# Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

Supplement to: The Emerging Risk Factors Collaboration. Diabetes mellitus, fasting glucose, and risk of cause-specific death. N Engl J Med 2011;364:829-41.

Supplementary Appendix to

# Diabetes Mellitus, Fasting Glucose, and Risk of Cause-Specific Death

The Emerging Risk Factors Collaboration

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**Supplementary Table 1. Characteristics of individual studies contributing to the current analyses**

| Study abbreviation | Country | Population source | Participant sampling method | No. of participants | Mean (SD) age at baseline (yrs) | N (%) male | N (%) with diabetes at baseline | Mean (SD) fasting glucose, mmol/l, at baseline | Median follow-up (5th & 95th percentiles), years |
|---|---|---|---|---|---|---|---|---|---|
| **Cohort studies** | | | | | | | | | |
| ARIC | USA | Households | Random | 14473 | 54 (6) | 6252 (43) | 1923 (13) | 6.0 (2.1) | 14.1 (7.6 to 15.7) |
| ATENA | Italy | Volunteers | Random | 4741 | 50 (7) | 0 (0) | 118 (2) | - | 6.7 (5.2 to 8.1) |
| ATTICA | Greece | General population | Random | 1577 | 51 (11) | 808 (51) | 146 (9) | 5.3 (1.5) | 5.0 (5.0 to 5.0) |
| BHS | Australia | Electoral rolls | Complete | 5865 | 45 (16) | 2766 (47) | 97 (2) | 5.1 (1.0) | 27.1 (7.5 to 33.2) |
| BRHS | UK | GP/Health service lists | Random | 6785 | 50 (6) | 6785 (100) | 74 (1) | - | 24.5 (7.4 to 25.4) |
| BRUN | Italy | Population register | Random | 817 | 58 (11) | 398 (49) | 44 (5) | 5.5 (1.0) | 15.3 (5.4 to 15.5) |
| BUPA | UK | GP/Health service lists | Complete | 20870 | 47 (8) | 20870 (100) | 157 (1) | 5.4 (1.1) | 23.7 (11.3 to 26.7) |
| BWHHS | UK | General population | Random | 2791 | 68 (5) | 0 (0) | 231 (8) | 6.0 (1.4) | 9.1 (4.6 to 10.2) |
| CaPS | UK | Electoral rolls | Random | 2130 | 52 (5) | 2130 (100) | 29 (1) | 6.3 (2.1) | 13.0 (6.0 to 13.0) |
| CASTEL | Italy | Screening | Complete | 2535 | 73 (5) | 965 (38) | 482 (19) | 6.1 (1.7) | 11.2 (2.4 to 14.0) |
| CHARL | USA | Households | Random | 1925 | 50 (11) | 860 (45) | 74 (4) | - | 26.5 (3.9 to 40.1) |
| CHS1 | USA | Medicare lists | Random | 3862 | 72 (5) | 1479 (38) | 494 (13) | 6.0 (1.8) | 12.2 (3.3 to 12.9) |
| CHS2 | USA | Medicare lists | Random | 470 | 72 (5) | 178 (38) | 103 (22) | 6.5 (2.9) | 9.1 (2.4 to 9.5) |
| COPEN | Denmark | General population | Random | 8237 | 57 (15) | 3537 (43) | 210 (3) | - | 15.6 (3.6 to 17.2) |
| DISCO | Italy | NR | NR | 1820 | 50 (11) | 810 (45) | 75 (4) | - | 5.5 (5.5 to 9.5) |
| DRECE | Spain | General population | Random | 2739 | 41 (11) | 1328 (48) | 181 (7) | 5.3 (1.3) | 16.4 (15.5 to 16.6) |
| DUBBO | Australia | Electoral rolls | Complete | 2053 | 68 (7) | 863 (42) | 138 (7) | 5.1 (1.1) | 14.2 (2.5 to 15.0) |
| EAS | Scotland | GP/Health service lists | Random | 1026 | 64 (6) | 511 (50) | 76 (7) | 5.7 (1.2) | 15.2 (4.4 to 15.9) |
| EMOFRI | Italy | Electoral rolls | Random | 360 | 55 (6) | 176 (49) | 24 (7) | 5.4 (1.7) | 6.8 (6.5 to 7.2) |
| EPESEBOS | USA | General population | Complete | 1033 | 72 (5) | 353 (34) | 131 (13) | - | 11.4 (7.6 to 11.9) |
| EPESEIOW | USA | General population | Complete | 1570 | 73 (5) | 504 (32) | 109 (7) | - | 15.9 (7.4 to 26.5) |
| EPESENCA | USA | General population | Random | 1347 | 72 (5) | 447 (33) | 177 (13) | - | 13.1 (7.8 to 13.6) |
| EPESENHA | USA | General population | Random | 813 | 73 (6) | 302 (37) | 92 (11) | - | 10.5 (7.4 to 10.8) |
| ESTHER | Germany | GP lists | Complete | 7771 | 62 (7) | 3307 (43) | 1007 (13) | 5.4 (1.6) | 5.1 (2.1 to 6.0) |
| FINE_IT | Italy | Survivors of an existing cohort | Complete | 457 | 72 (4) | 457 (100) | 36 (8) | - | 11.6 (1.9 to 21.4) |
| FINRISK92 | Finland | General population | Random | 5268 | 46 (10) | 2441 (46) | 96 (2) | - | 11.9 (11.2 to 11.9) |
| FINRISK97 | Finland | General population | Random | 6309 | 51 (11) | 3129 (50) | 210 (3) | - | 6.8 (6.7 to 6.9) |
| FRAMOFF | USA | Offspring/spouse to Framingham Heart Study participants | Complete | 2854 | 54 (10) | 1269 (45) | 291 (10) | 8.4 (2.6) | 5.2 (2.8 to 7.0) |
| GOH | Israel | General population | Random | 2613 | 44 (9) | 1300 (50) | 238 (9) | 8.7 (3.4) | 35.0 (14.6 to 36.0) |
| GOTO13 | Sweden | General population | Random | 784 | 50 (1) | 784 (100) | 17 (2) | - | 13.7 (1.1 to 30.5) |

| Study abbreviation | Country | Population source | Participant sampling method | No. of participants | Mean (SD) age at baseline (yrs) | N (%) male | N (%) with diabetes at baseline | Mean (SD) fasting glucose, mmol/l, at baseline | Median follow-up (5th & 95th percentiles), years |
|---|---|---|---|---|---|---|---|---|---|
| GOTO33 | Sweden | General population | Complete | 719 | 51 (0) | 719 (100) | 52 (7) | 5.1 (1.9) | 12.8 (7.9 to 13.1) |
| GOTO43 | Sweden | General population | Complete | 772 | 50 (0) | 772 (100) | 25 (3) | 4.7 (1.3) | 10.0 (9.6 to 10.7) |
| GOTOW | Sweden | General population | Random | 1425 | 47 (6) | 0 (0) | 16 (1) | 4.1 (0.9) | 37.6 (11.9 to 41.0) |
| GREPCO | Italy | NR | NR | 775 | 44 (8) | 0 (0) | 17 (2) | - | 7.9 (7.7 to 8.4) |
| GRIPS | Germany | Occupational | Complete | 5785 | 48 (5) | 5785 (100) | 124 (2) | - | 9.8 (8.6 to 10.0) |
| HBS | Finland | Occupational | NR | 1131 | 60 (4) | 1131 (100) | 19 (2) | 4.9 (1.0) | 20.5 (6.0 to 20.5) |
| HELSINAG | Finland | Population register | Random | 374 | 79 (4) | 98 (26) | 0 (0) | 5.7 (1.8) | 9.3 (2.1 to 11.0) |
| HISAYAMA | Japan | General population | Complete | 2575 | 59 (12) | 1087 (42) | 295 (11) | 5.8 (1.3) | 14.0 (4.8 to 14.0) |
| HONOL | USA | GP/Health service lists | Complete | 2433 | 78 (4) | 2433 (100) | 628 (26) | - | 6.4 (2.1 to 7.6) |
| HOORN | The Netherlands | General population | Random | 2209 | 61 (7) | 975 (44) | 203 (9) | 5.7 (1.5) | 13.6 (5.1 to 14.7) |
| HPFS | USA | Occupational | NR | 45763 | 54 (10) | 45763 (100) | 1231 (3) | - | 20.2 (6.2 to 21.9) |
| IKNS | Japan | General population | Complete | 8033 | 58 (10) | 3296 (41) | 1301 (16) | 6.0 (1.3) | 11.1 (5.1 to 18.6) |
| ISRAEL | Israel | Occupational | Random | 7671 | 49 (7) | 7671 (100) | 355 (5) | - | 23.3 (7.9 to 23.9) |
| KIHD | Finland | General population | Random | 2060 | 52 (5) | 2060 (100) | 91 (4) | 4.7 (1.0) | 20.9 (6.2 to 24.2) |
| LASA | The Netherlands | Population register | Random | 1247 | 69 (8) | 552 (44) | 87 (7) | - | 10.0 (2.4 to 10.5) |
| MALMO | Sweden | Screening | Random | 31643 | 45 (7) | 21885 (69) | 601 (2) | 5.0 (0.9) | 18.3 (8.8 to 22.7) |
| MATISS83 | Italy | Electoral rolls | Random | 2532 | 51 (10) | 1186 (47) | 160 (6) | 5.3 (1.3) | 18.7 (6.9 to 19.5) |
| MATISS87 | Italy | Electoral rolls | Random | 2025 | 52 (9) | 902 (45) | 97 (5) | 5.3 (1.2) | 15.6 (7.4 to 16.2) |
| MATISS93 | Italy | Electoral rolls | Random | 1207 | 49 (9) | 584 (48) | 63 (5) | 5.0 (1.4) | 8.3 (7.1 to 9.3) |
| MCVDRFP | The Netherlands | General population | Random | 23075 | 42 (10) | 10686 (46) | 221 (1) | - | 16.8 (13.8 to 18.9) |
| MESA | USA | General population | Random | 6759 | 62 (10) | 3187 (47) | 846 (13) | 5.4 (1.7) | 4.8 (3.3 to 5.4) |
| MICOL | Italy | Electoral rolls | NR | 18845 | 51 (10) | 10640 (56) | 938 (5) | - | 5.9 (4.5 to 7.1) |
| MOGERAUG1 | Germany | General population | Random | 869 | 54 (6) | 869 (100) | 36 (4) | - | 13.0 (4.7 to 13.5) |
| MOGERAUG2 | Germany | General population | Random | 3967 | 53 (12) | 1951 (49) | 193 (5) | - | 7.9 (6.1 to 8.4) |
| MOGERAUG3 | Germany | General population | Random | 3372 | 55 (10) | 1663 (49) | 178 (5) | - | 3.0 (2.5 to 3.6) |
| MONFRI86 | Italy | NR | NR | 1120 | 49 (9) | 545 (49) | 11 (1) | - | 16.7 (7.0 to 16.9) |
| MONFRI89 | Italy | NR | NR | 1094 | 48 (8) | 541 (49) | 13 (1) | - | 13.6 (8.9 to 13.7) |
| MONFRI94 | Italy | Electoral rolls | Random | 1296 | 49 (8) | 632 (49) | 96 (7) | 5.7 (1.4) | 8.5 (8.2 to 8.8) |
| MORGEN | The Netherlands | General population | Random | 17692 | 46 (9) | 8037 (45) | 225 (1) | - | 10.8 (8.5 to 13.1) |
| MOSWEGOT | Sweden | General population | Random | 4143 | 47 (11) | 1964 (47) | 98 (2) | - | 13.2 (8.0 to 18.6) |
| MRCOLD | UK | GP lists | Complete | 10079 | 80 (4) | 3803 (38) | 673 (7) | - | 8.7 (1.2 to 11.7) |
| NCS1 | Norway | General population | Complete | 23960 | 42 (4) | 11797 (49) | 168 (1) | 5.7 (1.1) | 16.1 (14.5 to 16.7) |
| NCS2 | Norway | General population | Complete | 12732 | 42 (4) | 6485 (51) | 70 (1) | 5.7 (0.7) | 17.3 (15.7 to 17.8) |
| NCS3 | Norway | General population | Complete | 9647 | 42 (4) | 4990 (52) | 43 (0) | 5.6 (0.8) | 18.2 (12.2 to 18.8) |
| NFR | Italy | NR | NR | 3075 | 55 (5) | 3075 (100) | 198 (6) | - | 10.2 (6.1 to 11.2) |

| Study abbreviation | Country | Population source | Participant sampling method | No. of participants | Mean (SD) age at baseline (yrs) | N (%) male | N (%) with diabetes at baseline | Mean (SD) fasting glucose, mmol/l, at baseline | Median follow-up (5th & 95th percentiles), years |
|---|---|---|---|---|---|---|---|---|---|
| NHANESI | USA | General population | Cluster | 8537 | 50 (15) | 3276 (38) | 423 (5) | - | 19.1 (5.5 to 21.1) |
| NHANESIII | USA | General population | Cluster | 9391 | 54 (16) | 4876 (52) | 910 (10) | 5.8 (1.9) | 8.8 (3.4 to 11.7) |
| NHS | USA | Occupational | NR | 117526 | 43 (7) | 0 (0) | 1922 (2) | - | 28.6 (12.1 to 30.3) |
| NPHSII | UK | GP/Health service lists | Complete | 2959 | 57 (3) | 2959 (100) | 73 (2) | - | 8.4 (4.5 to 12.0) |
| NSHS | Canada | Medical insurance register | Random | 1629 | 54 (15) | 775 (48) | 81 (5) | - | 9.8 (9.4 to 10.0) |
| OSAKA | Japan | General population or occupational | Complete | 12397 | 52 (10) | 8429 (68) | 1239 (10) | 5.7 (1.2) | 10.2 (3.9 to 18.8) |
| OSLO | Norway | General population | Complete & random | 17180 | 44 (6) | 17180 (100) | 198 (1) | 5.8 (1.0) | 29.5 (10.9 to 30.5) |
| PARIS1 | France | Occupational | Complete | 7072 | 47 (2) | 7072 (100) | 385 (5) | 5.7 (0.9) | 22.9 (7.6 to 26.1) |
| PRHHP | Caribbean | General population | Complete | 6334 | 54 (6) | 6334 (100) | 632 (10) | 5.4 (1.6) | 12.0 (6.2 to 12.0) |
| PRIME | France/NI | General population | Quota | 9581 | 55 (3) | 9581 (100) | 385 (4) | - | 5.2 (5.0 to 7.3) |
| PROCAM | Germany | Occupational | Complete | 20118 | 44 (10) | 14574 (72) | 410 (2) | - | 10.3 (3.9 to 18.9) |
| QUEBEC | Canada | General population | Random | 625 | 57 (7) | 625 (100) | 40 (6) | - | 5.3 (4.6 to 5.6) |
| RANCHO | USA | Households | Complete | 1810 | 68 (11) | 748 (41) | 121 (7) | 5.5 (1.0) | 15.0 (2.9 to 18.2) |
| REYK | Iceland | General population | Complete | 16714 | 52 (9) | 8005 (48) | 304 (2) | 4.5 (0.7) | 26.6 (7.6 to 38.9) |
| ROTT | The Netherlands | General population | Complete | 3880 | 68 (8) | 1460 (38) | 382 (10) | 8.7 (4.5) | 12.0 (3.5 to 14.3) |
| SHHEC | UK | GP/Health service lists | Random | 10903 | 49 (7) | 5363 (49) | 141 (1) | - | 10.0 (9.1 to 10.0) |
| SHS | USA | General population | Complete | 3919 | 56 (8) | 1538 (39) | 1839 (47) | 8.1 (4.0) | 12.7 (2.8 to 14.3) |
| SPEED | UK | GP/Health service lists | Complete | 2112 | 55 (4) | 2112 (100) | 39 (2) | - | 16.8 (4.6 to 18.2) |
| TARFS | Turkey | Households | Random | 2283 | 45 (14) | 1138 (50) | 94 (4) | 4.9 (1.2) | 16.6 (4.9 to 17.6) |
| TROMSØ | Norway | General population | Complete | 15311 | 38 (10) | 7464 (49) | 163 (1) | - | 22.0 (19.2 to 22.4) |
| ULSAM | Sweden | General population | Complete | 1685 | 50 (1) | 1685 (100) | 78 (5) | 5.0 (0.8) | 30.9 (8.5 to 35.9) |
| VHMPP | Austria | Health check-up | Complete | 66340 | 49 (13) | 32176 (49) | 0 (0) | 5.0 (1.5) | 9.9 (1.3 to 13.7) |
| VITA | Italy | Census lists | Random | 8980 | 51 (8) | 4025 (45) | 0 (0) | 4.6 (1.3) | 3.3 (1.7 to 5.3) |
| WHITEI | UK | Occupational | Complete | 3988 | 76 (5) | 3988 (100) | 182 (5) | - | 8.2 (2.0 to 8.4) |
| WHITEII | UK | Occupational | Complete | 10160 | 45 (6) | 6786 (67) | 90 (1) | - | 12.8 (11.8 to 14.1) |
| WHS | USA | Occupational | Complete | 27456 | 55 (7) | 0 (0) | 747 (3) | - | 10.2 (8.5 to 10.8) |
| ZARAGOZA | Spain | GP/Health service lists | Complete | 2398 | 60 (12) | 1006 (42) | 362 (15) | 6.0 (1.7) | 5.1 (3.9 to 5.1) |
| ZUTE | The Netherlands | General population | Random | 551 | 71 (5) | 551 (100) | 31 (6) | - | 13.4 (5.9 to 15.1) |
| **Clinical trials** | | | | | | | | | |
| AFTCAPS | USA | Screening | Complete | 5600 | 58 (7) | 4765 (85) | 127 (2) | - | 5.2 (4.5 to 6.8) |
| ALLHAT | USA/Canada/Puerto Rico/US Virgin Islands | Individuals with hypertension | NR | 28614 | 66 (8) | 14012 (49) | 12279 (43) | 7.0 (3.3) | 4.6 (2.0 to 6.8) |
| BIP | Israel | Screening | NR | 6862 | 60 (7) | 6060 (88) | 1099 (16) | - | 2.1 (0.2 to 8.7) |

