1 **Supplementary data:**

2 Diabetes in a TB and HIV-endemic South African population: Analysis of a virtual cohort
3 using routine health data.

4 **S1 Table**: Characteristics of the study population who are HIV positive and stratified by the
5 ascertainment of the HIV in relation to diabetes ascertainment

| | All<br>*N=2423[a]* | HIV before diabetes ascertainment<br>*N=1525 (63%)* | HIV after diabetes ascertainment<br>*N=898 (37%)* | p-value |
|---|---|---|---|---|
| Sex (Female) | 1676 (69.2%) | 1033 (67.8%) | 643 (71.6%) | 0.058 |
| Age at diabetes ascertainment (Years) | 46.0 [39.0;52.0] | 45.0 [39.0;52.0] | 47.0 [39.0;53.0] | 0.029 |
| Baseline HbA1c (%) | 8.4 [6.9;10.9] | 8.0 [6.8;10.4] | 9.4 [7.3;11.8] | <0.001 |
| Last HbA1c (%) | 12.2 [8.0;15.0] | 12.5 [7.9;15.2] | 11.6 [8.0;14.5] | 0.005 |
| Patient outcome (Deceased) | 142 (5.9%) | 69 (4.5%) | 73 (8.1%) | <0.001 |
| Diabetes duration (Years) | 4.0 [1.2;6.5] | 2.9 [0.6;5.6] | 5.8 [3.1;7.8] | <0.001 |
| Ever started diabetes treatment | 2056 (84.9%) | 1237 (81.1%) | 819 (91.2%) | <0.001 |
| Ever had Tuberculosis | 786 (32.4%) | 548 (35.9%) | 238 (26.5%) | <0.001 |
| TB-Diabetes comorbidity | 372 (47.8%) | 164 (30.1%) | 208 (88.5%) | <0.001 |

6 a. 85 (3%) individuals did not have enough data to classify when they were ascertained HIV relative to
7 diabetes ascertainment
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**S2 Table:** Characteristics of the whole study population, and stratified by history of active
Tuberculosis disease

| | ALL<br>*N=13771* | Never had<br>Tuberculosis<br>*N=11932* | Ever had<br>Tuberculosis<br>*N=1839* | p-<br>value |
|---|---|---|---|---|
| Sex (Female) | 9246 (67.2%) | 8201 (68.8%) | 1045 (56.9%) | <0.001 |
| Age at diabetes<br>ascertainment (Years) | 52.0 [44.0;59.0] | 52.0 [44.0;60.0] | 49.0 [41.0;56.0] | <0.001 |
| Baseline HbA1c (%) | 8.5 [7.0;11.1] | 8.5 [7.0;11.0] | 9.2 [7.1;11.8] | <0.001 |
| Last HbA1c (%) | 9.5 [7.2;12.7] | 9.3 [7.1;12.5] | 10.9 [7.6;14.1] | <0.001 |
| Patient outcome (Deceased) | 631 (4.6%) | 448 (3.8%) | 183 (10.0%) | <0.001 |
| TB-Diabetes comorbidity | 1008 (55.9%) | 0 (.%) | 1008 (55.9%) | . |
| Ever started TB treatment | 1831 (13.3%) | 0 (0.0%) | 1831 (99.6%) | 0.000 |
| Ever started diabetes<br>treatment | 11745 (85.3%) | 10141 (85.0%) | 1604 (87.2%) | 0.013 |
| Linkage to diabetes<br>Treatment | 10707 (91.2%) | 9335 (92.1%) | 1372 (85.5%) | <0.001 |
| Linkage to HbA1c testing | 9264 (67.3%) | 8029 (67.3%) | 1235 (67.2%) | 0.896 |

**S3 Table**: Number of study participants recorded as being on the different combinations of Diabetes, TB, and HIV medications.

