SUPPLEMENTARY MATERIAL

Sex differences in risk of incident micro and macrovascular complications: a population-based data-linkage study among 25, 713 people with diabetes.

Detailed information about linked administrative datasets and data linkage procedures.

For this study we used data from participants' baseline questionnaires that were linked to their corresponding medical services claims (medicare benefits schedule, MBS), prescription medication (pharmaceutical benefits schedule, PBS), hospital admission (admitted patient data collection, APDC) and death registry data collections (registry of Births Deaths and Marriages, RBDM). The MBS and PBS data were supplied by Services Australia, an agency of the Australian government responsible for the delivery of government payments and services. Medicare is a universal healthcare system that provides Government subsidies for out-of-hospital health care services, tests, and interventions. The MBS is a listing of the Medicare health care services subsidised by the Australian federal government. The PBS claims data lists all the medicines dispensed to patients subsidised by the Australian government. Linkage of the 45 and Up cohort data to the MBS and PBS data is facilitated by the Sax Institute using a unique identifier provided by Services Australia. The NSW APDC included records of all admitted patient services provided by NSW Public and Private Hospitals. The APDC and the RBDM death registrations were also linked, and this was conducted by the NSW Centre for Health Record Linkage (CHeReL). CHeReL uses a probabilistic procedure to link records, in which records with an uncertain probability of being true matches are checked by hand. Its current estimated false positive rate is 0.5% (http://www.cherel.org.au/). The Sax Institute's Secure Unified Research Environment (SURE) provided secure data storage and access.

Identification of diabetes cases by data source

Self-report

The question in the baseline, SEEF and follow-up questionnaires used to ascertain self-reported diabetes cases was: “has a doctor EVER told you that you have diabetes”.

Medicare Benefit Schedule

Potential diabetes cases were identified by claims for MBS items that can only be claimed by people who have been diagnosed with diabetes. These included pathology items for HbA1c (66551) and fructosamine (66557); items for completion of an Annual Cycle of Care (ACOC) (2517, 2518 2517, 2518, 2521, 2522, 2525, 2526, 2620, 2622, 2624, 2631, 2633, 2635); an item for a diabetes eye examination with an optometrist (10951) and consultations with allied health professionals, including diabetes educators, dietitians and exercise physiologists (81305, 81120, 81125, 81100, 81105, 81110, 81115). Of note, we only included individual or group allied health consultations specific for people with type 2 diabetes or those with a diabetes educator as the other allied health item numbers can be claimed by people with chronic diseases other than diabetes who are managed by a general practitioner chronic disease management plan.

Pharmaceutical Benefit Scheme

Dispensation of medications used for the management of diabetes, including ‘Insulin and other analogues (A10A)’ and ‘Glucose lowering medications (A10B)’ were used to identify potential diabetes cases.

NSW Admitted Patient Data Collection

Hospital admissions which corresponded to International Classification of Disease (ICD-10-AM) diagnostic codes for 'type 1', 'type 2', 'other' or 'unspecified' diabetes (E10, E11, E13, E14, respectively) were used to identify potential diabetes cases.

'*Uncertain diabetes' cases*

If a person was identified as taking metformin only they also had to be identified in at least one other data source (i.e. self-report, MBS or APDC data) to be classified as a diabetes case. If they were not identified in another data source, they were classified as an uncertain diabetes case. Of those not identified in the PBS dataset as taking insulin or any oral glucose lowering medication, to be classified as a diabetes case they had to be identified at least twice across or within the MBS or APDC data sources, or via self-report in either the SEEF or follow-up surveys. Those who were only identified once across these data sources were classified as an 'uncertain diabetes' case. Uncertain diabetes cases were excluded from the study.

Identification of diabetes complications

Diabetes-related complications were primarily ascertained from hospital admission records (APDC) using principal and additional ICD-10-AM diagnosis or Australian Classification of Healthcare Interventions (ACHI) procedure codes. As not all diabetes-related complications included in this analysis require hospital admission, we also included out-of-hospital treatment for complications such as home dialysis for chronic kidney disease, or retinal laser. This was identified using relevant MBS treatment items.