| Study abbreviation | Country | Population source | Participant sampling method | No. of participants | Mean (SD) age at baseline (yrs) | N (%) male | N (%) with diabetes at baseline | Mean (SD) fasting glucose, mmol/l, at baseline | Median follow-up (5th & 95th percentiles), years |
|---|---|---|---|---|---|---|---|---|---|
| LEADER | UK | GP lists | Complete | 927 | 68 (9) | 927 (100) | 149 (16) | - | 4.3 (1.3 to 6.2) |
| MRFIT | USA | Screening | Complete | 12857 | 47 (6) | 12857 (100) | 425 (3) | 5.5 (0.9) | 7.0 (6.1 to 7.8) |
| PROSPER | Scotland/Ireland/The Netherlands | Screening | Complete | 3253 | 75 (3) | 1351 (42) | 477 (15) | 5.5 (1.5) | 3.3 (2.0 to 3.9) |
| WOSCOPS | UK | Screening | Complete | 6192 | 55 (6) | 6192 (100) | 113 (2) | 4.8 (0.7) | 4.8 (3.8 to 6.0) |
| **Individually-matched case-control studies** | | | | | | | | | |
| EPICNOR | UK | GP lists | NR | 768 | 68 (7) | 537 (70) | 31 (4) | - | 7.1 (1.8 to 9.2) |
| FIA | Sweden | Population register | Random | 582 | 55 (8) | 465 (80) | 28 (5) | 5.5 (1.1) | 4.0 (0.5 to 10.9) |
| **Frequency-matched case-control studies** | | | | | | | | | |
| USPHS | USA | Occupational | Complete | 930 | 60 (9) | 930 (100) | 56 (6) | - | - |
| **SUMMARY OF AVAILABLE DATA** | | | | | | | | | |
| ***Studies with information on history of diabetes at baseline*** | | | | | | | | | |
| TOTAL (90 studies) | | | | **715,061** | **55 (8)** | **358,391 (50)** | **40,116 (6)** | **5.5 (2.0)** | **15.0 (4.1 to 29.5)** |
| ***Studies with information on fasting glucose concentration at baseline*** | | | | | | | | | |
| TOTAL (54 studies) | | | | **284,686** | **56 (9)** | **170,391 (60)** | **22,731 (12)** | **5.4 (1.8)** | **11.5 (2.5 to 26.4)** |
| ***ALL STUDIES*** | | | | | | | | | |
| TOTAL (97 studies) | | | | **820,900** | **55 (9)** | **424,474 (52)** | **40,851 (5)** | **5.4 (1.8)** | **13.6 (3.5 to 29.3)** |

Note: Totals include only people without pre-existing cardiovascular disease at baseline and having complete information on age, sex, smoking status (current vs. other) and BMI. To convert fasting glucose from mmol/l to mg/dl multiply by 18. NR, not reported

**Supplementary Table 2. Outcomes definitions used in the current analyses**

| Outcome | ICD-10 codes |
|---|---|
| **ALL CANCERS** | C00 – C97, D00 – D48 |
| Oral related cancers | C00-C14 |
| Digestive tract cancers | C15-C21 |
| - Esophageal cancer | C15 |
| - Stomach cancer | C16 |
| - Liver cancer | C22 |
| - Pancreatic cancer | C25 |
| - Colon cancer | C18 |
| - Rectosigmoid, rectum & anal cancer | C19-C21 |
| Respiratory or intrathoracic cancers | C30-C39 |
| - Lung cancer | C34 |
| Genitourinary tract cancers | C51-C68 |
| - Male genital | C60-C63 |
| - Prostate cancer | C61 |
| - Female genital | C51-C58 |
| - Ovarian cancer | C56 |
| - Endometrial cancer | C54 |
| - Bladder cancer | C67 |
| - Renal cancer | C64-C65 |
| Hematological cancers | C81-C96 |
| Endocrine & nervous system cancers | C69-C75 |
| Skin cancer | C43-C44 |
| - Melanoma | C43 |
| Bone and articular cartilage cancers | C40-C42, C45-C49 |
| **ALL VASCULAR OUTCOMES** | G45, I01, I03 – I82, I87, I95 – I99, F01, Q20 – Q28, R96 |
| All coronary heart disease | I20-I25 |
| All cerebrovascular disease | F01, I60-I69 |
| Cardiac dysrrhythmia | I47-I49 |
| Hypertensive disease | I10-I15 |
| TIA | G45 |
| Pulmonary embolism | I26 |
| Sudden death | R96 |
| Aortic aneurysm | I71 |
| Heart failure | I50 |
| Ill-defined descriptions and complications of heart disease | I51 |
| Peripheral vascular disease | I73-I74, I77-I78 |
| **ALL NON-CANCER, NON-VASCULAR OUTCOMES** | A00 –A99, B00 – B99, D50 – D99, E00 – E99, F00, F02 – F99, G00 – G44, G46 – G99, H00 – H99, I00, I02, I83 – I86, I88 – I89, J00 – J99, K00 – K99, L00 – L99, M00 – M99, N00 – N99, O00 – O99, P00 – P99, Q00 – Q18, Q30 – Q99, S00 – S99, T00 – T99, U04, V00 – V99, W00 – W99, X00 – X99, Y00 – Y99, Z00 – Z99 |
| Infections | A00-A99, B00-B14, B20-B99 |
| Respiratory system disorders | J00-J99 |
| - Pneumonia | J12-J18 |
| - COPD and related conditions | J40-J47 |
| Digestive system disease (excl. liver) | K00-K69, K78-K93 |
| Liver disease | B15-B19, K70-K77 |
| Endocrine*, nutritional and metabolic diseases | E00-E90* |
| Mental disorders | F04-F99 |
| Neurological disorders | F00-F03, G00-G44, G46-G99 |
| - Alzheimer's and related conditions | F00-F03, G30-G32 |
| - Episodic/paroxysmal disorders | G40-G44, G46-G47 |
| Musculoskeletal/connective tissue disorders | M00-M99 |
| Congenital anomalies (excl. circulatory) | Q00-Q18, Q30-Q99 |
| Genitourinary disease | N00-N99 |
| - Renal disease | N00-N19 |
| All external causes | S00-S99, T00-T98, U04, V01-V99, W00-W99, X00-X99, Y00-Y98, Z00-Z99 |
| - Falls | W00-W19 |
| - Intentional self-harm | X60-X84 |
| **ALL UNKNOWN CAUSES**[†] | R00 – R95, R97 – R99 |

Note: Attribution of death refers to the primary cause (or, in its absence, the underlying cause) provided by individual studies. Corresponding ICD-8 or -9 codes were used in studies that recorded outcomes using the earlier versions of the ICD code. *Deaths coded as due to diabetes (ICD-10 codes E10-E14) were not included in this subset.
[†]Ill-defined causes of death (Supplementary Fig.1 and Supplementary Fig. 7) were non-vascular deaths defined according to study-specific read-codes for mortality, and not the standard ICD codes.

**Supplementary Table 3. Baseline characteristics of participants contributing to the analyses on fasting glucose**

| Variable | No. of participants (N=284,686) | Mean (SD) or % |
|---|---|---|
| ***Demographic characteristics*** | | |
| Age at survey (yrs)* | 284,686[†] | 56 (9) |
| Male* | 170,399 | 60% |
| Female* | 114,287 | 40% |
| Diabetes at baseline[§] | | |
| Yes | 22,731 | 12% |
| No | 169,283 | 88% |
| Geographical region | | |
| North America | 68,431 | 70% |
| Europe | 198,610 | 24% |
| Japan | 8,243 | 3% |
| Other | 9,402 | 3% |
| ***Lifestyle factors*** | | |
| Smoking status* | | |
| Current smoker | 91,101 | 32% |
| Other | 193,585 | 68% |
| Alcohol use | | |
| Current drinker | 68,715 | 45% |
| Other | 83,895 | 55% |
| Physical activity | | |
| Not active | 61,459 | 57% |
| Active | 47,047 | 43% |
| ***Anthropometric markers*** | | |
| Body-mass index (kg/m$^2$)* | 284,686 | 26 (4) |
| Systolic blood pressure (mmHg) | 282,443 | 136 (19) |
| Waist circumference (cm) | 52,995 | 92 (13) |
| Waist-to-hip ratio | 52,565 | 0.90 (0.08) |
| ***Lipids*** | | |
| Total cholesterol (mmol/l) | 284,069 | 5.9 (1.1) |
| Non-HDL cholesterol (mmol/l) | 129,137 | 4.5 (1.1) |
| HDL cholesterol (mmol/l) | 129,181 | 1.4 (0.4) |
| $\text{Log}_e$ triglycerides (mmol/l) | 276,861 | 0.3 (0.5) |
| ***Inflammatory markers*** | | |
| Fibrinogen (µmol/l) | 66,242 | 9.3 (2.1) |
| $\text{Log}_e$ C-reactive protein (mg/l) | 45,398 | 0.7 (1.1) |
| ***Metabolic and renal markers*** | | |
| $\text{Log}_e$ insulin (pmol/l) | 53,530 | 4.3 (0.7) |
| Glycated hemoglobin (%) | 22,085 | 5.6 (1.3) |
| $\text{Log}_e$ estimated glomerular filtration rate (ml/min/1.73 m$^2$)[¶] | 169,304 | 4.6 (0.2) |

*Data are shown for individuals without known prior cardiovascular disease at baseline, and having complete information on age, sex, smoking status (current vs. other) and body mass index (BMI). Information on the other characteristics presented was available in subsets of participants, and the corresponding summary estimates (i.e. mean [SD] or percentage) relate to people within these subsets.
[†]Mean (SD) fasting glucose in this subset of participants was 5.6 (1.6) mmol/l. To convert glucose from mmol/l to mg/dl multiply by 18.
[§]Diabetes was defined by self-report, medication use, and/or fasting glucose ≥ 7mmol/l.
[¶]$\text{Log}_e$ glomerular filtration rate was calculated using the Modification of Diet in Renal Disease (MDRD) equation.

**Supplementary Table 4. Summary of events for individual causes of death**

**(a) Cancer deaths**

| Study abbreviation | Total participants | Median follow-up (5th & 95th percentiles), years | All cancer deaths | Oral cancer | Esophageal cancer | Stomach cancer | Liver cancer | Pancreatic cancer | Colorectal cancer | Lung cancer | Prostate cancer | Ovarian cancer | Bladder cancer | Hematological cancer | Endocrine & nervous system related cancer | Melanoma | Connective tissue cancer | Breast cancer | Site unspecified or other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Frequency-matched case-control studies*** | | | | | | | | | | | | | | | | | | | |
| USPHS | 930 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ***Individually-matched case-control studies*** | | | | | | | | | | | | | | | | | | | |
| EPICNOR | 768 | 7.1 (1.8 to 9.2) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| FIA | 582 | 4.0 (0.5 to 10.9) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ***Clinical trials*** | | | | | | | | | | | | | | | | | | | |
| AFTCAPS | 5600 | 5.2 (4.5 to 6.8) | 56 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 56 |
| ALLHAT | 28614 | 4.6 (2.0 to 6.8) | 824 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 824 |
| BIP | 6862 | 2.1 (0.2 to 8.7) | 140 | 1* | - | 14 | 3* | 11 | 18 | 37 | 6 | 1* | 2* | 13 | 5 | 2* | - | 3* | 18 |
| LEADER | 927 | 4.3 (1.3 to 6.2) | 56 | 1* | 3* | 2* | 2* | 1* | 4* | 28 | 3* | - | 2* | 2* | - | - | - | - | 5 |
| MRFIT | 12857 | 7.0 (6.1 to 7.8) | 143 | 7 | 5 | 9 | 3* | 7 | 10 | 62 | 4* | - | 2* | 9 | 3* | 5 | 1* | - | 11 |
| PROSPER | 3253 | 3.3 (2.0 to 3.9) | 119 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 119 |
| WOSCOPS | 6192 | 4.8 (3.8 to 6.0) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ***Cohort studies*** | | | | | | | | | | | | | | | | | | | |
| ARIC | 14473 | 14.1 (7.6 to 15.7) | 752 | 7 | 14 | 16 | 8 | 50 | 63 | 244 | 32 | 20 | 18 | 76 | 24 | 7 | 16 | 64 | 121 |
| ATENA | 4741 | 6.7 (5.2 to 8.1) | 22 | - | - | 1* | 1* | 4* | - | 4* | - | 2* | 1* | 3* | - | - | - | 4* | 5 |
| ATTICA | 1577 | 5.0 (5.0 to 5.0) | 13 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 13 |
| BHS | 5865 | 27.1 (7.5 to 33.2) | 533 | 6 | 12 | 23 | 5 | 19 | 83 | 83 | 56 | 16 | 17 | 45 | 18 | 13 | 6 | 34 | 77 |
| BRHS | 6785 | 24.5 (7.4 to 25.4) | 826 | 13 | 40 | 49 | 20 | 32 | 88 | 274 | 69 | - | 46 | 42 | 24 | 6 | 4* | - | 78 |
| BRUN | 817 | 15.3 (5.4 to 15.5) | 68 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 68 |
| BUPA | 20870 | 23.7 (11.3 to 26.7) | 1383 | 11 | 72 | 67 | 21 | 86 | 189 | 287 | 158 | - | 48 | 132 | 64 | 32 | 15 | 4* | 99 |
| BWHHS | 2791 | 9.1 (4.6 to 10.2) | 166 | 1* | 4* | 8 | 5 | 7 | 18 | 27 | - | 16 | 8 | 6 | 7 | - | 2* | 20 | 42 |
| CaPS | 2130 | 13.0 (6.0 to 13.0) | 131 | 1* | 6 | 12 | 1* | 5 | 17 | 47 | 4* | - | 3* | 9 | 5 | 1* | 1* | - | 10 |
| CASTEL | 2535 | 11.2 (2.4 to 14.0) | 280 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 280 |
| CHARL | 1925 | 26.5 (3.9 to 40.1) | 320 | 4* | 16 | 17 | 2* | 16 | 29 | 95 | 20 | 2* | 5 | 18 | 9 | 4* | 2* | 20 | 57 |
| CHS1 | 3862 | 12.2 (3.3 to 12.9) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CHS2 | 470 | 9.1 (2.4 to 9.5) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| COPEN | 8237 | 15.6 (3.6 to 17.2) | 575 | 8 | 22 | 14 | 10 | 34 | 55 | 155 | 37 | 17 | 23 | 30 | 11 | 6 | 5 | 48 | 108 |
| DISCO | 1820 | 5.5 (5.5 to 9.5) | 10 | - | - | - | - | - | 2* | 3* | - | 1* | 1* | 1* | - | - | - | - | 2* |
| DRECE | 2739 | 16.4 (15.5 to 16.6) | 61 | 2* | 1* | 4* | 1* | 4* | 12 | 13 | 1* | - | 2* | 3* | 1* | 1* | 2* | 6 | 9 |
| DUBBO | 2053 | 14.2 (2.5 to 15.0) | 190 | 2* | 4* | 4* | 1* | 9 | 19 | 34 | 19 | 5 | 6 | 19 | 3* | 2* | - | 7 | 48 |
| EAS | 1026 | 15.2 (4.4 to 15.9) | 134 | 1* | 6 | 9 | 1* | 5 | 17 | 35 | 15 | 3* | 2* | 8 | - | 1* | - | 9 | 24 |
| EMOFRI | 360 | 6.8 (6.5 to 7.2) | 2* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2* |
| EPESEBOS | 1033 | 11.4 (7.6 to 11.9) | 34 | - | 2* | 6 | 1* | 1* | 4* | 3* | 4* | - | 1* | 2* | - | 2* | - | 1* | 4* |
| EPESEIOW | 1570 | 15.9 (7.4 to 26.5) | 161 | 1* | 2* | 1* | 3* | 9 | 25 | 24 | 19 | 6 | 6 | 22 | 3* | 1* | 3* | 7 | 24 |
| EPESENCA | 1347 | 13.1 (7.8 to 13.6) | 53 | - | 1* | 2* | - | 5 | 6 | 20 | 5 | - | 1* | 4* | - | 1* | - | 1* | 4* |
| EPESENHA | 813 | 10.5 (7.4 to 10.8) | 9 | - | - | - | - | - | 3* | 1* | - | - | - | 1* | 1* | - | - | - | 3* |
| ESTHER | 7771 | 5.1 (2.1 to 6.0) | 161 | 4* | 3* | 7 | 3* | 15 | 19 | 39 | 6 | 8 | 1* | 7 | 12 | 3* | 2* | 12 | 24 |
| FINE_IT | 457 | 11.6 (1.9 to 21.4) | 119 | 2* | 2* | 11 | 3* | 5 | 24 | 19 | 20 | - | 6 | 9 | 5 | - | 2* | - | 2* |
| FINRISK92 | 5268 | 11.9 (11.2 to 11.9) | 90 | 1* | 2* | 9 | 5 | 6 | 9 | 19 | 4* | 4* | - | 3* | 5 | 2* | 3* | 10 | 11 |
| FINRISK97 | 6309 | 6.8 (6.7 to 6.9) | 72 | 1* | 3* | 6 | 4* | 5 | 5 | 14 | 4* | 3* | - | 6 | 3* | 2* | - | 4* | 8 |
| FRAMOFF | 2854 | 5.2 (2.8 to 7.0) | 11 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 11 |
| GOH | 2613 | 35.0 (14.6 to 36.0) | 158 | 4* | 3* | 12 | 6 | 8 | 19 | 17 | 10 | 2* | 5 | 14 | 7 | - | 2* | 8 | 36 |
| GOTO13 | 784 | 13.7 (1.1 to 30.5) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| GOTO33 | 719 | 12.8 (7.9 to 13.1) | 27 | 1* | - | 6 | - | 1* | 3* | 7 | 2* | - | - | 2* | 1* | - | - | - | 2* |
| GOTO43 | 772 | 10.0 (9.6 to 10.7) | 16 | - | - | 1* | - | - | - | 3* | - | - | - | 4* | 3* | - | 1* | 1* | 1* |
| GOTOW | 1425 | 37.6 (11.9 to 41.0) | 175 | - | - | - | - | - | - | 19 | - | 18 | - | 19 | - | 1* | - | 21 | 70 |
| GREPCO | 775 | 7.9 (7.7 to 8.4) | 4* | - | - | - | - | - | - | 1* | - | - | - | - | 2* | - | - | - | - |
| GRIPS | 5785 | 9.8 (8.6 to 10.0) | 109 | 2* | - | 11 | 3* | 6 | 18 | 34 | 3* | - | 5 | 10 | 7 | 1* | 1* | - | 3* |
| HBS | 1131 | 20.5 (6.0 to 20.5) | 141 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 141 |
| HELSINAG | 374 | 9.3 (2.1 to 11.0) | 32 | - | 1* | 4* | 1* | 2* | 2* | 4* | 1* | 1* | 2* | 2* | - | - | - | 2* | 7 |
| HISAYAMA | 2575 | 14.0 (4.8 to 14.0) | 172 | 2* | 4* | 22 | 28 | 13 | 21 | 37 | 2* | 2* | - | 12 | 4* | - | - | 2* | 6 |
| HONOL | 2433 | 6.4 (2.1 to 7.6) | 188 | 3* | 11 | 29 | 1* | 8 | 16 | 42 | 31 | - | 1* | 26 | 2* | - | 2* | - | 9 |
| HOORN | 2209 | 13.6 (5.1 to 14.7) | 142 | 1* | 5 | 10 | 4* | 11 | 13 | 29 | 5 | 7 | 3* | 10 | 6 | - | - | 2* | 29 |
| HPFS | 45763 | 20.2 (6.2 to 21.9) | 4220 | 64 | 133 | 93 | 64 | 327 | 467 | 745 | 623 | - | 175 | 687 | 198 | 121 | 43 | 7 | 219 |

