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Supplementary Table 1. Characteristics of data sources and sites contributing data

| Country | Region | Site name | Data source(s) | Person-years calculation | Patient type |
|-------------|------------------|---|--|--|---|
| Scotland | National | Public Health Scotland | Hospital stay information is sourced from the Scottish Morbidity Record 01 (SMR01) acute inpatient and day case dataset. Population data is sourced from National Records Scotland (NRS) mid-year population estimates, for each respective year. Vaccine uptake data is sourced from the Turas Vaccine Management Tool. | Population-level vaccination uptake | Hospital inpatient |
| New Zealand | National | VADAR, School of Population Health, Waipapa Taumata Rau, University of Auckland | Te Whatu Ora Health New Zealand national administrative data collection. National Covid Immunisation Register (CIR). | Immunisation register with individual-level data | Hospital inpatient |
| France | National | Institut National de la Santé et de la Recherche Médicale (INSERM) | SNDS (Système National des Données de Santé). Administrative data from 3 linked databases at the individual level: hospital discharge; healthcare claims; COVID19 vaccination records. | Immunisation register with individual-level data | Hospital inpatient |
| Finland | National | Finnish Institute for Health and Welfare THL, Helsinki | Linked national registers, including the Care Register for Health Care (HILMO) and the Vaccination Register. | Immunisation register with individual-level data | All = Emergency department + Hospital inpatients |
| Denmark | National | Statens Serum Institut, Copenhagen | Danish nationwide registers (Central Person Register, National Vaccination Register, National Hospital Discharge Register) | Immunisation register with individual-level data | Hospital Inpatient / All = Emergency department + Hospital inpatient + Hospital outpatient |
| Canada | Ontario | ICES | Registered Persons Database; Discharge Abstracts Database (DAD); National Ambulatory Care Reporting System (NACRS); Provincial COVID-19 vaccination database COVaxON. | Immunisation register (COVaxON) with individual-level data | Emergency department / Hospital Inpatient / All = Emergency department + Hospital inpatient |
| Canada | British Columbia | British Columbia Provincial Health Services Authority | Discharge Abstracts Database (DAD) ¹ ; National Ambulatory Care Reporting System (NACRS) ² ; British Columbia Stats Population Estimates; British Columbia Provincial Immunization Registry ³ . | Immunisation register with individual-level data | Emergency department / Hospital inpatient / All = Emergency department + Hospital inpatient |

| | | | | | |
|-------------|------------------------|--|---|--|---|
| Australia | New South Wales (NSW) | National Centre for Immunisation Research and Surveillance | Admitted Patient Data Collection (APDC) (hospitalisations). Australian Immunisation Register (AIR) (vaccination records and coverage data for observed vs expected denominators). Australian Bureau of Statistics (ABS) (population data for background rates). | Population-level vaccination uptake | Hospital inpatient (public hospitals only) |
| Argentina * | Tierra del Fuego State | Clínica San Jorge, Hospital Regional Ushuaia, Hospital de Rio Grande | Institutional Database | Population-level vaccination uptake | All = Emergency department + Hospital inpatient + Hospital outpatient |
| Australia | Victoria | Murdoch Children's Research Institute | Victorian Emergency Minimum Dataset (VEMD). Victorian Admitted Episodes Dataset (VAED). Australian Immunisation Register (AIR). | Immunisation register with individual-level data | Emergency department / Hospital inpatient / All = Emergency department + Hospital inpatient |

¹ British Columbia Ministry of Health [creator]. Discharge Abstract Database (Hospital Separations). British Columbia Ministry of Health [publisher]. Data Extract. MOH (2021). 2021.

² British Columbia Ministry of Health [creator]. National Ambulatory Care Reporting System. British Columbia Ministry of Health [publisher]. Data Extract. MOH (2021). 2021.

³ Provincial Health Services Authority [creator]. Provincial Public Health Information Systems [publisher]. (2021). 2021.

* Due to the lack of prior dose information, the Argentina data was not part of the global data (meta-analysis).

Supplementary Table 2. Study outcomes: Adverse event of special interest (AESI) according to the International Classification of Diseases 10th Revision (ICD-10) codes

| Outcome category | AESI | ICD-10 code(s) | Study code |
|---------------------------|--------------------------------------|----------------------------|-------------------|
| Neurological conditions | Guillain-Barré syndrome | G61.0 | NE_GBS |
| | Transverse myelitis | G37.3 | NE_TRM |
| | Facial (Bell's) palsy | G51.0 | NE_BP |
| | Acute disseminated encephalomyelitis | G04.0 | NE_ADEM |
| | Febrile seizures | R56.0 | NE_FSZ |
| | Generalized seizures | G40.0-G40.9, G41.0, R56.8 | NE_GSZ |
| Hematologic conditions | Thrombocytopenia | D69.5, D69.6 | HM_THR |
| | Idiopathic thrombocytopenia | D69.3, D69.4 | HM_ITP |
| | Pulmonary embolism | I26.0, I26.9 | HM_PEM |
| | Cerebral venous sinus thrombosis | I63.6, I67.6 | HM_CVST |
| | Splanchnic vein thrombosis | I81, I82.0, I82.3 | HM_SVT |
| Cardiovascular conditions | Myocarditis | I40.1, I40.8, I40.9, I51.4 | CV_MYO |
| | Pericarditis | I130.0, I130.8, I130.9 | CV_PER |

Supplementary Table 3. Ethical approvals

| Site name | Approval or waiver | Name of institutional ethics committee |
|---|--------------------|---|
| Hospital de Niños- FIPEC | Waiver | Epidemiología e Información de la Salud |
| Sydney Childrens Hospital Network | Approved | NSW Population and Health Services Research Ethics Committee |
| Murdoch Children's Research Institute | Approved | RCH Human Research Ethics Committee (HREC) |
| British Columbia Provincial Health Services Authority | Approved | The University of British Columbia Office of Research Services, Behavioural Research Ethics Board |
| ICES (Ontario) | Waiver | n/a |
| Statens Serum Institut- Denmark | Waiver | n/a |
| Finnish Institute for Health and Welfare | Waiver | n/a |
| INSERM | Waiver | n/a |
| Vaccine Datalink and Research Group | Approved | Auckland Health Research Ethics Committee |
| Public Health Scotland | Waiver | n/a |

