



**A SIMPLE AND CHEAP DIAGNOSTIC SCREENING PROFILE TO DETECT CORONA  
VIRUS (COVID 19) AT THE EARLIER THAN EXISTING TESTS.**

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**ABSTRACT**

An emergence of novel Corona virus outbreak in China, has become a global threat. In order to overcome this pandemic, medical laboratories across world can play vital role. It is rightly said that medical problems which can not be solved in a clinic can be solved in medical laboratory. There are different types of tests which support diagnosis of a disease. Some of them are screening tests and others are confirmatory tests. The conventional RT-PCR test being done to detects the virus based on RNA as a confirmatory test. The antibody test will detect the body's response to the virus, being done as a screening test. The former is direct evidence and the latter the indirect evidence. There is shortage of PCR kits, the test is complicated, expensive and time-consuming. The existing antibody test is also reasonably expensive. The serological test will only help screen number of suspected patients in a shorter duration, but is not aimed to be a tool for mass testing as it is expensive as well. Larger number of medical laboratories across India are small comprising about 80%, 18% are mid size laboratories and 2% are reference laboratories. These confirmatory tests are done in either mid size laboratories or reference laboratories. Present price of corona virus tests is approximately Rs 1500, that include screening tests costing Rs 500 and the confirmatory tests costing Rs 1000, in many of developing countries. Recent studies conducted on Covid patients showed simple existing lab tests such as Erythrocyte Sedimentation Rate (ESR) and C-Reactive Protein (CRP) levels were raised and Differential Leukocyte Count (DLC), revealed lymphocytopenia in Covid patients. Therefore these tests can be used to screen Covid patients, which cost less than Rs 100, are reliable and can be used for screening large number of patients. There is great demand for the screening tests for Covid, worldwide and these can be used as screening tests. The best way to prevent and slow down transmission is to diagnose corona virus at the earliest to minimize its affect.

**KEYWORDS:** Erythrocyte Sedimentation Rate (ESR); C-Reactive Protein (CRP); Differential Leukocyte Count (DLC); Reverse transcription polymerase chain reaction (RT-PCR).

An emergence of novel corona virus (Covid) outbreak in Wuhan, China, has become a global threat. In order to overcome this pandemic, medical laboratories can play vital role. It is rightly said that medical problems which can not be solved in a clinic can be solved in medical laboratory. There are different types of tests which support diagnosis of a disease. Some of them are screening tests and others are confirmatory tests. The conventional Reverse transcription polymerase chain reaction (RT-PCR) test being done to detects the virus based on RNA. The antibody test will detect the body's response to the virus. The former is direct evidence and the latter the indirect evidence. Therefore, the antibody tests are being used as a screening test where large number of people are being quarantined and where everybody cannot undergo RNA test. There is shortage

of RT-PCR kits world wide, the test is complicated, expensive and time-consuming.

Larger number of medical laboratories across India are small, comprising about 80%, 18% are mid size laboratories and 2% are reference laboratories. These confirmatory tests are done in either mid size laboratories or reference laboratories. The advantage is that the antibody test is very simple test. Just a drop of blood is required and the results will be available in just one-two hours. Some kits require whole blood and some kits require blood to be centrifuged. Present average price of corona virus test is Rs 1500 that include screening tests costing Rs 500 and the confirmatory tests costing Rs 1000 in many of developing countries including India. The serological test will only help to screen more number of suspected patients in a shorter

duration, but is not aimed to be a tool for mass testing as it is also reasonably expensive. Recent studies showed simple existing lab tests such as Erythrocyte Sedimentation Rate (ESR), C-Reactive Protein (CRP) and Differential Leukocyte Count (DLC) levels are helpful in Covid patients for predicting the status.

In a recent study conducted on Covid patients by Zhou, revealed, twenty-four of 30 patients who underwent routine blood tests (80.0%) had a lymphocytopenia. Of 27 patients who had their Erythrocyte sedimentation rate and high-sensitivity C-reactive protein level raised, 18 (66.7%) and all 27 (100.0%) had an elevated high-sensitivity C-reactive protein level.<sup>[1]</sup> Second review on Covid patients by Dan J Bell noted in a study of 138 hospitalised patients; lymphocytopenia, and mild elevations of inflammatory markers (CRP and ESR).<sup>[2]</sup> Another study conducted on Covid patients by Weiling Cao showed, Lymphocytes of overall patients were decreased. Alanine transaminase (ALT) and aspartate transaminase (AST) in the normal range of overall patients, but its were elevated in the severe group. C-reactive protein (CRP) level of all patients were increased markedly, but it in the severe group was significantly higher than that in the non-severe group.<sup>[3]</sup> In an another study by Wang on Consecutive cases above 60 years old with Covid in Renmin Hospital of Wuhan University from Jan 1 to Feb 6, 2020 were included of which 339 patients with Covid (aged 71±8 years, 173 females (51%)) were enrolled, showed Lymphocytopenia as a common laboratory finding (63.2%).<sup>[4]</sup>

All of the above stated studies and reviews support raised levels of ESR, CRP and decreased levels of lymphocytes. These tests are cheap and readily available in small, mid sized and reference laboratories across India, which cost less than Rs 100. There is great demand for the screening test worldwide and these can be used as screening tests.

The best way to prevent and slow down transmission is to diagnose corona virus at the earliest to minimize its affect. In view of the above, it is to bring to the notice of medical/paramedical staff that the simple and cheap tests can be used to screen corona virus detection.

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