Supplemental Digital Content

Additional analysis outputs for:

COVID-19 among adults living with HIV: Correlates of mortality in a general population in a resource-limited setting

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### Supplemental Digital Content A: Additional descriptions of SARS-CoV-2 infections

#### Table A1: Admission pressure, timing and location for SARS-CoV-2 infections among adults with HIV in the Western Cape, stratified by age group (percentages and counts)

| Characteristic | Cases until end of Wave 3 | All cases (including Wave 4) |
|---------------|---------------------------|-------------------------------|
|               | Ages 15-39 years          | Ages ≥40 years | All ages n = 18,120 | All ages n = 22,057 |
|               | n = 9,321                 | n = 8,799 |                           |                           |
| Admission pressure |                           |                  |                         |                           |
| <25          | 28.7 (2,674)              | 23.5 (2,070) | 26.2 (4,744)             | 29.2 (6,432)             |
| ≥25 and <50  | 34.1 (3,181)              | 36.5 (3,208) | 35.3 (6,389)             | 37.8 (8,346)             |
| ≥50          | 37.2 (3,466)              | 40.0 (3,521) | 38.6 (6,987)             | 33.0 (7,279)             |
| Wave         |                           |                  |                         |                           |
| Wave 1       | 32.7 (3,052)              | 31.0 (2,731) | 31.9 (5,783)             | 26.2 (5,783)             |
| Wave 2       | 26.5 (2,469)              | 28.8 (2,532) | 27.6 (5,001)             | 22.7 (5,001)             |
| Wave 3       | 29.3 (2,731)              | 31.2 (2,747) | 30.2 (5,478)             | 24.8 (5,478)             |
| Wave 4       | -                         | -                | -                        | 15.6 (3,450)             |
| Inter-waves  | 11.5 (1,069)              | 9.0 (789)       | 10.3 (1,858)             | 10.7 (2,365)             |
| District     |                           |                  |                         |                           |
| Cape Winelands | 9.8 (915)               | 10.8 (950)       | 10.3 (1,865)             | 10.2 (2,253)             |
| Central Karoo | 1.1 (106)                | 1.4 (124)       | 1.3 (230)                | 1.3 (277)                |
| City of Cape Town | 61.1 (5,698) | 62.7 (5,518) | 61.9 (11,216)            | 62.1 (13,707)            |
| Garden Route | 18.0 (1,677)              | 16.1 (1,416) | 17.1 (3,093)             | 17.2 (3,792)             |
| Overberg     | 5.2 (489)                 | 4.3 (379)       | 4.8 (868)                | 4.6 (1,009)              |
| West Coast   | 4.7 (436)                 | 4.7 (412)       | 4.7 (848)                | 4.6 (1,019)              |

1 The week’s total number of COVID-19 admissions relative to the maximum weekly COVID-19 admissions for that district (as a percent).

#### Table A2: Alternative CD4 cell count measures for SARS-CoV-2 infections among adults with HIV in the Western Cape, stratified by age group (percentages and counts)

| CD4 count (cells/µl) measure | Cases until end of Wave 3 | All cases (including Wave 4) |
|------------------------------|---------------------------|-------------------------------|
|                              | Ages 15-39 years          | Ages ≥40 years | All ages n = 18,120 | All ages n = 22,057 |
|                              | n = 9,321                 | n = 8,799 |                           |                           |
| **Recent**                   |                           |                  |                         |                           |
| ≥ 500                        | 14.0 (1,304)              | 11.3 (991)       | 12.7 (2,295)             | 12.6 (2,775)             |
| 200-499                      | 15.7 (1,465)              | 11.5 (1,014)     | 13.7 (2,479)             | 13.5 (2,986)             |
| 50-199                       | 7.0 (648)                 | 5.8 (511)        | 6.4 (1,139)              | 7.1 (1,576)              |
| 0-49                         | 3.6 (333)                 | 2.2 (191)        | 2.9 (524)                | 3.5 (773)                |
| Unknown                      | 59.8 (5,571)              | 69.2 (6,092)     | 64.4 (11,663)            | 63.2 (13,947)            |
| **Nadir**                    |                           |                  |                         |                           |
| ≥ 500                        | 15.3 (1,424)              | 12.1 (1,067)     | 13.7 (2,491)             | 13.4 (2,965)             |
| 200-499                      | 44.1 (4,109)              | 39.2 (3,446)     | 41.7 (7,555)             | 40.7 (8,986)             |
| 50-199                       | 21.3 (1,987)              | 28.7 (2,526)     | 24.9 (4,513)             | 25.1 (5,555)             |
| 0-49                         | 8.0 (743)                 | 10.1 (886)       | 9.0 (1,629)              | 9.6 (2,112)              |
| Unknown                      | 11.4 (1,058)              | 9.9 (874)        | 10.7 (1,932)             | 11.1 (2,459)             |
| **At ART initiation**        |                           |                  |                         |                           |
| ≥ 500                        | 11.9 (1,105)              | 7.2 (631)        | 9.6 (1,736)              | 9.6 (2,111)              |
| 200-499                      | 34.0 (3,166)              | 25.5 (2,245)     | 29.9 (5,411)             | 29.8 (6,572)             |
| 50-199                       | 14.9 (1,387)              | 19.9 (1,752)     | 17.3 (3,139)             | 17.3 (3,813)             |
| 0-49                         | 3.8 (358)                 | 5.4 (477)        | 4.6 (835)                | 4.7 (1,027)              |
| Unknown                      | 35.5 (3,305)              | 42.0 (3,694)     | 38.6 (6,999)             | 38.7 (8,534)             |
Table A3: Outcomes, demographic characteristics, co-existing conditions, vaccination status and HIV characteristics, for SARS-CoV-2 infections among adults with HIV in the Western Cape, stratified by wave (percentages and counts)