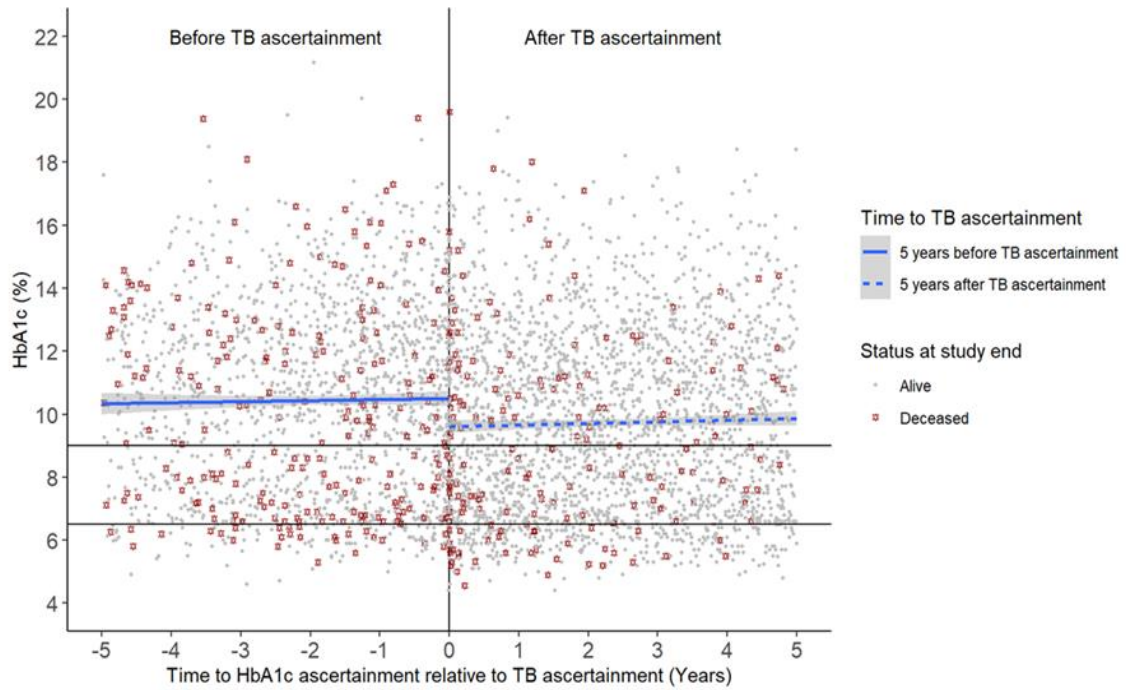| Diabetes treatment | Tuberculosis treatment | HIV treatment | Number of study participants |
|---|---|---|---|
| 1 | 0 | 0 | 10374 |
| 1 | 0 | 1 | 1323 |
| 1 | 1 | 0 | 1088 |
| 1 | 1 | 1 | 743 |

62  **S4 Table:** Characteristics of the whole study population, and stratified by the sex of the
63  participants

| | [ALL]<br>*N=13754* [a] | Female<br>*N=9246* (67%) | Male<br>*N=4508* (33%) | **p-value** |
|---|---|---|---|---|
| Age at diabetes ascertainment (Years) | 52.0 [44.0;59.0] | 52.0 [44.0;60.0] | 51.0 [43.0;59.0] | <0.001 |
| Age categories | | | | <0.001 |
| 18-39 | 2108 (15.3%) | 1348 (14.6%) | 760 (16.9%) | |
| 40-49 | 3711 (27.0%) | 2476 (26.8%) | 1235 (27.4%) | |
| 50-59 | 4570 (33.2%) | 3090 (33.4%) | 1480 (32.8%) | |
| 60-69 | 2356 (17.1%) | 1597 (17.3%) | 759 (16.8%) | |
| 70-79 | 804 (5.8%) | 569 (6.2%) | 235 (5.2%) | |
| >=80 | 205 (1.5%) | 166 (1.8%) | 39 (0.9%) | |
| HIV Positive | 2506 (18.2%) | 1726 (18.7%) | 780 (17.3%) | 0.054 |
| Ever had Tuberculosis | 1838 (13.4%) | 1045 (11.3%) | 793 (17.6%) | <0.001 |
| Tuberculosis-Diabetes comorbidity | 1007 (55.9%) | 581 (56.8%) | 426 (54.8%) | 0.415 |
| Baseline HbA1c (%) | 8.5 [7.0;11.1] | 8.6 [7.0;11.1] | 8.5 [6.9;11.2] | 0.441 |
| Baseline HbA1c < 7% | 2816 (24.5%) | 1867 (24.0%) | 949 (25.5%) | 0.089 |
| Last HbA1c (%) | 9.4 [7.2;12.7] | 9.5 [7.2;12.7] | 9.3 [7.1;12.7] | 0.038 |
| Last HbA1c < 7% | 2927 (21.3%) | 1886 (20.4%) | 1041 (23.1%) | <0.001 |
| Patient outcome (Deceased) | 631 (4.6%) | 394 (4.3%) | 237 (5.3%) | 0.010 |
| Ever started TB treatment | 1830 (13.3%) | 1043 (11.3%) | 787 (17.5%) | <0.001 |
| Ever started diabetes treatment | 11729 (85.3%) | 7802 (84.4%) | 3927 (87.1%) | <0.001 |
| Linkage to diabetes treatment | 10694 (91.2%) | 7117 (91.2%) | 3577 (91.1%) | 0.838 |
| Linkage to HbA1c testing | 9250 (67.3%) | 6157 (66.6%) | 3093 (68.6%) | 0.021 |

