LEARNING OBJECTIVES:

1. Define encephalitis, meningitis, myelitis, encephalopathy
2. Identify routes of virus entry into the CNS
3. Recognize herpes as a source of sporadic encephalitis
4. Identify enteroviruses as entering CNS by hematogenous routes
5. Recognize West Nile virus as a common meningitis virus, and note related Zika
6. Discuss measles and its CNS disease sequelae
7. Discuss rabies infection and disease
8. Define and describe transmission, mechanism of action, and disease caused by unconventional “infectious” agents (prions)

KEY POINTS:

1. CNS infections are a product of neuroinvasiveness and neurovirulence.
2. Herpes infections replicate in two distinct cell types; epithelia and neurons. Productive neuronal infection is cytolytic; serious disease.
3. Enterovirus infections can have a hematogenous infection stage (viremia) which can lead to viral meningitis or encephalitis.
4. Arbovirus infections can cause meningitis. Infections such as WNV are “dead ended” in human patient hosts.
5. Sequeulae of measles infections can be life threatening CNS inflammatory diseases (this justifies measles vaccinations).
6. Rabies prophylaxis is justified given fatality of disease once virus is in neurons.
7. Unconventional agents (i.e., Cruetzfeld Jakob disease agent) have established a new infectious disease paradigm that promotes understanding of Alzheimers disease and other encephalopathies.