| Characteristic / Outcome | Wave 1 n = 5,783 | Wave 2 n = 5,001 | Wave 3 n = 5,478 | Wave 4 n = 3,430 | Inter-wave n = 2,361 |
|--------------------------|------------------|------------------|------------------|------------------|------------------|
| **Death**                |                  |                  |                  |                  |                  |
| Female                   | 5.6 (323)        | 5.6 (281)        | 5.9 (325)        | 4.9 (167)        | 5.8 (137)        |
| Male                     | 24.8 (1,432)     | 29.7 (1,486)     | 32.8 (1,797)     | 31.1 (1,066)     | 30.2 (715)       |
| **Age (years)**          |                  |                  |                  |                  |                  |
| 15-24                    | 4.8 (279)        | 4.1 (204)        | 5.1 (277)        | 4.7 (161)        | 7.8 (185)        |
| 25-29                    | 11.3 (655)       | 10.9 (544)       | 10.3 (566)       | 12.7 (435)       | 13.4 (317)       |
| 30-34                    | 17.5 (1,012)     | 16.6 (830)       | 15.9 (872)       | 20.3 (695)       | 18.3 (432)       |
| 35-39                    | 19.1 (1,106)     | 17.8 (891)       | 18.5 (1,016)     | 19.5 (669)       | 18.9 (448)       |
| 40-49                    | 28.7 (1,657)     | 29.7 (1,486)     | 30.2 (1,653)     | 26.1 (894)       | 26.1 (618)       |
| 50-59                    | 13.7 (792)       | 14.8 (742)       | 15.0 (822)       | 12.2 (419)       | 11.9 (282)       |
| 60-69                    | 3.9 (225)        | 4.7 (233)        | 4.0 (217)        | 3.7 (127)        | 2.6 (62)         |
| ≥70                      | 1.0 (57)         | 1.4 (71)         | 1.0 (55)         | 0.9 (30)         | 0.9 (21)         |
| **Hypertension**         |                  |                  |                  |                  |                  |
| Absent                   | 72.2 (4,177)     | 71.7 (3,586)     | 67.5 (3,695)     | 60.8 (2,087)     | 64.4 (1,523)     |
| ≥1                       | 21.5 (1,242)     | 21.3 (1,064)     | 23.8 (1,303)     | 23.3 (800)       | 21.2 (502)       |
| <1                       | 3.0 (174)        | 2.7 (136)        | 3.4 (187)        | 5.7 (194)        | 4.9 (115)        |
| Ongoing                  | 3.3 (190)        | 4.3 (215)        | 5.3 (293)        | 10.2 (349)       | 9.5 (225)        |
| **Pregnancy (in women aged 15-49 years)** |                |                  |                  |                  |                  |
| Vaccination status²      |                  |                  |                  |                  |                  |
| None                     | 100.0 (5,783)    | 100.0 (5,001)    | 88.8 (4,866)     | 54.4 (1,866)     | 94.9 (2,245)     |
| Early                    |                  |                  |                  |                  |                  |
| Janssen - 1 vaccine      | -                | -                | 5.5 (298)        | 1.7 (57)         | 1.0 (24)         |
| Pfizer - 1 vaccine       | -                | -                | 3.8 (207)        | 16.8 (577)       | 1.5 (35)         |
| Janssen - 2 vaccines     | -                | -                | 1.7 (91)         | 5.1 (174)        | 1.1 (26)         |
| Pfizer - 2 vaccines      | -                | -                | 0.0 (0)          | 3.9 (133)        | 0.2 (4)          |
| **Number of previous SARS-CoV-2 diagnoses** |                |                  |                  |                  |                  |
| 0                        | 100.0 (5,783)    | 98.4 (4,920)     | 96.9 (5,308)     | 87.8 (3,011)     | 97.0 (2,294)     |
| 1                        | 0.0 (0)          | 1.6 (81)         | 3.0 (166)        | 11.8 (406)       | 2.9 (69)         |
| 2                        | 0.0 (0)          | 0.0 (0)          | 0.1 (4)          | 0.4 (13)         | 0.1 (2)          |
| **CD4 count (cells/ul)** |                  |                  |                  |                  |                  |
| ≥ 500                    | 11.6 (670)       | 13.7 (684)       | 13.3 (729)       | 12.7 (437)       | 10.8 (255)       |
| 200-499                  | 13.4 (775)       | 12.8 (642)       | 14.3 (783)       | 12.4 (426)       | 15.2 (360)       |
| 50-199                   | 5.2 (301)        | 6.0 (300)        | 7.4 (407)        | 10.2 (349)       | 9.3 (219)        |
| 0-49                     | 2.4 (140)        | 2.6 (132)        | 2.8 (152)        | 6.1 (210)        | 5.9 (139)        |
| Unknown                  | 67.4 (3,897)     | 64.8 (3,243)     | 62.2 (3,407)     | 58.5 (2,008)     | 58.9 (1,392)     |
| **Viral load³ (copies/ml)** |              |                  |                  |                  |                  |
| 0-999                    | 74.7 (3,970)     | 72.7 (3,301)     | 69.7 (3,449)     | 59.7 (1,833)     | 64.4 (1,360)     |
| ≥ 1000                   | 6.6 (352)        | 8.9 (405)        | 10.8 (532)       | 13.3 (407)       | 14.5 (307)       |
| Unknown                  | 18.7 (991)       | 18.4 (837)       | 19.5 (966)       | 27.0 (830)       | 21.0 (444)       |
| **ART (years since most recent collection)** |              |                  |                  |                  |                  |
| ≥ 2                      | 49.6 (2,868)     | 41.2 (2,061)     | 45.9 (2,517)     | 49.9 (1,713)     | 41.7 (987)       |
| <2                       | 42.3 (2,445)     | 49.6 (2,482)     | 44.4 (2,430)     | 39.6 (1,357)     | 47.5 (1,124)     |
| No ART                   | 8.1 (470)        | 9.2 (458)        | 9.7 (531)        | 10.5 (360)       | 10.7 (254)       |
| **HIV (years since first evidence)** |             |                  |                  |                  |                  |
| <1                       | 8.0 (464)        | 6.9 (347)        | 6.3 (346)        | 8.8 (303)        | 10.4 (246)       |
| 1-5                      | 31.7 (1,835)     | 32.0 (1,602)     | 29.3 (1,607)     | 29.3 (1,006)     | 32.8 (776)       |
| 5-10                     | 34.9 (2,016)     | 34.8 (1,738)     | 37.0 (2,026)     | 35.7 (1,224)     | 32.9 (777)       |
| ≥10                      | 25.4 (1,468)     | 26.3 (1,314)     | 27.4 (1,499)     | 26.2 (897)       | 23.9 (566)       |

¹Time since the most recent evidence of an event or diagnosis considered as ongoing. ²The highest level of protection from the following conditions: No vaccine received (‘None’); ≤28 days since a first vaccine dose (‘Early’); ≥28 days since a first dose of a vaccine, by type (‘1 vaccine’); or ≥14 days since a second dose, by type (‘2 vaccines’). ³Among those with evidence of ART at any time.
## Supplemental Digital Content B: Unadjusted and adjusted odds ratios for all model terms

Table B1: Mortality rates, unadjusted and adjusted odds ratios (and 95% CIs) describing the association of mortality with a person’s demographic characteristics, co-existing conditions, vaccination status, HIV characteristics and time/location covariates, for 15–39-year-old adults with HIV and SARS-CoV-2 infections in the Western Cape