Supplementary Table 4. Population summary by site and all vaccine schedules

| Characteristics | | Argentina | Australia: NSW | Australia: Victoria | Canada: BC | Canada: Ontario | Denmark | Finland | France | New Zealand | Scotland |
|-----------------------|------------|-----------------|------------------|---------------------|------------------|------------------|------------------|------------------|-------------------|------------------|------------------|
| Study period | | 12/2020–08/2023 | 02/2021–12/2021 | 02/2021–06/2023 | 12/2020–05/2023 | 12/2020–03/2023 | 12/2020–02/2023 | 12/2020–06/2022 | 01/2021–12/2021 | 02/2021–09/2022 | 12/2020–05/2023 |
| Vaccinated population | n | 157,883 | 6,492,805 | 5,789,070 | 4,267,644 | 12,081,337 | 4,291,034 | 4,501,659 | 52,795,394 | 4,151,269 | 4,540,806 |
| | Female (%) | 78,374 (49.6) | 3,289,381 (50.7) | 2,925,886 (50.5) | 2,183,666 (51.2) | 6,192,991 (51.3) | 2,179,415 (50.8) | 2,324,067 (51.6) | 27,216,365 (51.6) | 2,100,071 (50.6) | 2,346,694 (51.7) |
| | 0–19 (%) | 42,281 (26.8) | 692,498 (10.7) | 921,635 (15.9) | 274,813 (6.4) | 1,882,574 (15.6) | 620,273 (14.5) | 549,589 (12.2) | 5,585,455 (10.6) | 582,662 (14.0) | 501,397 (11.0) |
| | 20–39 (%) | 58,567 (37.1) | 2,125,624 (32.7) | 1,858,706 (32.1) | 1,386,513 (32.5) | 3,421,403 (28.3) | 1,100,566 (25.6) | 1,159,303 (25.8) | 14,517,426 (27.5) | 1,321,332 (31.8) | 1,218,142 (26.8) |
| | 40–59 (%) | 40,484 (25.6) | 1,933,770 (29.8) | 1,586,558 (27.4) | 1,244,817 (29.2) | 3,460,295 (28.6) | 1,263,265 (29.4) | 1,256,439 (27.9) | 16,065,061 (30.4) | 1,198,750 (28.9) | 1,418,313 (31.2) |
| | 60–79 (%) | 15,167 (9.6) | 1,433,446 (22.1) | 1,139,623 (19.7) | 1,103,315 (25.9) | 2,706,343 (22.4) | 1,063,018 (24.8) | 1,234,825 (27.4) | 12,997,416 (24.6) | 865,928 (20.9) | 1,142,053 (25.2) |
| | 80+ (%) | 1,384 (0.9) | 307,467 (4.7) | 282,548 (4.9) | 258,186 (6.0) | 610,722 (5.1) | 243,912 (5.7) | 301,503 (6.7) | 3,630,036 (6.9) | 182,597 (4.4) | 260,901 (5.7) |
| BNT162b2 | Dose 1 | | 3,896,923 (60.0) | 3,393,207 (58.6) | 2,959,369 (69.3) | 8,473,103 (70.1) | 3,425,161 (79.8) | 3,586,237 (79.7) | 41,450,092 (78.5) | 4,036,859 (97.2) | 2,087,109 (46.0) |
| | Dose 2 | | 3,837,153 (59.1) | 3,313,758 (57.2) | 2,778,036 (65.1) | 7,382,893 (61.1) | 3,480,685 (81.1) | 3,594,661 (79.9) | 38,876,671 (73.6) | 3,990,353 (96.1) | 1,967,726 (43.3) |
| | Dose 3 | | 751,169 (11.6) | 2,900,036 (50.1) | 1,295,609 (30.4) | 4,377,649 (36.2) | 2,811,507 (65.5) | 2,167,380 (48.1) | 16,121,693 (30.5) | 2,730,880 (65.8) | 2,557,434 (56.3) |
| | Dose 4 | | | 969,442 (16.7) | 259,228 (6.1) | 1,469,297 (12.2) | 1,609,558 (37.5) | | 54,905 (0.1) | 595,269 (14.3) | 358,410 (7.9) |
| | Dose 5 | | | 63,184 (1.1) | | 8,524 (0.1) | | | 4,819 (<0.1) | 5,043 (0.1) | 16,159 (0.4) |
| | Dose 6 | | | 14,595 (0.3) | | | | | 98 (<0.1) | 49 (<0.1) | 164 (<0.1) |
| | Dose 7 | | | 5,492 (0.1) | | | | | | 8 (<0.1) | 54 (<0.1) |
| | Dose 8 | | | | | | | | | 1–4 (<0.1) | 7 (<0.1) |
| | Dose 9 | | | | | | | | | | |
| mRNA-1273 | Dose 1 | 2,850 (1.8) | 134,960 (2.1) | 199,865 (3.5) | 940,656 (22.0) | 2,100,866 (17.4) | 507,031 (11.8) | 554,076 (12.3) | 5,853,595 (11.1) | 3,255 (0.1) | 205,528 (4.5) |
| | Dose 2 | 13,046 (8.3) | 126,291 (1.9) | 190,271 (3.3) | 1,196,017 (28.0) | 3,589,447 (29.7) | 578,985 (13.5) | 532,153 (11.8) | 5,880,520 (11.1) | 3,211 (0.1) | 183,966 (4.1) |
| | Dose 3 | 45,712 (29.0) | 117,804 (1.8) | 617,724 (10.7) | 1,482,817 (34.7) | 2,965,640 (24.5) | 61,548 (1.4) | 812,002 (18.0) | 4,676,771 (8.9) | 2,184 (0.1) | 970,917 (21.4) |
| | Dose 4 | | | 257,557 (4.4) | 380,862 (8.9) | 723,201 (6.0) | 56,850 (1.3) | | 14,245 (<0.1) | 134 (<0.1) | 195,885 (4.3) |
| | Dose 5 | | | 19,573 (0.3) | | 4,391 (<0.1) | | | 631 (<0.1) | 8 (<0.1) | 14,539 (0.3) |
| | Dose 6 | | | 3,449 (0.1) | | | | | 18 (<0.1) | 1–4 (<0.1) | 54 (<0.1) |
| | Dose 7 | | | 1,404 (<0.1) | | | | | | | 1–4 (<0.1) |
| | Dose 8 | | | | | | | | | | |
| ChAdOx1 | Dose 1 | 37,721 (23.9) | 2,460,922 (37.9) | 1,868,764 (32.3) | 308,867 (7.2) | 856,603 (7.1) | 133,181 (3.1) | 360,196 (8.0) | 4,398,411 (8.3) | 17,087 (0.4) | 2,139,669 (47.1) |
| | Dose 2 | 36,164 (22.9) | 2,433,046 (37.5) | 1,835,469 (31.7) | 132,111 (3.1) | 221,118 (1.8) | 1,780 (<0.1) | 191,120 (4.2) | 3,424,058 (6.5) | 14,560 (0.4) | 2,093,121 (46.1) |
| | Dose 3 | 28,255 (17.9) | 7,483 (0.1) | 57,841 (1) | 1,757 (<0.1) | | 46 (<0.1) | 306 (<0.1) | 7,368 (<0.1) | 2,058 (<0.1) | 9,551 (0.2) |
| | Dose 4 | | | 13,693 (0.2) | 76 (<0.1) | | | | 90 (<0.1) | 212 (<0.1) | 695 (<0.1) |
| | Dose 5 | | | 1,138 (<0.1) | | | | | 1–4 (<0.1) | 6 (<0.1) | 76 (<0.1) |
| BIBNT | Dose 1 | 14,399 (9.1) | | 6,949 (0.1) | | 9,128 (0.1) | | | | 1–4 (<0.1) | 241 (<0.1) |
| | Dose 2 | 13,605 (8.6) | | 2,191 (<0.1) | | 3,043 (<0.1) | | | | | |
| | Dose 3 | 40,661 (25.8) | | 20,135 (0.3) | | 76,400 (0.6) | | | | 1–4 (<0.1) | 17,220 (0.4) |

