Background/Aims
To quantify the risk of death among people with vasculitis during the UK 2020 COVID-19 epidemic compared with baseline risk, risk during annual influenza seasons and risk of death in the general population during COVID-19.

Methods
We performed a cohort study using data from the National Congenital Anomaly and Rare Disease Registration Service (NCARDIS) under their legal permissions (CAG 10-b29/6/2015). Coded diagnoses for vasculitis (ANCA-associated vasculitis, Takayasu arteritis, Behçet’s disease, and giant cell arteritis) were identified from Hospital Episode Statistics from 2003 onwards. Previous coding validation work demonstrated a positive predictive value >85%. The main outcome measure was age-standardised mortality rates (ASMRs) for all-cause death. ONS published data were used for general population mortality rates.

Results
We identified 55,110 people with vasculitis (median age 74.9 [IQR 64.1-82.7] years, 68.0% female) alive 01 March 2020. During March-April 2020, 892 (1.6%) died of any cause. The crude mortality rate was 9773.0 (95% CI 9152.3-10,435.9) per 100,000 person-years. The ASMR was 2567.5 per 100,000 person-years, compared to 1361.1 (1353.6-1368.7) in the general population (see table). The ASMR in March-April 2020 was 1.4 times higher than the mean ASMR for March-April 2015-2019 (1965.6). The increase in deaths during March-April 2020 occurred at a younger age than in the general population.

We went on to investigate the effect of previous influenza seasons. The 2014/15 season saw the greatest excess all-cause mortality nationally in recent years, and there were 624 deaths in 38,886 people (6472.5 person-years) with vasculitis in our data (crude mortality rate 9840.8 [8913.3-10427.7]); The ASMR was 2657.6, which was marginally higher
than the ASMR among people with vasculitis recorded during March-April 2020 during the COVID-19 pandemic.

Conclusion
People with vasculitis are at increased risk of death during circulating COVID-19 and influenza epidemics. The ASMR among people with vasculitis was high both during the 2014/15 influenza season and during the first wave of the COVID-19 epidemic. COVID-19 vaccination and annual influenza vaccination for people with vasculitis are both important, regardless of patient age.

Disclosure
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Table 1: Deaths and mortality rates in England during March and April 2015-2020

| Year | Vasculitis Number of deaths | Vasculitis Number of people | Vasculitis Person years | Crude mortality rate per 100,000 person-years | Vasculitis Age standardised mortality rate | Rare Autoimmune Rheumatic Diseases' Age standardised mortality rate | General population Age standardised mortality rate |
|------|-----------------------------|-----------------------------|-------------------------|---------------------------------------------|-------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| 2020 | 892                         | 55,110                      | 9,127.3                 | 9773.0 (9152.3-10,435.9)                     | 2567.5 (2399.0-2736.0)                     | 3669.3 (3500.4-3838.1)                           | 1361.1 (1272.6-1450.7)                           |
| 2019 | 577                         | 52,436                      | 8,614.4                 | 6698.1 (6173.3-7267.5)                       | 1696.3 (1527.9-1834.7)                     | 2256.9 (2131.1-2382.7)                           | 1915.2 (1847.0-1983.4)                           |
| 2018 | 587                         | 48,936                      | 8,027.6                 | 7312.3 (6744.1-7938.4)                       | 2119.9 (1948.4-2391.4)                     | 2618.8 (2476.7-2766.9)                           | 1393.6 (1293.7-1503.5)                           |
| 2017 | 512                         | 75,183                      | 6,810.0                 | 9246.4 (8245.0-7426.2)                       | 1955.4 (1786.0-2124.8)                     | 2364.7 (2225.0-2504.4)                           | 1903.2 (1842.4-2006.5)                           |
| 2016 | 513                         | 42,988                      | 7,341.9                 | 6732.5 (6028.5-7619.2)                       | 2573.9 (2225.8-3214.3)                     | 2953.0 (2779.7-3252.2)                           | 2362.3 (2205.9-2519.7)                           |
| 2015 | 482                         | 6,466.3                     | 7,454.0                 | 8177.4 (7817.4-8535.1)                       | 2132.7 (1942.3-2321.1)                     | 2577.5 (2418.1-2736.9)                           | 2032.0 (1851.0-2213.0)                           |

Notes:
1. Including vasculitis, SLE, JIA, scleroderma & IIM – see related abstract.
2. Coincided with flu season.