



London

Cite this as: *BMJ* 2021;372:n506<http://dx.doi.org/10.1136/bmj.n506>

Published: 19 February 2021

NEWS ANALYSIS

Covid-19: Is vaccination roll out reducing cases and deaths in the UK?

Death rates among people over 80 appear to be falling faster than other age groups, so are we starting to see the effect of the vaccination programme? **Jacqui Wise** looks at what we know

Jacqui Wise

Are deaths falling in groups of people who have been vaccinated?

The number of deaths in the UK within 28 days of a positive covid-19 test has been steadily falling since mid-January. An analysis carried out by the *Guardian*, using data from the official government dashboard, shows that from 24 January to 12 February deaths from coronavirus in England among those over 80 fell by 62%.¹ This compares with a drop of 47% among people aged between 20 and 64 and 51% among those aged 65 to 79.

Further evidence comes from Scotland which has seen deaths involving covid-19 falling in all locations, with the fastest decrease in care homes. In the three weeks to 14 February deaths in care homes fell by 62% to a level last seen around the end of October. Older residents in care homes were treated as the top priority when the vaccination programme began. The report from the National Records of Scotland shows that the number of deaths in the 85 and over age group has fallen by 45%—more steeply than younger age groups. There are now fewer deaths in this age group than in the 75-84 age group for the first time since mid-November.²

Is this because of the vaccination programme?

By 10 January, more than a third (34.6%) of people aged 80 and over in England had received at least one dose of a covid-19 vaccine, according to Public Health England (PHE).³ In comparison, fewer than 3% of under-80s in England had received a first dose by this stage. It takes two to three weeks for immunity to build after vaccination and then a further two to three weeks between a coronavirus infection and death from the virus so data from mid-February would provide the first indication that the vaccination programme was starting to have an effect.

David Spiegelhalter, chair of the Winton Centre for Risk and Evidence Communication at the University of Cambridge, told *The BMJ* that the signs are encouraging, “We can see that deaths in the over 85s are going down faster than in younger groups over the past couple of weeks. We can’t definitively say that this is because of the vaccination programme but it is compatible with the start of an effect of vaccines.” He explained that because deaths are going down so fast in every age group spotting that one group is going down faster than another group is more challenging.

However, Sheila Bird, formerly programme leader at the MRC Biostatistics Unit in Cambridge, told *The BMJ* that she is not yet persuaded that deaths are falling more rapidly in the over 80s. “I am not persuaded by graphs. I would like to see a detailed analysis that considers people’s vaccine status.” She pointed out that there are often delays in registering deaths and that there is a lot of potential confounding in who would have received the second dose of vaccine and therefore had higher levels of protection.

Scotland’s first minister Nicola Sturgeon said the latest Scottish data contained the “first hard evidence of the positive impact of vaccination.” But so far Chris Whitty, the UK’s chief medical adviser, has been more cautious. He told a Downing Street briefing, “The earliest indications would imply there is some effect. But I think it’s too early to put a number on that. We would expect to see some evidence that is strong enough to put into the public domain in the next few weeks.”

Is vaccination having an effect on hospitalisations?

Hospital admissions are falling in all age groups, presumably the effect of the current lockdown. The latest PHE data show hospital admissions (for the week to 14 February compared with the week to 7 February) falling faster for the 75-84 year old age group than other adult age groups.⁴ Duncan Robertson, an analyst from Loughborough University’s School of Business and Economics, told *The BMJ*, “This may be the first tentative sign of a vaccination effect, although we will need more data to be confident that this is an actual trend. As the vaccination programme works its way down the age groups, we would hope and expect to see hospitalisation rates for older age groups fall in the order they were prioritised.”

However, the data show that the highest hospital admission rate for confirmed covid-19 was in the over 85 age group. Robertson says this could be explained by delays in vaccinating care home residents and recent outbreaks in care homes, which may have led to a higher case rate in the over-80s compared with 70-79 year olds.

Spiegelhalter, who has carried out his own analysis of the data, said that in the 10 days up to 14 February hospital admissions were falling at 27% per week in the over 85s compared with 20% a week in the under 65s.

Are infection rates falling among the elderly?

Case numbers might not be a reliable indicator of whether the vaccine is working. The large number of routine coronavirus tests in settings such as care homes will also pick up mild and asymptomatic infections. The latest phase of the Real-time Assessment of Community Transmission study found that covid-19 infections fell by two thirds from mid-January to mid-February.⁵ However, the fall in prevalence was similar among those aged 65 years and over compared with other age groups. The study authors from Imperial College London said this suggests that if vaccines are effective at reducing transmission as well as disease, this effect is not yet a major driver of prevalence trends. Therefore, the observed falls described here are most likely because of reduced social interactions during lockdown.

What about antibody levels?

The over 80s age group is now the most likely to test positive for coronavirus antibodies. The Office for National Statistics survey shows that in England an estimated one in five people tested positive for SARS-CoV-2 antibodies in the 28 days up to 1 February but the figure for the over 80 age group was over 40%. Two weeks ago that figure was 26%.⁶ Spiegelhalter said this finding is what would be expected. However, he pointed out that the figures don't distinguish between those who have developed antibodies from past infection and those who have developed them from vaccination.

What can we say for sure?

Experts agree that although signs are encouraging better data are needed. Robertson said, "The vaccination rollout data is limited, despite the Royal Statistical Society and the Office for Statistics Regulation calling for more detailed statistics such as take-up by priority group and which vaccine was administered split by ethnicity, location, and age." Bird added that we need to see data on death rates linked by vaccine type and whether a patient had a second dose. The picture should become clearer in the next few weeks and it is expected the government will publish more data when they set out their roadmap for a route out of lockdown.

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- 2 National Records of Scotland. Deaths involving covid-19 week 6: 8 Feb-14 Feb. www.nrscotland.gov.uk/news/2021/deaths-involving-covid-19-week-6-8-feb-14-feb.
- 3 Public Health England. More than a third of over 80s vaccinated against covid-19. www.gov.uk/government/news/more-than-a-third-of-over-80s-vaccinated-against-covid-19.
- 4 Public Health England. Weekly national influenza and covid-19 surveillance report: week 7 report (up to week 6 data). 18 February 2021. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/962596/Weekly_Flu_and_COVID-19_report_w7.pdf
- 5 Wise J. Covid-19: Infections in England fall by two thirds since January. *BMJ* 2021;372.
- 6 Office for National Statistics. Coronavirus (covid-19) infection survey, antibody data for the UK: 16 February. www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/articles/coronaviruscovid19infectionsurveyantibodydatafortheuk/16february2021

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