Supplementary Table 1: Description, data sources, code type and code lists used to identify treatment and hospitalisation for diabetes-related complications

Diabetes-related complication category	Data source	Code type	Code list	
Hospitalisation for cardiovascular disease			Any codes listed in this box below	
Diabetic cardiomyopathy	APDC	ICD-10-AM Dx	E10.53	Type 1 diabetes mellitus with diabetic cardiomyopathy
			E11.53	Type 2 diabetes mellitus with diabetic cardiomyopathy
			E13.53	Other specified diabetes mellitus with diabetic cardiomyopathy
			E14.53	Unspecified diabetes mellitus with diabetic cardiomyopathy
Ischaemic heart disease: Myocardial infarct	APDC	ICD-10-AM Dx	I21	Acute myocardial infarction
			I22	Subsequent myocardial infarction
Ischaemic heart disease: Other coronary heart diseases	APDC	ICD-10-AM Dx	I20	Angina pectoris
			I23	Certain current complications following acute myocardial infarction

			I24	Other acute ischaemic heart diseases
			I25	Chronic ischaemic heart disease
Transient ischemic attack (TIA)	APDC	ICD-10-AM Dx	G45	Transient cerebral ischaemic attacks and related syndromes
Stroke	APDC	ICD-10-AM Dx	I60	Subarachnoid haemorrhage
			I61	Intracerebral haemorrhage
			I63	Cerebral infarction
			I64	Stroke, not specified as haemorrhage or infarction
Heart failure	APDC	ICD-10-AM Dx	I50	Heart failure
Hospitalisation or treatment for eye complication			Any codes listed in this box below	
Diabetes with any ophthalmic complication	APDC	ICD-10-AM Dx	E10.3	Type 1 diabetes mellitus with ophthalmic complication
			E11.3	Type 2 diabetes mellitus with ophthalmic complication
			E13.3	Other specified diabetes mellitus with ophthalmic complication
			E14.3	Unspecified diabetes mellitus with ophthalmic complication
Cataract	APDC	ICD-10-AM Dx	E10.36	Type 1 diabetes mellitus with diabetic cataract
			E11.36	Type 2 diabetes mellitus with diabetic cataract
			E13.36	Other specified diabetes mellitus with diabetic cataract
			E14.36	Unspecified diabetes mellitus with diabetic cataract
	MBS	MBS item number	42698	Lens extraction
			42701	Intraocular lens, insertion of
			42702	Lens extraction and insertion of intraocular lens

			42703	Intraocular lens or iris prosthesis, insertion of, into the posterior chamber with fixation to the iris or sclera
			42704	Intraocular lens, removal or repositioning of by open operation
			42705	Lens extraction and insertion of intraocular lens
			42707	Intraocular lens removal of and replacement with a different lens
			42710	Intraocular lens, removal of, and replacement with a lens inserted into the posterior chamber and fixated to the iris or sclera
			42713	Iris suturing, McCannell technique or similar, for fixation of intraocular lens or repair of iris defect
			42716	Cataract, juvenile, removal of, including subsequent needlings
	APDC	ACHI procedure	193	Insertion of intraocular lens prosthesis
			194	Replacement or removal of intraocular lens
			200	Extraction of crystalline lens
Diabetic retinopathy	APDC	ICD-10-AM Dx	E10.31	Type 1 diabetes mellitus with background retinopathy
			E10.32	Type 1 diabetes mellitus with preproliferative retinopathy
			E10.33	Type 1 diabetes mellitus with proliferative retinopathy
			E10.34	Type 1 diabetes mellitus with other retinopathy
			E11.31	Type 2 diabetes mellitus with background retinopathy
			E11.32	Type 2 diabetes mellitus with preproliferative retinopathy
			E11.33	Type 2 diabetes mellitus with proliferative retinopathy
			E11.34	Type 2 diabetes mellitus with other retinopathy

			E13.31	Other specified diabetes mellitus with background retinopathy
			E13.32	Other specified diabetes mellitus with preproliferative retinopathy
			E13.33	Other specified diabetes mellitus with proliferative retinopathy
			E13.34	Other specified diabetes mellitus with other retinopathy
			E13.41	Unspecified diabetes mellitus with background retinopathy
			E13.42	Unspecified diabetes mellitus with preproliferative retinopathy
			E13.43	Unspecified diabetes mellitus with proliferative retinopathy
			E13.44	Unspecified diabetes mellitus with other retinopathy
Vitreous haemorrhage	MBS	MBS item number	42725	Victrectomy via pars plana sclerotomy
	APDC	ACHI procedure	206	Destruction procedures on aqueous or vitreous
			207	Vitrectomy
Retinal lesion	MBS	MBS item number	42809	Retina, photocoagulation of
			42738	Paracentesis of anterior chamber or vitreous cavity, or both
			42739	Paracentesis of anterior chamber or vitreous cavity or both
			42740	Paracentesis of anterior chamber or vitreous cavity or both
	APDC	ACHI procedure	211	Destruction procedures on retina, choroid or posterior chamber
Retinal detachment	MBS	MBS item number	42773	Detached retina, pneumatic retinopexy for
			42776	Detached retina, buckling or resection operation for
			42779	Detached retina, revision of scleral buckling operation for
	APDC	ACHI procedure	212	Repair of retinal detachment