| | | | | | | | | | | | |
|--------|--------|---------------|--|---------------|--------------|---------------|---------------|------------|-----------------|--------------|----------------|
| | Dose 4 | | | 122,581 (2.1) | | 796,486 (6.6) | | | | | 712,553 (15.7) |
| | Dose 5 | | | 403,904 (7) | | 803,041 (6.6) | | | | | 213,093 (4.7) |
| | Dose 6 | | | 15,854 (0.3) | | 11,286 (0.1) | | | | | 223,060 (4.9) |
| | Dose 7 | | | 2,067 (<0.1) | | | | | | | 8,979 (0.2) |
| | Dose 8 | | | | | | | | | | 69 (<0.1) |
| | Dose 9 | | | | | | | | | | 16 (<0.1) |
| BIMODO | Dose 1 | | | 3,191 (0.1) | | 4,172 (<0.1) | | | | 6 (<0.1) | 219 (<0.1) |
| | Dose 2 | | | 1,138 (<0.1) | | 1,634 (<0.1) | | | | 8 (<0.1) | |
| | Dose 3 | | | 11,247 (0.2) | | 34,180 (0.3) | | | | 24 (<0.1) | 14,282 (0.3) |
| | Dose 4 | | | 106,049 (1.8) | | 579,059 (4.8) | | | | 18 (<0.1) | 759,724 (16.7) |
| | Dose 5 | | | 143,872 (2.5) | | 589,391 (4.9) | | | | 1–4 (<0.1) | 329,576 (7.3) |
| | Dose 6 | | | 6,281 (0.1) | | 2,817 (<0.1) | | | | | 155,425 (3.4) |
| | Dose 7 | | | 1,028 (<0.1) | | | | | | | 7,093 (0.2) |
| | Dose 8 | | | | | | | | | | 35 (<0.1) |
| | Dose 9 | | | | | | | | | | 5 (<0.1) |
| PBNT | Dose 1 | 121 (0.1) | | 305,954 (5.3) | 31 (<0.1) | 637,465 (5.3) | 183,276 (4.3) | | 19,213 (<0.1) | 85,525 (2.1) | 107,720 (2.4) |
| | Dose 2 | 53 (<0.1) | | 242,173 (4.2) | 8 (<0.1) | 489,857 (4.1) | 152,250 (3.5) | | 215 (<0.1) | 54,385 (1.3) | 70,257 (1.5) |
| | Dose 3 | 3,259 (2.1) | | 2,887 (<0.1) | 9 (<0.1) | 78,564 (0.7) | 1–4 (<0.1) | | 451 (<0.1) | 56 (<0.1) | 2,422 (0.1) |
| | Dose 4 | | | 540 (<0.1) | | 2,251 (<0.1) | 1–4 (<0.1) | | 1–4 (<0.1) | 1–4 (<0.1) | 98 (<0.1) |
| | Dose 5 | | | 22 (<0.1) | | | | | | | 9 (<0.1) |
| | Dose 6 | | | 7 (<0.1) | | | | | | | 1–4 (<0.1) |
| JJJ | Dose 1 | | | | 12,542 (0.3) | | 42,385 (1.0) | 151 (<0.1) | 1,074,083 (2.0) | 1,225 (<0.1) | |
| | Dose 2 | | | | 565 (<0.1) | | 1–4 (<0.1) | 73 (<0.1) | 5,415 (<0.1) | 28 (<0.1) | |
| | Dose 3 | | | | 215 (<0.1) | | | 127 (<0.1) | 656 (<0.1) | 24 (<0.1) | |
| | Dose 4 | | | | 12 (<0.1) | | | | 1–4 (<0.1) | | |
| | Dose 5 | | | | | | | | 1–4 (<0.1) | | |
| | Dose 7 | | | | | | | | | 1–4 (<0.1) | |
| HMOD | Dose 1 | | | 719 (<0.1) | 19,958 (0.5) | | | | | | |
| | Dose 2 | | | 470 (<0.1) | 75 (<0.1) | | | | | | |
| | Dose 3 | | | 15 (<0.1) | 5 (<0.1) | | 378,094 (8.8) | | | | |
| | Dose 4 | | | 1–4 (<0.1) | 7 (<0.1) | | 1,050 (<0.1) | | | | |
| BIBP | Dose 1 | 57,762 (36.6) | | | 9,960 (0.2) | | | | | 1,687 (<0.1) | |
| | Dose 2 | 53,248 (33.7) | | | 8,687 (0.2) | | | | | 1,558 (<0.1) | |
| | Dose 3 | 235 (0.1) | | | 1,186 (<0.1) | | | | | 197 (<0.1) | |
| | Dose 4 | | | | 25 (<0.1) | | | | | 5 (<0.1) | |

[illegible]

Vaccine abbreviations:

| Code | Vaccine brand |
|-------------|--|
| BIBNT | Comirnaty or Riltazinameran or Pfizer/BioNTech COVID-19 Vaccine Bivalent [Pfizer/BioNTech] |
| BIMODO | Spikevax bivalent Original/Omicron [Moderna] |
| PBNT | Comirnaty or Tozinameran Paediatric [Pfizer/BioNTech or Fosun-BioNTech] |
| JJJ | Janssen [Janssen/Johnson & Johnson] |
| HMOD | Elasomeran or Spikevax or TAK-919 Half Dose [Moderna or Takeda] |
| BIBP | Covilo or SARS-CoV-2 Vaccine (Vero Cell) [Sinopharm (Beijing)] |
| VGM | Sputnik V [Gamaleya Research Institute] |
| NVX | Covovax or Nuvaxoid [Novavax or Serum Institute of India] |
| SINO | CoronaVac or Sinovac [Sinovac Biotech] |
| ADN | Convidecia or Convidence [CanSino] |
| BBV | Covaxin [Bharat Biotech] |
| WIBP | Inactivated (Vero cell) [Sinopharm (Wuhan)] |
| LGM | Sputnik Light or Gam-COVID-Vac [Gamaleya Research Institute] |
| MVC | MVC-COV1901 [Medigen] |

Supplementary Table 5. Percentage of vaccinations included in aggregated and homologous analyses by site

| Analysis | Argentina | Australia: NSW | Australia: Victoria | Canada: BC | Canada: Ontario | Denmark | Finland | France | New Zealand | Scotland | Overall |
|------------|-----------|----------------|---------------------|------------|-----------------|---------|---------|--------|-------------|----------|---------|
| Aggregated | 37.7 | 100 | 90.9 | 99.3 | 88.6 | 94.4 | 100 | 99.1 | 98.6 | 82.8 | 95.8 |
| Homologous | 37.7 | 96.6 | 90.9 | 80.7 | 70.8 | 90.6 | 88.7 | 91.2 | 98.4 | 64.7 | 86.6 |

Supplementary Table 6. Guillain-Barré syndrome; Aggregated OE Ratios by last dose and site, period 0–42 days

