



Dried Blood Spot Sampling For COVID-19 Seroprevalence Survey

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The unprecedented outbreak of novel SARS-CoV-2 has created an immense pressure in healthcare systems globally. Its diagnosis is another challenge which remains costly and requires high-skilled manpower. Real-time PCR is considered gold standard test for diagnosing active infection; however, unavailability of adequate equipments and materials has affected testing strategies in many developing countries. Therefore, asymptomatic individuals remain untested. These factors have contributed to insidious community-level transmission and the actual prevalence remains obscure.

Anti SARS-CoV-2 IgM, IgG and IgA antibodies appear within 1-3 weeks of virus entry into the host. IgM and IgA antibodies degrade more rapidly than IgG antibodies which may persist in the circulation for more than 6 months [1]. One way to know the level of spread of the virus into communities is performing sero-prevalence study to find anti SARS-CoV-2 specific antibodies. It's useful for understanding past transmission, vulnerability of disease and for effective control and management policies and plans. Recent COVID-19 sero-prevalence reports emphasized that serological tests evaluate the actual infected individuals during the course of the pandemic and assist in making effective management and control policies [2,3].

Generally, venous blood sample is collected and serum is separated for sero-dignostic assays requiring collection, separation and transport sample to laboratory by maintaining cold chain. The process is labor-intensive and samples may be damaged during transport or due to cold chain failure. Dried blood spots (DBS) can be readily made from finger prick sample. Around 100µl whole blood is blotted over a blotting paper and dried at room temperature for few hours. DBS can be shipped in zip-lock plastic bags without cold-chain. Chemically pretreated cards ensure minimum biohazard risk. DBS card is

recommended for HIV sentinel surveillance having 99· 7% sensitivity and 100% specificity. Anti-hepatitis E virus IgM antibodies are stable in DBS up to 65 days at 4°C [4]. Serum and DBS samples produce similar results in COVID-19 IgG antibody assay; in IgG S1 subunit assay from DBS, sensitivity and specificity were 91·7% and 100%, respectively [5]. Thus, DBS can be used for COVID-19 serological tests.

Hence, we propose DBS sampling for large-scale seroprevalence surveys in COVID-19. It is inexpensive, minimizing the cost of collection, cold chain, transportation and storage with noteworthy sensitivity and specificity. There is no risk of spillage and damage of samples. In addition, DBS can be used for sero-epidemiological surveys in natural animal reservoirs of pathogens.

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