No effects were seen for COVID-19 vaccines and subacute post COVID-19 thromboembolic complications.

**Title:** COVID-19 vaccines effectiveness against thromboembolic complications in the post-acute phase of the COVID-19 infection: a staggered cohort study using UK primary care electronic health records

**Background:** Research suggests that SARS-CoV-2 infection leads to a high risk of thromboembolic complications, both immediately and in the post-acute phase after infection. Effect of COVID-19 vaccination on these subacute outcomes remains unknown.

**Methods**

**Data:** UK primary care records from Clinical Practice Research Datalink (CPRD) AURUM, mapped to OMOP CDM.

**Study design and population:**
- We conducted a staggered cohort study following the UK Government vaccine roll-out.
- First cohort enrolled people aged >= 75 years between 4th Jan 2021 and 27th Jan 2021. People receiving a first COVID-19 vaccine dose within this period constituted the vaccinated cohort (VC).
- Second cohort enrollment went from 28th Jan 2021 to 28th Feb 2021. Eligible individuals were >= 65 years, clinically extremely vulnerable adults or at-risk patients, and all unvaccinated persons from the first cohort.

**Index date** was the date of first dose for the VC. For the unvaccinated cohort (UV) index dates were randomly assigned within the enrolment period following the distribution of dates in the VC. Individuals with a history of COVID-19, or vaccination against COVID-19 before index date were excluded.

**Follow-up** end at first recording of outcome of interest, death, end of data availability, or first vaccine dose (UV).

**Outcomes of interest:** deep vein thrombosis (DVT), pulmonary embolism (PE), and venous thromboembolism (DVT+PE), in two-time windows: 91 to 180 days, and 181 to 365 days post-COVID.

**Methods to account for confounding:**
- Observed confounding: Propensity Score (PS) Overlap Weighting. Variables included in PS equation were age, GP surgery, region, prior observation years, number of previous outpatient visits, and number of previous PCR tests, in addition of covariates selected via LASSO regression.
- Unobserved confounding: 43 Negative Control Outcomes (NCO).

**Metrics:**
Fine-Gray model was used to estimate Subdistribution Hazard Ratios (sHR) for each outcome, and effect estimates were corrected using empirical calibration.

**Limitations:** Healthcare workers were eligible for vaccination in both cohorts, however we could not identify them and thus, they were excluded from the study. Inherent limitation of observational studies were accounted for using state-of-the-art methods like large scale propensity score overlap weighting and empirical calibration using negative control outcomes.