| Variable                        | Category                     | n     | Mortality risk (95% CI) | Univariable analysis: Unadjusted odds ratio (uOR) Estimate (95% CI) | p-value | Multivariable analysis: Adjusted odds ratio (aOR) Estimate (95% CI) | p-value |
|---------------------------------|------------------------------|-------|-------------------------|--------------------------------------------------------------------|---------|--------------------------------------------------------------------|---------|
| Sex                             | Female (Ref)                 | 7114  | 2.52 (2.16,2.91)        | -                                                                 | <0.001  | 1.07 (0.80,1.42)                                                   | 0.656   |
|                                 | Male                         | 2032  | 4.13 (3.31,5.09)        | 1.67 (1.28,2.17)                                                  |         | 1.07 (0.80,1.42)                                                   |         |
| Age group (years)               | 15-24 (Ref)                  | 884   | 2.26 (1.39,3.47)        | -                                                                 |         | 1.07 (0.80,1.42)                                                   | 0.656   |
|                                 | 25-29                        | 1973  | 2.13 (1.54,2.87)        | 0.94 (0.56,1.64)                                                  | 0.001   | 1.21 (0.70,2.17)                                                   | 0.003   |
|                                 | 30-34                        | 3008  | 2.56 (2.03,3.19)        | 1.13 (0.70,1.92)                                                  |         | 1.37 (0.83,2.38)                                                   |         |
|                                 | 35-39                        | 3281  | 3.78 (3.15,4.49)        | 1.70 (1.08,2.82)                                                  |         | 2.05 (1.25,3.51)                                                   |         |
| Hypertension                    | Absent (Ref)                 | 8360  | 2.75 (2.41,3.12)        | -                                                                 | 0.029   | 1.68 (1.07,2.55)                                                   | 0.019   |
|                                 | Present                      | 786   | 4.20 (2.91,5.85)        | 1.55 (1.05,2.22)                                                  |         | 1.68 (1.07,2.55)                                                   |         |
| Diabetes                        | Absent (Ref)                 | 8789  | 2.74 (2.41,3.11)        | -                                                                 | 0.001   | 2.64 (1.54,4.33)                                                   | <0.001  |
|                                 | Present                      | 357   | 6.16 (3.90,9.18)        | 2.33 (1.45,3.57)                                                  |         | 2.64 (1.54,4.33)                                                   |         |
| Chronic obstructive pulmonary disease | Absent (Ref)                  | 8776  | 2.83 (2.49,3.19)        | -                                                                 | 0.19    | 2.64 (1.54,4.33)                                                   |         |
|                                 | Present                      | 370   | 4.05 (2.92,5.60)        | 1.45 (0.82,2.39)                                                  |         | 2.64 (1.54,4.33)                                                   |         |
| Chronic kidney disease          | Absent (Ref)                 | 9062  | 2.74 (2.41,3.09)        | -                                                                 | <0.001  | 5.85 (2.93,11.06)                                                   | <0.001  |
|                                 | Present                      | 84    | 17.86 (10.35,27.74)     | 7.73 (4.20,13.32)                                                 |         | 5.85 (2.93,11.06)                                                   |         |
| Tuberculosis\(^1\) (years since) | Absent (Ref)                  | 6708  | 1.46 (1.19,1.78)        | -                                                                 | <0.001  | 1.73 (1.19,2.49)                                                   | <0.001  |
|                                 | ≥ 1                          | 1644  | 2.98 (2.21,3.92)        | 2.07 (1.45,2.92)                                                  |         | 1.73 (1.19,2.49)                                                   |         |
|                                 | < 1                          | 319   | 13.17 (9.66,17.38)      | 10.23 (6.93,14.87)                                                |         | 5.40 (3.43,8.41)                                                   |         |
|                                 | Recent/current               | 475   | 15.58 (12.44,19.16)     | 12.45 (9.03,17.09)                                                |         | 7.40 (5.12,10.67)                                                   |         |
| Number of conditions\(^2\)     | 0-2 (Ref)                    | 9076  | 2.81 (2.48,3.17)        | -                                                                 | 0.001   | 8.04 (5.21,13.14)                                                   | 0.334   |
|                                 | >2                           | 70    | 11.43 (5.07,21.28)      | 4.46 (1.96,8.88)                                                  |         | 0.62 (0.22,1.60)                                                   | 0.842   |
| Pregnancy                       | Absent (Ref)                 | 8381  | 2.97 (2.62,3.36)        | -                                                                 | 0.054   | 0.62 (0.22,1.60)                                                   |         |
|                                 | Present                      | 765   | 1.83 (1.00,3.05)        | 0.61 (0.34,1.01)                                                  |         | 0.94 (0.51,1.63)                                                   |         |

Continued on next page
| Variable                          | Category               | n      | Mortality risk (95% CI) | Univariable analysis: Unadjusted odds ratio (uOR) | Multivariable analysis: Adjusted odds ratio (aOR) |
|----------------------------------|------------------------|--------|-------------------------|---------------------------------------------------|-------------------------------------------------|
|                                  |                        |        | Estimate (95% CI)       | p-value                                           | Estimate (95% CI)       | p-value                                           |
| Vaccination status¹              | None (Ref)             | 8967   | 2.90 (2.56,3.27)        | 0.032                                             | -                   | 0.081                                             |
|                                  | Early                  | 69     | 4.35 (0.91,12.18)       | 1.52 (0.37,4.13)                                  | 1.31 (0.31,3.80)      | 0.00 (0.00,0.29)                                   |
|                                  | 1/2 vaccines           | 110    | 0.00 (0.00,3.30)        | 0.00 (no deaths)                                  | 0.00 (0.00,0.29)      |                                                  |
| CD4 count (cells/µl)             | ≥ 500 (Ref)            | 1280   | 1.48 (0.90,2.31)        | -                                                 | 0.081               | <0.001                                            |
|                                  | 200–499                | 1441   | 2.50 (1.76,3.44)        | 1.70 (0.98,3.04)                                  | 1.19 (0.67,2.17)      |                                                  |
|                                  | 50–199                 | 631    | 7.77 (5.80,10.14)       | 5.59 (3.32,9.80)                                  | 2.20 (1.23,4.04)      |                                                  |
|                                  | 0–49                   | 318    | 14.78 (11.07,19.17)     | 11.51 (6.76,20.38)                                | 3.39 (1.83,6.47)      |                                                  |
|                                  | Unknown                | 5476   | 2.05 (1.69,2.46)        | 1.39 (0.87,2.33)                                  | 1.05 (0.64,1.80)      |                                                  |
| Viral load⁴ (copies/ml)          | 0–999 (Ref)            | 5546   | 1.77 (1.44,2.15)        | -                                                 | 0.014               | <0.001                                            |
|                                  | ≥ 1000                 | 892    | 7.06 (5.47,8.95)        | 4.22 (3.04,5.83)                                  | 1.53 (1.03,2.24)      |                                                  |
|                                  | Unknown                | 1896   | 3.01 (2.28,3.88)        | 1.72 (1.23,2.39)                                  | 1.26 (0.88,1.81)      |                                                  |
| ART collection                   | Yes                    | 8334   | 2.62 (2.28,2.98)        | -                                                 | 0.002               | <0.001                                            |
|                                  | No ART                 | 812    | 5.54 (4.07,7.35)        | 2.18 (1.55,3.01)                                  | 2.30 (1.47,5.34)      |                                                  |
| HIV (years since first evidence) | ≥ 1 (Ref)              | 8322   | 2.66 (2.32,3.02)        | -                                                 | 0.136               | 0.126                                             |
|                                  | < 1                    | 824    | 5.10 (3.70,6.83)        | 1.97 (1.39,2.73)                                  | 1.37 (0.91,2.05)      |                                                  |
| Admission pressure⁵ (%)          | <25 (Ref)              | 2630   | 2.78 (2.18,3.48)        | -                                                 | 0.036               |                                                  |
|                                  | ≥25 and <50            | 3147   | 3.24 (2.65,3.92)        | 1.17 (0.87,1.60)                                  | 1.65 (1.11,2.49)      |                                                  |
|                                  | ≥50                    | 3369   | 2.61 (2.10,3.21)        | 0.94 (0.69,1.29)                                  | 1.24 (0.79,2.00)      |                                                  |
| Wave                            | Wave 1 (Ref)           | 3052   | 2.23 (1.73,2.82)        | -                                                 | 0.008               | 0.016                                             |
|                                  | Wave 2                 | 2415   | 2.61 (2.01,3.33)        | 1.18 (0.83,1.66)                                  | 1.29 (0.82,2.01)      |                                                  |
|                                  | Wave 3                 | 2636   | 3.57 (2.89,4.35)        | 1.62 (1.18,2.23)                                  | 1.68 (1.13,2.50)      |                                                  |
|                                  | Inter-waves            | 1043   | 3.64 (2.59,4.97)        | 1.66 (1.10,2.47)                                  | 1.83 (1.03,2.11)      |                                                  |
| District                         | City of Cape Town (Ref)| 5599   | 2.82 (2.40,3.29)        | -                                                 | 0.209               | 0.136                                             |
|                                  | Cape Winelands         | 907    | 4.08 (2.89,5.58)        | 1.46 (1.00,2.09)                                  | 1.70 (1.12,2.52)      |                                                  |
|                                  | Central Karoo          | 104    | 1.92 (0.25,6.77)        | 0.68 (0.11,2.16)                                  | 0.50 (0.08,1.75)      |                                                  |
|                                  | Garden Route           | 1623   | 2.40 (1.71,3.27)        | 0.85 (0.59,1.20)                                  | 0.95 (0.64,1.37)      |                                                  |
|                                  | Overberg               | 483    | 3.52 (2.06,5.58)        | 1.26 (0.73,2.03)                                  | 1.37 (0.76,2.32)      |                                                  |
|                                  | West Coast             | 430    | 2.33 (1.12,4.24)        | 0.82 (0.40,1.49)                                  | 0.94 (0.45,1.75)      |                                                  |

