NERVTAG meeting on SARS-CoV-2 variant under investigation VUI-202012/01

Date & Location of meeting: 11:00 – 13.00 18 December 2020 - Via telecon only
In attendance: Chair: Peter Horby (PH) NERVTAG Members: Peter Openshaw (PO), Andrew Hayward (AH), Wei Shen Lim (WSL) Julian Hiscox (J Hi), John Edmunds (JE), Neil Ferguson (NF), Robert Dingwall (RD), Muge Cevik (MC), Wendy Barclay (WB), James Rubin (JR), David Connell (DK), Jim McMenamin (JMM), Calum Semple (CSm), Cariad Evans (CE), NERVTAG Secretariat: Ruth Parry PHE Observers: Meera Chand (MCh), Maria Zambon (MZ) DHSC Observers: Sadia Dorsani (SD), Ursula Wells (UW), Jonathan Van Tam (JVT)
Apologies: Chloe Sellwood (CSe), Ben Killingley (BK)

Brief summary of NERVTAG opinion - signed off by Chair.

- The committee received and considered three documents:
    - The PHE document 'New evidence on VUI-202012/01 dated 18 December
    - Ct monitoring data from ONS/Oxford University COVID-19 Infection Survey
    - Bonsall paper: Early analysis of a potential link between viral load and the N501Y mutation in the SARS-CoV-2 spike protein
- Four analytic approaches were reviewed regarding the transmissibility of VUI-202012/01
    - Growth rate from genomic data: which suggest a growth rate of VUI-202012/01 that that is 71% (95%CI: 67%-75%) higher than other variants.
    - Studies of correlation between R-values and detection of the variant: which suggest an absolute increase in the R-value of between 0.39 to 0.93.
    - PCR ct values: which suggest a decrease of ct value of around 2 associated with the new variant.
    - Viral load inferred from number of unique genome reads: which suggests 0.5 increase in median log10 inferred viral load in Y501 versus N501.
- It was noted that variations in observed ct values can change with epidemiology since the stage of illness at which infection is detected can vary with incidence of cases, awareness of transmission, and the availability of tests.
- It was noted that VUI-202012/01 can be challenging to sequence so estimates of frequency of this variant may be underestimates.
- It was noted that whilst previous variants have successfully emerged in periods of low prevalence without clear evidence of having a selective advantage, the emergence and subsequent dominance of VUI-202012/01 in a period of relatively high prevalence suggests VUI-202012/01 does have a selective advantage over other variants.
- It was noted that VUI-202012/01 has demonstrated exponential growth during a period when national lockdown measures were in place.
- **In summary, NERVTAG has moderate confidence that VUI-202012/01 demonstrates a substantial increase in transmissibility compared to other variants.**
- NERVTAG concluded that there are currently insufficient data to draw any conclusion on:
    - Underlying mechanism of increased transmissibility (e.g. increased viral load, tissue distribution of virus replication, serial interval etc)
    - The age distribution of cases
    - Disease severity: 4 deaths in around 1000 cases have been identified but further

work is needed to compare this fatality rate with comparable data sets.

    - Antigenic escape. The location of the mutations in the receptor binding domain of the spike glycoprotein raises the possibility that this variant is antigenically distinct from prior variants. Four probable reinfections have been identified amongst 915 subjects with this variant but further work is needed to compare this reinfection rate with comparable data sets.

- The committee discussed the geographic extent of spread of the variant:
    - Within the UK, the variant is concentrated in the London, South East and East of England but has been detected in various parts of the UK.
    - Few cases of this variant have been reported internationally but one confirmed export from the UK to Australia has been reported. It was noted that other countries have lower sequencing capability than the UK.
- NERVTAG endorsed the actions proposed by PHE and in addition noted that:
    - Better comparative data on reinfection, readmission and case fatality rates will be available next week.
    - Better data on the age distribution of infections with this variant will be available next week.
    - In vitro data on the ability of convalescent and post-immunisation sera to neutralise this variant will take at least a further week.
- Work is ongoing to evaluate the ability of Lateral Flow Devices to detect VUI-202012/01.
- **NERVTAG recommends that a joint NERVTAG-SPI-M subgroup of SAGE is convened to provide further advice on risk and risk mitigation measures for VUI-202012/01.**