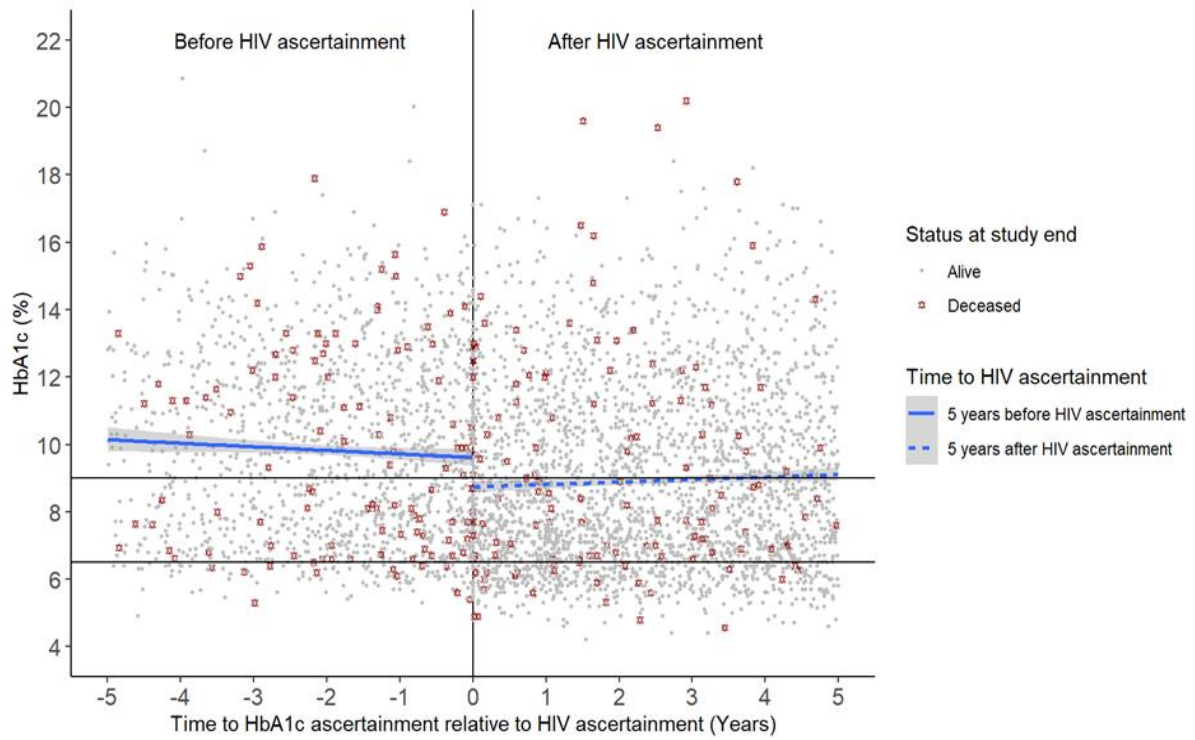64

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**S1 Fig:** Effect of Tuberculosis ascertainment on HbA1c (%) over a 5-year period. HbA1c plotted by participant outcome at the end of the study i.e. alive (grey circle) or deceased (dark-red star).

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**S2 Fig:** Effect of HIV ascertainment on HbA1c (%) over a 5-year period. HbA1c plotted by

participant outcome at the end of the study i.e. alive (grey circle) or deceased (dark-red star).