**Table 1: Baseline characteristics**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Men** | | **Women** | |
|  | **Type 2 diabetes n = 106,349** | **Without diabetes n = 245,525** | **Type 2 diabetes n = 108,626** | **Without diabetes n = 275,310** |
| Age, mean ± SD | 59.38 ± 12.77 | 60.91 ± 11.58 | 60.46 ± 14.72 | 61.83 ± 13.48 |
| Ethnicity   White  South Asian   Black  Mixed/Other   Unknown | 88,458 (83.18)  5,673 (5.33)  3,671 (3.45)  3,947 (3.71)  4,600 (4.33) | 219,636 (89.46) 4,531 (1.85) 3,971 (1.62) 4,582 (1.87) 12,805 (5.22) | 90,066 (82.91) 6,515 (6.00)  4,573 (4.21) 3,788 (3.49) 3,684 (3.39) | 246,641 (89.59) 5,754 (2.09) 5,231 (1.90) 5,256 (1.91) 12,428 (4.51) |
| IMD  1 (least deprived)  2  3   4  5 (most deprived) | 19,601 (18.43) 21,094 (19.83) 20,926 (19.68)  22,248 (20.92)  22,480 (21.14) | 53,980 (21.99)  54,343 (22.13)  49,266 (20.07)  45,388 (18.49)  42,548 (17.33) | 18,117 (16.68) 20,254 (18.65)  21,329 (19.64) 23,444 (21.58) 25,482 (23.46) | 56,937 (20.68) 59,138 (21.48)  54,383 (19.75) 53,356 (19.38)  51,496 (18.70) |
| Smoking status   Ever-smoker   Never-smoker | 61,127 (57.48)  45,222 (42.52) | 134,252 (54.68) 111,273 (45.32) | 46,235 (42.56) 62,391 (57.44) | 115,942 (42.11)  159,368 (57.89) |
| Alcohol intake  Current  Ex-drinker   Never | 79,734 (90.13)  941 (1.06)  7,792 (8.81) | 182,967 (91.82)  1,313 (0.66)  14,983 (7.52) | 74,651 (81.00) 749 (0.81)  16,762 (18.19) | 192,673 (84.12) 1,207 (0.53)  35,169 (15.35) |
| BMI (kg/m2) | 30.53 ± 5.79 | 26.40 ± 4.11 | 31.80 ± 7.33 | 26.30 ± 5.22 |
| Systolic blood pressure (mmHg) | 141.76 ± 18.07 | 135.78 ± 16.71 | 140.54 ± 19.45 | 134.46 ± 18.44 |
| Total cholesterol (mmol/l) | 4.91 ± 1.65 | 4.89 ± 1.33 | 5.00 ± 1.59 | 5.08 ± 1.46 |
| Anaemia | 2,727 (2.56) | 5,717 (2.33) | 8,155 (7.51) | 16,736 (6.08) |
| Asthma | 12,929 (12.16) | 26,668 (10.86) | 19,300 (17.77) | 35,958 (13.06) |
| Atrial fibrillation | 3,283 (3.09) | 5,807 (2.37) | 3,135 (2.89) | 4,577 (1.66) |
| Cancer | 8,668 (8.15) | 21,171 (8.62) | 11,976 (11.02) | 30,289 (11.00) |
| Chronic kidney disease | 11,179 (10.51) | 18,730 (7.63) | 20,062 (18.47) | 38,028 (13.81) |
| Chronic liver disease | 1,652 (1.55) | 1,597 (0.65) | 1,344 (1.24) | 1,446 (0.53) |
| COPD | 4,704 (4.42) | 10,527 (4.29) | 4,377 (4.03) | 9,451 (3.43) |
| Dementia | 492 (0.46) | 1,376 (0.56) | 898 (0.83) | 2,249 (0.82) |
| Depression | 13,392 (12.59) | 26,803 (10.92) | 25,055 (23.07) | 53,982 (19.61) |
| Hypertension | 48,622 (45.72) | 63,065 (25.69) | 55,889 (51.45) | 81,378 (29.56) |
| Osteoarthritis | 12,325 (11.59) | 23,799 (9.69) | 17,874 (16.45) | 35,485 (12.89) |
| Rheumatoid arthritis | 992 (0.93) | 2,291 (0.93) | 2,157 (1.99) | 5,467 (1.99) |
| Thyroid disorders | 2,761 (2.60) | 4,420 (1.80) | 13,558 (12.48) | 24,022 (8.73) |
| Antihypertensive drugs | 58,503 (55.01) | 88,388 (36.00) | 71,089 (65.44) | 122,131 (44.36) |
| Antiplatelet drugs | 19,658 (18.48) | 26,729 (10.89) | 20,019 (18.43) | 31,761 (11.54) |
| Digoxin | 1,820 (1.71) | 2,487 (1.01) | 2,213 (2.04) | 2,406 (0.87) |
| Lipid-lowering drugs | 28,790 (27.07) | 27,757 (11.31) | 27,892 (25.68) | 30,128 (10.94) |