| Dose | Vaccine | Overall | | Australia:NSW | | Australia:Victoria | | Canada:BC | | Canada:Ontario | | Denmark | | Finland | | France | | New Zealand | | Scotland | |
|------|-----------|----------|--------------|---------------|-------------|--------------------|-------------|-----------|----|----------------|--------------|----------|-------------|----------|-------------|----------|-------------|-------------|-------------|----------|-------------|
| | | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI |
| 1 | ChAdOx1 | 2.49 | (2.15,2.87) | 2.53 | (1.73,3.57) | 3.13 | (2.24,4.24) | - | - | 6.83 | (3.98,10.94) | - | - | - | - | 1.61 | (1.21,2.09) | - | - | 3.62 | (2.56,4.97) |
| | BNT162b2 | 0.90 | (0.79,1.03) | 0.95 | (0.45,1.74) | 1.47 | (0.81,2.47) | - | - | 0.60 | (0.30,1.07) | 0.56 | (0.21,1.23) | 0.40 | (0.13,0.93) | 1.03 | (0.87,1.20) | 0.98 | (0.42,1.93) | - | - |
| | mRNA-1273 | 0.95 | (0.65,1.34) | - | - | - | - | - | - | 1.31 | (0.48,2.85) | 0 | - | - | - | 1.02 | (0.65,1.53) | - | - | 0 | - |
| 2 | ChAdOx1 | 0.73 | (0.54,0.96) | 0.88 | (0.44,1.57) | 0.61 | (0.26,1.20) | - | - | 0 | - | - | - | - | - | 0.62 | (0.37,0.98) | - | - | 0.96 | (0.46,1.77) |
| | BNT162b2 | 0.69 | (0.60,0.79) | - | - | 0.66 | (0.30,1.26) | - | - | 0.65 | (0.33,1.17) | 0.80 | (0.41,1.40) | 0.69 | (0.32,1.31) | 0.72 | (0.61,0.85) | 0.53 | (0.20,1.16) | 0.93 | (0.34,2.02) |
| | mRNA-1273 | 0.84 | (0.60,1.15) | 0 | - | - | - | - | - | 0.70 | (0.26,1.52) | - | - | - | - | 0.87 | (0.57,1.28) | - | - | 0 | - |
| 3 | ChAdOx1 | 3.99 | (0.48,14.41) | - | - | - | - | - | - | 0.44 | (0.14,1.04) | 1.04 | (0.57,1.74) | 0.55 | (0.18,1.29) | 0.55 | (0.40,0.73) | 0.99 | (0.45,1.88) | 1.26 | (0.70,2.07) |
| | BNT162b2 | 0.66 | (0.54,0.79) | - | - | 0.64 | (0.32,1.14) | - | - | 0.86 | (0.34,1.77) | - | - | - | - | 0.50 | (0.20,1.04) | - | - | - | - |
| | mRNA-1273 | 0.68 | (0.45,1.00) | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 4 | BNT162b2 | 0.87 | (0.56,1.29) | - | - | - | - | - | - | 1.18 | (0.43,2.57) | 0.93 | (0.43,1.77) | - | - | - | - | - | - | - | - |
| | mRNA-1273 | 0.88 | (0.32,1.92) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Vaccines: Pfizer/BioNTech (BNT162b2), Moderna (mRNA-1273), and Oxford/Astra Zeneca/Serum Institute of India (ChAdOx1)

Supplementary Table 7. Acute disseminated encephalomyelitis; Aggregated OE Ratios by last dose and site, period 0–42 days

| Dose | Vaccine | Overall | | Australia:NSW | | Australia:Victoria | | Canada:BC | | Canada:Ontario | | Denmark | | Finland | | France | | New Zealand | | Scotland | |
|------|-----------|----------|--------------|---------------|--------------|--------------------|----|-----------|----|----------------|----|----------|----|----------|----|----------|--------------|-------------|----|----------|----|
| | | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI |
| 1 | ChAdOx1 | 2.23 | (1.15,3.90) | 5.30 | (1.72,12.36) | - | - | 0 | 0 | - | - | 0 | - | - | - | - | - | - | - | - | - |
| | BNT162b2 | 1.28 | (0.77,2.00) | - | - | - | - | 0 | - | - | - | - | - | 0 | - | 1.04 | (0.48,1.98) | - | - | - | - |
| | mRNA-1273 | 3.78 | (1.52,7.78) | - | - | - | - | 0 | 0 | - | - | 0 | - | 0 | - | 4.92 | (1.80,10.70) | - | - | 0 | - |
| 2 | ChAdOx1 | 1.63 | (0.70,3.21) | - | - | - | - | 0 | 0 | - | - | - | - | 0 | - | - | - | - | - | 0 | - |
| | BNT162b2 | 0.54 | (0.23,1.06) | - | - | - | - | 0 | 0 | - | - | 0 | - | 0 | - | 0.47 | (0.15,1.10) | - | - | 0 | - |
| | mRNA-1273 | 1.21 | (0.25,3.55) | 0 | - | - | - | - | - | - | - | 0 | - | 0 | - | - | - | - | - | 0 | - |
| 3 | ChAdOx1 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | BNT162b2 | 0.82 | (0.30,1.79) | 0 | - | - | - | - | 0 | - | - | - | - | - | - | - | - | 0 | - | 0 | - |
| | mRNA-1273 | 0.64 | (0.02,3.58) | 0 | - | - | - | 0 | 0 | - | - | - | - | - | - | 0 | - | - | - | 0 | - |
| 4 | BNT162b2 | 2.26 | (0.06,12.62) | - | - | - | - | 0 | - | - | - | 0 | - | - | - | - | - | 0 | - | 0 | - |
| | mRNA-1273 | 0 | - | - | - | - | - | 0 | 0 | - | - | - | - | - | - | - | - | - | - | 0 | - |

Vaccines: Pfizer/BioNTech (BNT162b2), Moderna (mRNA-1273), and Oxford/Astra Zeneca/Serum Institute of India (ChAdOx1)

Supplementary Table 8. Cerebral venous sinus thrombosis; Aggregated OE Ratios by last dose and site, period 0–42 days

| Dose | Vaccine | Overall | | Australia:NSW | | Australia:Victoria | | Canada:BC | | Canada:Ontario | | Denmark | | Finland | | France | | New Zealand | | Scotland | |
|------|-----------|----------|-------------|---------------|--------------|--------------------|-------------|-----------|----|----------------|-------------|----------|--------------|----------|-------------|----------|-------------|-------------|----|----------|----|
| | | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI |
| 1 | ChAdOx1 | 3.23 | (2.51,4.09) | 11.07 | (5.72,19.33) | 2.47 | (1.28,4.32) | 0 | - | - | - | 11.32 | (3.67,26.41) | 4.10 | (1.50,8.92) | 2.32 | (1.54,3.36) | - | - | - | - |
| | BNT162b2 | 1.49 | (1.26,1.75) | 0 | - | 1.30 | (0.48,2.84) | 0 | - | 1.11 | (0.41,2.42) | 1.21 | (0.55,2.29) | 1.15 | (0.61,1.96) | 1.64 | (1.35,1.97) | - | - | - | - |
| | mRNA-1273 | 1.48 | (0.92,2.23) | 0 | - | - | - | - | - | - | - | - | - | - | - | 1.20 | (0.62,2.09) | - | - | 0 | 0 |
| 2 | ChAdOx1 | 1.15 | (0.70,1.77) | 5.59 | (2.05,12.17) | - | - | 0 | 0 | - | - | - | - | - | - | 0.72 | (0.29,1.48) | - | - | - | - |
| | BNT162b2 | 1.25 | (1.06,1.46) | - | - | 0.91 | (0.33,1.99) | - | - | 1.21 | (0.45,2.64) | 1.70 | (1.01,2.69) | 1.03 | (0.53,1.79) | 1.25 | (1.03,1.52) | - | - | - | - |
| | mRNA-1273 | 1.43 | (0.95,2.06) | 0 | - | - | - | - | - | 2.47 | (0.91,5.38) | - | - | - | - | 1.33 | (0.78,2.14) | - | - | 0 | 0 |
| 3 | ChAdOx1 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | BNT162b2 | 1.14 | (0.89,1.44) | 0 | - | 1.67 | (0.87,2.92) | 0 | 0 | 1.89 | (0.69,4.11) | 1.21 | (0.60,2.17) | 1.22 | (0.59,2.25) | 0.99 | (0.67,1.41) | 0 | 0 | - | - |
| | mRNA-1273 | 0.94 | (0.49,1.65) | 0 | - | - | - | 0 | 0 | - | - | - | - | 0 | 0 | 1.13 | (0.42,2.46) | - | - | - | - |
| 4 | BNT162b2 | 0.99 | (0.47,1.81) | - | - | - | - | 0 | 0 | - | - | 1.08 | (0.40,2.35) | - | - | - | - | 0 | 0 | - | - |
| | mRNA-1273 | 0 | - | - | - | - | - | 0 | 0 | 0 | 0 | - | - | - | - | - | - | - | - | 0 | 0 |

Vaccines: Pfizer/BioNTech (BNT162b2), Moderna (mRNA-1273), and Oxford/Astra Zeneca/Serum Institute of India (ChAdOx1)

