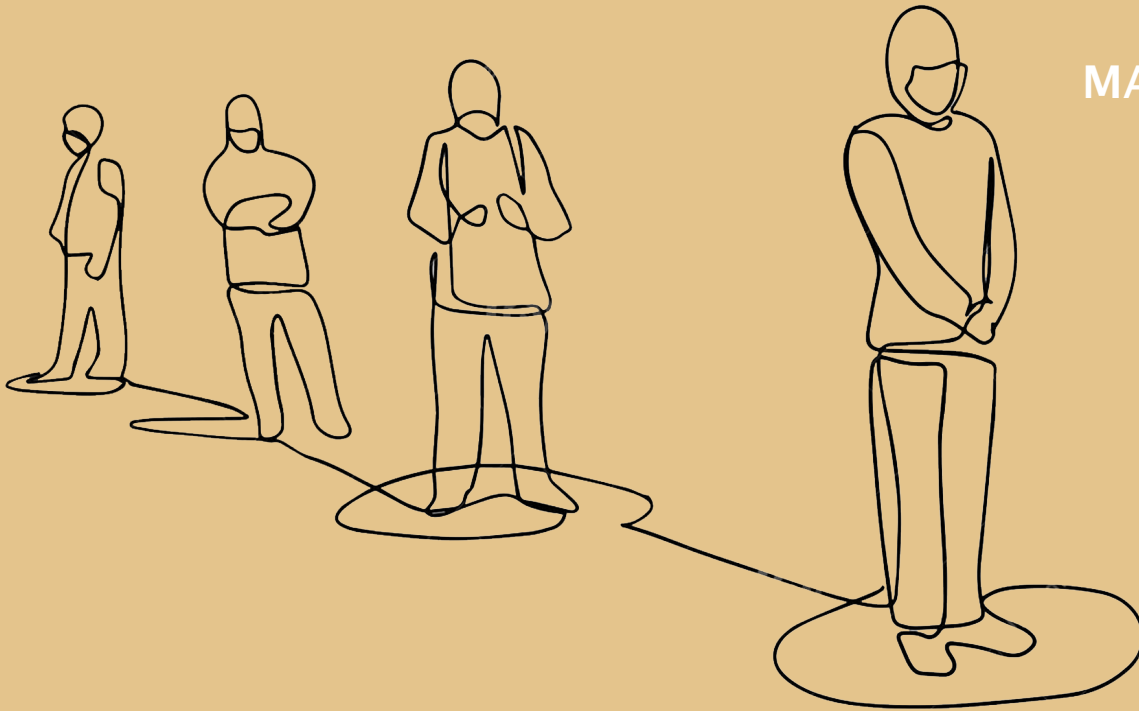


THE *LANCET* COVID-19 COMMISSION
TASK FORCE ON PUBLIC HEALTH MEASURES
TO SUPPRESS THE PANDEMIC

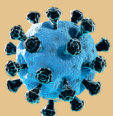
SARS-CoV-2 variants: the need for urgent public health action beyond vaccines

MARCH 2021



The *Lancet* COVID-19 Commission

Task Force on Public Health Measures to Suppress the
Pandemic



THE *LANCET*
COVID-19 COMMISSION

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For more information about the *Lancet* COVID-19 Commission, please go to covid19commission.org.

The following report has been posted online by the Commission Secretariat, and has not been peer-reviewed or published in *The Lancet*, nor in any other journal. This report intends to bring together expert views on key topics as the COVID-19 pandemic unfolds.