BMI = body mass index, COPD = chronic obstructive pulmonary disease, IMD = index of multiple deprivation, SD = standard deviation.

Categorical variables are presented as number (proportion, %) and continuous variables as mean ± standard deviation.

Cohort of people without missing data on ethnicity, IMD, systolic BP, smoking status, BMI (Figure S1 and S2). Missing data for total cholesterol and alcohol intake are reported in Table S1.

**Table 2: Sex-specific incidence of heart failure in two time periods of diagnosis of type 2 diabetes (2000-2004 and 2005-2009)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | People with type 2 diabetes | | | | People without diabetes | | | |
| Period | Total events/people | Age-standardised rates per 1,000 person-years | Age-adjusted  IRR  (95% CI) | Maximally adjusted IRR  (95% CI) | Total events/people | Age-standardised rates per 1,000 person-years | Age-adjusted  IRR  (95% CI) | Maximally adjusted  IRR  (95% CI) |
| Ischaemic heart failure |  |  |  |  |  |  |  |  |
| Men  2000-2004   2005-2009  Women  2000-2004   2005-2009 | 559/42,196 656/64,153  419/42,433  404/66,193 | 1.25 (1.15-1.34)  1.10 (1.02-1.17)  0.68 (0.62-0.75)  0.50 (0.45-0.55) | REF  0.81 (0.73-0.91)  REF 0.68 (0.59-0.78) | REF 0.85 (0.73-0.99)  REF 0.75 (0.61-0.91) | 867/108,243 951/137,282  638/119,793 579/155,517 | 0.76 (0.71-0.81) 0.67 (0.63-0.71)  0.37 (0.34-0.40) 0.27 (0.25-0.30) | REF 0.93 (0.84-1.01)  REF 0.76 (0.68-0.85) | REF 0.85 (0.73-0.99)  REF  0.74 (0.61-0.89) |
| Non-ischaemic heart failure |  |  |  |  |  |  |  |  |
| Men  2000-2004   2005-2009  Women  2000-2004   2005-2009 | 1,243/42,196 1,856/64,153  1,386/42,433 1,873/66,193 | 2.43 (2.30-2.55) 2.42 (2.30-2.54)  1.90 (1.80-2.00) 1.84 (1.75-1.94) | REF  1.03 (0.96-1.11)  REF 0.95 (0.88-1.02) | REF  1.03 (0.93-1.13)  REF 0.99 (0.90-1.09) | 2,264/108,243 2,636/137,282  2,401/119,793 2,842/155,517 | 1.58 (1.51-1.65) 1.58 (1.51-1.64)  1.15 (1.10-1.20)  1.12 (1.07-1.17) | REF 0.98 (0.93-1.04)  REF  0.99 (0.94-1.04) | REF  1.00 (0.91-1.09)  REF  0.98 (0.89-1.08) |

Abbreviations: IRR = incidence rate ratio, REF = reference group, 95% CI = 95% confidence intervals.

Age-standardised at mean age of the total population (60 years old).