			213	Revision procedures on retina, choroid or posterior chamber
Hospitalisation or treatment for lower limb complication			Any codes listed in this box below	
Peripheral neuropathy	APDC	ICD-10-AM Dx	E10.42	Type 1 diabetes mellitus with polyneuropathy
			E11.42	Type 2 diabetes mellitus with polyneuropathy
			E13.42	Other specified diabetes mellitus with polyneuropathy
			E14.42	Unspecified diabetes mellitus with polyneuropathy
Ulcer	APDC	ICD-10-AM Dx	E10.73	Type 1 diabetes mellitus with foot ulcer due to multiple causes
			E11.73	Type 2 diabetes mellitus with foot ulcer due to multiple causes
			E13.73	Other specified diabetes mellitus with foot ulcer due to multiple causes
			E14.73	Unspecified diabetes mellitus with foot ulcer due to multiple causes
			L97	Ulcer of lower limb, not elsewhere classified
Cellulitis (toe, foot or lower limb)	APDC	ICD-10-AM Dx	L03.02	Cellulitis of toe
			L03.11	Cellulitis of lower limb
			L03.13	Cellulitis of lower limb
			L03.14	Cellulitis of foot
Charcot toe	APDC	ICD-10-AM Dx	M14.6	Neuropathic arthropathy
Osteomyelitis	APDC	ICD-10-AM Dx	M86.17	Other acute osteomyelitis, ankle and foot
			M86.27	Subacute osteomyelitis, ankle and foot
			M86.47	Chronic osteomyelitis with draining sinus, ankle and foot
			M86.67	Other chronic osteomyelitis, ankle and foot

			M86.97	Unspecified osteomyelitis, ankle and foot
Peripheral vascular disease	APDC	ICD-10-AM Dx	E10.51	Type 1 diabetes mellitus with peripheral angiopathy, without gangrene
			E10.52	Type 1 diabetes mellitus with peripheral angiopathy, with gangrene
			E11.51	Type 2 diabetes mellitus with peripheral angiopathy, without gangrene
			E11.52	Type 2 diabetes mellitus with peripheral angiopathy, with gangrene
			E13.51	Other specified diabetes mellitus with peripheral angiopathy, without gangrene
			E13.52	Other specified diabetes mellitus with peripheral angiopathy,with gangrene
			E14.51	Unspecified diabetes mellitus with peripheral angiopathy, without gangrene
			E14.52	Unspecified diabetes mellitus with peripheral angiopathy, with gangrene
			I70.2	Atherosclerosis of arteries of extremities
			I73.8	Other specified peripheral vascular disease
			I73.9	Peripheral vascular disease, unspecified
Amputation:				
Minor (foot/ankle)	APDC	ACHI procedure	1533	Amputation of ankle or foot
Major (at, below or above knee)	APDC	ACHI procedure	1505	Other excision procedures on knee or leg
			1484	Amputation of pelvis or hip
Hospitalisation or treatment for kidney complication			Any codes listed in this box below	
Diabetes with kidney complication	APDC	ICD-10-AM Dx	E10.2	Type 1 diabetes mellitus with kidney complication
			E11.2	Type 2 diabetes mellitus with kidney complication

			E13.2	Other specified diabetes mellitus with kidney complication
			E14.2	Unspecified diabetes mellitus with kidney complication
Acute kidney failure	APDC	ICD-10-AM Dx	N17	Acute kidney failure
Chronic kidney disease	APDC	ICD-10-AM Dx	N18	Chronic kidney disease
Unspecified kidney failure	APDC	ICD-10-AM Dx	N19	Unspecified kidney failure
Dialysis				
Home	MBS	MBS item number	13104	Planning and management of home dialysis (either haemodialysis or peritoneal dialysis)
Hospital	APDC	ICD-10-AM Dx	Z49	Care involving dialysis
	APDC	ACHI procedure	13100-00	Haemodialysis
			13100-06	Peritoneal dialysis, short term
			13100-07	Intermittent peritoneal dialysis, long term
			13100-08	Continuous peritoneal dialysis, long term
			13104-00	Education and training for home dialysis
			13109-01	Replacement of indwelling peritoneal catheter for peritoneal dialysis
			13110-00	Removal of indwelling peritoneal catheter for dialysis
			13112-00	Establishment of peritoneal dialysis by abdominal puncture and insertion of temporary catheter
			90351-00	Removal of temporary catheter for peritoneal dialysis
			90352-00	Education and training for home dialysis