¹ Time since the most recent evidence of a start of an episode; with episodes beginning after 2 months before the SARS-CoV-2 diagnosis considered as ongoing. ² Hypertension, diabetes, chronic obstructive pulmonary disease, chronic kidney disease, tuberculosis (at any time). ³ The highest level of protection from among: No vaccine received ('None'); <28 days since a first vaccine dose ('Early'); ≥28 days since (at least) a first dose of a vaccine (1 or 2 Pfizer or Janssen vaccines not distinguished due to small samples). ⁴ Among those with evidence of ART at any time. ⁵ The week's total number of COVID-19 admissions relative to the maximum weekly COVID-19 admissions for that district (as a percent).

ART: Antiretroviral therapy. CI: Confidence interval.
Table B2: Mortality rates, unadjusted and adjusted odds ratios (and 95% CIs) describing the association of mortality with a person’s demographic characteristics, co-existing conditions, vaccination status, HIV characteristics and time/location covariates, for adults with HIV and SARS-CoV-2 infections ≥ 40 years old in the Western Cape

| Variable                        | Category       | n     | Mortality risk (95% CI) | Univariable analysis: Unadjusted odds ratio (uOR) Estimate (95% CI) | p-value | Multivariable analysis: Adjusted odds ratio (aOR) Estimate (95% CI) | p-value |
|---------------------------------|----------------|-------|-------------------------|---------------------------------------------------------------------|---------|---------------------------------------------------------------------|---------|
| **Sex**                         |                |       |                         |                                                                     |         |                                                                     |         |
| Sex                             | Female (Ref)   | 5529  | 7.23 (6.57,7.95)        | -                                                                   | <0.001  | 1.31 (1.11,1.54)                                                   | 0.002   |
| Sex                             | Male           | 3146  | 11.09 (10.02,12.24)     | 1.60 (1.38,1.86)                                                   |         | 1.31 (1.11,1.54)                                                   |         |
| **Age group (years)**           |                |       |                         |                                                                     |         |                                                                     |         |
| Age group (years)               | 40-49 (Ref)    | 5207  | 5.36 (4.76,6.00)        | -                                                                   | <0.001  | 1.73 (1.43,2.09)                                                   | <0.001  |
| Age group (years)               | 50-59          | 2560  | 10.35 (9.20,11.60)      | 2.04 (1.71,2.43)                                                  |         | 3.34 (2.61,4.26)                                                   |         |
| Age group (years)               | 60-69          | 711   | 20.68 (17.75,23.84)     | 4.60 (3.70,5.72)                                                  |         | 4.89 (3.35,7.07)                                                   |         |
| Age group (years)               | ≥ 70           | 197   | 29.44 (23.18,36.34)     | 7.37 (5.27,10.20)                                                 |         |                                                                     |         |
| Hypertension                    | Absent (Ref)   | 5796  | 6.82 (6.18,7.49)        | -                                                                   | <0.001  | 1.22 (1.01,1.48)                                                   | 0.039   |
| Hypertension                    | Present        | 2879  | 12.30 (11.12,13.55)     | 1.92 (1.65,2.23)                                                  |         |                                                                     |         |
| **Diabetes**                    |                |       |                         |                                                                     |         |                                                                     |         |
| Diabetes                        | Absent (Ref)   | 7298  | 6.48 (5.93,7.07)        | -                                                                   | <0.001  | 3.12 (2.54,3.83)                                                   | <0.001  |
| Diabetes                        | Present        | 1377  | 20.04 (17.96,22.26)     | 3.62 (3.08,4.25)                                                  |         |                                                                     |         |
| **Chronic obstructive pulmonary disease** | Absent (Ref) | 7782  | 8.30 (7.70,8.94)        | -                                                                   | 0.002   | 1.04 (0.80,1.35)                                                   | 0.744   |
| **Chronic obstructive pulmonary disease** | Present | 893   | 11.53 (9.51,13.81)      | 1.44 (1.15,1.79)                                                  |         |                                                                     |         |
| Chronic kidney disease          | Absent (Ref)   | 8098  | 7.42 (6.86,8.01)        | -                                                                   | <0.001  | 2.47 (1.89,3.21)                                                   | <0.001  |
| Chronic kidney disease          | Present        | 577   | 25.65 (22.13,29.42)     | 4.30 (3.50,5.27)                                                  |         |                                                                     |         |
| Tuberculosis¹ (years since)     | Absent (Ref)   | 5799  | 7.23 (6.57,7.92)        | -                                                                   | <0.001  | 1.26 (1.02,1.54)                                                   | <0.001  |
| Tuberculosis¹ (years since)     | ≥ 1            | 2284  | 8.89 (7.75,10.13)       | 1.25 (1.05,1.49)                                                  |         | 2.31 (1.54,3.42)                                                   |         |
| Tuberculosis¹ (years since)     | < 1            | 228   | 18.86 (14.00,24.55)     | 2.98 (2.09,4.18)                                                  |         | 3.37 (2.46,4.59)                                                   |         |
| Tuberculosis¹ (years since)     | Recent/current | 364   | 23.08 (18.85,27.75)     | 3.85 (2.95,4.99)                                                  |         |                                                                     |         |
| Number of conditions²           | 0-2 (Ref)      | 7994  | 7.36 (6.79,7.95)        | -                                                                   | <0.001  | 0.74 (0.53,1.03)                                                   | 0.074   |
| Number of conditions²           | >2             | 681   | 23.64 (20.50,27.02)     | 3.90 (3.20,4.73)                                                  |         |                                                                     |         |
| **Pregnancy**                   | Absent (Ref)   | 8625  | 8.66 (8.08,9.27)        | -                                                                   | 0.195   | 1.06 (0.17,3.51)                                                   | 0.937   |
| **Pregnancy**                   | Present        | 50    | 4.00 (0.49,13.71)       | 0.44 (0.07,1.42)                                                  |         |                                                                     |         |

