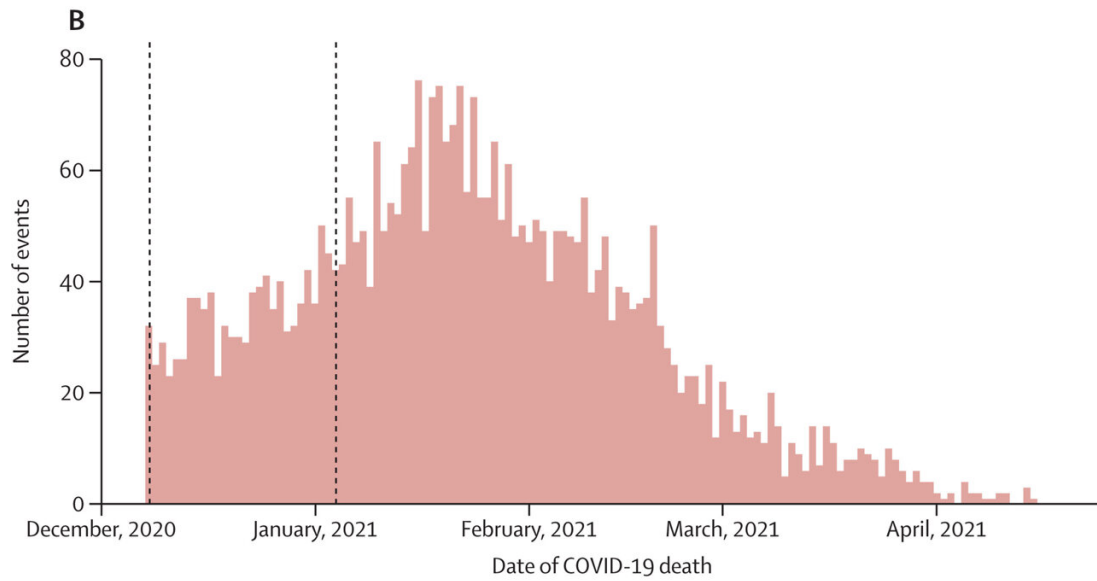
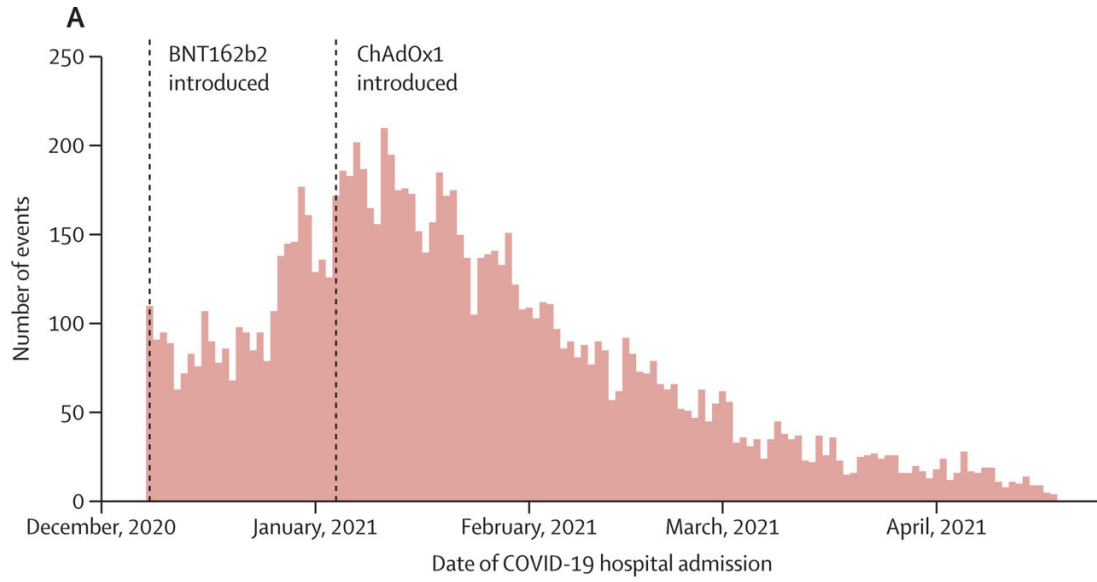


Vaccination works but a small number are still at increased risk

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Severe COVID-19 outcomes in Scotland in winter 2020–21 for hospitalization (A), deaths (B), and hospitalization and deaths combined (C). Credit: DOI: 10.1016/S2213-2600(21)00380-5

Men are more at risk of experiencing a severe complication from the COVID-19 virus than women even after vaccination, although the risk is low with only 0.07 percent of partially vaccinated and 0.006 percent of fully vaccinated people suffering a serious case of the virus, according to the first national study (Scotland) on COVID-19 outcomes after vaccination by a UK-wide consortium of researchers, including the University of St Andrews.