			90353-00	Test for haemodialysis adequacy
			90353-01	Test for peritoneal dialysis adequacy
Kidney transplant	APDC	ACHI procedure	36503-00	Kidney transplantation
			36503-01	Autotransplantation of kidney

Supplementary Table 2. Questions and response options used in the 45 and Up Study to assess sociodemographic, lifestyle and health factors

Factor	Question	Response options	Response categories
Age	What is your date of birth?	Day/month/year	1. 45-59 2. 60-74 3. 75+ years
Household income per year	What is your usual yearly HOUSEHOLD income before tax, from all sources? (please include benefits, pensions, superannuation, etc)	Less than $5,000 per year $5,000 - $9,999 per year $10,000 - $19,999 per year $20,000 - $29,999 per year $30,000 - $39,999 per year $40,000 - $49,999 per year $50,000 - $69,999 per year $70,000 or more per year I would rather not answer this question	1. <$30,000 2. $30,000 to <$70,0000 3. $70,000+ Australian Dollars AUD per year
Highest education	What is the highest qualification you have completed?	No school certificate or other qualifications School or intermediate certificate (or equivalent) Higher school or leaving certificate (or equivalent) Trade/apprenticeship (e.g., hairdresser, chef) Certificate/diploma (e.g., child care, technician) University degree or higher	1. up to school or intermediate certificate 2. higher school to diploma 3. university degree or higher
Language other than English spoken at home	Do you speak a language other than English at home?	Yes No	1. Yes 2. No
Country of birth	In which country were you born?	Australia UK Greece Philippines Poland Ireland New Zealand Netherlands Italy Germany	1. Asia (including the Indian sub-continent), Middle East, North Africa, Southern Europe 2. Australia 3. Other

		Vietnam China Lebanon Malta Other (please specify)	
Private health insurance	Which of the following do you have? (excluding Medicare)	Private health insurance – with extras Private health insurance – without extras Department of Veterans' Affairs white or gold card Health care concession card None of these	1. Yes 2. No
Body weight (BMI, kg/m^2)	How tall are you without shoes? (please give to the nearest cm or inch)	____cm OR ____ft ____inches	1. underweight <18.5 2. normal 18.5 - < 25.0 3. overweight 25.0 - < 30.0 4. obese ≥30 kg/m^2
	About how much do you weigh?	____kg OR ____stone _____lbs	
Smoking status	Are you a regular smoker now?	Yes/No	1. current smoker 2. past smoker 3. never smoked
	Have you ever been a regular smoker?	Yes/No	
Physical activity	How many TIMES did you do each of these activities LAST WEEK? -Walking continuously, for at least 10 minutes (for recreation or exercise or to get to or from places) -Vigorous physical activity (that made you breathe harder or puff and pant, like jogging, cycling, aerobics, competitive tennis, but not household chores or gardening) -Moderate physical activity (like gentle swimming, social tennis, vigorous gardening or work around the house)	__times in the last week (for walking, vigorous physical activity and moderate physical activity)	assessed in minutes of moderate to vigorous physical activity (MVPA) using the Active Australia questionnaire [12], 1. 0 – 149 2. ≥ 150 mins
	If you add up all the time you spent doing each activity LAST WEEK, how much time did you spend ALTOGETHER doing each type of activity?	__hours:__minutes (for walking, vigorous physical activity and moderate physical activity)	
Meets fruit and veg requirements	About how many serves of fruit do you usually have each day? A serve is 1 medium piece or 2 small pieces or 1 cup diced or canned fruit pieces	__number of serves of fruit each day	meets fruit and vegetable requirements, yes: ≥2 serves of fruit, ≥5 serves of vegetables per day