Continued on next page
| Variable                        | Category                          | n    | Mortality risk (95% CI) | Univariable analysis: Unadjusted odds ratio (uOR) Estimate (95% CI) | p-value | Multivariable analysis: Adjusted odds ratio (aOR) Estimate (95% CI) | p-value |
|--------------------------------|-----------------------------------|------|-------------------------|---------------------------------------------------------------------|---------|---------------------------------------------------------------------|---------|
| Vaccination status             | None (Ref)                        | 8275 | 8.82 (8.22,9.45)        | -                                                                   | 0.001   | 0.50 (0.25,0.92)                                                    | <0.001  |
|                                | Early                             | 217  | 5.07 (2.56,8.89)        | 0.55 (0.28,0.97)                                                   |         | 0.40 (0.16,0.89)                                                    |         |
|                                | Pfizer - 1 vaccine                | 79   | 8.86 (3.64,17.41)       | 1.00 (0.42,2.04)                                                   |         | 0.10 (0.01,0.45)                                                    |         |
|                                | Primary                           | 104  | 0.96 (0.02,5.24)        | 0.10 (0.01,0.45)                                                   |         | 0.10 (0.01,0.47)                                                    |         |
| CD4 count (cells/µl)           | ≥ 500 (Ref)                       | 974  | 7.80 (6.20,9.67)        | -                                                                   | <0.001  | 0.94 (0.72,1.24)                                                    | <0.001  |
|                                | 200-499                           | 998  | 10.12 (2.56,8.89)       | 1.33 (0.98,1.82)                                                   | 0.55 (0.28,0.97) | 0.74 (0.42,1.58)                                                   |         |
|                                | 50-199                            | 502  | 14.74 (11.76,18.15)     | 2.04 (1.45,2.87)                                                   | 1.20 (0.86,1.68) | 1.82 (1.25,2.66)                                                   |         |
|                                | 0-49                              | 184  | 24.46 (18.43,31.32)     | 3.83 (2.53,5.74)                                                   | 3.30 (2.04,5.31) | 0.94 (0.72,1.24)                                                    |         |
|                                | Unknown                            | 6017 | 7.53 (6.87,8.22)        | 0.96 (0.75,1.25)                                                   |         | 0.94 (0.72,1.24)                                                    |         |
| Viral load (copies/ml)         | 0-999 (Ref)                       | 6112 | 7.66 (7.00,8.35)        | -                                                                   | <0.001  | 1.08 (0.78,1.47)                                                    | 0.546   |
|                                | ≥ 1000                            | 570  | 12.63 (10.02,15.64)     | 1.74 (1.33,2.26)                                                   | 1.08 (0.78,1.47) | 0.89 (0.68,1.15)                                                   |         |
|                                | Unknown                            | 1183 | 7.27 (5.86,9.09)        | 0.95 (0.74,1.19)                                                   |         | 0.89 (0.68,1.15)                                                    |         |
| ART collection                 | Yes                               | 7865 | 7.96 (7.37,8.58)        | -                                                                   | <0.001  | 1.48 (1.12,1.94)                                                    | 0.006   |
|                                | No ART                            | 810  | 15.19 (12.78,18.74)     | 2.07 (1.67,2.54)                                                   | 1.48 (1.12,1.94) | 1.48 (1.08,2.01)                                                   | 0.012   |
| HIV (years since first evidence)| ≥ 1 (Ref)                         | 8164 | 8.06 (7.48,8.67)        | -                                                                   | <0.001  | 0.99 (0.78,1.27)                                                    | 0.932   |
|                                | < 1                               | 511  | 17.81 (14.59,21.41)     | 2.47 (1.93,3.13)                                                   | 1.48 (1.08,2.01) | 0.95 (0.72,1.26)                                                   |         |
| Admission pressure (%)         | <25 (Ref)                         | 2036 | 8.25 (7.09,9.53)        | -                                                                   |         | 0.96 (0.74,1.25)                                                    | 0.012   |
|                                | ≥25 and <50                       | 3183 | 9.43 (8.43,10.19)       | 1.16 (0.95,1.41)                                                   | 0.99 (0.78,1.27) | 0.95 (0.72,1.26)                                                   | 0.932   |
|                                | ≥50                               | 3456 | 8.13 (7.24,9.09)        | 0.98 (0.81,1.20)                                                   | 0.95 (0.72,1.26) | 0.95 (0.72,1.26)                                                   |         |
| Wave                           | Wave 1 (Ref)                      | 2731 | 9.34 (8.27,10.49)       | -                                                                   | 0.286   | 0.97 (0.74,1.26)                                                    | 0.104   |
|                                | Wave 2                            | 2505 | 8.58 (7.51,9.75)        | 0.91 (0.75,1.10)                                                   | 0.96 (0.74,1.25) | 0.75 (0.53,1.47)                                                   | 0.104   |
|                                | Wave 3                            | 2672 | 8.35 (7.32,9.46)        | 0.88 (0.73,1.07)                                                   | 1.14 (0.89,1.46) | 0.74 (0.51,1.06)                                                   | 0.104   |
|                                | Inter-waves                       | 767  | 7.30 (5.56,9.38)        | 0.76 (0.56,1.03)                                                   | 0.74 (0.51,1.06) | 0.74 (0.51,1.06)                                                   | 0.104   |
| District                       | City of Cape Town (Ref)           | 5447 | 9.42 (8.66,10.22)       | -                                                                   | 0.002   | 0.97 (0.74,1.26)                                                    | 0.231   |
|                                | Cape Winelands                    | 941  | 9.03 (7.28,11.15)       | 0.96 (0.75,1.21)                                                   | 0.97 (0.74,1.26) | 0.77 (0.50,1.14)                                                   |         |
|                                | Central Karoo                     | 121  | 8.26 (4.03,14.67)       | 0.87 (0.42,1.58)                                                   | 0.75 (0.35,1.47) | 0.77 (0.50,1.14)                                                   |         |
|                                | Garden Route                      | 1388 | 6.56 (5.31,7.99)        | 0.67 (0.53,0.85)                                                   | 0.82 (0.64,1.05) | 0.77 (0.50,1.14)                                                   |         |
|                                | Overberg                          | 368  | 5.71 (3.57,8.59)        | 0.58 (0.36,0.89)                                                   | 0.65 (0.39,1.03) | 0.77 (0.50,1.14)                                                   |         |
|                                | West Coast                        | 410  | 7.07 (4.79,10.00)       | 0.73 (0.49,1.06)                                                   | 0.77 (0.50,1.14) | 0.77 (0.50,1.14)                                                   |         |

