Twitter Thread by Giorgio Gilestro

Giorgio Gilestro
@giorgiogilestro

There are two issues with the English variant, as it is now referred. One issue is "what it could do" and the other issue is "what it could represent". They are both important and we know just enough to make hyphoteses that can drive to experiments. I'll try and explain 1/

Let's start with the latter: what does it represent? Mutations happen all the time and variants have been recorded in the thousands. The website below shows several 1000s different variants recorded in different countries. Why is this SO special? 2/

https://t.co/5MLzlcnJRh

The most special aspect of this variant is that the number of changes it shows is a large disconnect from its parental line as if this lineage made a big sudden jump rather than the usual slow progress to which we are used. 3/

There are a few (certainly not many) scenarios that are compatible with this jump and one of them is the one in which the virus has tried to escape its way out from an organism that had a static and relatively weak immune response.

4/

Such an organism is an immunosuppressed patient who tries to fight the infection with injections of donated plasma from a recovered patient. Someone who cannot produce antibodies and can be helped with plasmapheresis from a donor who could. 5/

In that organism, you would witness evolutionary pressure. The virus that is sensitive to the antibodies being injected would die: a random mutant who can escape that immune response would survive just enough to try and replicate. 6/

What kind of virus could survive that scenario? Well, one that 1) can go undetected by that antibody mix; 2) can replicate fast enough to outnumber the antibody chase. or 3) a mix of 1 and 2. The B.1.1.7 shows both features, on paper, hence the hypothesis of how it was born. 7/

Now, let's go back to point number 1. What can it do? Well, now that the hypothesis of its creation is clear, it should also be clear what it could do. It could lead to reinfections and it could spread much faster than the parental line. 8/

Data on the prevalence of this new strain clearly show it has outnumbered the parental strain in the wild, alarmingly quickly. In evolutionary terms, it means it has higher fitness than its competitors (viruses compete with each other not just with us). 9/ https://t.co/eTDTCvbYOh

> This is our UoB Turnkey lab data for proportion of positive cases that are the new variant pic.twitter.com/s2z2qrIl6A
>
> — Alan McNally (@alanmcn1) December 19, 2020

This has happened 1) everywhere in the country 2) in a period in which other strains were circulating and competing and 3) in a period of relative lockdown. Very different from what happened in the summer with the Spanish variant. 10/

So, the working hypothesis is that this strain is much faster than the parental line and can spread more easily. Is it more virulent too? We will know in the next weeks, but for now, the only answer possible is "we don't know". No point making public predictions. 11/

Can it lead to reinfections? In principle, it could. Remember we said it may have evolved escaping antibodies against the old virus. However, if this strain were to re-infect a normal, non-immunocompromised person, it would be met with the usual adaptive response 12/

New antibodies would form and it would be treated just like another virus (assuming virulence did not change).
13/

Can escape vaccines? Well. Vaccines were all designed to elicit the very same antibody mix this virus has learned to escape so yes, in principle it could. However, it is unlikely that they would be completely ineffective. 14/

A possible scenario is that efficacy will be lower than the 95% we have learned to celebrate. This scenario opens new outlooks on how we should select future vaccines: not simply looking at efficiency in the trial but taking into account the real world 15/

Lower efficiency, coupled with an increase in R would make the target of herd immunity very difficult to reach. 16/

So, we must continue the effort at vaccinating the world being aware that this shot will not be the end of it. We are entering a flu-like scenario, in which we will need a yearly jab. 17/

Finally, a note on what "it could happen". This episode shows this virus has a good capacity to evolve. Evolution rate, not mutation rate is what really matters at the end of the day. Stop worrying about "mutations" and start learning about evolution. https://t.co/T7IXQn5RQy 18/

Also, we must stop giving from granted some convenient beliefs, like the one that this virus is lethal almost only for the elderlies. Yes, it is now, but that should not be a laissez-passer for everyone. 19/

IMO this should be seen as the last nail in the coffin for exoteric declarations saying we should try to reach herd-immunity. We shall not. We shall avoid giving the virus every chance to mutate into something that will hit the fan. 20/END