

# MOSQUITO-BORNE ENCEPHALITIS



**NEUROINFECTIOUS  
DISEASE/TROPICAL  
NEUROLOGY –**

**PRACTICAL  
APPROACHES TO  
PATIENT  
MANAGEMENT**

**Avi Nath**

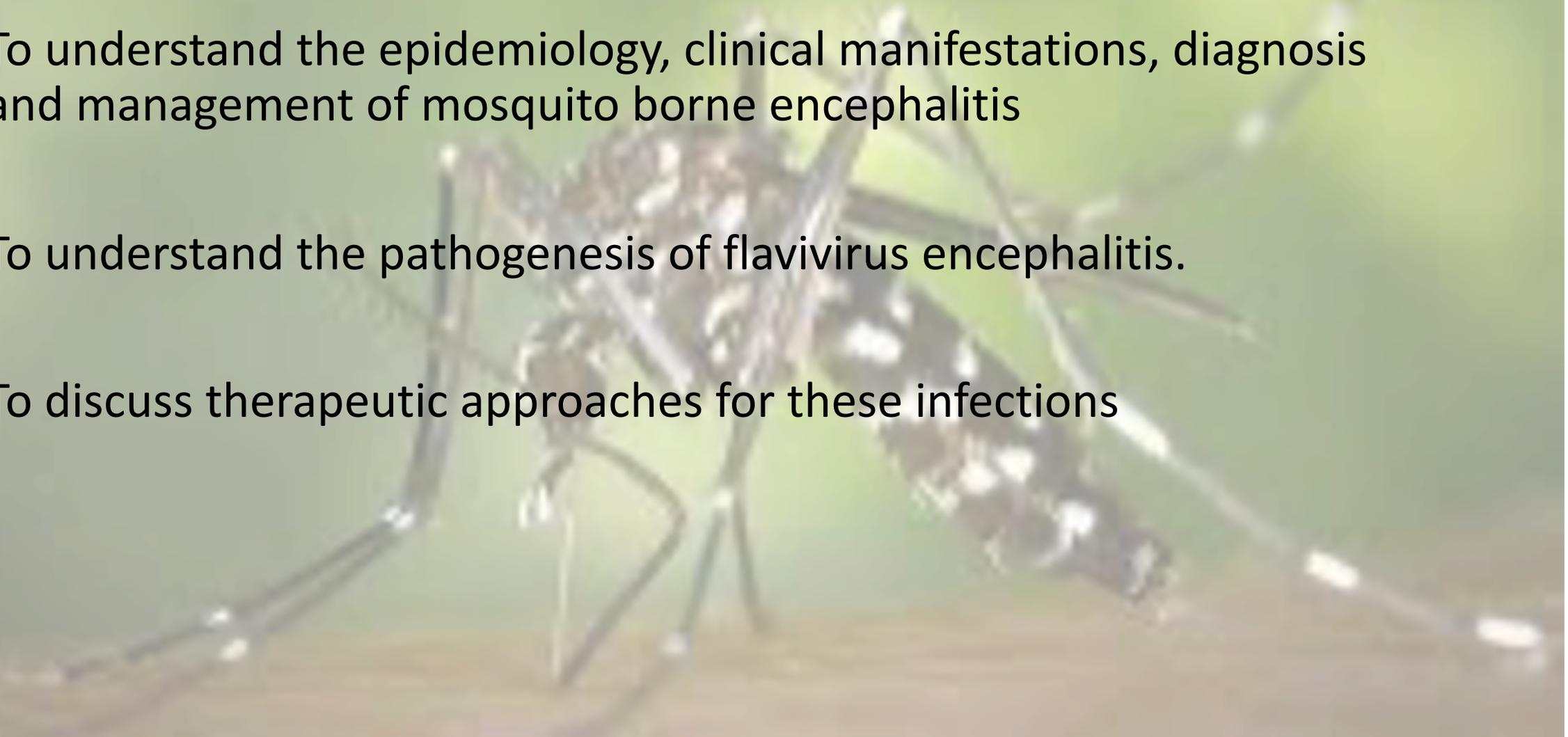
Chief, Section of Infections of the Nervous System  
National Institute of Neurological disorders and Stroke  
[natha@ninds.nih.gov](mailto:natha@ninds.nih.gov)

**No Disclosures**



# Learning Objectives

- To understand the epidemiology, clinical manifestations, diagnosis and management of mosquito borne encephalitis
- To understand the pathogenesis of flavivirus encephalitis.
- To discuss therapeutic approaches for these infections



# Key Message

- Flaviviruses are a major global threat and are emerging pathogens
- Early diagnosis and treatment are key to survival and prevention of long-term sequelae



# References

1. Peterson LR et al., West Nile virus: review of the literature. *JAMA* 310:308-15; 2013
2. Venkatesan A. Emerging infectious encephalitis. *Curr Opin Neurol* 34:410-16; 2021
3. McEntire CRS et al., Neurologic Manifestations of the World Health Organization's List of Pandemic and Epidemic Diseases. *Front Neurol* Feb 22, 2021
4. Piantadosi A and Kanjilal S. *J Clin Microbiol.* 58:e10926-19; 2020. Diagnostic Approach for Arboviral Infections in the United States
5. Baxter VK and Heise MT. Immunopathogenesis of alphaviruses. *Adv Virus Res*, 107: 315-82; 2020
6. Roberts A and Gandhi S. Japanese encephalitis: a review on emerging diagnostic techniques. *Front Biosci* 25: 1875-93; 2020
7. Zacks MA, Paessler S. Encephalitic alphaviruses. *Vet Microbiol.* 2010;140:281–6.
8. Abrams RPM et al., Therapeutic candidates for the Zika virus identified by a high-throughput screen for Zika protease inhibitors
9. *Proc Natl Acad Sci.* 117:31365-31375;2020.
10. Cle M et al., Neurocognitive impacts of arboviral infections. *J Neuroinflammation.* 17: 233; 2020
11. Johnson TP et al., Chronic Dengue Virus Panencephalitis in a Patient with Progressive Dementia with Extrapyrmidal Features. *Ann Neurol* 86: 695-703; 2019.
12. Sejvar J. Clinical manifestations and outcomes of West Nile virus infection. *Viruses* 6: 6060-23. 2014.
13. Da Silva Mello et al., Dengue and chikungunya infection in neurologic disorders from endemic areas in Brazil. *Neurol Clin Pract* 10: 497-502; 2020
14. Wilcox DR et al., Eastern equine encephalitis and use of IV immunoglobulin therapy and high-dose steroids. *Neurol Neuroimmunol Neuroinflamm* 8:e917; 2020
15. Turtle L and Solomon T. Japanese encephalitis-the prospects for new treatments. *Nat Rev Neurol* 14: 298-313; 2018
16. Gould EA and Solomon T. Pathogenic flaviviruses. *Lancet* 371:500-9; 2008.
17. Gill CM et al., Five Emerging Neuroinvasive Arboviral Diseases: Cache Valley, Eastern Equine Encephalitis, Jamestown Canyon, Powassan, and Usutu. *Semin Neurol* 39:419-427; 2019
18. Davis LE et al., North American encephalitic arboviruses. *Neurologic Clinics* 26: 727-57; 2008
19. Berger JR. Arthropod-borne virus encephalitis. In *Clinical Neurovirology 2<sup>nd</sup> Edition*. CRC Press Ed: A. Nath and JR Berger 2020