1 Time since the most recent evidence of a start of an episode; with episodes beginning after 2 months before the SARS-CoV-2 diagnosis considered as ongoing. 2 Hypertension, diabetes, chronic obstructive pulmonary disease, chronic kidney disease, tuberculosis (at any time). 3 The highest level of protection from among: No vaccine received (‘None’); <28 days since a first vaccine dose (‘Early’); ≥28 days since 1 dose of a Pfizer vaccine (‘1 vaccine (P)’); ≥28 days since 1 Janssen vaccine, possibly with a 2nd vaccine too, or ≥14 days since a 2nd Pfizer vaccine (combined into the ‘primary’ series due to the small sample). 4 Among those with evidence of ART at any time. 5 The week’s total number of COVID-19 admissions relative to the maximum weekly COVID-19 admissions for that district (as a percent). ART: Antiretroviral therapy. CI: Confidence interval.
Table C1: Adjusted odds ratios (and 95% CIs) describing the association of mortality with a person’s demographic characteristics, co-existing conditions, vaccination status, HIV characteristics and time/location covariates, using alternative CD4 cell count measures for 15–39-year-old adults with HIV and SARS-CoV-2 infections in the Western Cape

| Variable                              | Category                        | Model 1: Recent CD4 (AIC: 2051) | Model 2: CD4 nadir (AIC: 2043) | Model 3: CD4 at ART start (AIC: 2062) |
|---------------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------------|
| Sex                                   | Female (Ref)                    |                                 |                                 |                                       |
|                                       | Male                            | 1.07 (0.80,1.42)                | 1.04 (0.78,1.39)                | 1.09 (0.81,1.45)                      |
| Age group (years)                     | 15-24 (Ref)                     |                                 |                                 |                                       |
|                                       | 25-29                           | 1.21 (0.70,2.17)                | 1.15 (0.66,2.06)                | 1.14 (0.66,2.03)                      |
|                                       | 30-34                           | 1.37 (0.83,2.38)                | 1.30 (0.78,2.24)                | 1.28 (0.78,2.22)                      |
|                                       | 35-39                           | 2.05 (1.25,3.51)                | 1.88 (1.15,3.21)                | 1.91 (1.17,3.27)                      |
| Hypertension                          | Absent (Ref)                    |                                 |                                 |                                       |
|                                       | Present                         | 1.68 (1.07,2.55)                | 1.70 (1.08,2.59)                | 1.67 (1.06,2.53)                      |
| Diabetes                              | Absent (Ref)                    |                                 |                                 |                                       |
|                                       | Present                         | 2.64 (1.54,4.33)                | 2.56 (1.49,4.20)                | 2.46 (1.44,4.01)                      |
| Chronic obstructive pulmonary disease | Absent (Ref)                    |                                 |                                 |                                       |
|                                       | Present                         | 1.15 (0.62,1.98)                | 1.14 (0.62,1.97)                | 1.18 (0.64,2.03)                      |
| Chronic kidney disease                | Absent (Ref)                    |                                 |                                 |                                       |
|                                       | Present                         | 5.85 (2.93,11.06)               | 5.99 (3.01,11.31)               | 5.79 (2.90,10.95)                     |
| Tuberculosis\(^4\) (years since)     | Absent (Ref)                    |                                 |                                 |                                       |
|                                       | ≥ 1                             | 1.73 (1.19,2.49)                | 1.50 (1.01,2.20)                | 1.67 (1.14,2.42)                      |
|                                       | < 1                             | 5.40 (3.43,8.41)                | 5.81 (3.71,8.99)                | 7.48 (4.88,11.30)                     |
|                                       | Ongoing                         | 7.40 (5.12,10.67)               | 7.58 (5.24,10.96)               | 8.66 (6.06,12.36)                     |
| Number of conditions\(^2\)           | 0-2 (Ref)                       | 0.62 (0.22,1.60)                | 0.61 (0.22,1.58)                | 0.64 (0.23,1.65)                      |
|                                       | >2                              | 0.94 (0.51,1.63)                | 0.95 (0.51,1.64)                | 0.98 (0.53,1.68)                      |
| Pregnancy                             | Absent (Ref)                    | 1.31 (0.31,3.80)                | 1.29 (0.30,3.71)                | 1.18 (0.28,3.46)                      |
|                                       | Present                         | 0.94 (0.51,1.63)                | 0.95 (0.51,1.64)                | 0.98 (0.53,1.68)                      |
| Vaccination status\(^3\)             | None (Ref)                      | 1.19 (0.67,2.17)                | 1.08 (0.67,1.84)                | 0.90 (0.55,1.52)                      |
|                                       | Early                           | 2.20 (1.23,4.04)                | 1.29 (0.76,2.25)                | 1.41 (0.84,2.43)                      |
|                                       | 1/2 vaccines                    | 3.39 (1.83,6.47)                | 3.36 (1.95,5.98)                | 1.60 (0.84,3.05)                      |
| CD4 count (cells/µl)                  | ≥ 500 (Ref)                     | 1.05 (0.64,1.80)                | 1.16 (0.63,2.17)                | 0.63 (0.37,1.11)                      |
|                                       | 200–499                         | 1.19 (0.67,2.17)                | 1.08 (0.67,1.84)                | 0.90 (0.55,1.52)                      |
|                                       | 50–199                          | 2.20 (1.23,4.04)                | 1.29 (0.76,2.25)                | 1.41 (0.84,2.43)                      |
|                                       | 0–49                            | 3.39 (1.83,6.47)                | 3.36 (1.95,5.98)                | 1.60 (0.84,3.05)                      |
|                                       | Unknown                         | 1.05 (0.64,1.80)                | 1.16 (0.63,2.17)                | 0.63 (0.37,1.11)                      |
| Viral load\(^4\) (copies/ml)         | 0–999 (Ref)                     | 1.53 (1.03,2.24)                | 1.68 (1.15,2.43)                | 2.11 (1.46,3.02)                      |
|                                       | ≥ 1000                          | 1.26 (0.88,1.81)                | 1.35 (0.94,1.93)                | 1.43 (1.00,2.04)                      |
|                                       | Unknown                         | 1.53 (1.03,2.24)                | 1.68 (1.15,2.43)                | 2.11 (1.46,3.02)                      |
| ART collection                        | Yes                             | 2.30 (1.47,3.54)                | 2.33 (1.45,3.66)                | 3.32 (1.97,5.62)                      |
|                                       | No ART                          | 1.37 (0.91,2.05)                | 1.48 (0.96,2.24)                | 1.33 (0.88,1.99)                      |
| HIV (years since first evidence)      | ≥ 1 (Ref)                       |                                 |                                 |                                       |
|                                       | < 1                             |                                 |                                 |                                       |

