

Diagnostic and sample submission considerations for California serogroup viruses

California serogroup (CSG) viruses are encephalitic mosquito-borne pathogens that circulate across Canada. Cases and seroprevalance rates of 20-30% have been documented from coast to coast including northern regions of the country such as the Yukon and North West Territories. It is recommended that these arboviruses be part of the differential (along with West Nile virus**) for neurological case investigations that occur during the mosquito season.

Take home message: Both serum and CSF samples should be collected for CSG virus serology (eg. **Jamestown Canyon and snowshoe hare viruses**) and priority should be placed on testing patients with neurological illness. RT-PCR on serum or CSF is not a sensitive test for these viruses.

California serogroup (CSG) virus testing

During the 2018 mosquito season, the NML received predominately single serum samples for CSG virus serology testing. Given the difficulty in interpreting results from a single serum sample due to the possible persistence of IgM antibodies and the high seroprevalence associated with these viruses in the Canadian population, the NML will no longer accept single serum samples for CSG virus serology testing unless also accompanied by a CSF sample (see below).

Starting in 2019, the following samples will be accepted for CSG serology:

- A serum and CSF sample from patients with clinical illness.
- Paired serum samples (acute and convalescent) collected 2-3 weeks apart from patients with clinical illness.
- A minimum of 1 ml of serum must be submitted as multiple tests are required for CSG serological testing.
- A minimum volume of 250 ml (but preferably 750 ml) of CSF is required for serological testing.

The presence of **IgM*** in CSF* and / or the detection of **CSG virus-specific neutralizing antibodies** in CSF is considered strong evidence of viral association with current illness (CDC arbovirus case definition).

Clinical information must be provided on the requisition before testing will be performed. Priority should be placed on testing patients with neurological illness. Samples not meeting these criteria will be rejected for testing although testing will be considered on a case-by-case basis under special circumstances.

Please note that RT-PCR on serum or CSF is not a sensitive test for the CSG viruses and will only be performed under special circumstances. The NML will determine if molecular testing is feasible after serological testing is complete.

***The documentation of CSG virus specific IgM in CSF or serum should be verified/accompanied by detection of CSG specific neutralizing antibodies in a patient's serum sample.**

**** Eastern Equine Encephalitis virus may be added to the differential for cases in eastern Canada.**