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## **New Mutant COVID-19 Strain (VUI – 202012/01) – More Contagious than Current Status**

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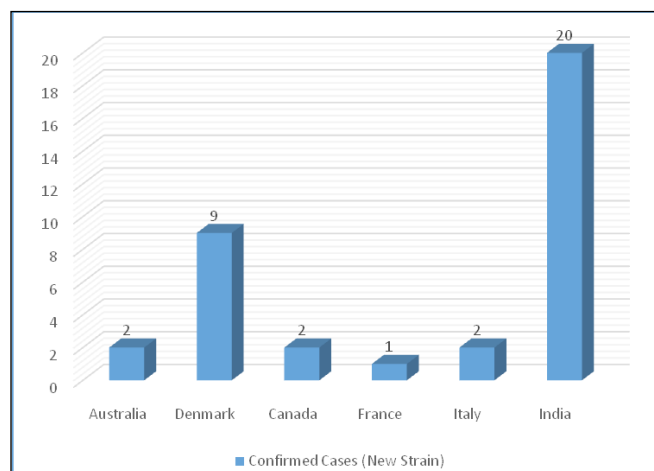
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### **Abstract**

The rapid spread of a new variant (VUI – 202012/01) of corona virus has been blamed for the introduction of strict tier four mixing rules for millions of people, harsher restrictions on mixing at Christmas in England, Scotland and Wales, and other countries placing the UK on a travel ban. The government's advisers on new infections now say they have "high" confidence that it is more able to transmit than other variants. All the work is at an early stage contains huge uncertainties and a long list of unanswered questions. According to BBC News (December 30, 2020), first 20 cases of new corona virus strain found in India as UK returnees tested positive.

### **Introduction**

An initial analysis of the new variant has been published and identifies 17 potentially important alterations. There have been changes to the spike protein - this is the key the virus uses to unlock the doorway to our body's cells. One mutation called N501Y alters the most important part of the spike, known as the "receptor-binding domain". This is where the spike makes first contact with the surface of our body's cells. Any changes that make it easier for the virus to get inside are likely to give it an edge. The other mutation - a H69/V70 deletion, in which a small part of the spike is removed - has emerged several times before, including famously in infected mink (<http://timesofindia.indiatimes.com/>). Work by Prof. Ravi Gupta (<https://www.bbc.com/news/health-55388846>) at the University of Cambridge has suggested this mutation increases infectivity two-fold in lab experiments. Studies by the same group suggest the deletion makes antibodies from the blood of survivors less effective at attacking the virus. It is rapidly increasing, that's what worried government is, we are worried, and most scientists are worried." The variant is unusually highly mutated (<https://timesofindia.indiatimes.com/topic/the-United-Kingdom>). The most likely explanation is the variant has emerged in a patient with a weakened immune system that was unable to beat the virus. Instead their body became a breeding ground for the virus to mutate. The variant has been named 'VUI – 202012/01' (the first Variant under Investigation in December, 2020). It is not uncommon for viruses to undergo mutations; seasonal influenza mutates every year. Variants of SARS-CoV-2 have been observed in other countries, such as Spain. This variant includes a mutation in the 'spike' protein. According to researchers, this virus has at least 17 changes of mutation. A list of the Countries where new corona virus strain confirmed cases reported till date with case numbers were indexed in Figure 1.



Source: <https://www.aljazeera.com/news/2020/12/26/which-countries-have-reported-new-variants-of-covid-19> & <https://indianexpress.com/article/india/india-uk-covid-strain-cases-vaccine-7125788/>

Figure 1: List of the Countries where new corona virus strain confirmed cases reported till 30th December 2020

## How Harmful Is It And Why Is This Variant Causing Concern?

While most mutations are either harmful to the virus or have no effect, a few mutations in this new variant looked as if they could potentially affect how the corona virus spread. According to reports, the new variant of the SARS-COV-2 could be up to 70 percent more transmissible than the old variant. What's more worrying is that this strain is affecting people in the age group of 30-60 years which is fairly young. Preliminary data from the UK shows the virus is spreading quickly in parts of southern England, displacing other variants that have been circulating for months. Three things are coming together that mean it is attracting attention. It is rapidly replacing other versions of the virus. It has mutations that affect part of the virus likely to be important. Some of those mutations have already been shown in the lab to increase the ability of the virus to infect cells. All of these come together to build a case for a virus that can spread more easily.

## How Much Faster Is It Spreading?

It was first detected in September, 2020. In November, 2020 around a quarter of cases in London were the new variant. This reached nearly two-thirds of cases in mid-December. You can see how the variant has come to dominate the results of testing in some centres such as the Milton Keynes Lighthouse Laboratory. Mathematicians have been running the numbers on the spread of different variants in an attempt to calculate how much of an edge this one might have. But teasing apart what is due to people's behaviour and what is

due to the virus is hard. There is no "nailed on" figure for how much more infectious the variant may be. Scientists, whose work is not yet public, have told figures both much higher and much lower than 70%. But there remain questions about whether it is any more infectious at all.

## How Far Has It Spread And Has This Happened Before?

It is thought the variant either emerged in a patient in the UK or has been imported from a country with a lower ability to monitor corona virus mutations. The variant can be found across the UK, except Northern Ireland, but it is heavily concentrated in London, the South East and eastern England. Cases elsewhere in the country do not seem to have taken off. Data from Next strain, which has been monitoring the genetic codes of the viral samples around the world, suggest cases in Denmark and Australia have come from the UK. The Netherlands has also reported cases. The virus that was first detected in Wuhan, China, is not the same one you will find in most corners of the world. The D614G mutation emerged in Europe in February and became the globally dominant form of the virus. Another, called A222V, spread across Europe and was linked to people's summer holidays in Spain.

## Will the Vaccines Work against the New Variant?

Almost certainly yes, or at least for now. All three leading vaccines develop an immune response against the existing spike, which is why the question comes up. 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. "But if we let it add more mutations, then you start worrying," (Prof. Gupta.) "This virus is potentially on a pathway for vaccine escape, it has taken the first couple of steps towards that." 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. This variant is just the latest to show the virus is continuing to adapt as it infects more and more of us.

## Conclusion

The new variant of corona virus named "VUI 202012/01" includes a genetic mutation in the "spike" protein that could be the cause of immediate and easy spread of the virus amongst people. This means, the variant that's been identified in the south-east of England has 17 mutations that affect the shape of the virus, including the spike protein that gives the corona virus family their name. While nothing further has been confirmed, scientists have suggested that this new strain could be the reason behind the faster spread of the

virus. Besides the three most common symptoms of COVID-19 such as fever, dry cough and loss of sense of smell and taste, 7 other symptoms have been associated with the new strain of corona virus. Following are the signs you should watch out for (Fatigue, Loss of appetite, Headache, Diarrhoea, Mental confusion, Muscle pains, and Skin rash). India has reported the first eight cases of mutant Corona virus strain as eight returnees from the United Kingdom tested positive, the health ministry. The mutated UK strain was detected in samples in National Institute of Mental Health and Neurosciences (NIMHANS), Bengaluru, in Centre for Cellular and Molecular Biology (CCMB), Hyderabad and one in National Institute of Virology (NIV), Pune and King Institute of Preventive Medicine and Research in Chennai. All these people have been kept in single room isolation in designated health care facilities. According to a King's College researcher, "If you develop any

symptoms that might be COVID-19, don't take a risk - you and your household must isolate immediately and ideally get a test as soon as possible."

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