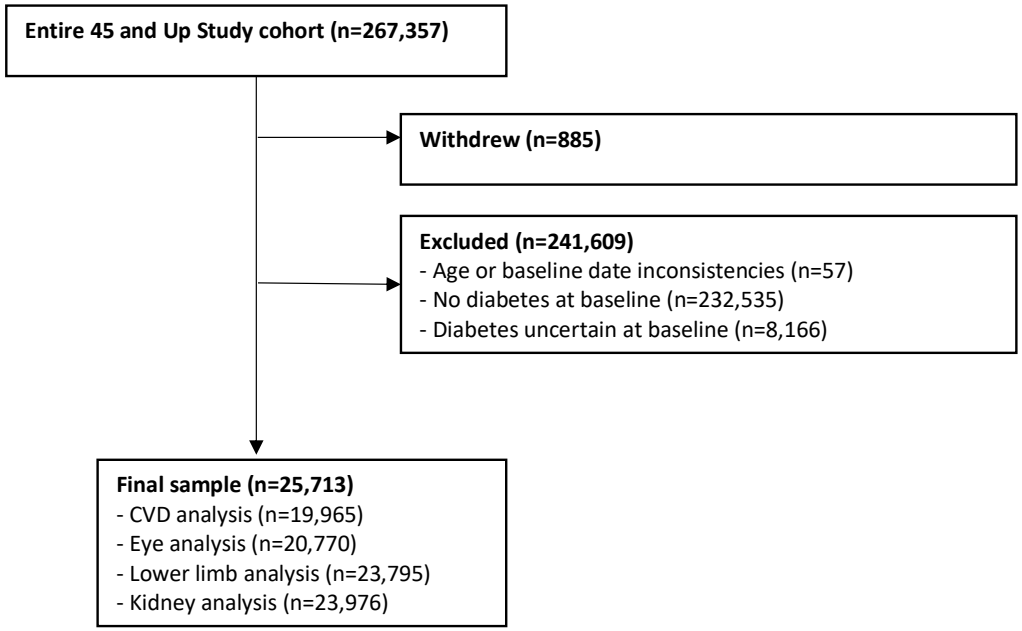
	About how many serves of vegetables do you usually eat each day? A serve is half a cup of cooked vegetables or one cup of salad (please include potatoes and put "0" is less than one a day)	__number of serves of cooked vegetables each day __number of serves of raw vegetables each day (e.g. salad)	
Family history of diabetes	Have your mother, father, brother(s) or sister(s) ever had diabetes	Mother Father Brother/sister	1. Yes 2. No
Ever told by a doctor that you have heart disease	Has a doctor EVER told you that you have heart disease	Yes ____Age when condition was first found Type of heart disease (please describe)_____	1. Yes 2. No
Ever told by a doctor that you have had a stroke	Has a doctor EVER told you that you have stroke	Yes ____Age when condition was first found	1. Yes 2. No
Ever told by a doctor that you have high blood pressure	Has a doctor EVER told you that you have high blood pressure – when pregnant	Yes ____Age when condition was first found	1. Yes 2. No
	Has a doctor EVER told you that you have high blood pressure – when not pregnant	Yes ____Age when condition was first found	1. Yes 2. No
Takes blood pressure medication	Have you taken any medications, vitamins or supplements for most of the last 4 weeks, including HRT and the pill?	Yes/No If yes, was it: Avapro, Karvea Coversyl, Coversyl Plus Cardizem, Vasocordol Norvasc Tritace Noten, Tenormin *atenolol*	1. Yes 2. No
Treated for high cholesterol in last month	In the last month have you been treated for high blood cholesterol?	Yes ____Age started treatment	1. Yes 2. No

Supplementary Table 3. Baseline Socio-demographic, health and behavioural characteristics by duration of diabetes missingness (n=25 713)

		Not Missing	**Missing**	
		N=19 277	**N=6 436**	**Total**
Age Group	45-59	5 150 (26.7)	1 278 (19.9)	6 428 (25)
	60-75	9 316 (48.3)	2 918 (45.3)	12 234 (47.6)
	75+	4 811 (25)	2 240 (34.8)	7 051 (27.4)
Sex	Male	11 258 (58.4)	3 439 (53.4)	14 697 (57.2)
	Female	8 019 (41.6)	2 997 (46.6)	11 016 (42.8)
Index of socio-economic disadvantage, quintile	1st Quintile (most disadvantaged)	5 353 (27.8)	1 953 (30.3)	7306 (28.4)
	2nd Quintile	4 547 (23.6)	1 427 (22.2)	5974 (23.2)
	3rd Quintile	3 470 (18)	1 134 (17.6)	4604 (17.9)
	4th Quintile	2 763 (14.3)	866 (13.5)	3629 (14.1)
	5th Quintile	2 693 (14)	925 (14.4)	3618 (14.1)
	Missing	451 (2.3)	131 (2)	582 (2.3)
Household income per year	<30 000	8 663 (44.9)	2 638 (41)	11301 (44)
	30 000-<70 000	4 056 (21)	994 (15.4)	5050 (19.6)
	70 000+	2 324 (12.1)	590 (9.2)	2914 (11.3)
	Missing	4 234 (22)	2 214 (34.4)	6448 (25.1)
Highest education	Up to School or Intermediate Certificate	8 113 (42.1)	2 979 (46.3)	11092 (43.1)
	Higher School to Diploma	7 779 (40.4)	2 328 (36.2)	10107 (39.3)
	Degree or higher	2 978 (15.4)	840 (13.1)	3818 (14.8)