Supplementary Table 9. Myocarditis; Aggregated OE Ratios by last dose and site, period 0–42 days

| Dose | Vaccine | Overall | | Australia:NSW | | Australia:Victoria | | Canada:BC | | Canada:Ontario | | Denmark | | Finland | | France | | New Zealand | | Scotland | |
|------|-----------|----------|-------------|---------------|--------------|--------------------|---------------|-----------|-------------|----------------|---------------|----------|--------------|----------|-------------|----------|-------------|-------------|-------------|----------|-------------|
| | | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI |
| 1 | ChAdOx1 | 1.36 | (1.08,1.68) | 2.01 | (1.21,3.13) | 2.50 | (1.60,3.72) | 0 | 0 | - | - | 0 | 0 | - | - | 1.01 | (0.68,1.44) | - | - | - | - |
| | BNT162b2 | 2.78 | (2.61,2.95) | 3.13 | (2.30,4.17) | 5.69 | (4.53,7.07) | 0.85 | (0.44,1.49) | 7.23 | (6.08,8.53) | 1.79 | (1.16,2.65) | 1.27 | (0.97,1.64) | 2.68 | (2.47,2.91) | 3.60 | (2.50,5.03) | - | - |
| | mRNA-1273 | 3.48 | (3.00,4.01) | 0 | - | 11.08 | (5.31,20.38) | - | - | 6.63 | (4.57,9.32) | 3.06 | (1.23,6.30) | 0.78 | (0.29,1.70) | 3.91 | (3.26,4.65) | - | - | - | - |
| 2 | ChAdOx1 | 1.31 | (1.01,1.68) | 1.60 | (0.90,2.64) | 1.57 | (0.88,2.58) | 0 | 0 | - | - | - | - | - | - | 1.15 | (0.76,1.68) | - | - | 1.63 | (0.66,3.36) |
| | BNT162b2 | 2.86 | (2.70,3.03) | 6.37 | (5.15,7.79) | 9.26 | (7.99,10.68) | 3.46 | (2.54,4.60) | 7.05 | (5.87,8.41) | 2.63 | (1.95,3.47) | 1.81 | (1.45,2.23) | 1.96 | (1.80,2.14) | 5.67 | (4.43,7.15) | 2.60 | (1.30,4.65) |
| | mRNA-1273 | 6.10 | (5.52,6.72) | 13.41 | (4.92,29.20) | 23.71 | (15.62,34.50) | 6.33 | (4.48,8.69) | 13.10 | (10.85,15.68) | 7.28 | (4.71,10.75) | 5.56 | (3.91,7.66) | 3.91 | (3.33,4.58) | - | - | - | - |
| 3 | ChAdOx1 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | BNT162b2 | 2.09 | (1.88,2.32) | 1.80 | (0.58,4.20) | 4.23 | (3.31,5.33) | 3.88 | (2.49,5.77) | 3.09 | (2.12,4.37) | 2.04 | (1.39,2.90) | 1.64 | (1.17,2.23) | 1.35 | (1.10,1.63) | 3.48 | (2.38,4.91) | 1.89 | (0.91,3.48) |
| | mRNA-1273 | 2.01 | (1.60,2.49) | - | - | 5.71 | (3.27,9.28) | 1.91 | (1.02,3.27) | 3.59 | (2.32,5.30) | - | - | - | - | 1.51 | (0.94,2.31) | - | - | - | - |
| 4 | BNT162b2 | 2.06 | (1.47,2.80) | - | - | 2.20 | (1.06,4.05) | - | - | 2.44 | (1.05,4.80) | 1.76 | (0.96,2.96) | - | - | - | - | - | - | - | - |
| | mRNA-1273 | 2.91 | (1.45,5.21) | - | - | - | - | 3.16 | (1.03,7.38) | - | - | - | - | - | - | - | - | - | - | - | - |

Vaccines: Pfizer/BioNTech (BNT162b2), Moderna (mRNA-1273), and Oxford/Astra Zeneca/Serum Institute of India (ChAdOx1)

Supplementary Table 10. Pericarditis; Aggregated OE Ratios by last dose and site, period 0–42 days

| Dose | Vaccine | Overall | | Australia:NSW | | Australia:Victoria | | Canada:BC | | Canada:Ontario | | Denmark | | Finland | | France | | New Zealand | | Scotland | |
|------|-----------|----------|--------------|---------------|-------------|--------------------|--------------|-----------|-------------|----------------|-------------|----------|-------------|----------|-------------|----------|-------------|-------------|-------------|----------|-------------|
| | | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI |
| 1 | ChAdOx1 | 1.29 | (1.15,1.44) | 1.01 | (0.69,1.42) | 3.43 | (2.87,4.07) | 0 | | 1.80 | (1.07,2.85) | 2.41 | (0.78,5.62) | - | | 0.72 | (0.58,0.87) | | | 1.44 | (0.94,2.11) |
| | BNT162b2 | 1.54 | (1.47,1.62) | 1.37 | (0.99,1.85) | 6.78 | (6.15,7.47) | 0.27 | (0.13,0.50) | 1.83 | (1.54,2.15) | 1.57 | (1.24,1.96) | 0.91 | (0.53,1.45) | 1.15 | (1.07,1.23) | 1.55 | (0.92,2.45) | 1.12 | (0.60,1.92) |
| | mRNA-1273 | 1.74 | (1.54,1.97) | - | | 10.65 | (7.61,14.51) | - | | 2.33 | (1.71,3.10) | 1.76 | (0.96,2.96) | - | | 1.49 | (1.26,1.74) | | | - | |
| 2 | ChAdOx1 | 1.27 | (1.12,1.43) | 1.11 | (0.77,1.54) | 3.24 | (2.70,3.86) | - | | - | | - | | - | | 0.71 | (0.56,0.88) | | | 0.96 | (0.56,1.53) |
| | BNT162b2 | 1.38 | (1.32,1.45) | 2.11 | (1.63,2.70) | 5.28 | (4.80,5.78) | 0.92 | (0.63,1.30) | 1.88 | (1.58,2.22) | 1.43 | (1.16,1.75) | 1.28 | (0.83,1.89) | 0.94 | (0.88,1.01) | 1.77 | (1.18,2.56) | 1.50 | (0.87,2.40) |
| | mRNA-1273 | 1.67 | (1.50,1.85) | - | | 7.62 | (5.34,10.55) | 1.44 | (0.91,2.19) | 2.77 | (2.26,3.35) | 2.53 | (1.70,3.61) | 3.31 | (1.51,6.28) | 1.06 | (0.89,1.25) | | | - | |
| 3 | ChAdOx1 | 6.91 | (3.45,12.36) | | | | | | | | | | | | | | | | | | |
| | BNT162b2 | 1.19 | (1.10,1.28) | 1.03 | (0.47,1.96) | 3.29 | (2.88,3.74) | 1.54 | (1.00,2.27) | 1.46 | (1.14,1.84) | 1.50 | (1.20,1.85) | 1.74 | (1.12,2.59) | 0.67 | (0.59,0.76) | 0.97 | (0.50,1.70) | 0.75 | (0.42,1.24) |
| | mRNA-1273 | 1.39 | (1.20,1.59) | - | | 4.69 | (3.68,5.90) | 1.60 | (1.10,2.26) | 1.25 | (0.91,1.69) | | | - | | 0.61 | (0.42,0.84) | | | 0.72 | (0.23,1.68) |
| 4 | BNT162b2 | 1.55 | (1.30,1.83) | | | 3.00 | (2.28,3.89) | 2.35 | (1.13,4.33) | 0.98 | (0.61,1.50) | 1.09 | (0.77,1.50) | | | | | - | | - | |
| | mRNA-1273 | 2.64 | (2.05,3.35) | | | 5.67 | (3.82,8.09) | 2.47 | (1.38,4.07) | 1.59 | (0.93,2.55) | | | | | | | | | - | |

