

* New COVID-19 Strain

A brief on new COVID-19 strain emerged in UK

Key Points

- A rapidly growing strain of SARS-CoV-2 is reported in the UK associated with an unexpectedly large number of genetic changes. This strain is named as B.1.1.7
- The two earliest sampled genomes that belong to the B.1.1.7 lineage were collected on 20-Sept-2020 in Kent and another on 21-Sept-2020 from Greater London. B.1.1.7 infections have continued to be detected in the UK through early December 2020. This reached nearly two-thirds of cases in mid-December.
- There is no evidence to suggest that it is more lethal, although this will need to be monitored. However, just increasing transmission would be enough to cause problems for hospitals.
- There is growing international alarm over a new variant of the coronavirus in the UK, with a host of countries imposing travel bans.

Mutation

This strain is carrying 23 mutations which is an unprecedented and high number as compare to previous data. Further, inferred nucleotide changes on this branch are predominantly amino acid-altering (14 non-synonymous mutations and 3 deletions). There are 6 synonymous mutations on the branch.

Three of these mutations have potential biological effects that have been described previously to varying extents:

1. Mutation N501Y is one of six key contact residues within the receptor-binding domain (RBD) and has been identified as increasing binding affinity to human and murine ACE2.
2. The spike deletion 69-70del has been described in the context of evasion to the human immune response but has also occurred a number of times in association with other RBD changes.
3. Mutation P681H is immediately adjacent to the furin cleavage site, a known location of biological significance

Possible Effects on Vaccine

Vaccines train the immune system to attack several different parts of the virus, so even though part of the spike has mutated, the vaccines should still work.

This virus is potentially on a pathway for vaccine escape, it has taken the first couple of steps towards that. Those steps are fast accumulation of mutations

Vaccine escape happens when the virus changes so it dodges the full effect of the vaccine and continues to infect people.

This may be the most concerning element of what is happening with the virus

A presentation by Prof David Robertson, from the University of Glasgow on Friday, concluded: "The virus will probably be able to generate vaccine escape mutants."