

Summary

This report has been published to share the detailed variant surveillance analyses which contribute to the Omicron risk assessment. This specialist technical briefing contains early data and analysis on emerging variants and findings have a high level of uncertainty.

A [separate report is published](#) covering surveillance data on all other variants of concern (VOCs) and variants under investigation (VUIs).

Omicron cases, hospitalisation and deaths

The data cut off for analyses in this report is 29 December 2021. At this time, there were 198,348 confirmed cases of Omicron VOC-21NOV-01 (B.1.1.529) (hereafter referred to as Omicron), identified through sequencing or genotyping in England, and 451,194 probable cases, identified through S-gene target failure (SGTF). This does not represent the total number of Omicron infections or cases (approximately 30% of community PCR tests are performed using an assay that can detect SGTF); SGTF accounts for 93% of cases with an S-gene test on 29 December, this is the number of cases which can be classified as Omicron for comparative analyses. As of 29 December, a total of 815 individuals with laboratory-confirmed (sequencing, genotyping or SGTF) Omicron have been admitted or transferred from emergency departments in England.

Studies of hospitalisation and vaccine effectiveness (VE)

Two studies have been undertaken which examine the association between both variant and vaccination status and risk of hospitalisation. Study 1 is based on a larger dataset, approximately half a million Omicron cases, because it includes all cases diagnosed in the community and in the first day of hospital admission, and all age groups. Study 2 uses a smaller dataset because it is restricted to symptomatic cases diagnosed in the community, followed by a hospital admission, in part to reduce the impact of cases where coronavirus (COVID-19) is incidental to the admission but detected on routine hospital admission screening. It is restricted to ages 18 and over.

The previous finding of reduced overall risk of hospitalisation for Omicron compared to Delta is confirmed by the updated Study 1. In addition, both studies find a substantial reduction in risk of hospitalisation for Omicron cases after 3 doses of vaccine compared to those who are unvaccinated, with overlapping estimate ranges. Both studies have been run on relatively small numbers of hospitalised cases and will require iteration. Despite the estimated reduction in hospitalisation risk and preserved vaccine effectiveness against hospitalisation, the very high

number of Omicron cases means that there may still be large numbers of admissions to hospital.

Study 1: Risk of hospitalisation (UKHSA/MRC Biostatistics Unit, University of Cambridge)

An update on the analysis published last week finds the risk of presentation to emergency care or hospital admission with Omicron was approximately half of that for Delta (Hazard Ratio 0.53, 95% CI: 0.50 to 0.57). The risk of hospital admission from emergency departments with Omicron was approximately one-third of that for Delta (Hazard Ratio 0.33, 95% CI: 0.30 to 0.37). These analyses were stratified on date of specimen and area of residence and further adjusted for age, sex, ethnicity, local area deprivation, international travel, vaccination status. They are also adjusted for whether the current infection is a known reinfection, although as reinfections are substantially under-ascertained, the adjustment may not have fully accounted for the effect of reinfections.

In this analysis, the risk of hospitalisation is lower for Omicron cases after 2 and 3 doses of vaccine, with an 81% (77 to 85%) reduction in the risk of hospitalisation after 3 doses compared to unvaccinated Omicron cases.

Study 2. Vaccine effectiveness against symptomatic infection and hospitalisation (UKHSA)

Vaccine effectiveness (VE) against symptomatic disease continues to be lower for Omicron than for Delta with waning by 10 weeks after dose 3, confirming findings published last week.

Symptomatic cases were then linked to hospitalisation data. After 3 doses of vaccine, the risk of hospitalisation for a symptomatic case identified with Omicron through community testing was estimated to be reduced by 68% (42 to 82%) when compared to similar individuals with Omicron who were not vaccinated (after adjusting for age, gender, previous positive test, region, ethnicity, clinically extremely vulnerable status, risk group status and period). Combined with the protection against becoming a symptomatic case, this gives a vaccine effectiveness against hospitalisation of 88% (78 to 93%) for Omicron after 3 doses of vaccine. Although waning is seen in the effectiveness against symptomatic disease, there is insufficient data to assess the duration of protection against hospitalisation, which is expected to last longer.

Risk assessment

The Omicron risk assessment will next be updated on 14 January 2022.