Continued on next page
| Variable          | Category                | Model 1: Recent CD4 (AIC: 2051) | Model 2: CD4 nadir (AIC: 2043) | Model 3: CD4 at ART start (AIC: 2062) |
|------------------|-------------------------|-------------------------------|-------------------------------|----------------------------------|
| Admission pressure (%) | <25 (Ref)               | 1.65 (1.11,2.49)              | 1.68 (1.13,2.53)              | 1.66 (1.12,2.51)                  |
|                  | ≥25 and <50             | 1.24 (0.79,2.00)              | 1.30 (0.82,2.09)              | 1.25 (0.80,2.01)                  |
|                  | ≥50                     |                               |                               |                                  |
| Wave             | Wave 1 (Ref)            | 1.29 (0.82,2.01)              | 1.27 (0.81,1.99)              | 1.31 (0.83,2.04)                  |
|                  | Wave 2                  | 1.68 (1.13,2.50)              | 1.71 (1.15,2.54)              | 1.66 (1.11,2.47)                  |
|                  | Wave 3                  | 1.83 (1.08,3.11)              | 1.81 (1.07,3.07)              | 1.88 (1.11,3.19)                  |
|                  | Inter-waves             |                               |                               |                                  |
| District         | City of Cape Town (Ref) | 1.70 (1.12,2.52)              | 1.70 (1.12,2.54)              | 1.71 (1.12,2.54)                  |
|                  | Cape Winelands          | 0.50 (0.08,1.75)              | 0.55 (0.09,1.88)              | 0.51 (0.08,1.77)                  |
|                  | Central Karoo           | 0.95 (0.64,1.37)              | 0.94 (0.64,1.37)              | 0.96 (0.65,1.39)                  |
|                  | Garden Route            | 1.37 (0.76,2.32)              | 1.38 (0.77,2.34)              | 1.31 (0.73,2.21)                  |
|                  | Overberg                | 0.94 (0.45,1.75)              | 0.93 (0.45,1.73)              | 0.96 (0.46,1.80)                  |
|                  | West Coast              |                               |                               |                                  |

1 Time since the most recent evidence of a start of an episode; with episodes beginning after 2 months before the SARS-CoV-2 diagnosis considered as ongoing. 2 Hypertension, diabetes, chronic obstructive pulmonary disease, chronic kidney disease, tuberculosis (at any time). 3 The highest level of protection from among: No vaccine received ("None"); <28 days since a first vaccine dose ("Early"); ≥28 days since (at least) a first dose of a vaccine (1 or 2 Pfizer or Janssen vaccines not distinguished due to small samples). 4 Among those with evidence of ART at any time. 5 The week’s total number of COVID-19 admissions relative to the maximum weekly COVID-19 admissions for that district (as a percent). 6 Akaike Information Criterion (AIC) provides relative measure of models’ predictive powers; lower AIC values are more favourable.

ART: Antiretroviral therapy. CI: Confidence interval.
Table C2: Adjusted odds ratios (and 95% CIs) describing the association of mortality with a person’s demographic characteristics, co-existing conditions, vaccination status, HIV characteristics and time/location covariates, using alternative CD4 cell count measures, for adults with HIV and SARS-CoV-2 infections ≥ 40 years old in the Western Cape

| Variable                          | Category            | Model 1: Recent CD4 (AIC: 4465) | Model 2: CD4 nadir (AIC: 4470) | Model 3: CD4 at ART start (AIC: 4489) |
|-----------------------------------|---------------------|---------------------------------|---------------------------------|--------------------------------------|
| Sex                               | Female (Ref)        | 1.31 (1.11,1.54)                | 1.30 (1.10,1.53)                | 1.33 (1.13,1.57)                     |
| Age group (years)                 | Male                |                                 |                                 |                                      |
| 40-49 (Ref)                       |                     |                                 |                                 |                                      |
| 50-59                             |                     | 1.73 (1.43,2.09)                | 1.71 (1.42,2.06)                | 1.67 (1.39,2.02)                     |
| 60-69                             |                     | 3.34 (2.61,4.26)                | 3.44 (2.68,4.39)                | 3.27 (2.56,4.17)                     |
| 70+                               |                     | 4.89 (3.35,7.07)                | 4.99 (3.41,7.24)                | 4.62 (3.16,6.68)                     |
| Hypertension                      | Absent (Ref)        | 1.22 (1.01,1.48)                | 1.23 (1.02,1.49)                | 1.22 (1.01,1.48)                     |
|                                  | Present             |                                 |                                 |                                      |
| Diabetes                          | Absent (Ref)        | 3.12 (2.54,3.83)                | 3.14 (2.56,3.86)                | 3.04 (2.48,3.73)                     |
|                                  | Present             |                                 |                                 |                                      |
| Chronic obstructive pulmonary disease | Absent (Ref)   | 1.04 (0.80,1.35)                | 1.09 (0.84,1.41)                | 1.09 (0.84,1.41)                     |
|                                  | Present             |                                 |                                 |                                      |
| Chronic kidney disease            | Absent (Ref)        | 2.47 (1.89,3.21)                | 2.49 (1.91,3.23)                | 2.52 (1.93,3.27)                     |
|                                  | Present             |                                 |                                 |                                      |
| Tuberculosis3 (years since)       | Absent (Ref)        | 1.26 (1.02,1.54)                | 1.18 (0.96,1.45)                | 1.24 (1.01,1.52)                     |
|                                  | 12m+                | 2.31 (1.54,3.42)                | 2.68 (1.80,3.93)                | 2.93 (1.96,4.28)                     |
|                                  | <12m                | 3.37 (2.46,4.59)                | 3.66 (2.69,4.96)                | 4.07 (2.99,5.49)                     |
|                                  | Recent/current      |                                 |                                 |                                      |
| Number of conditions2            | 0-2 (Ref)           | 0.74 (0.53,1.03)                | 0.75 (0.54,1.04)                | 0.75 (0.54,1.04)                     |
|                                  | >2                  | 0.94 (0.72,1.24)                | 0.79 (0.53,1.19)                | 1.21 (0.85,1.76)                     |
| Pregnancy                        | Absent (Ref)        | 1.06 (0.17,3.51)                | 1.14 (0.18,3.74)                | 1.11 (0.18,3.65)                     |
|                                  | Present             |                                 |                                 |                                      |
| Vaccination status3              | None (Ref)          | 0.50 (0.25,0.92)                | 0.49 (0.24,0.90)                | 0.49 (0.24,0.90)                     |
|                                  | Early               | 0.40 (0.16,0.89)                | 0.41 (0.16,0.89)                | 0.41 (0.16,0.90)                     |
|                                  | Pfizer - 1 vaccine  | 0.10 (0.01,0.47)                | 0.10 (0.01,0.48)                | 0.09 (0.01,0.44)                     |
|                                  | Primary             |                                 |                                 |                                      |
| CD4 count (cells/µl)             | ≥ 500 (Ref)         | 1.20 (0.86,1.68)                | 1.37 (1.02,1.86)                | 1.07 (0.74,1.57)                     |
|                                  | 200-499             | 1.82 (1.25,2.66)                | 1.50 (1.12,2.07)                | 1.37 (0.95,2.01)                     |
|                                  | 50-199              | 3.30 (2.04,5.31)                | 2.36 (1.65,3.38)                | 2.11 (1.36,3.32)                     |
|                                  | Unknown             | 0.94 (0.72,1.24)                | 0.79 (0.53,1.19)                | 1.21 (0.85,1.76)                     |
| Viral load4 (copies/ml)           | ≥ 1000              | 1.08 (0.78,1.47)                | 1.34 (0.99,1.79)                | 1.45 (1.08,1.93)                     |
|                                  | Unknown             | 0.89 (0.68,1.15)                | 1.03 (0.79,1.34)                | 0.94 (0.73,1.21)                     |
| ART collection                   | Yes                 | 1.48 (1.12,1.94)                | 1.80 (1.32,2.43)                | 1.40 (1.03,1.88)                     |
|                                  | No ART              |                                 |                                 |                                      |
| HIV (years since first evidence) | ≥ 1 (Ref)           | 1.48 (1.08,2.01)                | 1.87 (1.35,2.57)                | 1.57 (1.15,2.14)                     |
|                                  | < 1                 |                                 |                                 |                                      |