	Missing	407 (2.1)	289 (4.5)	696 (2.7)
Language other than English spoken at home	No	16 851 (87.4)	5 389 (83.7)	22 240 (86.5)
	Yes	2 426 (12.6)	1 047 (16.3)	3 473 (13.5)
	Missing			
Country of Birth	Australia	13 891 (72.1)	4 435 (68.9)	18 326 (71.3)
	Asia/MidEast/SouthEurope/NorthAfrica	1 605 (8.3)	660 (10.3)	2 265 (8.8)
	Other	3 619 (18.8)	1 226 (19)	4 845 (18.8)
	Missing	162 (0.8)	115 (1.8)	277 (1.1)
Private health insurance	No	8 231 (42.7)	2 863 (44.5)	11 094 (43.1)
	Yes	10 568 (54.8)	3 319 (51.6)	13 887 (54)
	Missing	478 (2.5)	254 (3.9)	732 (2.8)
Body weight (BMI, kg/m²)	Underweight/Normal	3 544 (18.4)	1 373 (21.3)	4 917 (19.1)
	Overweight	6 589 (34.2)	2 160 (33.6)	8 749 (34)
	Obese	7 851 (40.7)	2 222 (34.5)	10 073 (39.2)
	Missing	1 293 (6.7)	681 (10.6)	1 974 (7.7)
Family hx of diabetes	No	10 235 (53.1)	4 055 (63)	14 290 (55.6)
	Yes	9 042 (46.9)	2 381 (37)	11 423 (44.4)
Ever told by a doctor you have high blood pressure	No	7 243 (37.6)	3 127 (48.6)	10 370 (40.3)
	Yes	12 034 (62.4)	3 309 (51.4)	15 343 (59.7)
Takes blood pressure medication	No	9 277 (48.1)	3 344 (52)	12 621 (49.1)
	Yes	10 000 (51.9)	3 092 (48)	13 092 (50.9)
	No	12 860 (66.7)	4 834 (75.1)	17 694 (68.8)

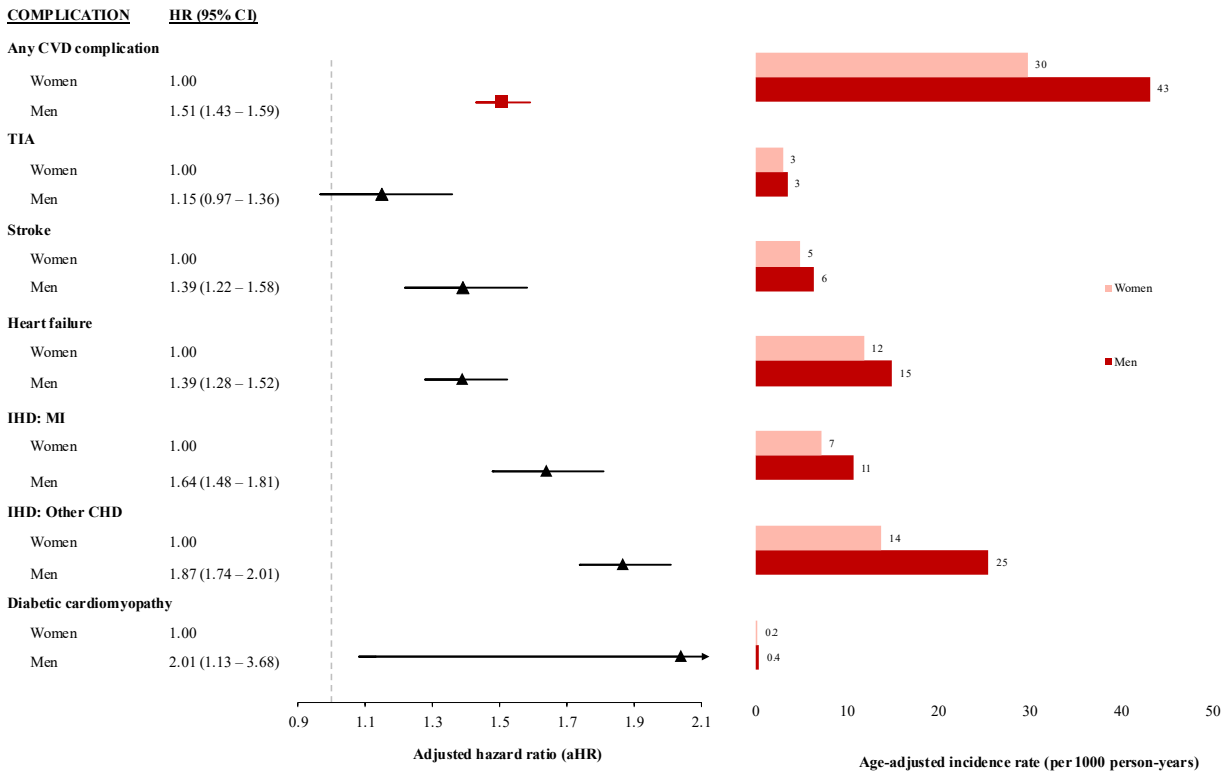
Treated for high cholesterol in last month	Yes	6 417 (33.3)	1 602 (24.9)	8 019 (31.2)
Ever told by a doctor you have heart disease	No	14 624 (75.9)	4 915 (76.4)	19 539 (76)
	Yes	4 653 (24.1)	1 521 (23.6)	6 174 (24)
Ever told by a doctor you have had a stroke	No	17 983 (93.3)	5 902 (91.7)	23 885 (92.9)
	Yes	1 294 (6.7)	534 (8.3)	1 828 (7.1)



