

# New COVID-19 variant growing rapidly in England

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The new SARS-CoV-2 variant is growing rapidly, is more transmissible than other variants, and affecting a greater proportion of under 20s.

The new variant has a transmission advantage of 0.4 to 0.7 in reproduction number compared to the previously observed strain.

The findings come in a [pre-print](#) authored by a collaborative team from Imperial College London, University of Edinburgh, Public Health England (PHE), the Wellcome Sanger Institute, the University of Birmingham and the [COVID-19 Genomics UK \(COG-UK\) Consortium+](#).

## **New variant of concern**

All viruses undergo genetic changes which are called mutations, and through selection pressure can result in different variants. The variant of SARS-CoV-2 (the virus causing COVID-19) originally termed lineage B.1.1.7, was detected in November 2020 and is rapidly spreading across England. Several [genetic changes](#) (substitutions and deletions) have immunological significance and are associated with diagnostic test failures. The absence of S gene target in an otherwise positive PCR test appears to be a highly specific marker for the B.1.1.7 lineage, which has now been designated a Variant of Concern (VOC) 202012/01 by Public Health England.

Using a variety of statistical approaches, the team evaluated the relationship between transmission and the frequency of the new variant across regions in the UK over time.

## **Greater transmission**

Using whole genome prevalence of different genetic variants through time and phylodynamic modelling (dynamics of epidemiological and evolutionary processes), researchers show that this variant is growing rapidly.

The study finds a high correlation between VOC frequency and something called S-gene target failure (SGTF) in routine PCR testing of

community cases. This allowed the researchers to use SGTF frequency as an estimate for VOC and non-VOC occurrence by region over time showing that VOC frequency is associated with epidemic growth in nearly all areas.

There is a consensus among all analyses that the VOC has a substantial transmission advantage (increased transmission compared to non-VOC), with the estimated difference in reproduction numbers between VOC and non-VOC ranging between 0.4 and 0.7, and the ratio of reproduction numbers varying between 1.4 and 1.8.

These higher infection levels took place despite the high levels of social distancing in England. Extrapolation to other transmission contexts requires caution, the researchers note.

## **Under 20s more affected**

The study finds that individuals under 20 years old make up a higher proportion of VOC cases than non-VOC cases. However, it is too early to determine the mechanism behind this change according to the researchers. They explain that it may partly have been influenced by the variants spread coinciding with a period where lockdown was in force but schools were open. Further research is ongoing on the specific nature of any changes in how the virus affects this age group.

Dr. Erik Volz of Imperial College London, said: "All viruses evolve, and very rarely a virus will change in a way that requires us to re-evaluate public health policy. We find overwhelming evidence of a change in transmissibility of the B.1.1.7 variant that should be taken into account when planning our COVID-19 response in the new year."

Prof Neil Ferguson of Imperial College London, said: "These analyses, which have informed UK government planning in recent weeks, show

that the new variant of concern, B.1.1.7, has substantially higher transmissibility than previous SARS-CoV-2 viruses circulating in the UK. This will make control more difficult and further accentuates the urgency of rolling out vaccination as quickly as possible."

Prof Axel Gandy of Imperial College London, said: "Until a very high proportion of the population has been vaccinated, strong social distancing measures are needed to control this more transmissible variant of COVID-19. Everybody that can be vaccinated should be vaccinated."

Dr. Meera Chand, incident director for COVID-19 at PHE, said: "These new analyses provide further evidence of the increased transmissibility of the novel variant of COVID-19.

"We now have two licensed vaccines, but this research underlines the importance of doing everything we can to reduce the spread of the virus while the vaccines are being rolled out. The basics remain very important: Comply with social distancing and abide by the restrictions in place."

Jeffrey Barrett of the Wellcome Sanger Institute, said: "Bringing the UK's high-throughput genomic surveillance together with data from community testing from around the UK and advanced statistical models has enabled us to understand how the new variant of the COVID [virus](#) spreads. It's a real testament to scientific teamwork that everything has come together so quickly."

**More information:** Report 42 - Transmission of SARS-CoV-2 Lineage B.1.1.7 in England: insights from linking epidemiological and genetic data: [www.imperial.ac.uk/mrc-global- ... -sars-cov-2-variant/](http://www.imperial.ac.uk/mrc-global-...-sars-cov-2-variant/)

Provided by Imperial College London

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