# Uptake of COVID-19 vaccination in people with haematological malignancy and other high-risk blood disorders

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## Main findings

- **In people with blood cancer, those in the most deprived groups were 28% less likely to be vaccinated against COVID-19 during the study period compared to those in the most affluent groups.**
- **There were ethnic disparities in COVID-19 vaccine uptake, and these patterns persisted across all levels of deprivation.**

## Introduction

People with haematological malignancies are at increased risk of hospitalisation and death after COVID-19 infection.

COVID-19 vaccines are safe and effective in the general population, but there are no reports on vaccine uptake in people with haematological malignancies.

## Objectives

1) To report the uptake of COVID-19 vaccines in England in people with blood cancers using QResearch, a multi-million person electronic healthcare record database.

2) To explore uptake in different demographic groups within the blood cancer population, in particular, across different ethnicities and levels of deprivation.

## Methods

### Study design

This was a retrospective cohort study using QResearch primary care database with linkages to:

- Civil registration for mortality
- Hospital episode statistics (HES)
- National Cancer Registration and Analysis Service data
- National Immunisation (NIMS) Database of COVID-19 vaccinations in England.

### Population & study period

- Individuals aged 12 years and older with a blood cancer diagnosis before the beginning of the study period
- Study period was 1st December 2020 to 11th April 2022

### Analysis methods

We used Kaplan Meyer and Cox proportional hazards models to investigate uptake of 1, 2, 3 or 4 doses of COVID-19 vaccines in people with and without blood cancer, and by ethnicity and quintile of social deprivation.

## Results

12,274,948 people were included in the full analysis, of whom 97,707 had blood cancer.

92% of people with blood cancer and 80% or people without blood cancer received at least one dose of COVID-19 vaccine (Figure 1). Uptake decreased with each subsequent dose.

Uptake of vaccines was lowest in people of Black Caribbean, Black African and Pakistani ethnicities compared to White populations (Figures 2 & 3).