Supplementary Figure 1. Participant selection flow diagram

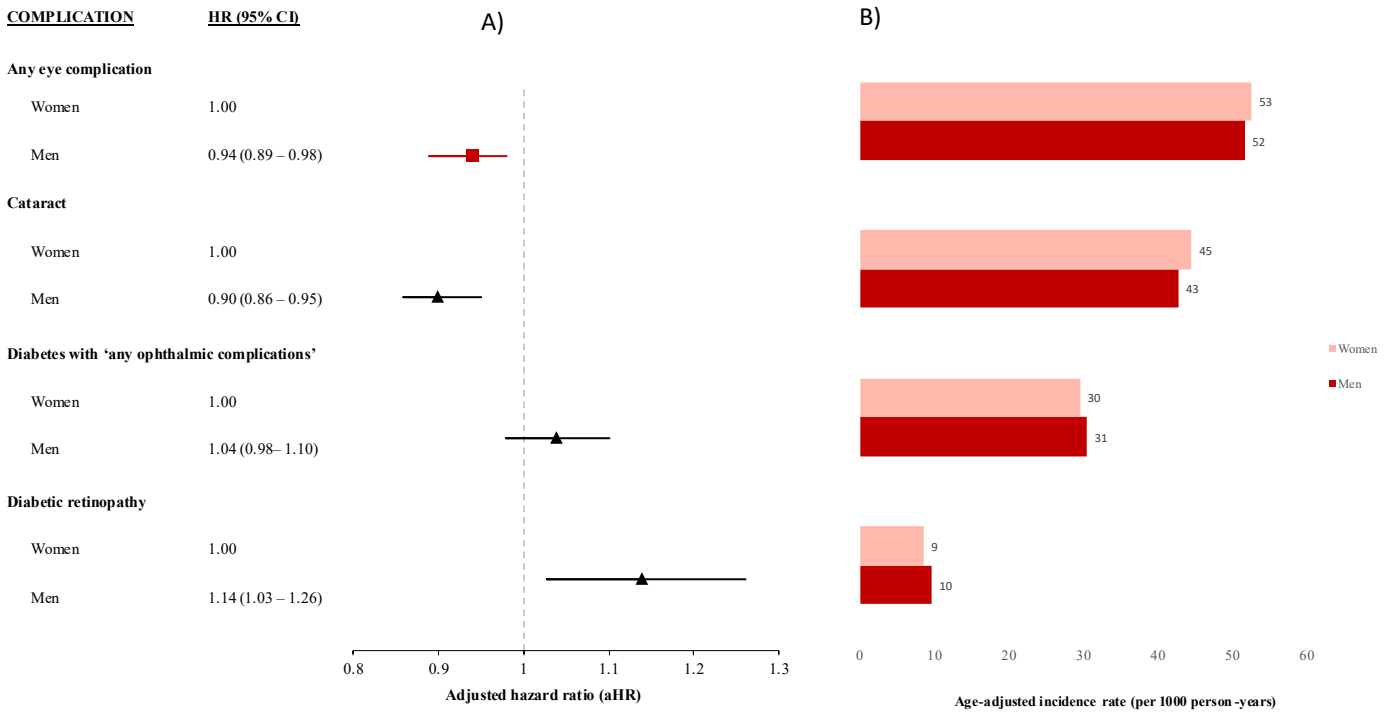
DVA, Department of Veteran Affairs.