| Study abbreviation | Total participants | Median follow-up (5th & 95th percentiles), years | All cancer deaths | Oral cancer | Esophageal cancer | Stomach cancer | Liver cancer | Pancreatic cancer | Colorectal cancer | Lung cancer | Prostate cancer | Ovarian cancer | Bladder cancer | Hematological cancer | Endocrine & nervous system related cancer | Melanoma | Connective tissue cancer | Breast cancer | Site unspecified or other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IKNS | 8033 | 11.1 (5.1 to 18.6) | 304 | 4* | 14 | 71 | 27 | 32 | 26 | 19 | 7 | 1* | 3* | 10 | 3* | 2* | 1* | 4* | 20 |
| ISRAEL | 7671 | 23.3 (7.9 to 23.9) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| KIHD | 2060 | 20.9 (6.2 to 24.2) | 180 | 3* | 2* | 9 | 7 | 21 | 16 | 43 | 20 | - | 4* | 15 | 9 | 7 | 3* | 1* | 8 |
| LASA | 1247 | 10.0 (2.4 to 10.5) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| MALMO | 31643 | 18.3 (8.8 to 22.7) | 1310 | 28 | 28 | 69 | 21 | 98 | 108 | 345 | 76 | 37 | 37 | 111 | 61 | 37 | 20 | 50 | 106 |
| MATISS83 | 2532 | 18.7 (6.9 to 19.5) | 93 | 1* | - | 2* | 3* | 1* | 3* | 13 | - | - | - | 6 | 3* | - | 3* | 2* | 51 |
| MATISS87 | 2025 | 15.6 (7.4 to 16.2) | 45 | - | - | 3* | 1* | 1* | 2* | 7 | 1* | 1* | - | 1* | 2* | - | 2* | 1* | 20 |
| MATISS93 | 1207 | 8.3 (7.1 to 9.3) | 4* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2* |
| MCVDRFP | 23075 | 16.8 (13.8 to 18.9) | 849 | 8 | 23 | 32 | 6 | 48 | 82 | 246 | 26 | 27 | 12 | 60 | 19 | 18 | 16 | 95 | 166 |
| MESA | 6759 | 4.8 (3.3 to 5.4) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| MICOL | 18845 | 5.9 (4.5 to 7.1) | 243 | 5 | 5 | 18 | 15 | 16 | 24 | 75 | 2* | 7 | 3* | 16 | 10 | 4* | 5 | 12 | 23 |
| MOGERAUG1 | 869 | 13.0 (4.7 to 13.5) | 47 | 1* | 1* | 6 | 1* | 4* | 8 | 10 | 1* | - | 1* | 2* | 2* | - | - | - | 2* |
| MOGERAUG2 | 3967 | 7.9 (6.1 to 8.4) | 96 | 3* | - | 4* | 3* | 7 | 18 | 19 | 3* | 4* | 3* | 7 | 2* | 1* | 2* | 5 | 9 |
| MOGERAUG3 | 3372 | 3.0 (2.5 to 3.6) | 25 | 1* | - | 2* | 1* | 2* | 5 | 4* | 1* | 1* | 1* | 3* | 2* | - | - | - | 1* |
| MONFRI86 | 1120 | 16.7 (7.0 to 16.9) | 33 | - | 1* | 1* | 3* | - | - | 4* | - | - | - | 1* | 1* | - | - | 1* | 21 |
| MONFRI89 | 1094 | 13.6 (8.9 to 13.7) | 13 | - | - | - | - | - | - | 1* | - | - | - | - | - | - | - | - | 12 |
| MONFRI94 | 1296 | 8.5 (8.2 to 8.8) | 7 | 1* | - | 1* | - | - | 1* | - | - | - | - | - | - | - | - | 1* | 4* |
| MORGEN | 17692 | 10.8 (8.5 to 13.1) | 317 | 6 | 10 | 10 | 5 | 23 | 32 | 80 | 8 | 10 | 6 | 19 | 7 | 4* | 6 | 33 | 62 |
| MOSWEGOT | 4143 | 13.2 (8.0 to 18.6) | 126 | 1* | 1* | 7 | 3* | 7 | 12 | 17 | 8 | 5 | - | 10 | 8 | 1* | 4* | 17 | 28 |
| MRCOLD | 10079 | 8.7 (1.2 to 11.7) | 1385 | 14 | 56 | 69 | 30 | 63 | 165 | 219 | 141 | 25 | 62 | 89 | 11 | 15 | 16 | 99 | 309 |
| NCS1 | 23960 | 16.1 (14.5 to 16.7) | 556 | 10 | 8 | 36 | 3* | 29 | 76 | 75 | 13 | 32 | 4* | 69 | 32 | 15 | 4* | 47 | 85 |
| NCS2 | 12732 | 17.3 (15.7 to 17.8) | 322 | 5 | 3* | 25 | 1* | 13 | 66 | 43 | 12 | 18 | 8 | 16 | 18 | 12 | 3* | 30 | 50 |
| NCS3 | 9647 | 18.2 (12.2 to 18.8) | 275 | 5 | 1* | 30 | 4* | 21 | 18 | 60 | 6 | 25 | 4* | 17 | 8 | 1* | 1* | 24 | 47 |
| NFR | 3075 | 10.2 (6.1 to 11.2) | 150 | 1* | 3* | 14 | 8 | 4* | 12 | 39 | 8 | - | 7 | 16 | 6 | 3* | 3* | - | 10 |
| NHANESI | 8537 | 19.1 (5.5 to 21.1) | 677 | 6 | 16 | 25 | 13 | 37 | 89 | 141 | 57 | 14 | 17 | 70 | 14 | 7 | 4* | 55 | 107 |
| NHANESIII | 9391 | 8.8 (3.4 to 11.7) | 449 | 59 | 5 | 15 | 13 | 16 | - | 137 | 49 | 4* | 3* | 35 | 4* | 5 | - | 18 | 77 |
| NHS | 117526 | 28.6 (12.1 to 30.3) | 10289 | 100 | 97 | 156 | 90 | 611 | 960 | 2193 | - | 719 | 114 | 1073 | 364 | 162 | 84 | 2199 | 2839 |
| NPHSII | 2959 | 8.4 (4.5 to 12.0) | 247 | 1* | 21 | 13 | 5 | 13 | 42 | 55 | 19 | - | 9 | 19 | 10 | 4* | 3* | - | 13 |
| NSHS | 1629 | 9.8 (9.4 to 10.0) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| OSAKA | 12397 | 10.2 (3.9 to 18.8) | 225 | 3* | 9 | 38 | 30 | 18 | 16 | 10 | 7 | 5 | 2* | 10 | 7 | - | - | 6 | 16 |
| OSLO | 17180 | 29.5 (10.9 to 30.5) | 2014 | 46 | 42 | 125 | 23 | 115 | 310 | 502 | 225 | - | 47 | 179 | 74 | 51 | 22 | - | 126 |
| PARIS1 | 7072 | 22.9 (7.6 to 26.1) | 918 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 918 |
| PRHHP | 6334 | 12.0 (6.2 to 12.0) | 239 | 24 | 24 | 43 | 2* | 6 | 18 | 35 | 24 | - | 5 | 24 | 5 | - | 2* | 1* | 16 |
| PRIME | 9581 | 5.2 (5.0 to 7.3) | 99 | 3* | 4* | 4* | 3* | 4* | 15 | 29 | 2* | - | 2* | 8 | 6 | 1* | 2* | 1* | 5 |
| PROCAM | 20118 | 10.3 (3.9 to 18.9) | 443 | 15 | 6 | 25 | 10 | 33 | 56 | 98 | 22 | - | 13 | 43 | 17 | - | - | 28 | 64 |
| QUEBEC | 625 | 5.3 (4.6 to 5.6) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| RANCHO | 1810 | 15.0 (2.9 to 18.2) | 196 | - | 2* | 3* | 1* | 14 | 25 | 37 | 31 | 5 | 6 | 24 | 5 | 8 | 1* | 10 | 18 |
| REYK | 16714 | 26.6 (7.6 to 38.9) | 2820 | 30 | 63 | 202 | 48 | 193 | 323 | 624 | 246 | 78 | 85 | 195 | 104 | 27 | 46 | 221 | 341 |
| ROTT | 3880 | 12.0 (3.5 to 14.3) | 369 | 3* | 8 | 13 | 4* | 22 | 60 | 76 | 24 | 6 | 15 | 36 | 7 | 2* | 15 | 36 | 57 |
| SHHEC | 10903 | 10.0 (9.1 to 10.0) | 296 | 6 | 14 | 12 | 6 | 19 | 36 | 81 | 7 | 2* | 5 | 18 | 11 | 4* | 3* | 26 | 56 |
| SHS | 3919 | 12.7 (2.8 to 14.3) | 246 | 5 | 7 | 8 | 16 | 16 | 21 | 43 | 8 | 5 | 1* | 30 | 4* | 0 | 2* | 16 | 47 |
| SPEED | 2112 | 16.8 (4.6 to 18.2) | 213 | 4* | 8 | 18 | 1* | 7 | 31 | 69 | 12 | - | 7 | 12 | 7 | 1* | - | - | 19 |
| TARFS | 2283 | 16.6 (4.9 to 17.6) | 25 | - | - | 1* | - | 1* | 3* | 3* | 1* | - | - | - | - | - | - | 1* | 14 |
| TROMSØ | 15311 | 22.0 (19.2 to 22.4) | 452 | 5 | 12 | 30 | 4* | 30 | 51 | 121 | 32 | 18 | 15 | 34 | 9 | 7 | 10 | 24 | 36 |
| ULSAM | 1685 | 30.9 (8.5 to 35.9) | 384 | 4* | 13 | 15 | 10 | 34 | 37 | 74 | 74 | - | 23 | 22 | 12 | 6 | 4* | - | 26 |
| VHMPP | 66340 | 9.9 (1.3 to 13.7) | 844 | 18 | 15 | 63 | 23 | 60 | 111 | 196 | 47 | 23 | 13 | 61 | 28 | 15 | 8 | 47 | 91 |
| VITA | 8980 | 3.3 (1.7 to 5.3) | 47 | 2* | 1* | 2* | 5 | 3* | 3* | 8 | 1* | - | 3* | 4* | 4* | 1* | - | 3* | 6 |
| WHITEI | 3988 | 8.2 (2.0 to 8.4) | 399 | 2* | 18 | 13 | 3* | 20 | 50 | 62 | 84 | - | 22 | 43 | 11 | 5 | 3* | - | 49 |
| WHITEII | 10160 | 12.8 (11.8 to 14.1) | 163 | 2* | 7 | 8 | 2* | 8 | 23 | 15 | 6 | 6 | 3* | 14 | 8 | 5 | 3* | 21 | 36 |
| WHS | 27456 | 10.2 (8.5 to 10.8) | 395 | - | - | - | - | - | - | - | - | - | - | 1* | - | - | - | - | 394 |
| ZARAGOZA | 2398 | 5.1 (3.9 to 5.1) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZUTE | 551 | 13.4 (5.9 to 15.1) | 102 | - | 2* | 9 | 1* | 6 | 8 | 22 | 20 | - | 6 | 4* | 2* | 2* | 1* | 1* | 9 |
| **TOTAL** | **820,900** | **13.6 (3.5 to 29.3)** | **41,320** | **511** | **871** | **1658** | **583** | **2324** | **4153** | **8321** | **2400** | **1172** | **890** | **3605** | **1290** | **592** | **333** | **3385** | **9023** |

Note: Totals include only people without known pre-existing cardiovascular disease at baseline and having complete information on age, sex, smoking status (current vs. other) and BMI. Studies with fewer than 5 events for an endpoint (*) do not contribute to the totals for each endpoint. In analyses that adjusted for more than age, sex, smoking status and BMI, we required each study to have a minimum of 10 events for an endpoint.