**Figure 1:** Uptake of COVID-19 vaccine doses in people with and without blood cancer.

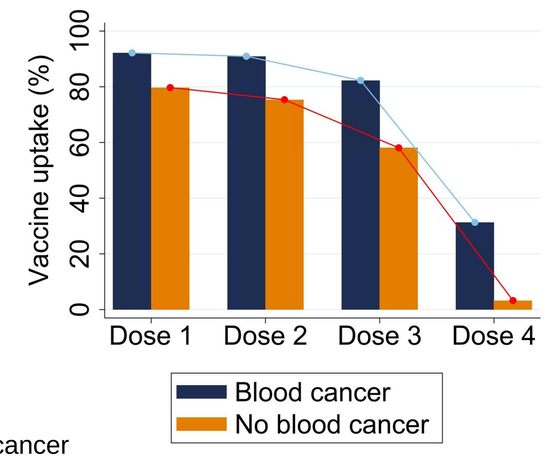
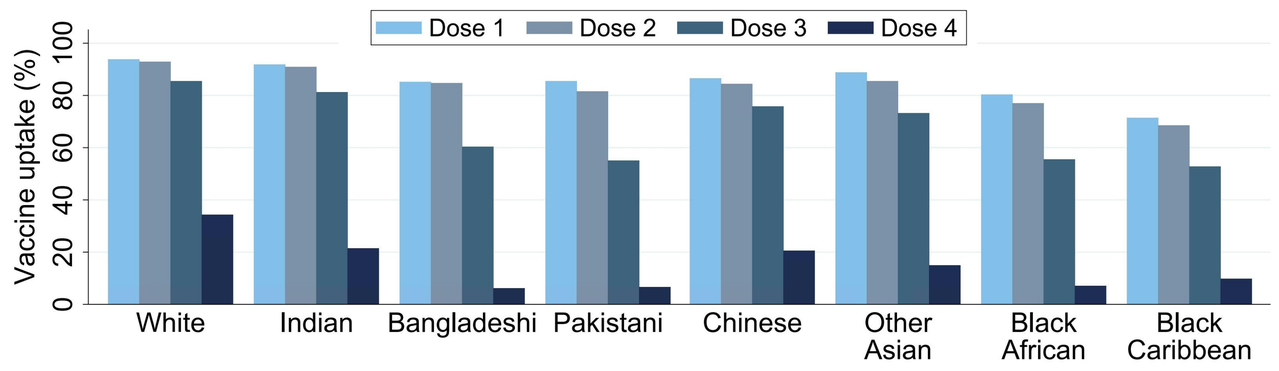
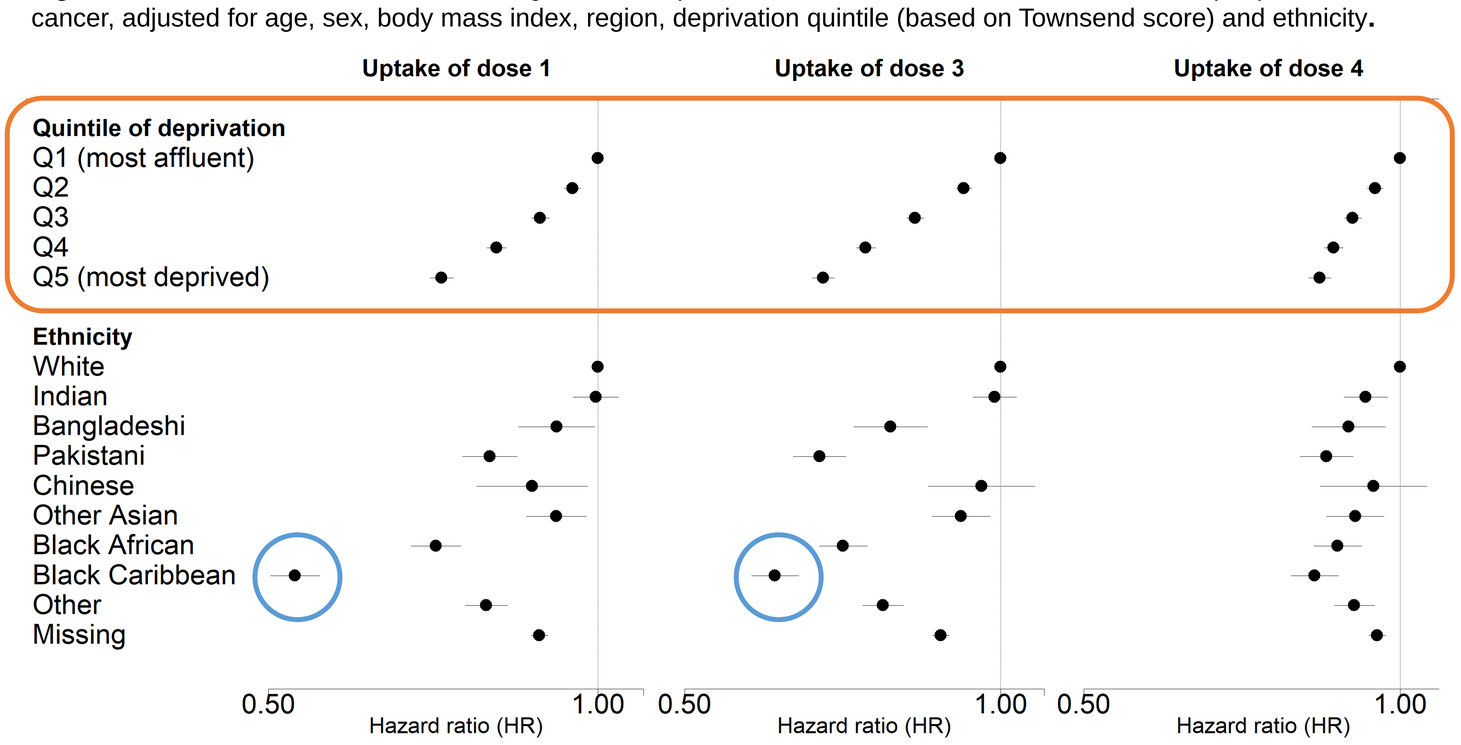



**Figure 2:** Uptake of COVID-19 vaccine doses in people with blood cancer across different ethnic groups.




Uptake of all vaccine doses was lower in the most deprived groups, and deprivation and ethnicity were both independently associated with vaccine uptake in Cox regression models (Figure 3).

**Figure 3**: Results from multivariable Cox regression of uptake of first, third and fourth vaccine doses in people with blood cancer, adjusted for age, sex, body mass index, region, deprivation quintile (based on Townsend score) and ethnicity**.**




## Conclusions

In people with blood cancer, COVID-19 vaccine uptake may be influenced by patient and disease-related factors. This analysis highlights inequalities in COVID-19 vaccine uptake in a clinically vulnerable population and the need for targeted measures to improve vaccine uptake.

## Limitations

- Full cancer registry data, the most reliable source of defining people with cancer, was only available up to December 2018.
- Our analysis did not examine reasons for low uptake; further research is needed to address this.

## Acknowledgments

This project was funded by Blood Cancer UK. We also wish to thank our patient representatives for their contribution to this research.

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## Reference

Hirst J, Mi E, Copland E, Patone M, Coupland C, Hippisley-Cox J. Uptake of COVID-19 vaccination in people with blood cancer: Population-level cohort study of 12 million patients in England. European Journal of Cancer 2023 183, 162-170 https://doi.org/10.1016/j.ejca.2023.02.001