KEY POINTS

1. SARS-CoV-2 variants of concern have emerged simultaneously in many countries, including the highly transmissible variant B.1.351, now present in at least 46 countries.
 2. Lack of capacity for genomic surveillance in many countries, including some higher income countries, means that the situation may be even more serious than it appears.
 3. No one is safe until everyone is safe. We are in a race against time to get global transmission rates low enough to prevent the emergence and spread of new variants overcoming immunity conferred by vaccination and prior disease.
 4. Differences in the effectiveness of vaccines in providing immunity to variant B.1.351 raises the concern that current vaccines may be less effective against new and emerging variants.
 5. No single action is sufficient to prevent the spread of the virus: strong public health measures against the virus must be maintained in tandem with global vaccination programs.
 6. Conducting clinical trials of vaccines for every highly transmissible variant as it emerges is impracticable given the time needed to conduct them. We urgently need to identify biomarkers that can accurately predict vaccine protection against infection, disease and death.
- which has significant potential implications for what current vaccination programs can achieve;
 - They are more easily passed from one individual to the next, which has potential implications for public health measures and for health system preparedness (given infections and hospitalizations occur more rapidly); and
 - They can lead to more severe disease, which has implications for health system preparedness.
- There are currently at least three documented SARS-CoV-2 variants of concern:
- B.1.351, first reported in South Africa in December 2020;
 - B.1.1.7, which was first reported in the U.K. in December 2020;
 - P.1, which was first reported in Brazil and Japan.
- Experience in South Africa suggests that:
- Past infection with SARS-CoV-2 offers no or only very weak protection against the B.1.351 variants;
 - The AstraZeneca vaccine-generated antibodies have up to an 86-fold reduction in neutralizing activity and 3.2-fold lower (70% vs 22%) clinical efficacy against mild to moderate illness for B.1.351; and
 - The B.1.351 variant is about 50% more transmissible compared to pre-existing variants.

THE PROBLEM

At the end of 2020, there was strong hope that a global vaccination programme would render SARS-CoV-2 an endemic virus that could be contained at very low levels without further societal disruption or significant numbers of deaths. However, SARS-CoV-2 variants of concern have emerged and spread around the world, which means that current pandemic control efforts, including vaccination, are threatened.

Genetic mutations of viruses like SARS-CoV-2 emerge frequently, but some variants are labelled “variants of concern” because they have one or more of the following features:

- They can ‘re-infect’ people who already have antibodies from a previous infection and they can infect people who have already been vaccinated,

The B.1.351 variant has already been detected in at least 46 countries, including in the U.S.

If there are high levels of transmission and hence of replication of SARS-CoV-2 anywhere in the world, there will be more variants of concern, with the more infectious variants dominating. With international mobility, these variants will spread. Similar mutations are occurring in different countries simultaneously, meaning that not even border controls and high vaccination rates can protect individual countries from home-grown variants, including variants of concern, where there is substantial community transmission. Reducing community transmission is therefore paramount.

NEED FOR URGENT ACTION

1. **Maximum suppression:** Public health leaders should focus on efforts that maximally suppress viral infection rates and hence preventing the emergence of mutations that can become new variants of concern (each time the virus replicates there is an opportunity for a mutation to occur), through a combination of vaccination and continued public health and behavioural measures (such as facemasks and physical distancing).
2. **Global equity in vaccine access:** High-income countries should support multilateral mechanisms such as COVAX vaccines and donate excess vaccine to low and middle income countries. They should strengthen laboratory research globally, enable and accelerate knowledge transfer and sharing of intellectual property. While equitable access is an important global goal, there is an overarching imperative to reduce the emergence of viral variants of concern, and this may necessitate prioritising those countries or locations with highest disease prevalence and levels of transmission, where the selective pressure and the rate of mutation are likely to be greatest.
3. **Strengthen public health and behavioural interventions:** in all countries to reduce the risk of further dangerous variants.
4. **Capacity to accommodate surges in demand for healthcare:** Health system leaders need to mobilise and support health professionals and manage increased hospitalizations over shorter periods during surges, without reducing care for non-COVID patients.
5. **Preparedness:** Suppression of viral infection rates and health system efforts need to be accompanied by:
 - Genomic surveillance programmes to identify and quickly characterize emerging variants in as many countries as possible around the world;
 - Rapid large-scale 'second-generation' A vaccine programmes and increased production capacity that can support equity in vaccine distribution across and within countries;
 - Studies of vaccine effectiveness in relation to existing and new variants of concern (ideally using biomarkers in laboratory studies and rapid clinical studies that yield results quickly) and living syntheses of these studies that derive implications for vaccine choice, combinations and re-vaccination;
 - Monitoring of the ability of diagnostic tests to reliably identify new variants;
 - Evaluation studies that examine need for adaptation to public health measures (e.g., double masking, duration of quarantine, approach to and frequency of testing) and to health system arrangements (e.g., hospital and long-term care visitor policies, personal protective equipment (PPE), sharing of room or ward by two or more patients who are infected with the same microorganism, Heating Ventilation and Air Conditioning systems, and surge capacity).