Continued on next page
| Variable                  | Category                  | Model 1: Recent CD4 (AIC: 4465) | Model 2: CD4 nadir (AIC: 4470) | Model 3: CD4 at ART start (AIC: 4489) |
|---------------------------|---------------------------|---------------------------------|---------------------------------|-------------------------------------|
| Admission pressure (%)    | <25 (Ref)                 | 0.99 (0.78,1.27)                | 0.98 (0.77,1.26)                | 1.00 (0.78,1.28)                    |
|                           | ≥25 and <50               | 0.95 (0.72,1.26)                | 0.95 (0.72,1.26)                | 0.95 (0.72,1.26)                    |
|                           | ≥50                       | 0.95 (0.72,1.26)                | 0.95 (0.72,1.26)                | 0.95 (0.72,1.26)                    |
| Wave                      | Wave 1 (Ref)              | 0.96 (0.74,1.25)                | 0.97 (0.74,1.26)                | 0.98 (0.75,1.27)                    |
|                           | Wave 2                    | 1.14 (0.89,1.46)                | 1.15 (0.90,1.48)                | 1.18 (0.91,1.51)                    |
|                           | Wave 3                    | 0.74 (0.51,1.06)                | 0.72 (0.50,1.04)                | 0.75 (0.52,1.09)                    |
|                           | Inter-waves               |                                 |                                 |                                     |
| District                  | City of Cape Town (Ref)   | 0.97 (0.74,1.26)                | 1.01 (0.77,1.31)                | 1.00 (0.76,1.30)                    |
|                           | Cape Winelands            | 0.75 (0.35,1.47)                | 0.81 (0.37,1.57)                | 0.79 (0.36,1.54)                    |
|                           | Central Karoo             | 0.82 (0.64,1.05)                | 0.84 (0.65,1.07)                | 0.82 (0.64,1.05)                    |
|                           | Garden Route              | 0.65 (0.39,1.03)                | 0.66 (0.40,1.05)                | 0.67 (0.40,1.06)                    |
|                           | Overberg                  | 0.77 (0.50,1.14)                | 0.79 (0.52,1.18)                | 0.80 (0.52,1.18)                    |
|                           | West Coast                | 0.77 (0.50,1.14)                | 0.79 (0.52,1.18)                | 0.80 (0.52,1.18)                    |

1 Time since the most recent evidence of a start of an episode; with episodes beginning after 2 months before the SARS-CoV-2 diagnosis considered as ongoing. 2 Hypertension, diabetes, chronic obstructive pulmonary disease, chronic kidney disease, tuberculosis (at any time). 3 The highest level of protection from among: No vaccine received (’None’); <28 days since a first vaccine dose (’Early’); ≥28 days since 1 dose of a Pfizer vaccine (‘1 vaccine (P)’); ≥28 days since 1 Janssen vaccine, possibly with a 2nd vaccine too, or ≥14 days since a 2nd Pfizer vaccine (combined into the ‘primary’ series due to the small sample). 4 Among those with evidence of ART at any time. 5 The week’s total number of COVID-19 admissions relative to the maximum weekly COVID-19 admissions for that district (as a percent). 6 Akaike Information Criterion (AIC) provides relative measure of models’ predictive powers; lower AIC values are more favourable.

ART: Antiretroviral therapy. CI: Confidence interval.
Supplemental Digital Content D: Adjusted odds ratios for models including SARS-CoV-2 infections diagnosed during Wave 4

Figure D1: Adjusted odds ratios (and 95% CIs) describing the association of mortality with a person’s HIV characteristics, vaccination, demographic characteristics, and co-existing conditions, for 15–39-year-old adults with HIV and SARS-CoV-2 infections in the Western Cape using all infections until 10 March 2022. P-values are reported on the right.

1 Among those with evidence of ART at any time. 2 The highest level of protection from among six categories: No vaccine received (‘None’); <28 days since a first vaccine dose (‘Early’); ≥28 days since a first dose of a vaccine, by type (‘1 vaccine’); or ≥14 days since a second dose, by type (‘2 vaccines’). J: Janssen, P: Pfizer. 3 Time since the most recent evidence of a start of an episode; with episodes beginning after 2 months before the SARS-CoV-2 diagnosis considered as ongoing. Hypertension, diabetes, chronic obstructive pulmonary disease, chronic kidney disease, tuberculosis (at any time).

ART: Antiretroviral therapy. CI: Confidence interval. CKD: Chronic kidney disease. COPD: Chronic obstructive pulmonary disease.
Supplemental Digital Content

Figure D2: Adjusted odds ratios (and 95% CIs) describing the association of mortality with a person’s HIV characteristics, vaccination, demographic characteristics, and co-existing conditions, for adults with HIV and SARS-CoV-2 infections aged ≥ 40 years in the Western Cape using all infections until 10 March 2022. P-values are reported on the right.

1 Among those with evidence of ART at any time. 2 The highest level of protection from among six categories: No vaccine received (‘None’); <28 days since first vaccine dose (‘Early’); ≥28 days since a first dose of a vaccine, by type (‘1 vaccine’); or ≥14 days since a second dose, by type (‘2 vaccines’). J: Janssen, P: Pfizer. 3 Time since the most recent evidence of a start of an episode; with episodes beginning after 2 months before the SARS-CoV-2 diagnosis considered as ongoing. 4 Hypertension, diabetes, chronic obstructive pulmonary disease, chronic kidney disease, tuberculosis (at any time).

ART: Antiretroviral therapy. CI: Confidence interval. CKD: Chronic kidney disease. COPD: Chronic obstructive pulmonary disease.