Vaccines: Pfizer/BioNTech (BNT162b2), Moderna (mRNA-1273), and Oxford/Astra Zeneca/Serum Institute of India (ChAdOx1)

Thresholds for statistical indications of potential signals:

Red: LBCI* >1.5, statistically significant safety signal

Yellow: LBCI* >1 and ≤1.5, statistically significant

Green: LBCI* ≤1.0, not statistically significant

*LBCI: Lower bound of confidence interval

Conditions applied to the analysis of aggregated OE ratios by site:

- PYRS ≥10000
- OE ratios and 95% CI were suppressed (-) if fewer than five events were observed

Supplementary Tables 11-13: Supplemental analysis including all vaccines from GVDN sites

Supplementary Table 11: All aggregated OE Ratios by last dose, neurological conditions, period 0–42 days, PYRS≥1000, no censoring on observed counts

| Dose | Vaccine | GBS | | TRM | | BP | | ADEM | | FSZ | | GSZ | |
|------|---------|----------|---------------|----------|--------------|----------|--------------|----------|--------------|----------|--------------|----------|--------------|
| | | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI |
| 1 | AZD | 2.49 | (2.15,2.87) | 1.91 | (1.22,2.84) | 0.98 | (0.88,1.08) | 2.23 | (1.15,3.90) | 0.93 | (0.55,1.46) | 0.86 | (0.83,0.90) |
| | BNT | 0.90 | (0.79,1.03) | 0.74 | (0.53,1.02) | 1.05 | (1.00,1.11) | 1.28 | (0.77,2.00) | 0.73 | (0.53,0.97) | 0.92 | (0.91,0.94) |
| | MOD | 0.95 | (0.65,1.34) | 1.50 | (0.77,2.62) | 1.25 | (1.11,1.39) | 3.78 | (1.52,7.78) | 1.36 | (1.02,1.77) | 1.15 | (1.10,1.20) |
| | BIBNT | 0 | | 0 | | 1.42 | (0.04,7.89) | 0 | | 0 | | 0.89 | (0.11,3.23) |
| | NVX | 0 | | 0 | | 0 | | 0 | | 0 | | 2.70 | (0.33,9.77) |
| | PBNT | 0.79 | (0.02,4.38) | 1.96 | (0.05,10.93) | 0.91 | (0.49,1.56) | 1.40 | (0.04,7.81) | 1.01 | (0.72,1.37) | 0.81 | (0.71,0.93) |
| | BIBP | 0 | | 0 | | 0.88 | (0.18,2.56) | 0 | | 0 | | 2.15 | (1.03,3.95) |
| | VGM | 0 | | 0 | | 0.91 | (0.25,2.34) | 0 | | 0 | | 5.50 | (2.74,9.84) |
| | JJJ | 1.60 | (0.85,2.73) | 2.35 | (0.28,8.49) | 1.00 | (0.71,1.36) | 0 | | 0 | | 0.97 | (0.87,1.08) |
| | SINO | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | |
| 2 | HMOD | 0 | | 0 | | 0 | | 0 | | 0.70 | (0.19,1.80) | 0.43 | (0.09,1.26) |
| | AZD | 0.73 | (0.54,0.96) | 0.58 | (0.21,1.26) | 0.95 | (0.85,1.06) | 1.63 | (0.70,3.21) | 0.45 | (0.20,0.89) | 0.77 | (0.74,0.81) |
| | BNT | 0.69 | (0.60,0.79) | 0.84 | (0.62,1.11) | 0.93 | (0.88,0.97) | 0.54 | (0.23,1.06) | 0.58 | (0.42,0.79) | 0.81 | (0.80,0.83) |
| | MOD | 0.84 | (0.60,1.15) | 1.27 | (0.69,2.12) | 1.02 | (0.91,1.13) | 1.21 | (0.25,3.55) | 1.44 | (1.04,1.95) | 0.97 | (0.93,1.01) |
| | BIBNT | 0 | | 0 | | 0 | | 0 | | 0 | | 3.29 | (0.90,8.43) |
| | NVX | 62.83 | (1.59,350.05) | 0 | | 0 | | 0 | | 0 | | 1.25 | (0.03,6.99) |
| | PBNT | 0 | | 0 | | 0.11 | (0.00,0.61) | 0 | | 0.82 | (0.53,1.21) | 0.81 | (0.69,0.93) |
| | BIBP | 0 | | 0 | | 0.90 | (0.18,2.62) | 0 | | 3.11 | (0.64,9.08) | 1.76 | (0.76,3.46) |
| | VGM | 0 | | 0 | | 0.33 | (0.01,1.85) | 0 | | 0 | | 3.43 | (1.11,8.00) |
| | SINO | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | |
| 3 | AZD | 3.99 | (0.48,14.41) | 0 | | 0.75 | (0.20,1.92) | 0 | | 2.88 | (0.07,16.04) | 0.71 | (0.44,1.10) |
| | BNT | 0.66 | (0.54,0.79) | 1.02 | (0.68,1.46) | 0.81 | (0.76,0.87) | 0.82 | (0.30,1.79) | 0.97 | (0.69,1.33) | 0.80 | (0.78,0.82) |
| | MOD | 0.68 | (0.45,1.00) | 0.92 | (0.40,1.81) | 0.83 | (0.74,0.94) | 0.64 | (0.02,3.58) | 0.58 | (0.19,1.36) | 0.69 | (0.66,0.73) |
| | BIBNT | 4.19 | (0.11,23.37) | 0 | | 0.58 | (0.16,1.48) | 0 | | 0 | | 1.24 | (0.83,1.77) |
| | BIMODO | 0 | | 0 | | 0.65 | (0.02,3.63) | 0 | | 0 | | 1.79 | (1.07,2.79) |
| | NVX | 0 | | 0 | | 0 | | 0 | | 0 | | 3.87 | (0.10,21.57) |
| | PBNT | 0 | | 0 | | 1.07 | (0.03,5.95) | 0 | | 0.47 | (0.01,2.59) | 1.84 | (1.20,2.70) |
| | HMOD | 0 | | 2.66 | (0.32,9.62) | 1.10 | (0.57,1.93) | 0 | | 0 | | 0.99 | (0.84,1.16) |
| 4 | AZD | 0 | | 0 | | 6.58 | (1.36,19.23) | 0 | | 0 | | 1.50 | (0.55,3.27) |
| | BNT | 0.87 | (0.56,1.29) | 1.05 | (0.39,2.29) | 1.14 | (0.99,1.29) | 2.26 | (0.06,12.62) | 0.99 | (0.43,1.94) | 1.09 | (1.04,1.14) |
| | MOD | 0.88 | (0.32,1.92) | 1.25 | (0.15,4.50) | 1.08 | (0.83,1.38) | 0 | | 0.85 | (0.02,4.75) | 1.00 | (0.91,1.10) |
| | BIBNT | 0.87 | (0.28,2.04) | 1.21 | (0.15,4.36) | 1.01 | (0.74,1.34) | 0 | | 1.65 | (0.04,9.20) | 0.83 | (0.74,0.93) |
| | BIMODO | 1.28 | (0.52,2.65) | 0 | | 0.89 | (0.62,1.23) | 0 | | 0 | | 0.76 | (0.67,0.86) |
| | NVX | 0 | | 0 | | 0 | | 0 | | 0 | | 0.82 | (0.10,2.97) |
| 5 | BNT | 0 | | 0 | | 2.38 | (0.65,6.10) | 0 | | 0 | | 0.72 | (0.44,1.11) |
| | MOD | 12.31 | (1.49,44.46) | 0 | | 1.40 | (0.04,7.80) | 0 | | 0 | | 0.82 | (0.33,1.69) |
| | BIBNT | 0.46 | (0.09,1.34) | 0 | | 0.90 | (0.67,1.17) | 1.78 | (0.04,9.90) | 0 | | 0.66 | (0.58,0.74) |
| | BIMODO | 1.02 | (0.33,2.37) | 2.17 | (0.26,7.84) | 1.03 | (0.74,1.39) | 0 | | 1.81 | (0.22,6.56) | 0.77 | (0.68,0.87) |
| 6 | BNT | 0 | | 0 | | 0 | | 0 | | 0 | | 15.65 | (3.23,45.74) |
| | BIBNT | 0.51 | (0.01,2.86) | 6.58 | (0.17,36.69) | 0.14 | (0.00,0.79) | 0 | | 0 | | 0.50 | (0.38,0.66) |
| | BIMODO | 0 | | 0 | | 0.43 | (0.05,1.56) | 0 | | 0 | | 0.37 | (0.24,0.54) |
| 7 | BIBNT | 0 | | 0 | | 4.99 | (0.13,27.83) | 0 | | 0 | | 0.93 | (0.19,2.71) |