**(b) Vascular deaths, non-cancer non-vascular deaths, and death from any cause**

| Study abbreviation | Total participants | Median follow-up (5th & 95th percentiles), years | All vascular deaths | All non-cancer, non-vascular deaths | Infection | Endocrine, nutritional or metabolic disorders | Mental disorders | Nervous system disorders | Alzheimer's & related conditions | Liver disease | Pneumonia | COPD & related conditions | Digestive system disorders (excl. liver) | Renal disease | External causes | Other non-cancer non-vascular deaths | Death from any cause |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Frequency-matched case-control studies*** | | | | | | | | | | | | | | | | | |
| USPHS | 930 | - | 27 | - | - | - | - | - | - | - | - | - | - | - | - | - | 27 |
| ***Individually-matched case-control studies*** | | | | | | | | | | | | | | | | | |
| EPICNOR | 768 | 7.1 (1.8 to 9.2) | 262 | - | - | - | - | - | - | - | - | - | - | - | - | - | 262 |
| FIA | 582 | 4.0 (0.5 to 10.9) | 128 | - | - | - | - | - | - | - | - | - | - | - | - | - | 128 |
| ***Clinical trials*** | | | | | | | | | | | | | | | | | |
| AFTCAPS | 5600 | 5.2 (4.5 to 6.8) | 31 | 26 | - | - | - | - | - | - | - | - | - | - | 3* | 23 | 113 |
| ALLHAT | 28614 | 4.6 (2.0 to 6.8) | 1462 | 800 | - | - | - | - | - | - | - | - | - | - | 80 | 646 | 3295 |
| BIP | 6862 | 2.1 (0.2 to 8.7) | 475 | 68 | 7 | 1* | - | 3* | - | 3* | 2* | 4* | 12 | 7 | 18 | - | 1027 |
| LEADER | 927 | 4.3 (1.3 to 6.2) | 106 | 44 | 4* | 1* | 1* | - | - | 1* | 19 | 6 | 4* | 1* | - | 1* | 214 |
| MRFIT | 12857 | 7.0 (6.1 to 7.8) | 286 | 87 | 1* | - | - | 3* | - | 11 | 3* | 4* | 7 | - | 53 | 1* | 519 |
| PROSPER | 3253 | 3.3 (2.0 to 3.9) | 105 | 50 | - | - | - | - | - | - | - | - | - | - | - | 50 | 274 |
| WOSCOPS | 6192 | 4.8 (3.8 to 6.0) | 105 | - | - | - | - | - | - | - | - | - | - | - | - | - | 214 |
| ***Cohort studies*** | | | | | | | | | | | | | | | | | |
| ARIC | 14473 | 14.1 (7.6 to 15.7) | 636 | 394 | 30 | 11 | 11 | 39 | 10 | 22 | 17 | 87 | 25 | 23 | 70 | 19 | 1824 |
| ATENA | 4741 | 6.7 (5.2 to 8.1) | 11 | 8 | - | - | - | 1* | 1* | 2* | - | - | - | - | 4* | 1* | 42 |
| ATTICA | 1577 | 5.0 (5.0 to 5.0) | 30 | 7 | - | - | - | - | - | - | - | - | - | - | 1* | 6 | 50 |
| BHS | 5865 | 27.1 (7.5 to 33.2) | 914 | 429 | 4* | 11 | 27 | 59 | 39 | 10 | 32 | 103 | 45 | 21 | 52 | 21 | 1893 |
| BRHS | 6785 | 24.5 (7.4 to 25.4) | 1065 | 359 | 7 | 8 | 8 | 31 | 6 | 20 | 61 | 104 | 34 | 13 | 35 | 11 | 2417 |
| BRUN | 817 | 15.3 (5.4 to 15.5) | 63 | 59 | 2* | 1* | 3* | 1* | - | 2* | 25 | 5 | 5 | 1* | 13 | - | 192 |
| BUPA | 20870 | 23.7 (11.3 to 26.7) | 1504 | 614 | 12 | 13 | 35 | 91 | 16 | 50 | 61 | 92 | 56 | 30 | 115 | 24 | 3538 |
| BWHHS | 2791 | 9.1 (4.6 to 10.2) | 106 | 107 | 4* | 1* | 1* | 24 | 17 | 3* | 15 | 18 | 13 | 2* | 5 | 8 | 385 |
| CAPS | 2130 | 13.0 (6.0 to 13.0) | 189 | 64 | 1* | 2* | 2* | 4* | 1* | 5 | 2* | 23 | 7 | 2* | 11 | - | 384 |
| CASTEL | 2535 | 11.2 (2.4 to 14.0) | 530 | 300 | 60 | - | - | - | - | 28 | - | 37 | - | - | - | 175 | 1128 |
| CHARL | 1925 | 26.5 (3.9 to 40.1) | 757 | 292 | 25 | 6 | 13 | 22 | 8 | 16 | 41 | 47 | 36 | 18 | 20 | 13 | 1434 |
| CHS1 | 3862 | 12.2 (3.3 to 12.9) | 538 | - | - | - | - | - | - | - | - | - | - | - | - | - | 1531 |
| CHS2 | 470 | 9.1 (2.4 to 9.5) | 50 | - | - | - | - | - | - | - | - | - | - | - | - | - | 138 |
| COPEN | 8237 | 15.6 (3.6 to 17.2) | 721 | 778 | 53 | 32 | 31 | 56 | 33 | 31 | 187 | 94 | 60 | 27 | 68 | 44 | 2781 |
| DISCO | 1820 | 5.5 (5.5 to 9.5) | 10 | 5 | - | - | - | - | - | 2* | - | - | - | - | 3* | - | 25 |
| DRECE | 2739 | 16.4 (15.5 to 16.6) | 29 | 37 | 3* | - | - | 6 | - | 6 | 1* | 6 | 3* | - | 5 | 3* | 127 |
| DUBBO | 2053 | 14.2 (2.5 to 15.0) | 377 | 208 | 13 | 1* | 13 | 23 | 18 | 6 | 33 | 30 | 18 | 9 | 28 | 9 | 801 |
| EAS | 1026 | 15.2 (4.4 to 15.9) | 102 | 73 | 1* | - | 4* | 12 | 6 | - | 14 | 17 | 7 | 3* | 2* | 6 | 318 |
| EMOFRI | 360 | 6.8 (6.5 to 7.2) | 5 | 2* | - | - | - | - | - | - | - | - | - | - | 2* | - | 10 |
| EPESEBOS | 1033 | 11.4 (7.6 to 11.9) | 104 | 62 | 6 | 3* | 1* | 4* | - | - | 17 | 5 | 4* | 8 | 5 | 1* | 220 |
| EPESEIOW | 1570 | 15.9 (7.4 to 26.5) | 630 | 449 | 27 | 20 | 53 | 35 | 23 | 4* | 93 | 66 | 34 | 23 | 29 | 14 | 1417 |
| EPESENCA | 1347 | 13.1 (7.8 to 13.6) | 134 | 70 | 9 | 2* | - | 3* | 1* | 1* | 23 | 3* | 6 | 7 | 9 | 3* | 325 |
| EPESENHA | 813 | 10.5 (7.4 to 10.8) | 109 | 34 | 5 | 1* | - | 1* | 1* | 2* | 10 | 3* | 2* | 2* | 4* | - | 189 |
| ESTHER | 7771 | 5.1 (2.1 to 6.0) | 83 | 44 | 3* | 3* | 1* | 5 | - | 3* | - | 6 | 9 | 4* | 2* | 3* | 309 |
| FINE_IT | 457 | 11.6 (1.9 to 21.4) | 177 | 50 | - | 1* | - | 3* | 2* | 4* | 5 | 5 | 9 | 1* | 16 | 1* | 383 |
| FINRISK92 | 5268 | 11.9 (11.2 to 11.9) | 86 | 115 | 5 | 1* | 2* | 8 | 2* | 7 | 20 | 1* | 9 | 4* | 50 | 3* | 292 |
| FINRISK97 | 6309 | 6.8 (6.7 to 6.9) | 70 | 88 | 6 | - | 2* | 3* | 1* | 3* | 25 | 3* | 5 | - | 33 | 2* | 232 |
| FRAMOFF | 2854 | 5.2 (2.8 to 7.0) | 3* | 6 | - | - | - | - | - | - | - | - | - | - | - | 6 | 25 |
| GOH | 2613 | 35.0 (14.6 to 36.0) | 262 | 123 | 10 | 2* | 6 | 5 | 2* | 4* | 11 | 15 | 11 | 15 | 23 | 5 | 958 |
| GOTO13 | 784 | 13.7 (1.1 to 30.5) | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | 9 |
| GOTO33 | 719 | 12.8 (7.9 to 13.1) | 22 | 28 | - | 1* | 7 | 4* | - | 2* | 2* | 2* | - | - | 9 | - | 80 |
| GOTO43 | 772 | 10.0 (9.6 to 10.7) | 5 | 5 | - | - | - | - | - | 2* | - | - | - | - | 3* | - | 27 |
| GOTOW | 1425 | 37.6 (11.9 to 41.0) | 210 | 144 | 27 | - | - | - | - | - | - | - | - | - | 103 | - | 879 |
| GREPCO | 775 | 7.9 (7.7 to 8.4) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5 |
| GRIPS | 5785 | 9.8 (8.6 to 10.0) | 144 | 73 | 4* | 1* | - | 3* | - | 7 | 3* | 3* | 17 | 3* | 32 | - | 327 |
| HBS | 1131 | 20.5 (6.0 to 20.5) | 112 | 96 | - | - | - | - | - | - | - | - | - | - | 23 | 73 | 357 |
| HELSINAG | 374 | 9.3 (2.1 to 11.0) | 94 | 58 | - | - | 9 | 1* | - | - | 32 | 1* | 6 | 1* | 2* | 2* | 197 |
| HISAYAMA | 2575 | 14.0 (4.8 to 14.0) | 163 | 194 | 9 | 11 | - | 6 | 1* | 14 | 55 | 13 | 21 | 7 | 27 | 3* | 531 |
| HONOL | 2433 | 6.4 (2.1 to 7.6) | 152 | 144 | 9 | 2* | 34 | 16 | - | 1* | 16 | 24 | 6 | 1* | 20 | 1* | 568 |
| HOORN | 2209 | 13.6 (5.1 to 14.7) | 163 | 49 | 6 | - | 1* | 1* | - | - | 15 | 9 | 4* | 4* | 5 | 1* | 473 |
| HPFS | 45763 | 20.2 (6.2 to 21.9) | 4259 | 3377 | 146 | 39 | 310 | 771 | 330 | 124 | 293 | 365 | 188 | 180 | 644 | 117 | 12207 |
| IKNS | 8033 | 11.1 (5.1 to 18.6) | 220 | 273 | 6 | 1* | 3* | - | - | 15 | 102 | 11 | 15 | 24 | 61 | 13 | 864 |

| Study abbreviation | Total participants | Median follow-up (5th & 95th percentiles), years | All vascular deaths | All non-cancer, non-vascular deaths | Infection | Endocrine, nutritional or metabolic disorders | Mental disorders | Nervous system disorders | Alzheimer's & related conditions | Liver disease | Pneumonia | COPD & related conditions | Digestive system disorders (excl. liver) | Renal disease | External causes | Other non-cancer non-vascular deaths | Death from any cause |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISRAEL | 7671 | 23.3 (7.9 to 23.9) | 981 | - | - | - | - | - | - | - | - | - | - | - | - | - | 2518 |
| KIHD | 2060 | 20.9 (6.2 to 24.2) | 247 | 156 | 4* | - | 3* | 33 | 17 | 21 | 10 | 6 | 14 | 2* | 52 | 9 | 590 |
| LASA | 1247 | 10.0 (2.4 to 10.5) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 378 |
| MALMO | 31643 | 18.3 (8.8 to 22.7) | 1273 | 662 | 14 | 22 | 51 | 62 | 10 | 89 | 51 | 94 | 55 | 6 | 175 | 20 | 3412 |
| MATISS83 | 2532 | 18.7 (6.9 to 19.5) | 248 | 53 | - | - | 3* | 6 | 2* | 11 | 3* | 5 | 3* | 5 | 9 | 2* | 472 |
| MATISS87 | 2025 | 15.6 (7.4 to 16.2) | 114 | 35 | - | - | 2* | 2* | 1* | 4* | 2* | 1* | 2* | 5 | 11 | 2* | 238 |
| MATISS93 | 1207 | 8.3 (7.1 to 9.3) | 15 | 8 | - | - | 1* | 1* | - | 1* | - | - | 1* | 2* | 1* | 1* | 32 |
| MCVDRFP | 23075 | 16.8 (13.8 to 18.9) | 454 | 332 | 13 | 10 | 13 | 41 | 12 | 22 | 19 | 72 | 45 | 8 | 68 | 9 | 1747 |
| MESA | 6759 | 4.8 (3.3 to 5.4) | 45 | - | - | - | - | - | - | - | - | - | - | - | - | - | 224 |
| MICOL | 18845 | 5.9 (4.5 to 7.1) | 146 | 90 | - | - | - | 3* | - | 40 | 4* | 8 | 6 | 3* | 20 | 1* | 503 |
| MOGERAUG1 | 869 | 13.0 (4.7 to 13.5) | 75 | 29 | 1* | - | 3* | 2* | 1* | 1* | 7 | 4* | 3* | - | 7 | - | 151 |
| MOGERAUG2 | 3967 | 7.9 (6.1 to 8.4) | 112 | 65 | 2* | 1* | 8 | 3* | - | 7 | 8 | 12 | 6 | 4* | 11 | 3* | 277 |
| MOGERAUG3 | 3372 | 3.0 (2.5 to 3.6) | 29 | 11 | - | - | 2* | 1* | - | 2* | 1* | 1* | - | - | 2* | - | 65 |
| MONFRI86 | 1120 | 16.7 (7.0 to 16.9) | 56 | 18 | - | - | - | 2* | 1* | 5 | 2* | - | 1* | - | 5 | 2* | 145 |
| MONFRI89 | 1094 | 13.6 (8.9 to 13.7) | 37 | 16 | - | - | - | - | - | 5 | 2* | - | 1* | - | 4* | 1* | 82 |
| MONFRI94 | 1296 | 8.5 (8.2 to 8.8) | 19 | 7 | - | - | - | - | - | 3* | 1* | - | 1* | - | 1* | 1* | 51 |
| MORGEN | 17692 | 10.8 (8.5 to 13.1) | 149 | 90 | 7 | 1* | 4* | 12 | 2* | 9 | 5 | 9 | 8 | - | 25 | 2* | 582 |
| MOSWEGOT | 4143 | 13.2 (8.0 to 18.6) | 93 | 61 | 1* | - | 6 | 9 | 5 | 3* | - | 12 | 6 | 3* | 16 | 1* | 285 |
| MRCOLD | 10079 | 8.7 (1.2 to 11.7) | 2630 | 2023 | 59 | 8 | 45 | 333 | 259 | 17 | 540 | 293 | 251 | 43 | 83 | 101 | 6248 |
| NCS1 | 23960 | 16.1 (14.5 to 16.7) | 545 | 225 | 7 | 5 | 10 | 19 | 1* | 16 | 9 | 31 | 11 | 5 | 88 | 12 | 1408 |
| NCS2 | 12732 | 17.3 (15.7 to 17.8) | 271 | 126 | 3* | 4* | 10 | 11 | - | 8 | 10 | 9 | 3* | 4* | 56 | 7 | 772 |
| NCS3 | 9647 | 18.2 (12.2 to 18.8) | 446 | 135 | 4* | 1* | 17 | 13 | 2* | 9 | 4* | 24 | 7 | 2* | 44 | 3* | 949 |
| NFR | 3075 | 10.2 (6.1 to 11.2) | 124 | 41 | - | - | - | 1* | 1* | 15 | 3* | 2* | 4* | 2* | 13 | 1* | 330 |
| NHANESI | 8537 | 19.1 (5.5 to 21.1) | 1285 | 571 | 38 | 15 | 28 | 36 | 12 | 26 | 93 | 110 | 59 | 29 | 69 | 25 | 2577 |
| NHANESIII | 9391 | 8.8 (3.4 to 11.7) | 648 | 455 | 30 | 4* | - | 34 | 26 | 30 | 52 | 85 | 5 | 16 | 53 | 108 | 1562 |
| NHS | 117526 | 28.6 (12.1 to 30.3) | 5195 | 5936 | 255 | 66 | 1116 | 547 | 11 | 373 | 269 | 465 | 372 | 88 | 919 | 300 | 22905 |
| NPHSII | 2959 | 8.4 (4.5 to 12.0) | 136 | 71 | 1* | - | 4* | 8 | 1* | 6 | 8 | 18 | 9 | 2* | 10 | 1* | 458 |
| NSHS | 1629 | 9.8 (9.4 to 10.0) | 46 | - | - | - | - | - | - | - | - | - | - | - | - | - | 46 |
| OSAKA | 12397 | 10.2 (3.9 to 18.8) | 133 | 162 | 12 | - | 8 | 2* | - | 18 | 54 | 6 | 13 | 10 | 23 | 3* | 681 |
| OSLO | 17180 | 29.5 (10.9 to 30.5) | 2613 | 1006 | 29 | 28 | 60 | 106 | 15 | 98 | 90 | 226 | 101 | 27 | 182 | 33 | 5821 |
| PARIS1 | 7072 | 22.9 (7.6 to 26.1) | 601 | 479 | - | - | - | - | - | - | - | - | 153 | - | 150 | 176 | 2081 |
| PRHHP | 6334 | 12.0 (6.2 to 12.0) | 406 | 254 | 18 | 5 | 9 | 13 | - | 58 | 13 | 7 | 13 | 7 | 99 | 3* | 921 |
| PRIME | 9581 | 5.2 (5.0 to 7.3) | 46 | 34 | - | - | - | 2* | - | 3* | 1* | 1* | 1* | 1* | 24 | - | 194 |
| PROCAM | 20118 | 10.3 (3.9 to 18.9) | 324 | 209 | 22 | - | 6 | 5 | 3* | 22 | 48 | 8 | 10 | 2* | 65 | 21 | 1026 |
| QUEBEC | 625 | 5.3 (4.6 to 5.6) | 9 | - | - | - | - | - | - | - | - | - | - | - | - | - | 36 |
| RANCHO | 1810 | 15.0 (2.9 to 18.2) | 366 | 231 | 8 | 4* | 36 | 26 | 13 | 7 | 52 | 26 | 19 | 5 | 11 | 10 | 797 |
| REYK | 16714 | 26.6 (7.6 to 38.9) | 3867 | 2013 | 73 | 13 | 18 | 495 | 325 | 29 | 328 | 337 | 167 | 54 | 117 | 253 | 8803 |
| ROTT | 3880 | 12.0 (3.5 to 14.3) | 424 | 280 | 19 | 1* | 1* | 98 | 67 | 4* | 25 | 42 | 31 | 8 | 38 | 5 | 1219 |
| SHHEC | 10903 | 10.0 (9.1 to 10.0) | 202 | 99 | 8 | 4* | 2* | 6 | 2* | 13 | 18 | 18 | 9 | 1* | 10 | 6 | 615 |
| SHS | 3919 | 12.7 (2.8 to 14.3) | 381 | 505 | 42 | 9 | 30 | 8 | 1* | 124 | 40 | 38 | 32 | 22 | 92 | 26 | 1150 |
| SPEED | 2112 | 16.8 (4.6 to 18.2) | 264 | 82 | 1* | 1* | 1* | 9 | 2* | 3* | 13 | 24 | 5 | 4* | 11 | 3* | 560 |
| TARFS | 2283 | 16.6 (4.9 to 17.6) | 235 | 19 | - | - | 1* | 3* | 3* | - | - | 3* | - | - | 5 | 5 | 431 |
| TROMSØ | 15311 | 22.0 (19.2 to 22.4) | 300 | 193 | 4* | 4* | 7 | 32 | 14 | 9 | 7 | 32 | 12 | 3* | 65 | 8 | 1081 |
| ULSAM | 1685 | 30.9 (8.5 to 35.9) | 487 | 199 | 6 | 1* | 4* | 25 | 14 | 8 | 15 | 44 | 27 | 4* | 40 | 8 | 1082 |
| VHMPP | 66340 | 9.9 (1.3 to 13.7) | 1190 | 481 | 2* | 6 | 27 | 32 | 2* | 68 | 24 | 64 | 48 | 12 | 166 | 4* | 2535 |
| VITA | 8980 | 3.3 (1.7 to 5.3) | 21 | 15 | - | 1* | - | 1* | - | 4* | - | 1* | 1* | - | 6 | - | 87 |
| WHITEI | 3988 | 8.2 (2.0 to 8.4) | 470 | 336 | 9 | 3* | 10 | 42 | 17 | 5 | 112 | 47 | 31 | 11 | 8 | 12 | 1219 |
| WHITEII | 10160 | 12.8 (11.8 to 14.1) | 99 | 72 | 2* | 3* | - | 10 | - | 10 | 4* | 7 | 5 | 1* | 25 | 2* | 337 |
| WHS | 27456 | 10.2 (8.5 to 10.8) | 152 | 168 | - | - | - | - | - | - | - | 35 | - | - | 46 | 81 | 715 |
| ZARAGOZA | 2398 | 5.1 (3.9 to 5.1) | 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | 20 |
| ZUTE | 551 | 13.4 (5.9 to 15.1) | 157 | 48 | 2* | - | 3* | 6 | - | 1* | 8 | 9 | 7 | 4* | 48 | 1* | 337 |
| **TOTAL** | **820,900** | **13.6 (3.5 to 29.3)** | **44,407** | **27,661** | **1093** | **318** | **2019** | **3245** | **1300** | **1550** | **2999** | **3331** | **2139** | **728** | **4518** | **2504** | **123,205** |

