

22 June 2022 Risk assessment for SARS-CoV-2 variants VOC-22APR-03 and VOC-22APR-04 UK Health Security Agency

Indicator	Red, amber, or green status*	Confidence level	Assessment and rationale The risk assessment is presented in comparison to the current predominant variant (BA.2). Red indicates the assessed variant as worse than BA.2 in a characteristic, amber equivalent, green improved. The laboratory data includes published data and data supplied by Variant Technical Group (VTG) members (UKHSA, the Genotype to Phenotype Consortium, Oxford University, the Office for National Statistics and SIREN) which has been reviewed by VTG but is unpublished.
Overall growth advantage	Red	High	Evidence of a growth advantage compared to BA.2 BA.4 and BA.5 are now likely to be dominant in England. There is now an associated overall increase in coronavirus (COVID-19) incidence. The growth advantage is also evident in multiple other countries, including those with prior BA.2 waves similar to the UK.
Growth advantage 1: Transmissibility		Insufficient information	Insufficient data There is no direct data on transmissibility and there is no current ability to measure this directly from surveillance data. Based on data reported to VTG, ACE2 binding is increased for BA.4 and BA.5 compared to prior Omicron variants.
Growth advantage 2: Immune evasion	Red	Moderate	There is evidence of some antigenic change compared to BA.2, based on laboratory data (moderate confidence); insufficient data to assess vaccine effectiveness BA.4 and BA.5 are most closely related to BA.2. Structural modelling indicates there is likely to be antigenic change compared to BA.1 and BA.2, which may affect the binding of neutralising antibodies. Neutralisation data from prior Omicron infections (human or hamster) shows neutralisation of BA.4 is substantially reduced using BA.1 antisera but there is a more moderate drop in neutralisation by BA.2 specific antisera. Sera from triple vaccinees shows similar or lower neutralisation for BA.4 compared to BA.2 or BA.1. Sera from vaccinees with BA.1 or BA.2 breakthrough infections shows better cross reactivity against BA.4, although there is variation in the data. There is evidence from 2 national surveillance studies of ongoing reinfection, including after prior Omicron variant infection. There is insufficient data for a robust assessment of vaccine effectiveness but in population and survey data there were no early indicators of a large change. The current epidemiological data, whilst incomplete, is consistent with the neutralisation findings.
Infection severity		Low	In vitro data suggests similarity to previous Omicron variants; epidemiological data requires close monitoring There has been an increase in people admitted to hospital with COVID-19 in England. Whilst this accompanies an increase in incidence generally, early analysis suggests that the infection hospitalisation rate may be increasing from its low base of approximately 0.3% across all age groups. The reason for any observed increase in IHR is unclear. The properties of BA.4 and BA.5 as assessed in vitro are approximately in keeping with those of other Omicron variants, although it is possible, based on preliminary data, that there have been small changes in phenotype compared to BA.2. These require further confirmation and assessment of clinical significance. Countries which have experienced BA.4 and BA.5 waves have not experienced apparent high severity of disease and hospitalisation rates have tended to remain lower than previous waves.

* Refer to scale and confidence grading slide.