The research, published in [medical journal](#) *The Lancet Respiratory Medicine* (Tuesday 28 September), found that fewer than one in 2000 partially vaccinated people and fewer than one in 10,000 fully vaccinated people in Scotland suffered a serious case of COVID-19 (hospitalisations and deaths) between December 2020 and April 2021 when there were high background levels of infection.

The study used data from the Early Pandemic Evaluation and Enhanced Surveillance of COVID-19 (EAVE II) which was funded by UK Research and Innovation (Medical Research Council); Research and Innovation Industrial Strategy Challenge Fund; the Scottish Government; the National Institute for Health Research (NIHR); and Health Data Research UK.

The study, which also included researchers at the Universities of Aberdeen, Glasgow, Edinburgh and Strathclyde and Public Health Scotland, found that although the risk for men was around 25 percent

higher than that for women, those aged in their 80s were five times at greater risk than those aged 18–64, and those with multiple underlying health conditions, those admitted to hospital in the previous four weeks, those with a high risk occupation, living in a care home or a deprived area were also at greater risk even after having received both doses of a vaccine.

Dr. Utkarsh Agrawal of the School of Medicine at the University of St Andrews, a lead author on the paper, said: "Our research has identified that there are some groups who remain at greater risk of severe complications from the COVID-19 virus even after vaccination.

"However, the vaccination program has lowered that risk significantly with only 0.006 percent of people who have had both vaccinations suffering a severe complication from the virus."

Professor Aziz Sheikh, Director of the University of Edinburgh's Usher Institute and EAVE II study lead, said: "No vaccine is 100 percent effective. These data, from our national analysis of over 2.5 million COVID-19 vaccines, show that the risk of developing severe COVID-19 leading to hospital admission or death after at least one vaccination was—thankfully—very low. Based on this analysis, we would encourage anyone who has not yet been vaccinated to take up the offer as soon as possible.

"By identifying the characteristics of those most at risk of serious COVID-19 outcomes after vaccination, clinicians will, we hope, be better informed about which patients may require particularly close monitoring if they develop COVID-19."

A severe case of COVID-19 is defined as one involving hospitalization or death within 28 days of a positive test or with COVID-19 recorded as the reason for admission to hospital.

The COVID-19 vaccination program in Scotland began on 8 December 2020 with the Pfizer-BioNTech vaccine. This was then followed by the Oxford-AstraZeneca vaccine from 4 January 2021 after approval from the Medicines and Healthcare products Regulatory Agency (MHRA).

Of the 2.57 million adults who had received the first dose of a vaccine, only 883 were admitted to hospital with COVID-19 and 541 died within the period studied.

Nearly 700,000 people received their second vaccine in this period—27 percent of those included in the study with just 39 of those (0.006 percent) suffering a serious case of COVID-19.

The study also found that having had COVID-19 before receiving a vaccine reduced the risk of serious COVID-19 even further.

The authors report that taking age, sex and level of social deprivation into account, people with a history of asthma, [chronic kidney disease](#), heart failure, type 2 diabetes, dementia and coronary heart disease were at increased risk of serious COVID-19 after a vaccination.

The team will now continue to analyze the outcomes for those who have suffered a serious case of COVID-19 following second and, in eligible individuals, booster [vaccine](#) doses.

They also plan to extend this work from the focus on Pfizer-BioNTech and Oxford-AstraZeneca in this analysis to other vaccines such as Moderna, which are now beginning to be administered at scale.

Finally, they also plan to investigate outcomes in children and young people who are now eligible for COVID-19 vaccinations.

More information: Utkarsh Agrawal et al, COVID-19 hospital

admissions and deaths after BNT162b2 and ChAdOx1 nCoV-19 vaccinations in 2.57 million people in Scotland (EAVE II): a prospective cohort study, *The Lancet Respiratory Medicine* (2021). [DOI: 10.1016/S2213-2600\(21\)00380-5](https://doi.org/10.1016/S2213-2600(21)00380-5)

Provided by University of St Andrews

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