Note: Totals include only people without known pre-existing cardiovascular disease at baseline and having complete information on age, sex, smoking status (current vs. other) and BMI. Studies with fewer than 5 events for an endpoint (*) do not contribute to the totals for each endpoint. In analyses that adjusted for more than age, sex, smoking status and BMI, we required each study to have a minimum of 10 events for an endpoint.

**Supplementary Table 5. Hazard ratios for major causes of death and death from any cause in people with vs. without diabetes at baseline in further supplementary analyses**

| Description of supplementary analysis | Cause of death | No. of participants | No. of deaths | HR (95% CI) | $I^2$ (95% CI) |
|---|---|---|---|---|---|
| ***Excluding 1st 5 years of follow-up duration*** | All cancer deaths | 611033 | 32089 | 1.24 (1.17 to 1.32) | 0 (0 to 26) |
| | All vascular deaths | 628619 | 33388 | 2.33 (2.09 to 2.60) | 77 (71 to 81) |
| | All non-cancer, non-vascular deaths | 605808 | 21926 | 1.70 (1.58 to 1.82) | 0 (0 to 26) |
| | Death from any cause | 633396 | 95356 | 1.79 (1.69 to 1.90) | 64 (55 to 71) |
| ***Excluding current smokers*** | All cancer deaths | 468783 | 22149 | 1.28 (1.21 to 1.36) | 0 (0 to 25) |
| | All vascular deaths | 489415 | 25016 | 2.52 (2.26 to 2.81) | 79 (74 to 83) |
| | All non-cancer, non-vascular deaths | 467725 | 16235 | 1.73 (1.60 to 1.88) | 8 (0 to 30) |
| | Death from any cause | 492627 | 69233 | 1.89 (1.78 to 2.01) | 68 (60 to 74) |
| ***Including adjustments for smoking amount (pack-years) instead of smoking status (current vs. other)*** | All cancer deaths | 348860 | 15424 | 1.24 (1.15 to 1.34) | 0 (0 to 27) |
| | All vascular deaths | 361018 | 16683 | 2.47 (2.18 to 2.81) | 73 (66 to 78) |
| | All non-cancer, non-vascular deaths | 346644 | 10565 | 1.76 (1.61 to 1.93) | 0 (0 to 27) |
| | Death from any cause | 361900 | 46679 | 1.82 (1.70 to 1.95) | 56 (44 to 65) |
| ***Excluding non-Western populations*** | All cancer deaths | 637759 | 37119 | 1.26 (1.20 to 1.32) | 0 (0 to 27) |
| | All vascular deaths | 663228 | 37748 | 2.42 (2.19 to 2.69) | 81 (78 to 85) |
| | All non-cancer, non-vascular deaths | 638965 | 24759 | 1.79 (1.67 to 1.91) | 6 (0 to 29) |
| | Death from any cause | 665166 | 106992 | 1.84 (1.74 to 1.95) | 68 (61 to 75) |
| ***Excluding participants using lipid- or blood pressure-lowering medication*** | All cancer deaths | 632119 | 36944 | 1.26 (1.19 to 1.32) | 0 (0 to 26) |
| | All vascular deaths | 660255 | 37350 | 2.39 (2.16 to 2.64) | 80 (75 to 83) |
| | All non-cancer, non-vascular deaths | 633297 | 24506 | 1.72 (1.60 to 1.84) | 5 (0 to 27) |
| | Death from any cause | 661338 | 107604 | 1.81 (1.72 to 1.92) | 67 (59 to 73) |
| ***Adjustments for waist circumference instead of BMI**** | All cancer deaths | 122492 | 5672 | 1.27 (1.16 to 1.39) | 0 (0 to 36) |
| | All vascular deaths | 137269 | 8191 | 2.25 (1.94 to 2.61) | 63 (49 to 74) |
| | All non-cancer, non-vascular deaths | 123690 | 5766 | 1.67 (1.50 to 1.86) | 0 (0 to 36) |
| | Death from any cause | 138776 | 23023 | 1.71 (1.57 to 1.85) | 53 (32 to 67) |
| ***Adjustments for WHR instead of BMI**** | All cancer deaths | 121972 | 5566 | 1.24 (1.13 to 1.37) | 0 (0 to 37) |
| | All vascular deaths | 136746 | 8061 | 2.31 (1.99 to 2.67) | 62 (47 to 73) |
| | All non-cancer, non-vascular deaths | 123170 | 5693 | 1.61 (1.45 to 1.79) | 0 (0 to 37) |
| | Death from any cause | 138243 | 22685 | 1.69 (1.56 to 1.83) | 51 (30 to 66) |
| ***Adjustments for WHR plus BMI*** | All cancer deaths | 121432 | 5508 | 1.26 (1.14 to 1.38) | 0 (0 to 37) |
| | All vascular deaths | 136161 | 7923 | 2.26 (1.95 to 2.62) | 62 (46 to 73) |
| | All non-cancer, non-vascular deaths | 122629 | 5567 | 1.65 (1.49 to 1.84) | 0 (0 to 37) |
| | Death from any cause | 137647 | 22335 | 1.70 (1.57 to 1.84) | 51 (29 to 66) |

Note: All analyses were stratified or adjusted for sex and adjusted for age, smoking status (current vs. other) and BMI except where indicated otherwise*. Study-specific estimates were combined using 2-stage random-effects meta-analysis. Individuals with known pre-existing cardiovascular disease at baseline were excluded from all analyses. Abbreviations: BMI, body mass index; WHR, waist-to-hip ratio.

**Supplementary Table 6. Hazard ratios for major causes of death and death from any cause in people with vs. without diabetes upon progressive adjustment for usual levels of confounders/mediators**

| Cause of death and progressive adjustment | HR (95%CI) | p-value for heterogeneity | $I^2$ (95% CI) |
|---|---|---|---|
| **Cancer deaths** | **486,807 individuals 22,399 deaths 71 studies** | | |
| Age and sex | 1.20 (1.14 to 1.27) | 0.676 | 0 (0 to 28) |
| Plus smoking* | 1.27 (1.20 to 1.35) | 0.929 | 0 (0 to 28) |
| Plus BMI* | 1.28 (1.21 to 1.35) | 0.927 | 0 (0 to 28) |
| Plus SBP* | 1.26 (1.19 to 1.33) | 0.937 | 0 (0 to 28) |
| Plus total cholesterol* | 1.24 (1.17 to 1.31) | 0.944 | 0 (0 to 28) |
| **Vascular deaths** | **513,951 individuals 28,354 deaths 80 studies** | | |
| Age and sex | 2.38 (2.17 to 2.60) | <0.001 | 74 (68 to 79) |
| Plus smoking* | 2.44 (2.23 to 2.67) | <0.001 | 74 (68 to 79) |
| Plus BMI* | 2.35 (2.16 to 2.57) | <0.001 | 71 (64 to 77) |
| Plus SBP* | 2.10 (1.93 to 2.28) | <0.001 | 67 (58 to 74) |
| Plus total cholesterol* | 2.13 (1.96 to 2.32) | <0.001 | 68 (60 to 74) |
| **Non-cancer, non-vascular deaths** | **479,601 individuals 14,481 deaths 67 studies** | | |
| Age and sex | 1.67 (1.55 to 1.79) | 0.107 | 18 (0 to 40) |
| Plus smoking* | 1.72 (1.59 to 1.85) | 0.097 | 19 (0 to 41) |
| Plus BMI* | 1.74 (1.62 to 1.87) | 0.156 | 15 (0 to 38) |
| Plus SBP* | 1.68 (1.58 to 1.80) | 0.313 | 7 (0 to 31) |
| Plus total cholesterol* | 1.64 (1.54 to 1.75) | 0.319 | 7 (0 to 31) |
| **Death from any cause** | **521,824 individuals 72,167 deaths 85 studies** | | |
| Age and sex | 1.79 (1.69 to 1.89) | <0.001 | 69 (61 to 75) |
| Plus smoking* | 1.84 (1.74 to 1.95) | <0.001 | 68 (59 to 74) |
| Plus BMI* | 1.82 (1.72 to 1.92) | <0.001 | 65 (55 to 72) |
| Plus SBP* | 1.71 (1.63 to 1.80) | <0.001 | 60 (50 to 69) |
| Plus total cholesterol* | 1.70 (1.62 to 1.79) | <0.001 | 61 (51 to 69) |

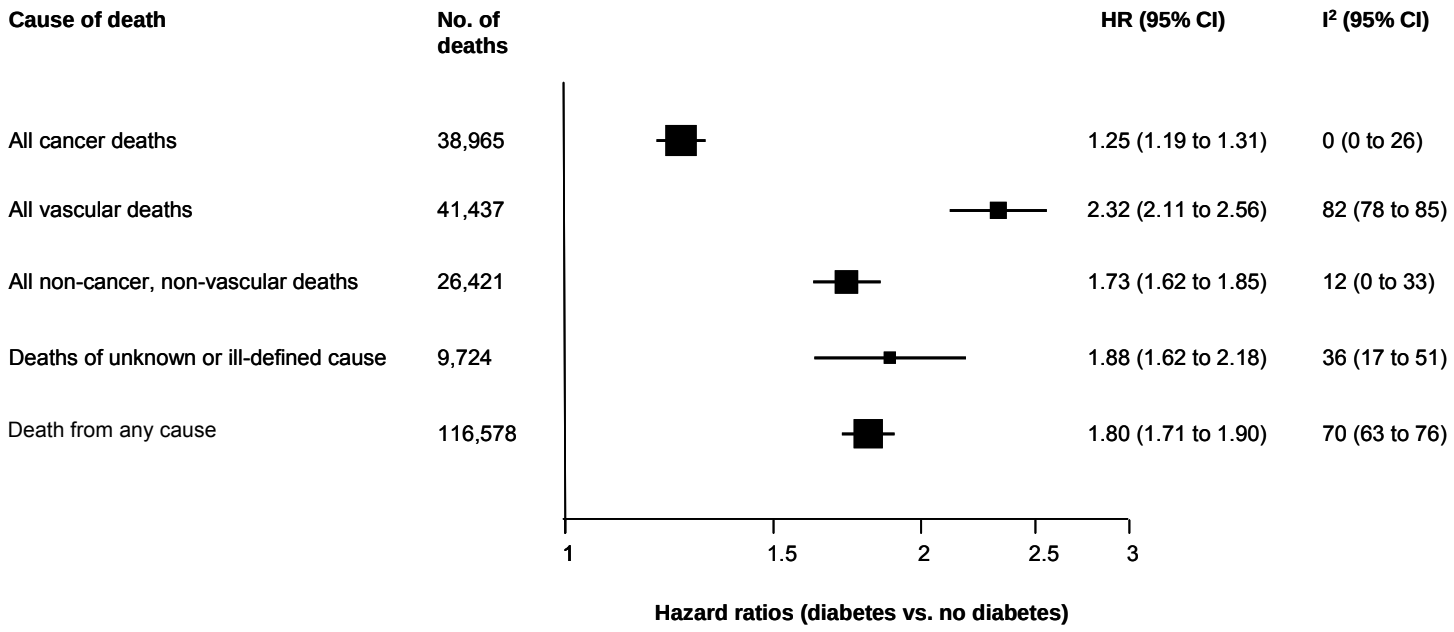
Note: Baseline levels used for diabetes status and empirical Bayesian predicted usual levels for adjustment variables with repeats (indicated by *). Individuals with known pre-existing cardiovascular disease at baseline were excluded from the analyses.

**Supplementary Table 7. Population attributable fraction for major causes of death and death from any cause associated with diabetes, after making allowances for misclassification in diabetes status**

| Cause of death | | Prevalence of diabetes amongst cases | | |
|---|---|---|---|---|
| ***Cancer deaths*** | | **10%** | **20%** | **30%** |
| (679,887 participants, 38,965 deaths) | Baseline | 2% (1.6% to 2.4%) | 4% (3.3% to 4.8%) | 6.1% (4.9% to 7.2%) |
| | **Incidence of diabetes (% per year)** | | | |
| | 0.05% | 1.9% (1.6% to 2.3%) | 3.9% (3.1% to 4.6%) | 5.8% (4.7% to 6.8%) |
| | 0.1% | 2% (1.6% to 2.3%) | 4% (3.3% to 4.7%) | 6% (4.9% to 7%) |
| | 0.3% | 2.1% (1.8% to 2.5%) | 4.3% (3.6% to 5%) | 6.4% (5.3% to 7.5%) |
| | 0.5% | 2.3% (1.9% to 2.6%) | 4.6% (3.9% to 5.3%) | 6.9% (5.8% to 7.9%) |
| | 1.0% | 2.9% (2.4% to 3.3%) | 5.7% (4.7% to 6.6%) | 8.6% (7.1% to 10%) |
| | 1.5% | 3.2% (2.6% to 3.8%) | 6.5% (5.2% to 7.6%) | 9.7% (7.8% to 11.4%) |
| ***Vascular deaths*** | | **10%** | **20%** | **30%** |
| (710,770 participants, 41,021 deaths) | Baseline | 5.7% (5.2% to 6.1%) | 11.3% (10.5% to 12.1%) | 17% (15.7% to 18.2%) |
| | **Incidence of diabetes (% per year)** | | | |
| | 0.05% | 5.4% (5% to 5.8%) | 10.8% (9.9% to 11.7%) | 16.3% (14.9% to 17.5%) |
| | 0.1% | 5.5% (5% to 5.9%) | 11% (10.1% to 11.8%) | 16.4% (15.1% to 17.6%) |
| | 0.3% | 5.6% (5.1% to 6%) | 11.2% (10.3% to 12%) | 16.7% (15.4% to 17.9%) |
| | 0.5% | 5.7% (5.2% to 6.1%) | 11.3% (10.5% to 12.2%) | 17% (15.7% to 18.2%) |
| | 1.0% | 5.9% (5.4% to 6.3%) | 11.8% (10.9% to 12.6%) | 17.7% (16.3% to 18.9%) |
| | 1.5% | 6.1% (5.6% to 6.5%) | 12.2% (11.2% to 13%) | 18.2% (16.9% to 19.5%) |
| ***Non-cancer, non-vascular deaths*** | | **10%** | **20%** | **30%** |
| (681,093 participants, 26,421 deaths) | Baseline | 4.2% (3.8% to 4.6%) | 8.4% (7.7% to 9.2%) | 12.7% (11.5% to 13.8%) |
| | **Incidence of diabetes (% per year)** | | | |
| | 0.05% | 3.9% (3.5% to 4.3%) | 7.8% (7% to 8.6%) | 11.8% (10.6% to 12.9%) |
| | 0.1% | 4% (3.6% to 4.4%) | 8% (7.2% to 8.7%) | 12% (10.8% to 13.1%) |
| | 0.3% | 4.1% (3.7% to 4.5%) | 8.3% (7.5% to 9%) | 12.4% (11.2% to 13.5%) |
| | 0.5% | 4.3% (3.9% to 4.7%) | 8.6% (7.8% to 9.3%) | 12.9% (11.7% to 14%) |
| | 1.0% | 4.7% (4.2% to 5.1%) | 9.3% (8.5% to 10.1%) | 14% (12.7% to 15.2%) |
| | 1.5% | 5% (4.5% to 5.4%) | 10% (9.1% to 10.8%) | 15% (13.6% to 16.3%) |
| ***Death from any cause*** | | **10%** | **20%** | **30%** |
| (713,073 participants, 116,144 deaths) | Baseline | 4.4% (4.1% to 4.7%) | 8.9% (8.3% to 9.4%) | 13.3% (12.4% to 14.1%) |
| | **Incidence of diabetes (% per year)** | | | |
| | 0.05% | 4.1% (3.8% to 4.4%) | 8.3% (7.7% to 8.9%) | 12.4% (11.5% to 13.3%) |
| | 0.1% | 4.2% (3.9% to 4.5%) | 8.4% (7.8% to 9%) | 12.6% (11.7% to 13.5%) |
| | 0.3% | 4.3% (4% to 4.6%) | 8.7% (8.1% to 9.3%) | 13% (12.1% to 13.9%) |
| | 0.5% | 4.5% (4.2% to 4.8%) | 8.9% (8.3% to 9.5%) | 13.4% (12.5% to 14.3%) |
| | 1.0% | 4.8% (4.4% to 5.1%) | 9.5% (8.9% to 10.1%) | 14.3% (13.3% to 15.2%) |
| | 1.5% | 5% (4.6% to 5.3%) | 10% (9.3% to 10.7%) | 15% (13.9% to 16%) |

