

COVID-19 Point-of-care Tests and their Application in the Great Indian Healthcare Delivery Pyramid

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ABSTRACT

COVID-19 pandemic is spreading like wildfire. Although several countries across the world imposed strict lockdown to break the chain of viral transmission, this respiratory inferno has not spared any country/continent. Months of lockdown saw a sharp rise of unemployment across our country. The limited economic opportunities forced a large numbers of daily wage labourers to migrate back towards their hometowns (countryside) which led to further spike of COVID-19 cases “the migrant paradox”. Indian Council of Medical Research (ICMR) has emphasized the significance of ‘test-track-treat’ as the way ahead. Indian Government has been quick to respond to World Health Organization (WHO)’s advice for increasing level of testing for COVID-19. Moving testing from laboratory to the point of care will potentially thrust the diagnostic capacity of our country. In resource limited countries like India with huge population burden, accurate and scalable point-of-care (POC) tests are especially significant to reduce the time for an actionable result viz., patient isolation/contact tracing/infection prevention and control activities etc. We systematically reviewed the published work using the terms novel coronavirus 2019, COVID-19, SARS-CoV-2, human coronavirus, etc. PubMed, NCBI, World Health Organization, Ministry of Health and Family Welfare (MoHFW, India), Indian Council of Medical Research (ICMR, India) and Centers for Disease Control and Prevention databases were searched, and bibliographies of relevant studies were included. We extracted COVID-19 outbreak and genomic data as reported in various studies discovered through this methodology, and presented in tables, figures and text. This review is our attempt at highlighting the various POC tests available for SARS-CoV-2 and their application in a resource limited developing country.

Keywords: SARS-CoV-2, Rapid test, Molecular tests, Serological tests, Nanotechnology

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