



Putting Covid-19 Testing to the Test

The pandemic has underscored the chronically poor testing capacity and calls for diagnostics strategies at the national level.

More than two years into the Covid-19 pandemic, the health crisis is still unfolding in many parts of the world. While Europe continues to lift restrictions in spite of **another looming wave**, parts of Asia, notably China's Jilin province, are experiencing lockdowns. The week of 7 to 13 March 2022 saw the first rise of new infections globally since the end of January 2022, with 11 million new cases and just over 43,000 new deaths, according to the WHO. Even if we now have better access to vaccines and are bent on living with Covid-19, these figures tell us we are not yet out of the woods.

Widespread testing and timely diagnosis remain critical for continued pandemic control and preparedness. In fact, regular testing and wastewater surveillance can help us to identify surges and emerging variants, assess vaccine efficacy and support test-and-treat strategies. Yet, testing shortages in many countries have been a major contributing factor to the **botched early response** to the pandemic.

The Covid-19 pandemic has underscored the chronically poor testing capacity, particularly in resource-limited settings, and calls for diagnostics strategies at the national level.

Putting governments and industry to the test

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Scientists have developed tools to tackle Covid-19 at an unprecedented speed. This would not have been possible without collaboration, robust public and private investments, and effective coordination. In parallel to the race to develop effective vaccines, the race to develop and deploy novel testing approaches and therapeutics for the SARS-CoV-2 virus is ongoing. While vaccine development and deployment were managed with much resolve, endeavours to enhance testing capacity have not received as much attention.

The testing gap was not only observed in the low- and middle-income countries (LMICs), as described in "**The silent and dangerous inequity around access to Covid-19 testing**", but also in advanced nations such as the US, UK, France, Australia and Singapore.

In an **INSEAD Knowledge article in 2020**, I had highlighted the need for governments to focus their efforts on managing a testing market with a variety of tests for different use cases. Unfortunately, many countries, including the US, were over-reliant on polymerase chain reaction (PCR) tests and did not pivot to rapid antigen testing (RAT) swiftly enough. The PCR tests were the mainstay of Covid-19 testing till last year. With the emergence of the more transmissible Omicron variant and its BA.2 sublineage, the saliency of a testing strategy reliant

almost exclusively on PCR testing was put to test.

More affordable tests with short turnaround time were needed to scale up testing for large populations. Rapid antigen tests proved promising, as they can be done at home or in community settings at relatively lower costs. More importantly, with a turnaround time of just 15 minutes, they can accelerate detection and responses to Covid-19. However, due to the time required to scale up production and the limited pool of approved suppliers globally, production fell way behind demand. The US FDA has been criticised for not approving more rapid test suppliers more quickly. For the self-testing industry – which was best known for pregnancy tests in high-income countries and for malaria and HIV self-tests in LMICs – such demand surges were unprecedented.

The Covid-19 waves hit supply chains hard and most countries were unable to react to fluctuations in demand for testing. Unfortunately, unlike for vaccines, advanced contracting for test kits was not prioritised. In periods of high demand, manufacturers expanded capacity by adding production lines, running existing ones 24/7 and sourced for new suppliers. Yet, prices for tests supplied to governments and businesses in European countries such as Denmark, Germany and the UK **slumped after a surge in infections receded** in 2021. Naturally, suppliers were hesitant to scale up production in view of demand swings.

Role of governments and global agencies in a healthy testing market

Investing in testing capacity must be seen as an investment in preparedness. Governments and global organisations can take the lead in organising the overall testing market to achieve a higher level of readiness. Amid the ups and downs of Covid-19 waves, governments not only need to ensure that production meets immediate demand, but also maintain stockpiles even in periods of low demand for future waves.

Fluctuations in demand tend to stand in the way of manufacturers investing sufficiently in production expansion and research on new cost-effective testing approaches. Governments need to help stabilise demand and provide some degree of financial assurance by sharing manufacturers' risks instead of exposing them to a "feast or famine" demand pattern. For tests producers to invest in building additional manufacturing capacity and for the in-country private sector to create more capacity to deploy such tests, they need contracting models which include some degree of risk sharing with the governments.

Procurement commitments, such as the UK's pledge

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at the end of 2021 to triple its testing programme and the US government's funding of free tests earlier this year, send vital demand signals but do not always translate into demand. However, the US government's purchase and distribution of 1 billion at-home rapid Covid-19 test kits directly to American households did represent a small step towards stabilising the rapid test market. Moreover, firm commitments on the future utilisation of new Covid-19 testing manufacturing capacity would not only allow governments to address Covid-19 testing needs, but help strengthen the surveillance model for endemic diseases and future pathogens.

Ultimately, governments need to consider how much excess testing capacity they are willing to invest in, fully acknowledging that not all of it may be used when things are going well. But that **capacity needs to be available** when the next wave hits. This would involve large investments from the government, not just to purchase more tests, but also to systematically resolve bottlenecks in the testing supply chain.

Global agencies and national governments must get serious about the geographical diversification of test manufacturing capacity by investing in production in regions where test production is limited. This can contribute to the regions' preparedness and resilience, and more generally, to more equitable access and global health security.

Coordinating efforts

At the global level, leaders need to define a global diagnostics agenda for emerging pathogens as part of overall pandemic preparedness. This should be tied to global collaborations and investments to build infrastructure for molecular testing, particularly in LMICs. To better coordinate global supply chains, integrated platforms can help to improve resource mobilisation, allocation and collaborative purchasing mechanisms.

Global coordination is also needed to define research priorities and policy applications of current and future diagnostics options. For instance, to ensure that tests are applicable to diverse population profiles in a variety of settings, investments can be funnelled towards multi-country validation studies. Ultimately, multilateral collaboration is needed to achieve regulatory approval and enable timely adoption of tests.

Apart from individual testing, scientists and industry are pushing ahead with R&D efforts to develop new solutions. New surveillance methods such as testing for **Covid-19 virus in waste water** to provide early warnings have been developed at a scale not seen before in wastewater surveillance. **New therapeutic options** for early treatment of Covid-19 may further

amplify the need for a healthy testing market.

At the end of the day, we must accept that there is considerable uncertainty in the demand and supply landscape of the Covid-19 testing market. Test developers, manufacturers, governments and global organisations need to stay agile and collaborative to be able to change strategy quickly as new developments unfold. Operational flexibility, diversity in testing approaches and more effective ways to share demand-side risks will be important attributes to manage uncertainty in the testing market.

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