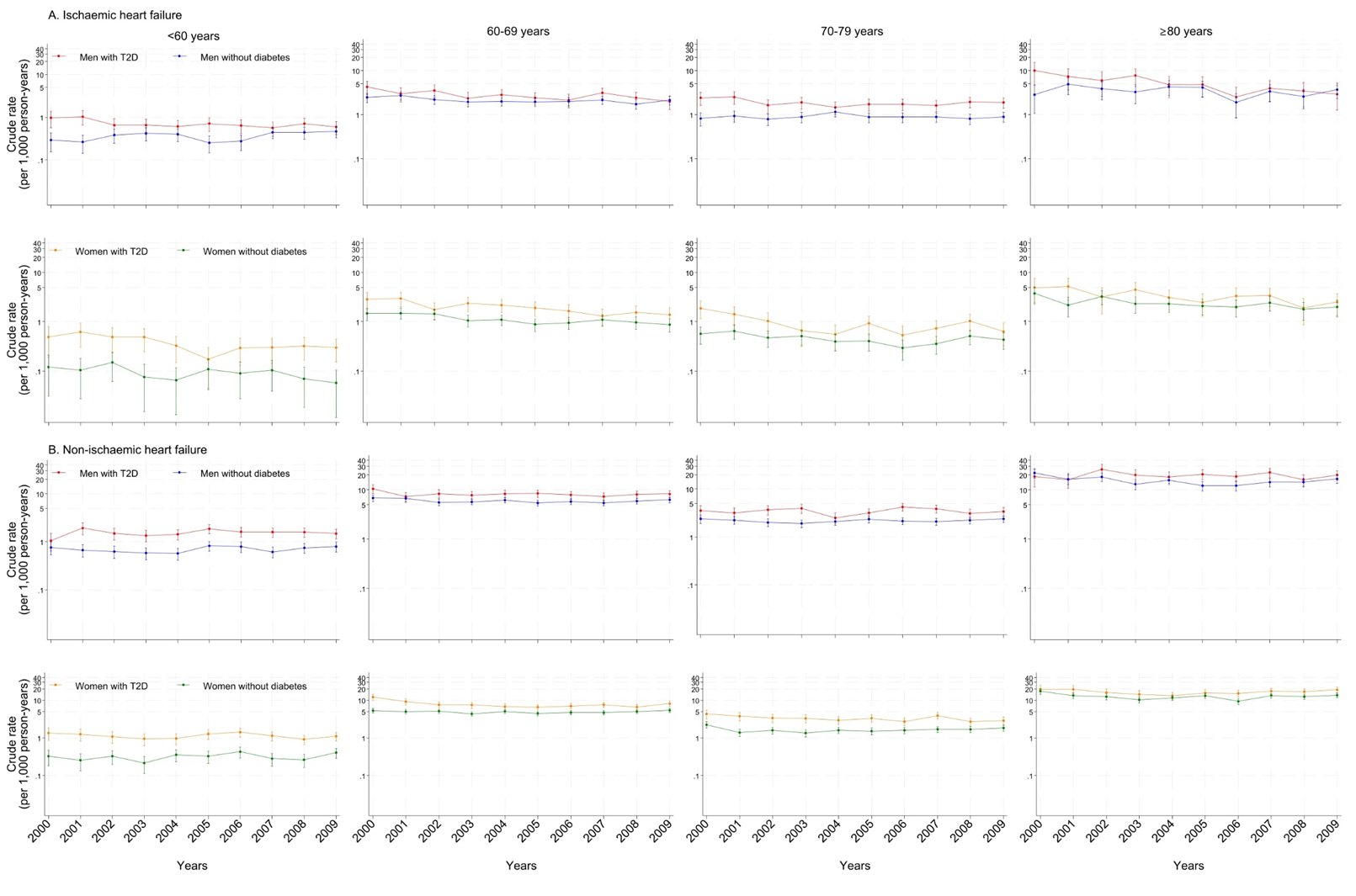
Maximally-adjusted model included: age, index of multiple deprivation, ethnicity, smoking, alcohol intake status, comorbidities (anaemia, asthma, atrial fibrillation, cancer, chronic kidney disease, chronic liver disease, chronic obstructive pulmonary disease, dementia, depression, hypertension, osteoarthritis, rheumatoid arthritis, thyroid disorders), body mass index, systolic blood pressure, total cholesterol level and prescriptions (antihypertensive medications, antiplatelets medications, digoxin, and lipid-lowering medications).

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Description automatically generated with medium confidenceFigure 1: Sex-stratified age-standardised 10-year incident rates of heart failure by year at type 2 diabetes diagnosis and diabetes status**

Abbreviations: T2D = type 2 diabetes. Age-standardised rates at mean total population age (60 years). Bars indicate 95% confidence interval.

**Figure 2: Sex-stratified crude 10-year incident rates of heart failure by year at type 2 diabetes diagnosis, age and diabetes status**



Abbreviations: T2D = type 2 diabetes. Bars indicate 95% confidence interval.