As the world prepares for the rollout of mass immunization in 2021, testing and manufacturing ramps up to ensure that vaccines are safe, effective, and available. A critical component of the development process uses serological tests to assess seroconversion and the efficacy of the vaccines being deployed. Antibodies remain the backbone of immunoassays. Here, we discuss the importance of antibodies as vaccines look to change the landscape of the COVID-19 pandemic.

SARS-CoV-2 Vaccines

As we move closer to the global deployment of a vaccine against Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), the need for accurate serological testing is at its peak.

Vaccines work by instigating an immune response in the inoculated individual to develop neutralizing antibodies, enabling the body to detect and clear the virus before the infection becomes a disease.

Vaccine efficacy – Monitoring seroconversion

Tests that can quantitatively measure antibodies generated in response to infection or vaccination are critical in monitoring the immune response in vaccine recipients. Highly sensitive serological tests use immunoglobulins (antibodies) to detect antibodies generated by the immune response. Monitoring the immune response to vaccination aids clinicians in assessing the efficacy of the vaccine to generate an immune response and prevent infection. Not only as a step in clinical trials during vaccine development,

but also to evaluate real-world response in patients.

Novel treatments

Although Covid-19 may be mild for many, some cases result in severe disease; novel treatments continue to develop in the wait for vaccine deployment. One therapeutic avenue is plasma donation (plasmapheresis). Serology tests allow antibody levels to be determined in patients who have cleared infection – indicating their suitability as donors.

Seroprevalence

Knowing the exposure levels of the virus in a population allows virus spread and its associated risk to be calculated and managed, for example, government decision making for the implementation and timing of public containment measures.

Production – challenges for validation

Increasing production to meet the demands of global vaccine deployment compels manufacturers to achieve consistent quality and efficacy across production batches. Robust and sensitive serological tests enable vaccine manufacturers to assess product efficacy between batches to ensure reliability and efficacy.

Learn more about how immunoassays are important in the fight against COVID-19. .

Serological testing for diagnostics and disease surveillance
Lateral flow

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