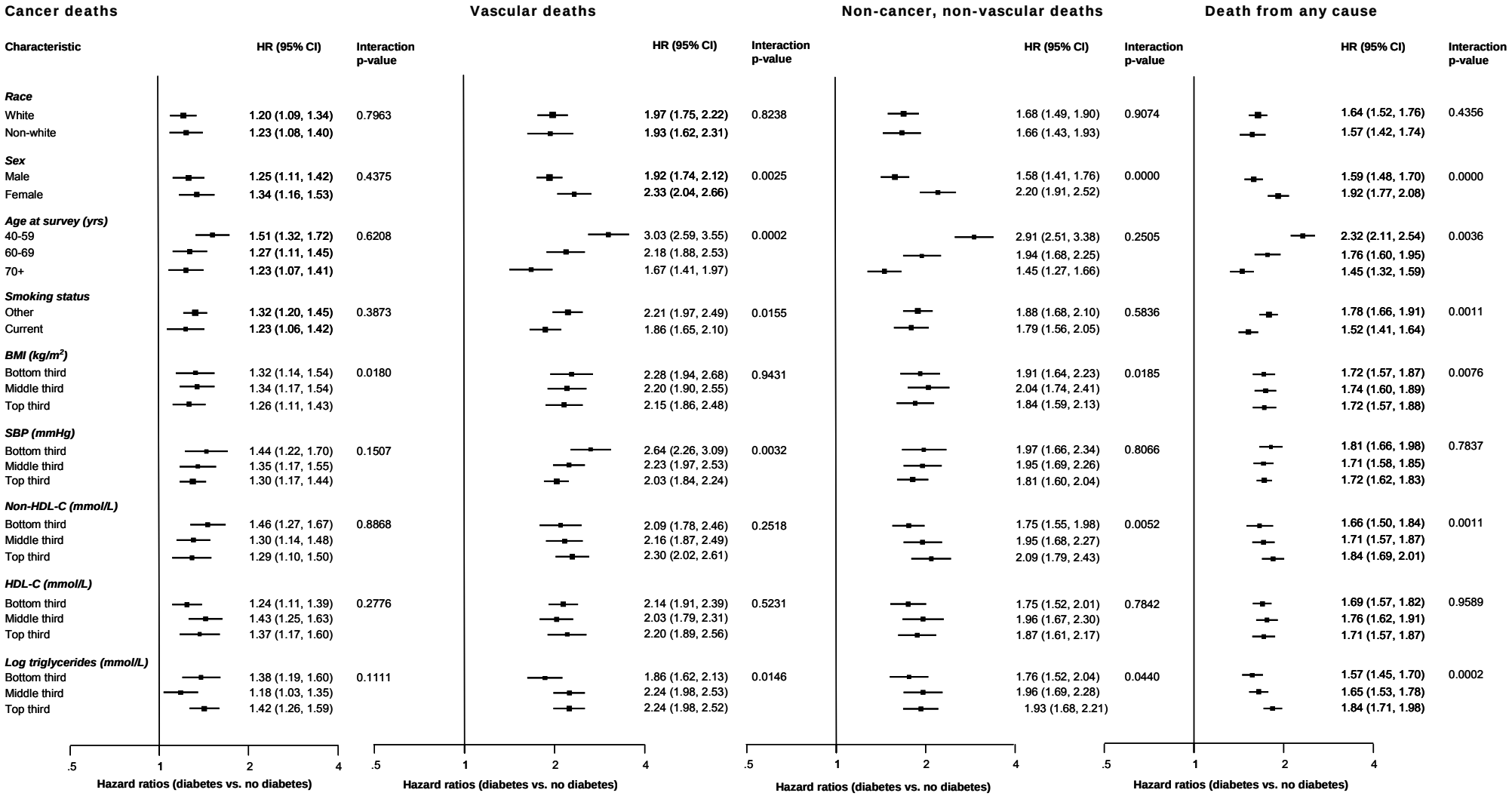
Note: HRs were estimated using a 2-stage approach where study-specific HRs were calculated then pooled across studies by random-effects meta-analyses. In the first stage, regression analyses were stratified, where appropriate, by sex and trial group, and adjusted for age, smoking status (current vs. other) and BMI. In the baseline analyses diabetes status was defined only according to the baseline status. In the other analyses, diabetes status was modeled as a time dependent continuous variable to represent the probability of having diabetes (range between 0 and 1). Multiple records were used for each participant when available. Diabetes status was assessed at baseline and reassessed at each re-survey. People were classified as having diabetes based on self-report, drug treatment for diabetes or fasting glucose ≥7 mmol/L (126 mg/dl). Participants classified as having diabetes kept diabetes status of 1 until the time of an event. For participants with no known diabetes, the probability of having diabetes was calculated according to the incident rates of diabetes (% per year) based on the cumulative exponential distribution. Case-control studies were excluded from the analyses. Individuals with known pre-existing cardiovascular disease at baseline were also excluded from the analyses.

**Supplementary Fig.1. Hazard ratios for major causes of death and death from any cause associated with diabetes**



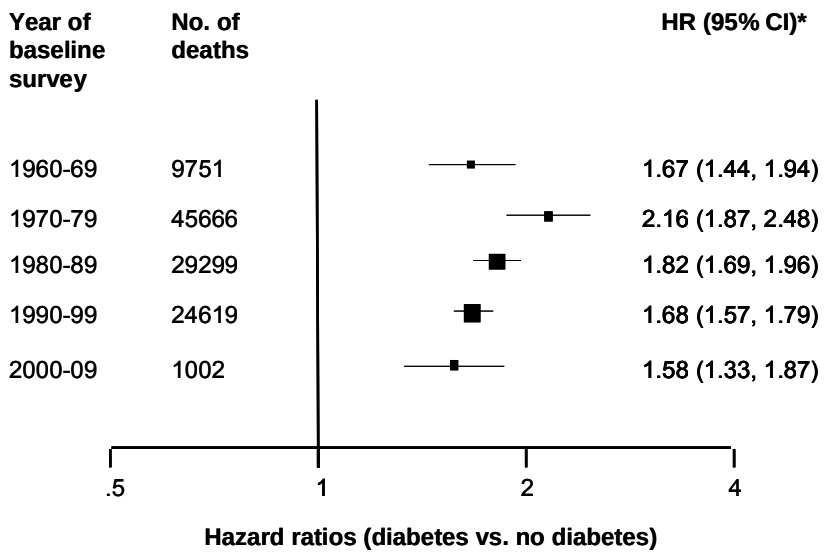

Note: Study-specific $\log_e$ hazard ratios adjusted for baseline age, smoking status (current vs. other) and BMI, and stratified by sex and trial arm (where appropriate) were combined using multivariate random-effects meta-analysis. Individuals with known pre-existing cardiovascular disease at baseline were excluded from all analyses. The $I^2$ statistic estimates the percentage of variation in the pooled $\log_e$ HRs that can be accounted for by genuine between-study heterogeneity and not chance.

**Supplementary Fig. 2. Hazard ratios for major causes of death and death from any cause among people with vs. without diabetes according to levels of other factors**



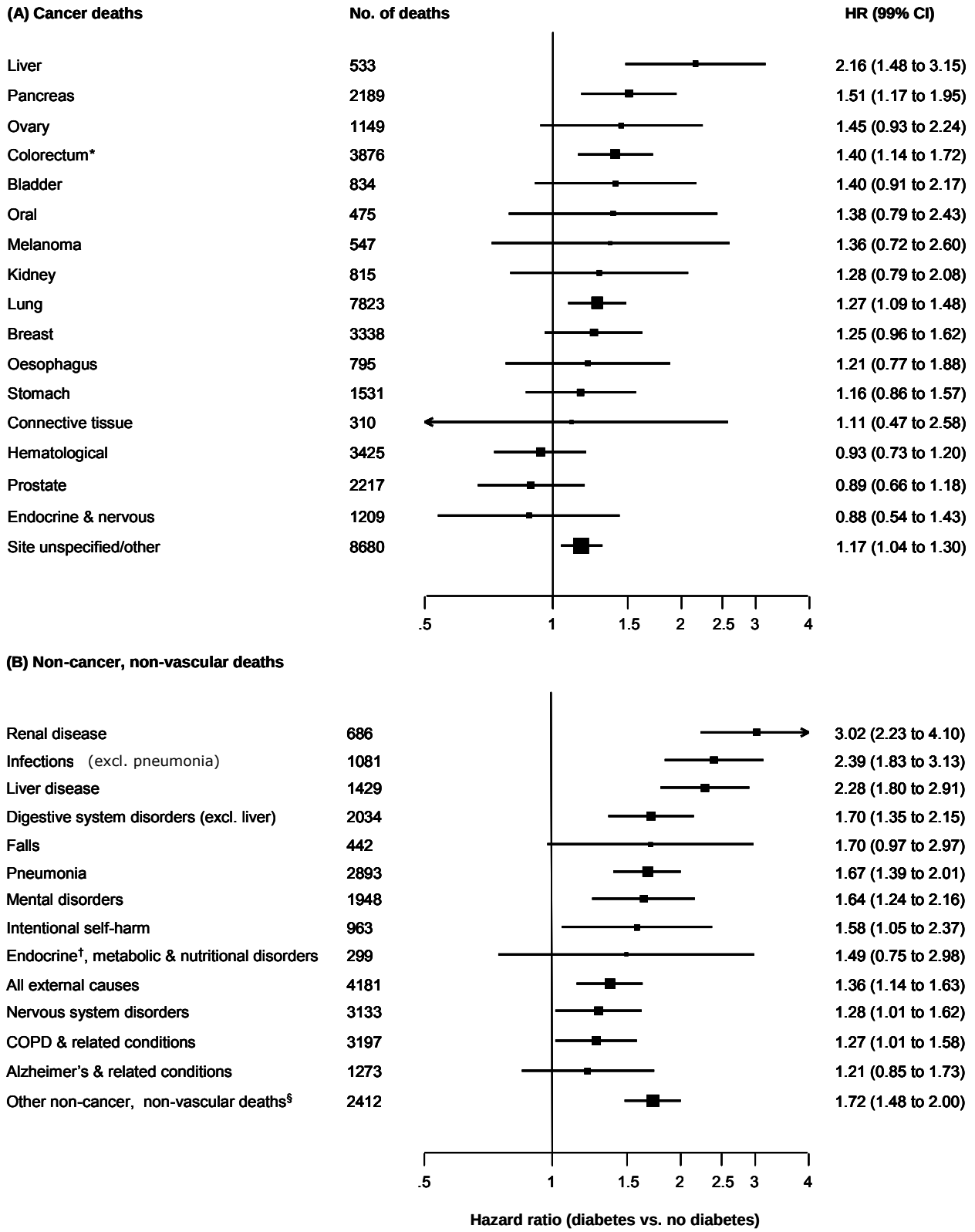

Note: Regression analyses were stratified, where appropriate, by sex and trial group, and adjusted for age, smoking status (current vs. other), BMI, systolic blood pressure (SBP), non-HDL cholesterol (non-HDL-C), HDL-cholesterol (HDL-C) and $\log_e$ triglycerides. P-values for interaction were calculated from analyses using continuous variables where appropriate. Sizes of data markers are proportional to the inverse of the variance of the $\log_e$ hazard ratios. Individuals with known pre-existing cardiovascular disease at baseline were excluded from all analyses.

**Supplementary Fig. 3. Hazard ratios for death from any cause in people with vs. without diabetes by decade of baseline survey**



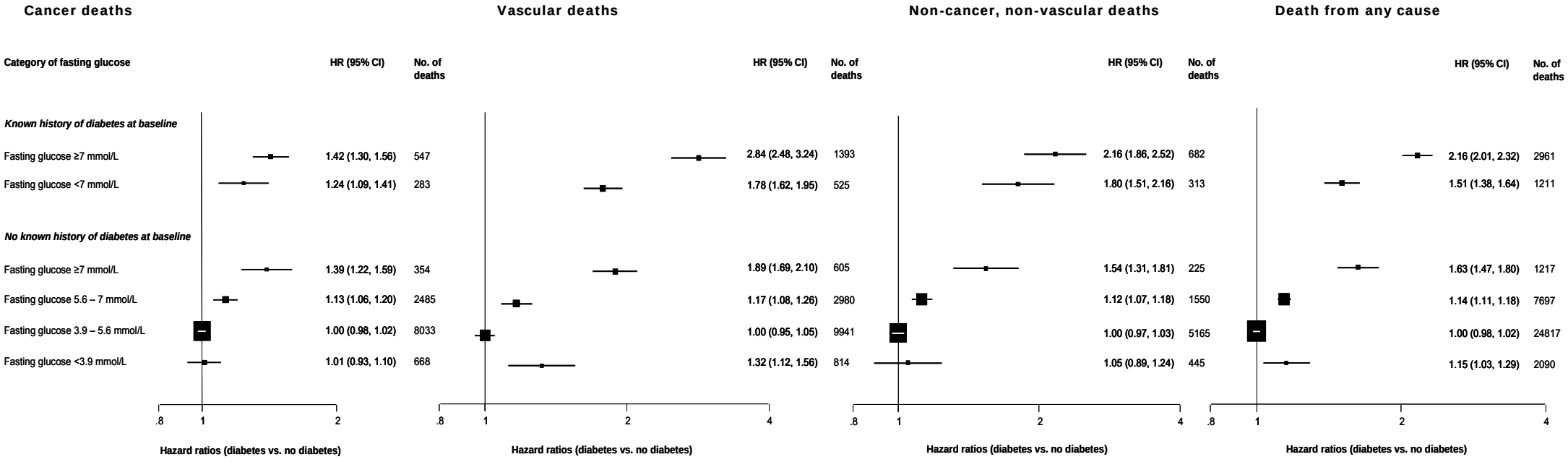

Note: Analyses were stratified or adjusted for sex and trial arm, where appropriate, and adjusted for baseline age, smoking status (current vs. other) and BMI. *p-value was <0.001 for the interaction by decade of baseline survey.

**Supplementary Fig. 4. Hazard ratios (99% confidence intervals) for death from cancer and from non-cancer, non-vascular causes in participants with diabetes compared to those without diabetes at baseline**



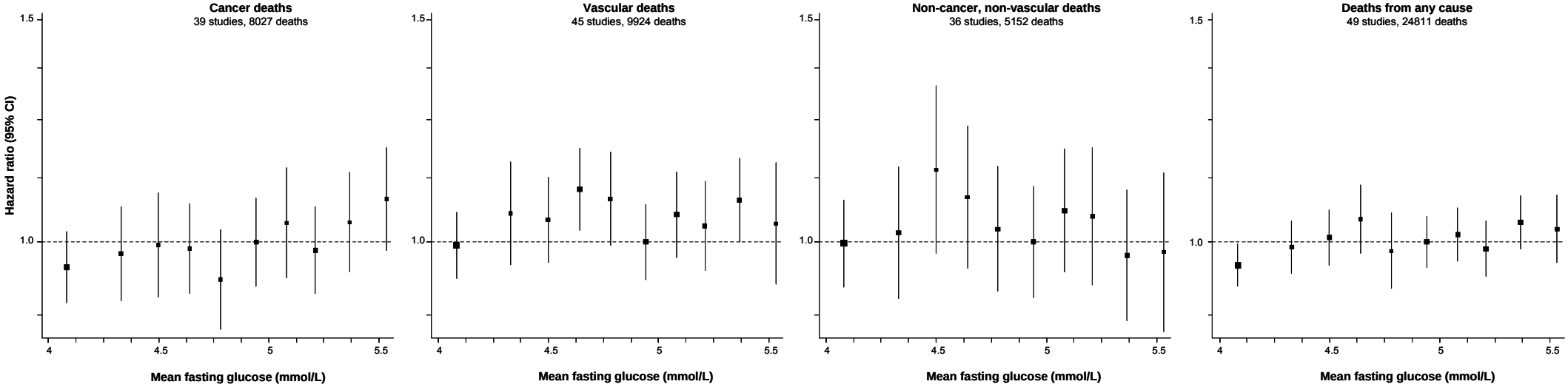

Note: With the exception of 'Site unspecified/other cancers' and 'Other non-cancer, non-vascular deaths', causes of death are presented in descending order of their estimated HRs. All analyses were stratified by study, sex and trial arm (where appropriate) and adjusted for baseline age, smoking status (current vs. other) and BMI. Sizes of the data markers are proportional to the inverse of the variance of the $\log_e$ hazard ratios. There was evidence of heterogeneity in HRs between different cancer sites and between different non-cancer, non-vascular causes of death (p-value for heterogeneity <0.001 for both). *Hazard ratios were broadly similar for sub-sites, namely colon cancer vs. cancer of recto-sigmoid and anus. †Deaths coded as due to diabetes were excluded from this category. §Causes that could not be grouped into major organs or systems. Individuals with known pre-existing cardiovascular disease at baseline were excluded from all analyses.

