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Decrease in uptake of SARS-CoV-2 vaccine in patients with inflammatory bowel disease on intravenous biological therapy

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On July 15, 2022, the UK Joint Committee on Vaccination and Immunisations (JCVI) and the UK Government strongly advised immunosuppressed individuals, including those on biological therapy, to accept a fourth dose of a SARS-CoV-2 vaccine, 3 months after receiving their third dose.¹ This advice followed research from the COV-Boost Trial and data from health-care workers in Israel showing the safety and benefit of a fourth dose in preventing hospital admissions due to severe COVID-19 and breakthrough infections.^{2,3}

We assessed the uptake of the fourth dose of a SARS-CoV-2 vaccine in patients with inflammatory bowel disease (IBD) attending the infusion centre at the John Radcliffe hospital in Oxford, UK, as previously described.⁴ Vaccination status was unavailable for ten (2.2%) of 459 patients as of July 29, 2022, leaving 449 patients for analysis. Of these, 175 (39.0%) were on infliximab therapy; and 274 (61.0%) were on vedolizumab (appendix). Our analysis showed that 197 (43.9%) patients completed four doses, 205 (45.7%) completed three doses, 29 (6.5%) completed two doses, and 18 patients remained unvaccinated (figure). On univariable logistic regression, only older age (odds ratio [OR] per year 1.04 [95% CI 1.03–1.05], $p < 0.0001$) was significantly associated with uptake of the fourth dose (appendix). On multivariable regression, in addition to age, which remained the strongest predictor of complete vaccination (OR 1.04 [95% CI 1.03–1.06], $p < 0.0001$), vedolizumab treatment was strongly associated with decreased

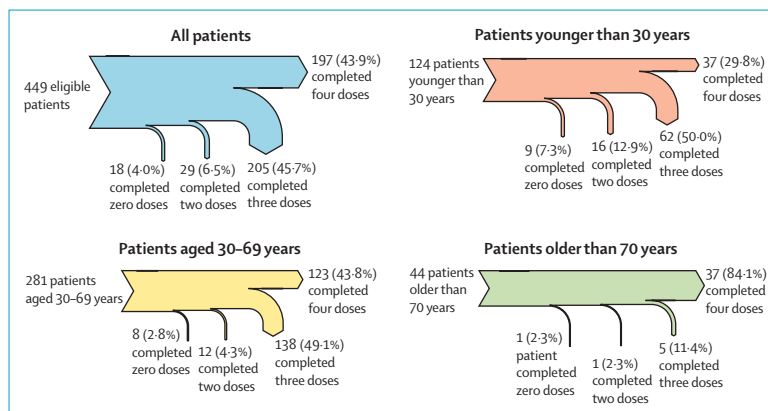


Figure: Uptake of each dose of a SARS-CoV-2 vaccine in patients with inflammatory bowel disease receiving biological therapy

The first SARS-CoV-2 vaccine was administered on Jan 6, 2021. All vaccination data were collected on July 17, 2022.

uptake of the fourth dose (0.467 [0.3–0.73], $p < 0.0001$; appendix). Due to the strong correlation between age and drug choice it is both true that vedolizumab is correlated with completing four doses of a SARS-CoV-2 vaccine, and that at any specific age it is independently associated with decreased vaccine uptake.⁵

Of the 44 patients older than 70 years, 37 (84.1%) had received four doses of vaccine; by contrast, only 122 (43.8%) of the 281 patients aged 30–69 years, and 37 (29.8%) of the 124 patients aged younger than 30 years had received four doses (appendix). By contrast, more than 90% of patients in all age groups had received two doses of vaccine, with 115 (92.7%) of the 124 patients younger than 30 years having received two doses. The decrease in uptake seems to have taken place after receiving the third dose, with a third dose uptake rate of 95.5% (42 of 44) in patients older than 70 years, 92.9% (261 of 281) in patients aged 30–69 years, and 79.8% (99 of 124) in those younger than 30 years.

In conclusion, we report a concerning reduction in uptake of the SARS-CoV-2 vaccines in patients younger than 70 years receiving vedolizumab or infliximab. Potential reasons for these differences in uptake

could be the relaxation in concerns about COVID-19 in the population and reduced messaging from the government and clinicians, including retraction of the IBD risk grid for COVID-19 severity⁶ but with ongoing promotion of fourth dose boosters to those older than 70 years. Hesitancy due to more pronounced side-effects in younger individuals and their belief that they are less likely to be severely affected by COVID-19 might also have a role.⁷ The identification of vedolizumab as a factor contributing to reduced uptake of the SARS-CoV-2 vaccines is intriguing and might reflect a heightened concern of patients treated with infliximab.

Given the recent approval in the UK of the new bivalent vaccine mRNA-1273.214 (Moderna), recommended for adults older than 50 years and immunocompromised individuals, we propose that increased efforts should be made to increase vaccination uptake in all age groups, but especially in patients younger than 70 years,^{1,8,9} and those on vedolizumab. At a time when high infection rates continue to be reported in the UK, full vaccination uptake in individuals aged 18–30 years is only seen in one in five patients receiving vedolizumab and in two in five receiving infliximab.

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See Online for appendix

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