- all components of the CNS are vulnerable to viral infection
- acute viral meningitis is characterised by meningeal irritation, cerebrospinal fluid pleocytosis and a self limited clinical course
- myelitis implies infection of the spinal cord & may be present in isolation (eg polio) or as part of an overlap syndrome of encephalomyelitis (eg West Nile virus)
- encephalitis is characterised by alteration in cognition lasting 24 hours or more. As a result of parenchymal involvement, CNS function may deteriorate over several days; confusion, lethargy, somnolence, coma and seizures are common

- most viral infections of the CNS occur through haematogenous spread
- the virus may initially transverse the mucus membranes (eg enteroviruses) or be inoculated into subcutaneous tissue (eg arboviruses)
- after local replication in within in the extraneural tissues, sustained viraemia occurs
- alternatively, the virus may gain access to the CNS by direct neuronal invasion as occurs when rabies spreads retrogradely along the peripheral nerves into the CNS
- olfactory tracts may provide a route of entry for herpes simples type 1
- individual viruses demonstrate affinities for different anatomic areas of the CNS
- enteroviruses and mumps viruses usually infect the ependyma & tissues of the subarachnoid space, producing meningeal irritation
- arboviruses and rabies almost always involve the parenchyma and cause encephalitis
- in older children and adults, herpes simplex virus type 1 characteristically causes temporal lobe encephalitis, whereas herpes simplex type 2 more typically causes meningitis
- many viruses cause meningitis & clinical practice
- a specific pathogen is rarely identified
- epidemiological studies suggest the enteroviruses are the most common cause of viral meningitis. Other causes include arboviruses, herpes simplex type 2, acute HIV infection and lymphocytic choriomeningitis virus
- at the time of presentation, it may be difficult to differentiate viral meningitis from other forms of culture negative meningitis the may be more aggressive or require directed therapy
- the differential diagnosis for culture negative or aseptic meningitis includes tick borne infections such as Ehrlichia or Rickettsia, secondary Syphilis, mycobacterial or fungal infections & partially treated bacterial meningitis
- signs and symptoms of bacterial and viral meningitis are indistinguishable
- CSF findings suggestive of a viral cause include lymphocytic pleocytosis (typically with a total WCC <1000), normal glucose & normal to slightly elevated protein
- management is supportive & meningeal symptoms usually resolve in the first 2 weeks