Office for National Statistics

Statistical bulletin

Risk of COVID-19 death in adults who received booster COVID-19 vaccinations, England: September 2022 to April 2023

An analysis of the sociodemographic factors and health conditions associated with the risk of COVID-19 and non-COVID-19 deaths in boosted individuals in England.

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1 . Main points

- Age was associated with the risk of death involving coronavirus (COVID-19) in individuals boosted in autumn 2022, with the risk being over 46 times greater in those aged 80 years, compared with those aged 50 years; for non-COVID-19 deaths the risk was 30 times greater in 80-year-olds compared with 50-year-olds.
- Women were at a lower risk of COVID-19 death (relative risk: 0.63, 95% confidence interval, 0.60 to 0.66) and non-COVID-19 death (0.76, 0.75 to 0.77) relative to men.
- Being morbidly obese or underweight was associated with an increased risk of COVID-19 and non-COVID-19 deaths.
- Several health conditions were associated with an elevated risk of COVID-19 death, including learning disabilities or Down Syndrome (5.07, 3.69 to 6.98), pulmonary hypertension or fibrosis (2.88, 2.43 to 3.40), motor neurone disease, multiple sclerosis, myasthenia or Huntington's disease (2.94, 1.82 to 4.74), cancer of blood and bone marrow (3.11, 2.72 to 3.56), Parkinson's disease (2.74, 2.34 to 3.20), lung or oral cancer (2.57, 2.04 to 3.24), dementia (2.64, 2.46 to 2.83), or liver cirrhosis (2.65, 1.95 to 3.59).
- For some of these conditions, the risk of non-COVID-19 death was also raised in a similar magnitude (learning disabilities or Down Syndrome, Parkinson's disease, lung or oral cancer, motor neurone disease, multiple sclerosis, myasthenia, or Huntington's disease) or higher (dementia) than the risk of COVID-19 death.
- For some conditions, such as cancer of blood or bone marrow, the risk of death was significantly higher for COVID-19 causes than for non-COVID-19 causes.

2 . Data

Risk of COVID-19 death in adults who received booster COVID-19 vaccinations, England: September 2022 to April 2023 Dataset | Released 19 June 2023 An analysis of the sociodemographic factors and health conditions associated with the risk of COVID-19 and non-COVID-19 deaths in boosted individuals in England.

3 . Measuring the data

These analyses used data from the the National Immunisation Management Service (NIMS) linked to Census 2021 and the General Practice Extraction Service (GPES) Data for Pandemic Planning and Research (GDPPR) via NHS number. Census 2021 was linked to the NHS Personal Demographics Service (PDS) using a combination of name, date of birth and address, with a linkage rate of 94.6%.

The study population included adults aged 50 to 100 years who had received a COVID-19 booster dose in England after 1 September 2022, were enumerated in Census 2021, and were linked to the PDS. An autumn booster dose was defined as a booster dose administered on or after 1 September 2022, and at least 84 days since the last clinically acceptable dose, and individuals must have had at least two doses prior to the booster.

There were 14,651,440 adults aged 50 to 100 years in our study population (mean equals 67.9 years, standard deviation (SD) equals 10.9); 46.9% were male and 90.4% were White British. Between September 1, 2022, and April 11, 2023, there were 6,800 COVID-19 deaths (52.2% male), and 150,075 non-COVID-19 deaths, 1 (48.4% male). The mean age of those who died from COVID-19 was 84.0 years (SD) equals 8.87) and for non-COVID-19 deaths was 82.3 years (SD equals 9.85).

We used Cox proportional hazards regression to model the risk of death involving coronavirus (COVID-19) and non-COVID-19 deaths in people who had received a booster vaccination dose in autumn 2022. For COVID-19 outcomes, this was defined as any death with codes U071 (confirmed COVID-19) and U072 (suspected COVID-19) recorded anywhere on the death certificate, and non-COVID-19 deaths defined as any other cause of death occurring between 1 September 2022 and 11 April 2023. For COVID-19 models, individuals were censored at date of death for other causes, and for non-COVID-19 models, censored at date of death for COVID-19 causes, if the date of deaths occurred before the end of the study date (11 April 2023). Time at risk started 14 days after receipt of the autumn booster dose and ended either at time of death or end of study period (11 April 2023). The predictors included in the model sociodemographic characteristics (age, sex, ethnic group, region, disability status) and medical conditions. The medical conditions were derived using primary care records based on the definitions used by the QCovid2 risk prediction model. Models were also adjusted for calendar time. All counts have been rounded to the nearest 5, with values less than 10 suppressed for disclosure reasons.

4 . Related links

Characteristics associated with the risk of death involving coronavirus (COVID-19) among people receiving a booster vaccination, England: January to March 2022 Article | Released 08 September 2022 An analysis of the socio-demographic characteristics associated with the risk of coronavirus (COVID-19) death in boosted individuals in England.

5 . Cite this bulletin

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