

Novel method for storing and transporting cerebrospinal fluid samples for diagnosis of JEV

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In resource poor areas patient samples often have to travel long distances for suitable diagnosis. Filter paper is currently used for the storage and transport of dried blood samples, however there is very little research on similarly simple and inexpensive methods for the transport of other diagnostic fluids. This prompted researchers from the Lao-Oxford-Mahosot Hospital-Wellcome Trust Research Unit (LOMWRU) to explore an appropriate storage system of cerebrospinal fluid. Published in *PLOS Neglected Tropical Diseases*, they propose the use of pre-cut filter paper to store samples for detection of anti-Japanese encephalitis virus antibodies from patient cerebrospinal fluid.

While novel and complex diagnostic tests are developing at a rapid rate they are not always accompanied by a corresponding development in laboratory infrastructure. Japanese encephalitis virus is one of the most common causative pathogens in Asia. However, diagnosis relies on laboratory facilities to test for antibodies in [cerebrospinal fluid](#). The researchers tested different techniques and filter papers to find the optimal method for transporting dried cerebrospinal fluid samples without the need for keeping samples frozen.

The researchers investigated a novel technique using a pre-cut circle of cellulose-cotton paper. This circle was saturated with the maximal fluid volume that could be added before being dried. To test whether Japanese encephalitis virus could be successfully identified from the samples, the

researchers carried out a retrospective analysis on cerebrospinal fluid for patients tested for the virus between 2009 - 2015 in Laos, with a total of 132 samples containing sufficient fluid volume for testing.

Samples were dried on the pre-cut [filter paper](#) and then left for 30 days at room temperature. When tested for the presence of viral antibodies 34 dried samples and 38 neat samples tested positive, with overall agreement of 92.4% (86.5 - 96.3 95% CI). Compared with neat (i.e non-dried) samples the dried spots showed 81.6% positive agreement (65.7 - 92.3 95% CI) and 96.8% negative agreement (91.0 - 99.3 95% CI).

"This novel method for saturating dried cerebrospinal fluid spots has the potential to enhance our knowledge of Japanese encephalitis virus epidemiology, and inform health policies where they are most needed," explains Dr. Tehmina Bharucha from LOMWRU and the London School of Hygiene and Tropical Medicine. "It could also be transferred for use in diagnosing other infectious diseases, including using other body [fluid](#) samples."

In Laos, laboratory diagnosis of Japanese encephalitis virus is only available in the capital city of Vientiane. A simple tool for storage and transport of samples will greatly improve clinical diagnosis, as well as proving a vital tool for the study of epidemiology and etiology of the infection.

More information: *PLOS Neglected Tropical Diseases*, [dx.plos.org/10.1371/journal.pntd.0004516](https://doi.org/10.1371/journal.pntd.0004516)

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