AESi: GBS= Guillain-Barré syndrome, TRM= Transverse myelitis, BP= Facial (Bell's) palsy, ADEM= Acute disseminated encephalomyelitis, FSZ= Febrile seizures, GSZ= Generalised seizures

Supplementary Table 12: All aggregated OE Ratios by last dose, haematologic conditions, period 0–42 days, PYRS≥1000, no censoring on observed counts

| Dose | Vaccine | THR | | ITP | | PEM | | CVST | | SVT | |
|------|---------|----------|--------------|----------|---------------|----------|--------------|----------|----------------|----------|---------------|
| | | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI | OE_Ratio | CI |
| 1 | AZD | 1.07 | (1.03,1.12) | 1.40 | (1.24,1.58) | 1.20 | (1.16,1.24) | 3.23 | (2.51,4.09) | 1.02 | (0.89,1.16) |
| | BNT | 1.11 | (1.08,1.14) | 1.08 | (1.01,1.16) | 1.29 | (1.26,1.32) | 1.49 | (1.26,1.75) | 1.25 | (1.17,1.34) |
| | MOD | 1.33 | (1.25,1.42) | 1.13 | (0.93,1.37) | 1.33 | (1.26,1.40) | 1.48 | (0.92,2.23) | 1.23 | (1.03,1.47) |
| | BIBNT | 0 | | 0 | | 2.58 | (0.31,9.30) | 0 | | 0 | |
| | NVX | 0 | | 0 | | 3.01 | (0.82,7.71) | 0 | | 34.57 | (0.88,192.63) |
| | PBNT | 0.55 | (0.28,0.99) | 0.77 | (0.33,1.51) | 0 | | 0 | | 1.22 | (0.03,6.81) |
| | BIBP | 0 | | 0 | | 0 | | 0 | | 0 | |
| | VGM | 0 | | 0 | | 0 | | 0 | | 0 | |
| | JJJ | 0.95 | (0.82,1.09) | 0.64 | (0.33,1.11) | 1.07 | (0.94,1.21) | 1.01 | (0.21,2.96) | 0.99 | (0.67,1.40) |
| | SINO | 0 | | 0 | | 0 | | 0 | | 0 | |
| | HMOD | 0 | | 0 | | 0 | | 0 | | 0 | |
| 2 | AZD | 0.96 | (0.91,1.01) | 1.02 | (0.88,1.18) | 0.96 | (0.92,1.00) | 1.15 | (0.70,1.77) | 0.95 | (0.82,1.10) |
| | BNT | 0.92 | (0.89,0.94) | 0.93 | (0.86,1.00) | 0.99 | (0.97,1.01) | 1.25 | (1.06,1.46) | 1.03 | (0.96,1.10) |
| | MOD | 0.98 | (0.92,1.04) | 0.80 | (0.65,0.97) | 1.05 | (0.99,1.10) | 1.43 | (0.95,2.06) | 1.17 | (1.01,1.36) |
| | BIBNT | 0 | | 0 | | 3.33 | (0.08,18.57) | 0 | | 0 | |
| | NVX | 3.28 | (0.68,9.59) | 0 | | 2.16 | (0.05,12.04) | 0 | | 0 | |
| | PBNT | 0.29 | (0.06,0.84) | 0.57 | (0.16,1.47) | 0 | | 3.55 | (0.09,19.80) | 4.03 | (0.49,14.57) |
| | BIBP | 0 | | 0 | | 0 | | 0 | | 0 | |
| | VGM | 0 | | 0 | | 0 | | 0 | | 0 | |
| | SINO | 0 | | 0 | | 0 | | 0 | | 0 | |
| | HMOD | 0 | | 0 | | 0 | | 0 | | 0 | |
| 3 | AZD | 1.95 | (1.29,2.84) | 3.65 | (0.75,10.67) | 1.88 | (1.32,2.58) | 0 | | 3.59 | (0.43,12.96) |
| | BNT | 0.78 | (0.75,0.81) | 0.85 | (0.77,0.93) | 0.96 | (0.93,0.98) | 1.14 | (0.89,1.44) | 0.90 | (0.82,0.99) |
| | MOD | 0.73 | (0.67,0.79) | 0.72 | (0.57,0.91) | 0.97 | (0.92,1.02) | 0.94 | (0.49,1.65) | 0.94 | (0.77,1.13) |
| | BIBNT | 1.26 | (0.51,2.60) | 0.87 | (0.02,4.85) | 2.20 | (1.30,3.48) | 15.01 | (0.38,83.62) | 1.63 | (0.04,9.09) |
| | BIMODO | 1.30 | (0.35,3.33) | 2.44 | (0.06,13.61) | 1.07 | (0.39,2.34) | 0 | | 2.34 | (0.06,13.02) |
| | NVX | 1.51 | (0.04,8.43) | 0 | | 0 | | 546.57 | (13.84,3045.2) | 0 | |
| | PBNT | 0.89 | (0.02,4.98) | 1.92 | (0.05,10.67) | 0 | | 0 | | 0 | |
| | HMOD | 0.80 | (0.26,1.86) | 1.35 | (0.67,2.41) | 0.80 | (0.59,1.05) | 0 | | 0.87 | (0.18,2.54) |
| | HMOD | 0.80 | (0.26,1.86) | 1.35 | (0.67,2.41) | 0.80 | (0.59,1.05) | 0 | | 0.87 | (0.18,2.54) |
| 4 | AZD | 2.72 | (1.00,5.92) | 0 | | 3.33 | (1.60,6.12) | 0 | | 6.90 | (0.17,38.45) |
| | BNT | 1.04 | (0.95,1.13) | 1.18 | (0.99,1.41) | 0.99 | (0.94,1.04) | 0.99 | (0.47,1.81) | 1.30 | (1.06,1.59) |
| | MOD | 1.08 | (0.93,1.24) | 0.96 | (0.59,1.47) | 1.03 | (0.93,1.13) | 0 | | 1.53 | (1.05,2.16) |
| | BIBNT | 0.86 | (0.68,1.07) | 0.81 | (0.43,1.38) | 0.92 | (0.80,1.06) | 5.16 | (1.41,13.22) | 0.67 | (0.32,1.23) |
| | BIMODO | 0.69 | (0.52,0.90) | 1.10 | (0.63,1.78) | 0.99 | (0.85,1.13) | 1.53 | (0.04,8.54) | 1.07 | (0.60,1.77) |
| | NVX | 1.33 | (0.16,4.81) | 0 | | 3.25 | (1.19,7.07) | 0 | | 0 | |
| 5 | BNT | 2.05 | (1.36,2.97) | 4.57 | (1.68,9.94) | 1.63 | (1.14,2.26) | 0 | | 2.67 | (0.55,7.79) |
| | MOD | 2.45 | (1.22,4.39) | 1.91 | (0.05,10.66) | 2.72 | (1.58,4.35) | 0 | | 0 | |
| | BIBNT | 0.73 | (0.62,0.85) | 0.94 | (0.59,1.42) | 0.92 | (0.83,1.02) | 0.65 | (0.02,3.62) | 0.94 | (0.57,1.47) |
| | BIMODO | 1.02 | (0.86,1.19) | 1.07 | (0.67,1.62) | 0.91 | (0.81,1.02) | 0 | | 0.98 | (0.55,1.61) |
| 6 | BNT | 4.45 | (0.92,13.02) | 40.46 | (1.02,225.42) | 4.37 | (1.42,10.20) | 108.71 | (2.75,605.68) | 113.98 | (2.89,635.07) |
| | BIBNT | 0.70 | (0.41,1.12) | 0.52 | (0.14,1.32) | 0.53 | (0.40,0.69) | 0 | | 0 | |
| | BIMODO | 0.63 | (0.29,1.20) | 0.38 | (0.05,1.38) | 0.32 | (0.20,0.48) | 15.65 | (0.40,87.17) | 1.68 | (0.46,4.31) |
| 7 | BIBNT | 3.39 | (0.41,12.23) | 10.65 | (1.29,38.46) | 0.41 | (0.01,2.29) | 0 | | 0 | |

