the Asian region.

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