**Supplementary Fig. 5. Hazard ratios for major causes of death and death from any cause by clinical categories of fasting glucose**



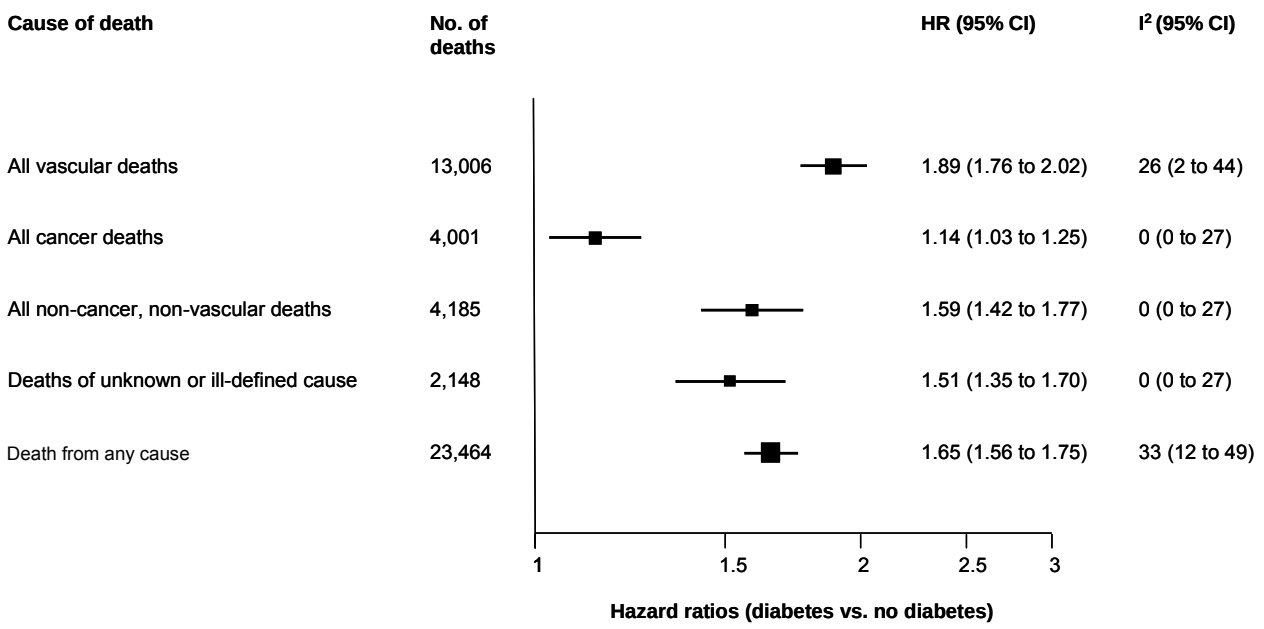

Note: Regression analyses were stratified, where appropriate, by sex and trial group, and adjusted for age, smoking status (current vs. other) and BMI. Sizes of the data markers are proportional to the inverse of the variance of the $\log_e$ hazard ratios. Individuals with known pre-existing cardiovascular disease at baseline were excluded from all analyses. Fasting glucose values of 3.9, 5.6, 6.1, and 7.0 mmol/l correspond approximately to 70, 100, 110, and 126 mg/dl, respectively.

**Supplementary Fig. 6. Hazard ratios for major causes of death and death from any cause by baseline fasting glucose concentration between 3.9 and 5.6 mmol/l (70 to 100 mg/dl) in participants without known history of diabetes at baseline**



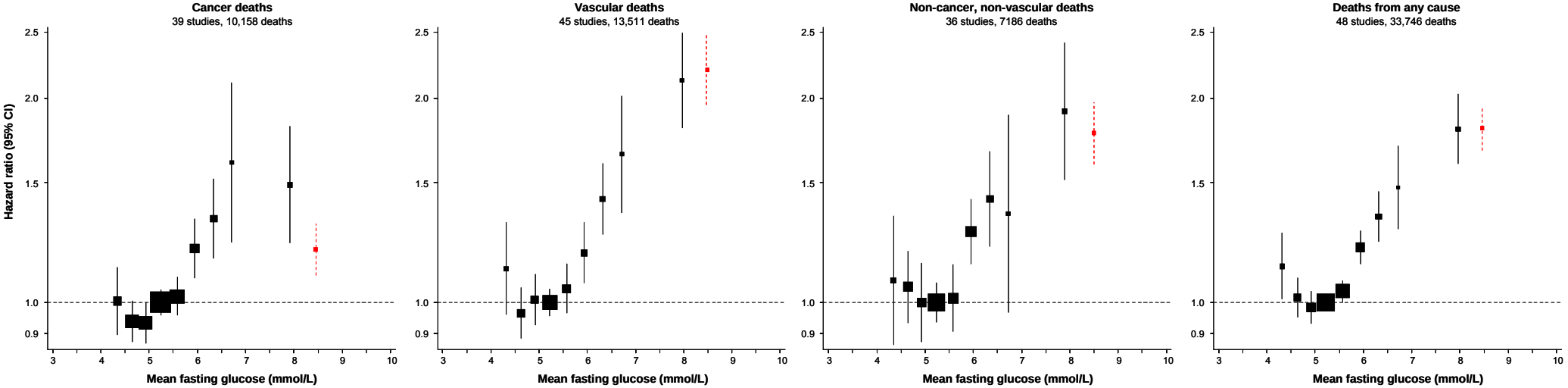

Note: Participants with fasting glucose concentration <3.9 (70 mg/dl) or >5.6 mmol/L (100 mg/dl), or with a history of or treatment for diabetes at baseline were excluded from the analyses. Individuals were then classified into tenths of fasting glucose within this range and hazard ratios plotted against the mean fasting glucose in each group. The 6th decile (i.e. the tenth containing the mean value for fasting glucose) was used as the reference group for all analyses. Regression analyses were stratified, where appropriate, by sex and trial group, and adjusted for baseline age, smoking status (current vs. other) and BMI. Sizes of the data markers are proportional to the inverse of the variance of the $\log_e$ hazard ratios. Individuals with known pre-existing cardiovascular disease at baseline were excluded from all analyses.

**Supplementary Fig. 7. Hazard ratios for major causes of death and death from any cause associated with diabetes among individuals with a history of cardiovascular disease at baseline**




Note: Hazard ratios were combined across studies using a 2-stage multivariate random-effects model. Analyses were stratified or adjusted for sex and trial arm (where appropriate), and adjusted for baseline age, smoking status (current vs. other) and BMI. People without known pre-existing cardiovascular disease at baseline were excluded from the analyses.

**Supplementary Fig. 8. Hazard ratios for major causes of death and death from any cause across usual levels of fasting glucose, with adjustments for usual levels of confounders**

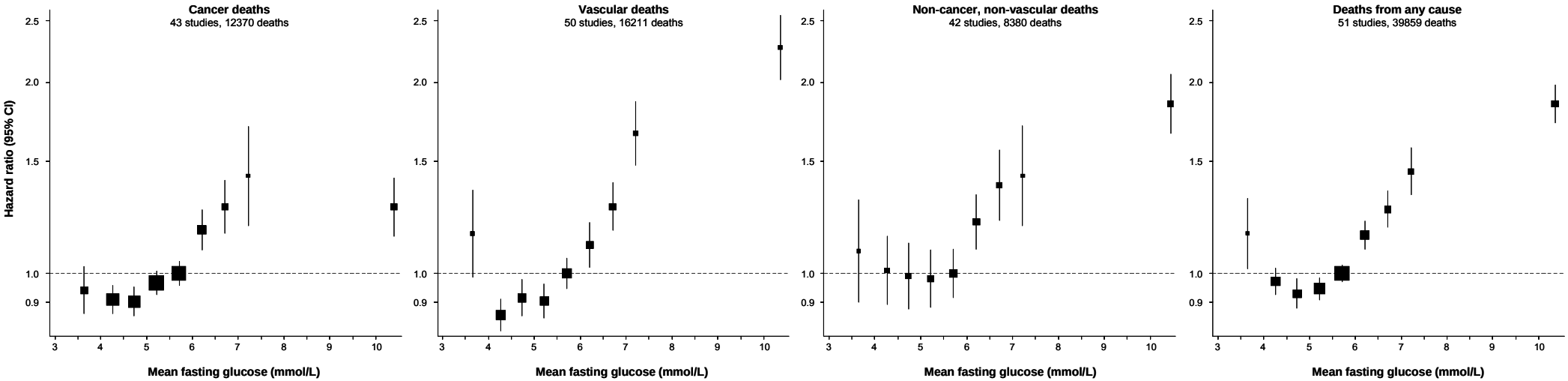



Known history of diabetes at baseline survey

No known history of diabetes at baseline survey

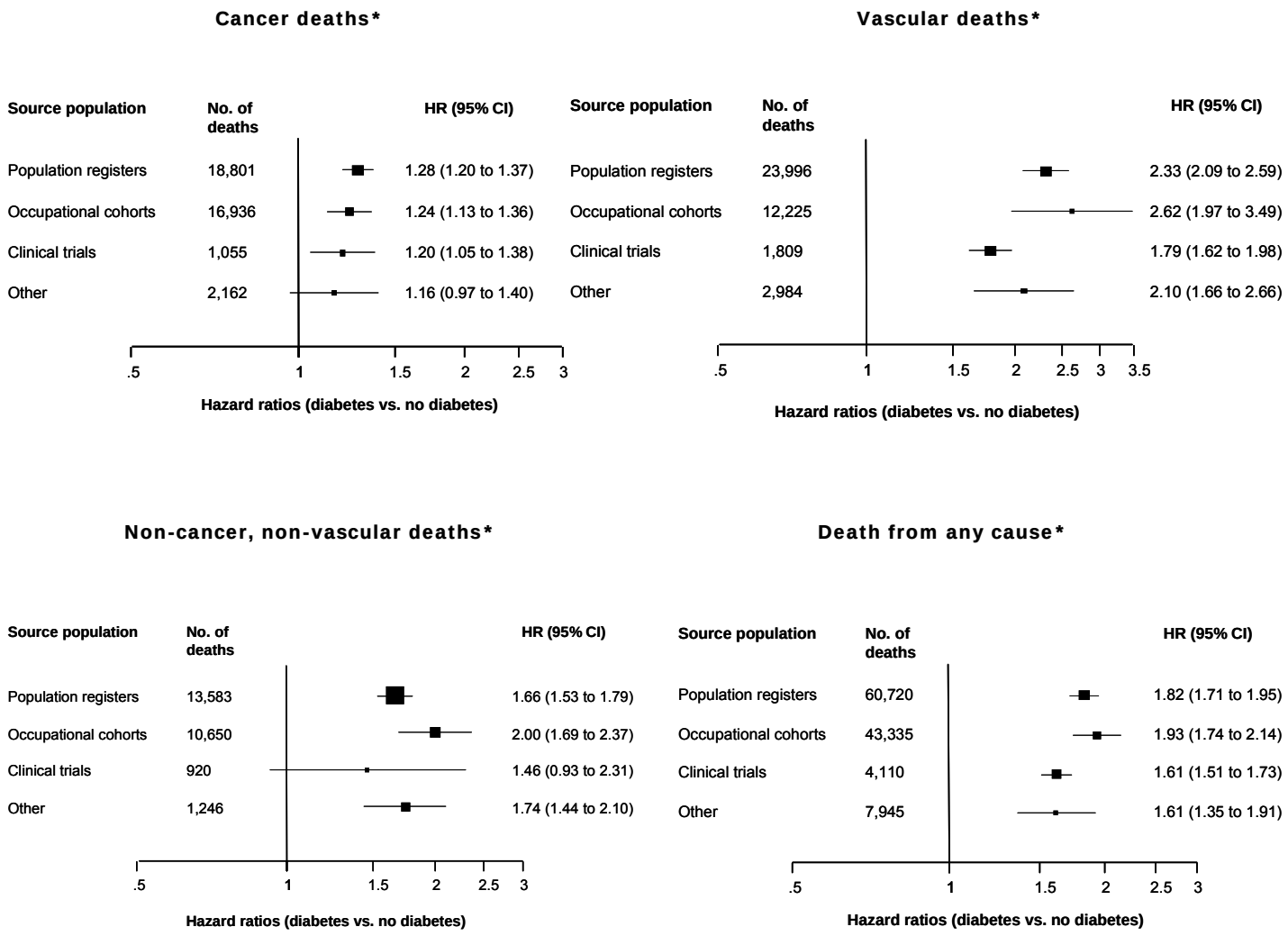
Note: History of diabetes was defined according to a self-report of or treatment for diabetes. Participants were classified into groups of fasting glucose as described in Figure 2 in the main text (to convert glucose from mmol/l to mg/dl multiply by 18). Hazard ratios were plotted against the mean fasting glucose in each group (reference category 5 to <5.5 mmol/L). Sizes of the data markers are proportional to the inverse of the variance of the $\log_e$ hazard ratios. All analyses were stratified or adjusted for sex and adjusted for baseline age, and usual levels of smoking status (current vs. other) and BMI. Individuals with known pre-existing cardiovascular disease at baseline were excluded from all analyses.

**Supplementary Fig.9. Hazard ratios for major causes of death and death from any cause across baseline levels of fasting glucose regardless of baseline history of diabetes**




Note: Participants were classified into the following groups of fasting glucose concentration at baseline regardless of their diabetes status: <4, 4 to <4.5, 4.5 to <5, 5 to <5.5, 5.5 to <6, 6 to <6.5, 6.5 to <7, 7 to <7.5 and ≥7.5 mmol/L (to convert glucose from mmol/l to mg/dl multiply by 18). Hazard ratios were plotted against the mean fasting glucose in each group (reference category 5.5 to <6 mmol/L). Sizes of the data markers were proportional to the inverse of the variance of the $\log_e$ hazard ratios. All analyses were stratified or adjusted for sex and adjusted for baseline age, smoking status (current vs. other) and BMI. Individuals with known pre-existing cardiovascular disease at baseline were excluded from all analyses.