AESI: THR= Thrombocytopenia, ITP=

Idiopathic thrombocytopenia, PEM= Pulmonary embolism, CVST=Cerebral venous sinus thrombosis, SVT= Splanchnic vein thrombosis

Supplementary Table 13: All aggregated OE Ratios by last dose, cardiovascular conditions, period 0–42 days, PYRS≥1000, no censoring on observed counts

| Dose | Vaccine | MYO | | PER | |
|------|---------|----------|---------------|----------|----------------|
| | | OE_Ratio | CI | OE_Ratio | CI |
| 1 | AZD | 1.36 | (1.08,1.68) | 1.29 | (1.15,1.44) |
| | BNT | 2.78 | (2.61,2.95) | 1.54 | (1.47,1.62) |
| | MOD | 3.48 | (3.00,4.01) | 1.74 | (1.54,1.97) |
| | BIBNT | 20.99 | (0.53,116.94) | 0 | |
| | NVX | 20.18 | (0.51,112.44) | 13.73 | (2.83,40.12) |
| | PBNT | 10.41 | (4.18,21.44) | 1.22 | (0.03,6.82) |
| | BIBP | 0 | | 0 | |
| | VGM | 0 | | 0 | |
| | JJJ | 1.64 | (0.87,2.80) | 0.81 | (0.54,1.18) |
| | SINO | 0 | | 0 | |
| | HMOD | 0 | | 0 | |
| 2 | AZD | 1.31 | (1.01,1.68) | 1.27 | (1.12,1.43) |
| | BNT | 2.86 | (2.70,3.03) | 1.38 | (1.32,1.45) |
| | MOD | 6.10 | (5.52,6.72) | 1.67 | (1.50,1.85) |
| | BIBNT | 0 | | 0 | |
| | NVX | 39.26 | (0.99,218.74) | 33.99 | (4.12,122.78) |
| | PBNT | 8.98 | (2.45,22.98) | 4.54 | (0.94,13.26) |
| | BIBP | 0 | | 0 | |
| | VGM | 0 | | 0 | |
| | SINO | 0 | | 0 | |
| | HMOD | 0 | | 0 | |
| 3 | AZD | 0 | | 6.91 | (3.45,12.36) |
| | BNT | 2.09 | (1.88,2.32) | 1.19 | (1.10,1.28) |
| | MOD | 2.01 | (1.60,2.49) | 1.39 | (1.20,1.59) |
| | BIBNT | 0 | | 1.21 | (0.03,6.77) |
| | BIMODO | 0 | | 3.00 | (0.36,10.85) |
| | NVX | 0 | | 9.72 | (2.01,28.42) |
| | PBNT | 0 | | 12.42 | (0.31,69.22) |
| | HMOD | 1.80 | (0.49,4.61) | 0.64 | (0.21,1.49) |
| 4 | AZD | 66.79 | (8.09,241.26) | 53.41 | (14.55,136.75) |
| | BNT | 2.06 | (1.47,2.80) | 1.55 | (1.30,1.83) |
| | MOD | 2.91 | (1.45,5.21) | 2.64 | (2.05,3.35) |
| | BIBNT | 1.45 | (0.47,3.37) | 0.98 | (0.56,1.59) |
| | BIMODO | 2.28 | (0.92,4.70) | 1.63 | (1.03,2.45) |
| | NVX | 0 | | 49.87 | (6.04,180.15) |
| 5 | BNT | 11.27 | (0.29,62.82) | 9.39 | (4.29,17.82) |
| | MOD | 25.83 | (0.65,143.92) | 4.14 | (0.10,23.06) |
| | BIBNT | 1.73 | (0.56,4.04) | 2.02 | (1.45,2.75) |
| | BIMODO | 2.31 | (0.63,5.92) | 1.85 | (1.19,2.72) |
| 6 | BNT | 0 | | 41.43 | (1.05,230.85) |
| | BIBNT | 3.59 | (0.09,20.02) | 2.35 | (0.86,5.11) |
| | BIMODO | 0 | | 0.61 | (0.02,3.40) |
| 7 | BIBNT | 0 | | 0 | |

AESI: MYO= Myocarditis, PER= Pericarditis

Vaccine abbreviations:

| Code | Vaccine brand |
|--------|--|
| AZD | Covishield or Vaxzevria [AstraZeneca or Serum Institute of India] |
| BNT | Comirnaty or Tozinameran [Pfizer/BioNTech or Fosun-BioNTech] |
| MOD | Elasomeran or Spikevax or TAK-919 [Moderna or Takeda] |
| BIBNT | Comirnaty or Riltazinameran or Pfizer/BioNTech COVID-19 Vaccine Bivalent [Pfizer/BioNTech] |
| NVX | Covovax or Nuvaxoid [Novavax or Serum Institute of India] |
| PBNT | Comirnaty or Tozinameran Paediatric [Pfizer/BioNTech or Fosun-BioNTech] |
| BIBP | Covilo or SARS-CoV-2 Vaccine (Vero Cell) [Sinopharm (Beijing)] |
| VGM | Sputnik V [Gamaleya Research Institute] |
| JJJ | Janssen [Janssen/Johnson & Johnson] |
| SINO | CoronaVac or Sinovac [Sinovac Biotech] |
| HMOD | Elasomeran or Spikevax or TAK-919 Half Dose [Moderna or Takeda] |
| BIMODO | Spikevax bivalent Original/Omicron [Moderna] |

Thresholds for statistical indications of potential signals:

Red: LBCI* >1.5, statistically significant safety signal

Yellow: LBCI* >1 and ≤1.5, statistically significant

Green: LBCI* ≤1.0, not statistically significant

*LBCI: Lower bound of confidence interval

Conditions applied to the analysis of aggregated OE ratios:

- PYRS ≥1000
- No censoring on observed counts