The UK variant is likely deadlier, more infectious and becoming dominant—but the vaccines work well against it

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New research published this week in the *British Medical Journal* found the coronavirus variant originating in the United Kingdom, called

B.1.1.7, is substantially more deadly than the original strain of SARS-CoV-2.

The authors say the B.1.1.7 variant is between 32 and 104% deadlier. However, it's important to recognize these data were only collected from one group of people so more research is needed to see if these numbers hold true in other groups of patients.

The B.1.1.7 variant is becoming the dominant virus in many parts of the world, and is more infectious than the original strain (UK authorities have suggested it's up to 70% more transmissible). This makes sense because a virus can become more transmissible as it evolves. However, it's actually a strange thing for a virus to become more deadly over time (more on that later).

The good news is preliminary data suggest COVID vaccines still perform very well against this variant.

> Virus is still spreading at an extraordinary rate in NYC. ~4,000 cases/day, despite steady progress on vaccination.
>
> One big reason: variants
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> B.1.117 (UK) & B.1.526 (NYC) now together make up 51% of new cases here, up from 31% last week.
>
> We still need to take this seriously.
>
> — Mark D. Levine (@MarkLevineNYC) March 10, 2021

What did the study find?

There are two ways to check if someone has this variant. The first is by

doing full genomic sequencing, which takes time and resources. The other, easier way, is to analyze results from the standard PCR test, which normally takes a swab from your nose and throat.

This test targets two viral genes in the swab sample, one of which doesn't work very well with this variant (it's called the "S-gene"). So if someone was positive for one of these genes, but negative for the "S-gene," there's a good chance they're infected with the B.1.1.7 variant.

The study authors looked at the S-gene status of 109,812 people with COVID, and looked at how many died. They found S-gene negative people had a higher chance of dying 28 days after testing positive for the virus. The study "matched" patients in the S-gene positive and S-gene negative groups based on various factors (including age) to ensure these factors didn't confound the results.

This matches a report from the UK government's New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG), which said in January there's a "realistic possibility" infection with this strain is linked with a higher chance of death.

With increased death from a variant, you would also expect to see increased hospitalisations and ICU admissions in places where the variant is surging. We're still waiting for better data on this, but one Danish study suggested an increased risk of hospitalization from this variant.

But why is it more deadly?

Viruses have a selective advantage (meaning they're more likely to outcompete other viruses) if they're able infect more hosts. It's also advantageous for the virus if they can evade the host's immune response, because it helps them survive longer and reproduce more.

But it's actually quite strange for this variant to be more deadly. There's not a selective advantage for a virus to kill its host, because it might kill its host before they transmit the virus.

Scientists still need to find out why this variant is more deadly, and how it came about.

One possibility is this variant's increased disease severity is linked to its increased transmissibility. For example, it could be that because it's more infectious, it's leading to larger clusters of infection including in places like aged care homes, which we know are linked to more deaths. We don't know for sure yet.

Vaccines still respond well to this variant

It's important to note the current crop of vaccines still perform well against the variant.

A slight drop in the numbers of neutralizing antibodies responding to the B.1.1.7 virus was recorded after vaccination with vaccines from Novavax and Moderna. But the protection these vaccines offer should still be sufficient to prevent severe disease. This variant also had a negligible impact on the function of T-cells, which can kill virus-infected cells and help control the infection.

Preliminary data suggest people given the AstraZeneca vaccine also experienced a mild decrease in the number of circulating antibodies when infected with the B.1.1.7 variant. But again, the effect was relatively modest, and the authors say the efficacy of the vaccine against this variant is similar to that of the original Wuhan strain of the virus.

It's becoming dominant

The B.1.1.7 variant is becoming the dominant strain in many parts of the world. The ABC reports it's dominant in at least 10 countries.

In the UK it represents around 98% of new cases, and up to 90% of new cases in some parts of Spain.

In Denmark, new cases from this variant were around 0.3% in November last year, rising to 65% of new cases in February. It accounts for more than two-thirds of new cases in the Netherlands.

In the United States, the states of Florida, Texas and California (among others) are seeing significant increases in the number of cases from this variant.

> 1/ The B.1.1.7 UK variant is spreading rapidly across the U.S. It is more transmissible and likely more virulent (causing more severe disease). This is NOT the time to be lifting mask mandates & opening up indoor dining. https://t.co/olnPgSxSyH pic.twitter.com/RcmHT6MJco
>
> — Céline Gounder, MD, ScM, FIDSA (@celinegounder) March 6, 2021

It's possible the spread of this variant is even higher than reported. The ability to detect its spread is dependent on how often genomic sequencing is done, and many countries aren't currently in the position to do regular genomic testing.

There's a suggestion from some researchers and commentators the variant is linked with a surge in cases among kids. However, this observation remains largely anecdotal and it's unclear if this simply reflects rising total case numbers in certain places.

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