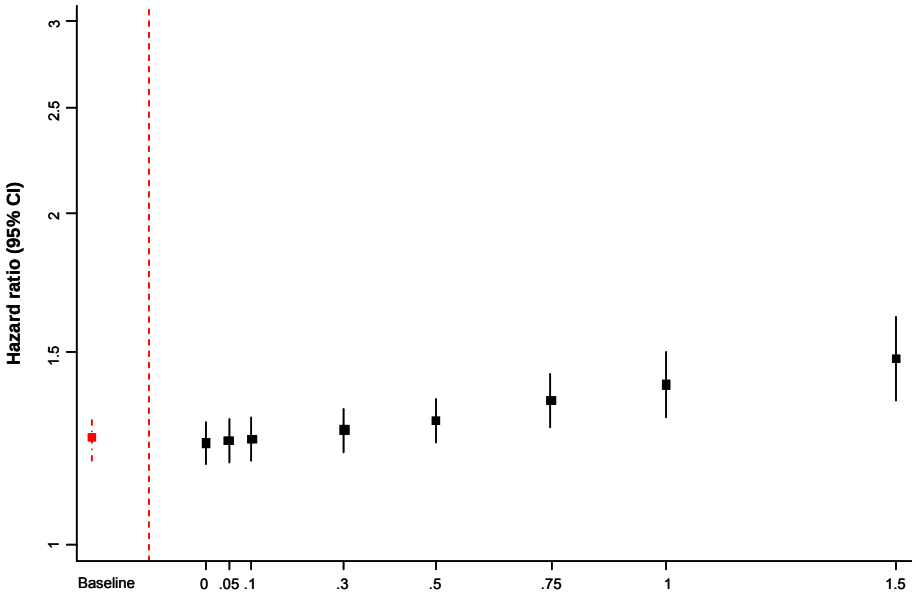
**Supplementary Fig. 10. Hazard ratios for major causes of death and death from any cause according to participant sampling frames**



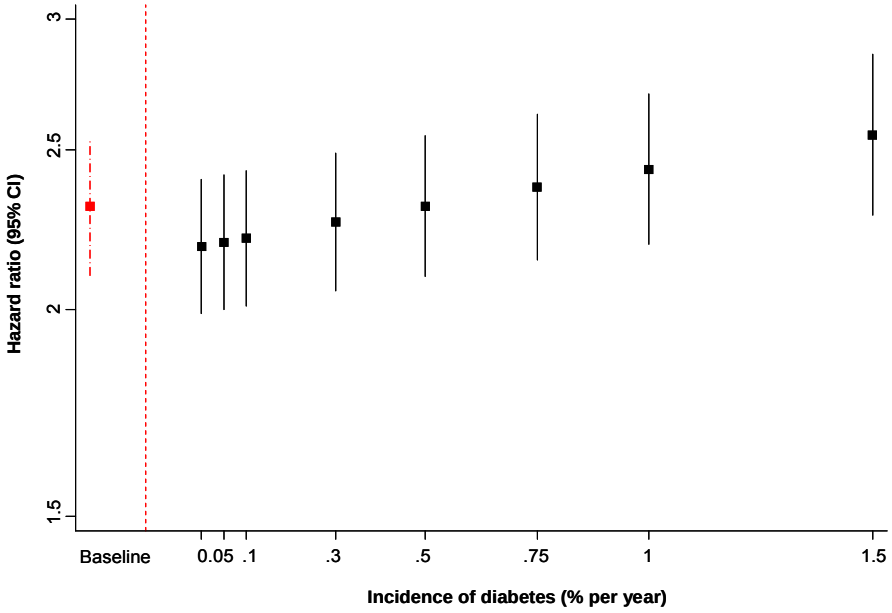

Note: Hazard ratios were combined across studies using random-effects meta-analysis. Analyses were stratified by sex and adjusted for baseline age, smoking status (current vs. other), and BMI. Studies with fewer than 5 events for an outcome were excluded from the analysis of that outcome. *P-value for interaction = 0.688 for cancer deaths, < 0.001 for vascular deaths, 0.063 for non-cancer non-vascular deaths, and < 0.001 for death from any cause. Individuals with known pre-existing cardiovascular disease at baseline were excluded from all analyses.

**Supplementary Fig. 11. Sensitivity analyses of hazard ratios for major causes of death and death from any cause in people with vs. without diabetes, allowing for time-dependent diabetes status**

**Cancer deaths**



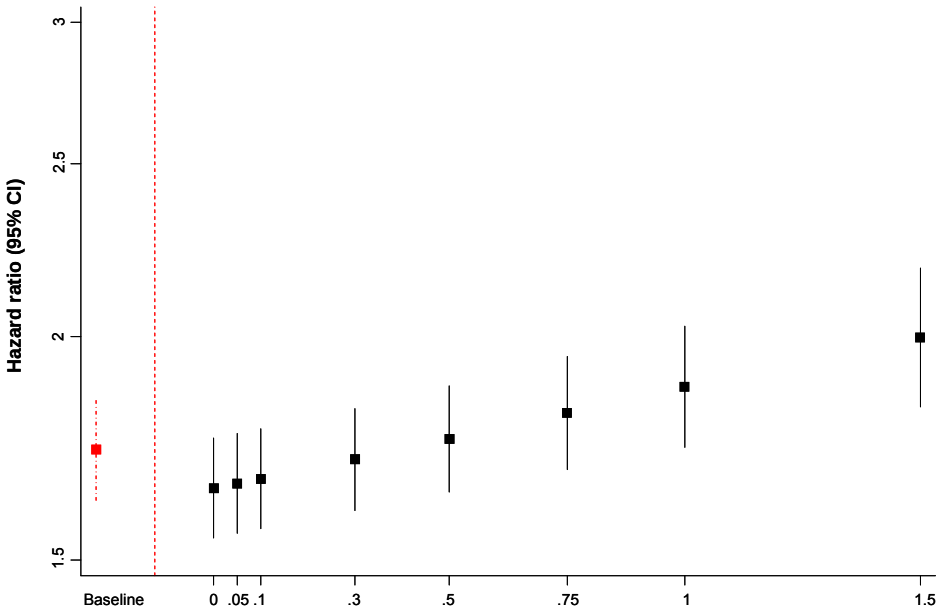

**Vascular deaths**



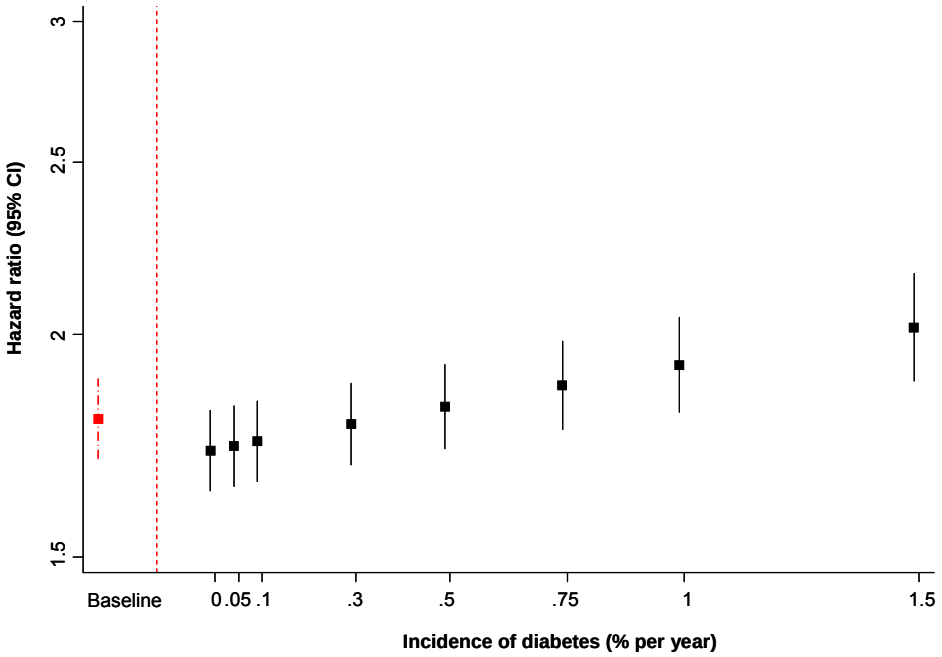

Note: Analyses were based on the same number of participants (and using similar methods) as shown in Supplementary Table 7. In the baseline analyses (indicated by red markers) diabetes status was defined only according to the baseline status. In the other analyses, diabetes status was modeled as a time-dependent continuous variable to represent the probability of having diabetes (range between 0 and 1). Multiple records were used for each participant when available. Diabetes status was assessed at baseline and reassessed at each re-survey. People were classified as having diabetes based on self-report, drug treatment for diabetes or fasting glucose ≥7 mmol/L (126 mg/dl). Participants classified as having diabetes kept diabetes status of 1 until the time of an event. For participants with no known diabetes, the probability of having diabetes was calculated according to the incident rates of diabetes (% per year) based on the cumulative exponential distribution. Case-control studies were excluded from the analyses. Individuals with known pre-existing cardiovascular disease at baseline were also excluded from the analyses.

**Supplementary Fig. 11 (contd.). Sensitivity analyses of hazard ratios for major causes of death and deaths from any cause in people with vs. without diabetes, allowing for time-dependent diabetes status**

**Non-cancer, non-vascular deaths**




**Death from any cause**




Note: Analyses were based on the same number of participants (and using similar methods) as shown in Supplementary Table 7. In the baseline analyses (indicated by red markers) diabetes status was defined only according to the baseline status. In the other analyses, diabetes status was modeled as a time-dependent continuous variable to represent the probability of having diabetes (range between 0 and 1). Multiple records were used for each participant when available. Diabetes status was assessed at baseline and reassessed at each re-survey. People were classified as having diabetes based on self-report, drug treatment for diabetes or fasting glucose ≥7 mmol/L (126 mg/dl). Participants classified as having diabetes kept diabetes status of 1 until the time of an event. For participants with no known diabetes, the probability of having diabetes was calculated according to the incident rates of diabetes (% per year) based on the cumulative exponential distribution. Case-control studies were excluded from the analyses. Individuals with known pre-existing cardiovascular disease at baseline were also excluded from the analyses.

**Supplementary Appendix (contd.)**. Data request for bespoke analyses on metabolic and anthropometric markers in the Emerging Risk Factors Collaboration

ERFC

**Emerging Risk Factors Collaboration**

Name of study: _____

Name of contact: _____

**Information on diabetes and metabolic markers**

Some studies sharing data in the ERFC have already provided the Coordinating Centre with as much data as are available on diabetes and related metabolic markers (see below for list of relevant variables). If this applies to your study, please tick the box immediately below and return to the Coordinating Centre.

☐ Our study has previously provided to the ERFC all available data on a cohort-wide basis on the variables listed below.

If, however, your study has not provided complete data on **a cohort-wide basis** on the variables listed below, please complete and return the remainder of this form.

Many thanks.

| Variables | Available at the "baseline" survey | | Available at some subsequent resurveys? | | Willing to share in the ERFC? | |
|---|---|---|---|---|---|---|
| Type of diabetes mellitus (type 1 or 2) | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably no |
| Duration of diabetes | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably no |
| Medication for diabetes | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably no |
| HbA1c levels | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably no |
| Fasting glucose levels | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably no |
| Post-load glucose levels | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably no |
| Creatinine levels | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably no |
| Insulin or proinsulin levels | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably no |
| Urinary protein | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably no |
| Waist circumference* | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably no |
| Hip circumference* | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably No |
| Skin-fold thickness | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably no |
| **Non-fatal incidence of**: | | | | | | |
| Diabetes mellitus | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably no |
| Retinopathy | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably no |
| Kidney disease | ☐ Yes | ☐ No | ☐ Yes | ☐ No | ☐ Probably yes | ☐ Probably no |

** Either measured or self-reported*

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**Supplementary Appendix (contd.).** List of study acronyms

**AFTCAPS**, Air Force/Texas Coronary Atherosclerosis Prevention Study
**ALLHAT**, Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial
**ARIC**, Atherosclerosis Risk in Communities Study
**ATENA**, cohort of Progetto CUORE
**ATTICA**, ATTICA Study
**BHS**, Busselton Health Study
**BIP**, Bezafibrate Infarction Prevention study
**BRHS**, British Regional Heart Study
**BRUN**, Bruneck Study
**BUPA**, BUPA Study
**BWHHS**, British Women's Heart and Health Study
**CaPS**, Caerphilly Prospective Study
**CASTEL**, Cardiovascular Study in the Elderly
**CHARL**, Charleston Heart Study
**CHS1**, Original cohort of the Cardiovascular Health Study
**CHS2**, Supplemental African-American cohort of the Cardiovascular Health Study
**COPEN**, Copenhagen City Heart Study
**DISCO**, District of Sezze Chronic Disease Control Programme
**CUORE**, Progetto CUORE
**DRECE**, Diet and Risk of Cardiovascular Disease in Spain
**DUBBO**, Dubbo Study of the Elderly
**EAS**, Edinburgh Artery Study
**EMOFRI**, part of CUORE
**EPESEBOS**, The Established Populations for the Epidemiologic Study of the Elderly Studies, Boston
**EPESEIOW**, The Established Populations for the Epidemiologic Study of the Elderly Studies, Iowa
**EPESENCA**, The Established Populations for the Epidemiologic Study of the Elderly Studies, North Carolina
**EPESENHA**, The Established Populations for the Epidemiologic Study of the Elderly Studies, New Haven
**EPICNOR**, EPIC-Norfolk Study
**ESTHER**, Epidemiologische Studie zu Chancen der Verhütung, Früherkennung und Therapie chronischer Erkrankungen in der älteren Bevölkerung
**FIA**, First Myocardial Infarction in Northern Sweden study
**FINE-FIN**, Finland, Italy and Netherlands Elderly Study - Finland cohort
**FINE-IT**, Finland, Italy and Netherlands Elderly Study – Italian cohort
**FINRISK-92**, Finrisk Cohort 1992
**FINRISK-97**, Finrisk Cohort 1997
**FRAMOFF**, Framingham Offspring Study
**GOH**, The Glucose Intolerance, Obesity and Hypertension Study
**GOTO13**, Goteborg Study 1913
**GOTO33**, Göteborg 1933 Study
**GOTO43**, Göteborg 1943 Study
**GOTOW**, Population Study of Women in Gothenburg, Sweden
**GREPCO,** cohort of Risk Factors and Life Expectancy Pooling Project
**GRIPS**, Göttingen Risk Incidence and Prevalence Study
**HBS**, Helsinki Businessmen Study
**HELSINAG**, Helsinki Aging Study
**HISAYAMA,** Hisayama Study
**HONOL**, Honolulu Heart Program
**HOORN**, Hoorn Study
**HPFS**, Health Professionals Follow-up Study
**IKNS**, Ikawa, Kyowa, and Noichi Study
**ISRAEL**, Israeli Ischaemic Heart Disease Study
**KIHD**, Kuopio Ischaemic Heart Disease Study
**LASA**, Longitudinal Aging Study Amsterdam
**LEADER**, Lower Extremity Arterial Disease Event Reduction Trial
**MALMO**, Malmö Study
**MATISS-83**, cohort of Progetto CUORE
**MATISS-87**, cohort of Progetto CUORE
**MATISS-93**, cohort of Progetto CUORE
**MCVDRFP**, Monitoring of CVD Risk Factors Project
**MESA**, Multi-Ethnic Study of Atherosclerosis
**MICOL**, cohort of Risk Factors and Life Expectancy Pooling Project
**MOGERAUG1**, MONICA/KORA Augsburg Surveys S1
**MOGERAUG2**, MONICA/KORA Augsburg Surveys S2
**MOGERAUG3**, MONICA/KORA Augsburg Surveys S3
**MONFRI-86**, cohort of Progetto CUORE
**MONFRI-89**, cohort of Progetto CUORE
**MONFRI-94**, cohort of Progetto CUORE
**MORGEN**, Monitoring Project on Chronic Disease Risk Factors
**MOSWEGOT**, MONICA Göteborg Study
**MRCOLD**, MRC Study of Older People
**NCS 1, 2 and 3**, Norwegian Counties Studies
**NFR**, cohort of Risk Factors and Life Expectancy Pooling Project
**NHANES I**, First National Health and Nutrition Examination Survey
**NHANES III**, Third National Health and Nutrition Examination Survey
**NHS**, Nurses' Health Study
**NPHSII**, Northwick Park Heart Study II
**NSHS**, Nova Scotia Health Survey
**OSAKA**, Osaka Study
**OSLO**, Oslo Study
**PARIS1**, Paris Prospective Study I
**PRHHP**, Puerto Rico Heart Health Program
**PRIME**, Prospective Epidemiological Study of Myocardial Infarction
**PROCAM**, Prospective Cardiovascular Münster Study
**PROSPER**, Prospective Study of Pravastatin in the Elderly at Risk
**QUEBEC**, Quebec Cardiovascular Study
**RANCHO**, Rancho Bernardo Study

**REYK**, Reykjavik Study
**RIFLE**, Risk Factors and Life Expectancy Pooling Project
**ROTT**, The Rotterdam Study
**SHHEC**, Scottish Heart Health Extended Cohort
**SHS**, Strong Heart Study
**SPEED**, Speedwell Study
**TARFS**, Turkish Adult Risk Factor Study
**TROMSØ**, Tromsø Study
**ULSAM**, Uppsala Longitudinal Study of Adult Men
**USPHS**, US Physicians' Health Study
**VHMPP**, Vorarlberg Health Monitoring and Promotion Programme
**VITA**, Vicenza Thrombophilia and Athrosclerosis Project
**WHITE I**, Whitehall I Study
**WHITE II**, Whitehall II Study
**WHS**, Women's Health Study
**WOSCOPS**, West of Scotland Coronary Prevention Study
**ZARAGOZA**, Zaragoza study
**ZUTE**, Zutphen Elderly Study

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**Supplementary Appendix (contd.). Censoring and competing risks**

Participants contributed to analyses of mortality irrespective of the occurrence of previous non-fatal events. For each specific cause of death, participants were censored if: they were lost to follow-up, died from other causes, or reached the study's end of follow-up. HRs calculated in this manner for each cause of death are etiologically interpretable (Pintilie 2007). The statistical significance of each HR in a Cox regression model remains a reliable test of association, like a log rank test, even in the presence of competing risks (Freidlin & Korn, 2005).

The calculation of the risk of dying from each cause based on the estimated cause-specific HRs has to take into account the other causes, for example using cumulative incidence functions (Gooley et al, 1999). We confirm that our calculations of life expectancy with and without diabetes do take other causes into account. For all-cause mortality, there is no problem since there are no competing causes. For our calculation of the proportion of life expectancy lost through diabetes that is due to vascular, cancer and other causes, the separate causes of death are assumed to be independent. There is, however, no way to assess this assumption of independence from observed data (Tsiatis 2002). As the type of model presented by Fine & Gray (1999) allows those who have died of a competing cause to still be considered at risk of the cause of interest, we have opted not to use it here because it may not be a plausible model.

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