Supplementary Figure 2. Adjusted hazards ratio (aHR) (95% CI) for association between sex and incident CVD complication subgroups, and age-adjusted incidence rates per 1000 person-years.



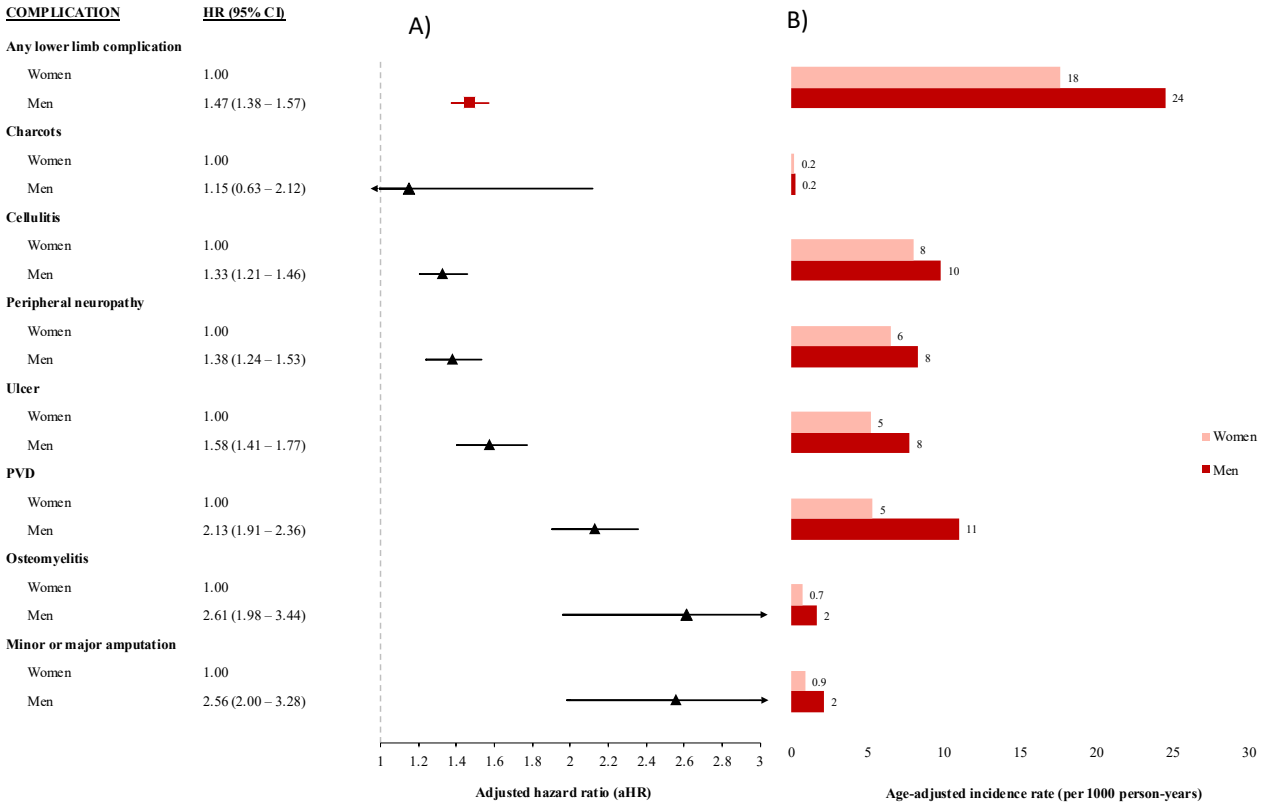
Hazards ratios are calculated from Cox proportional hazard models based on multiple imputed data adjusted for age, socio-demographics (education, SEIFA, income, language, country of birth, private insurance), lifestyle (BMI, smoking, diet and physical activity) and health history (family history of diabetes, cardiovascular disease, blood pressure and treatment for high cholesterol).

Supplementary Figure 3. A) Adjusted hazards ratio (aHR) (95% CI) for association between sex and incident eye complication subgroups, and B) age-adjusted incidence rates per 1000 person-years.



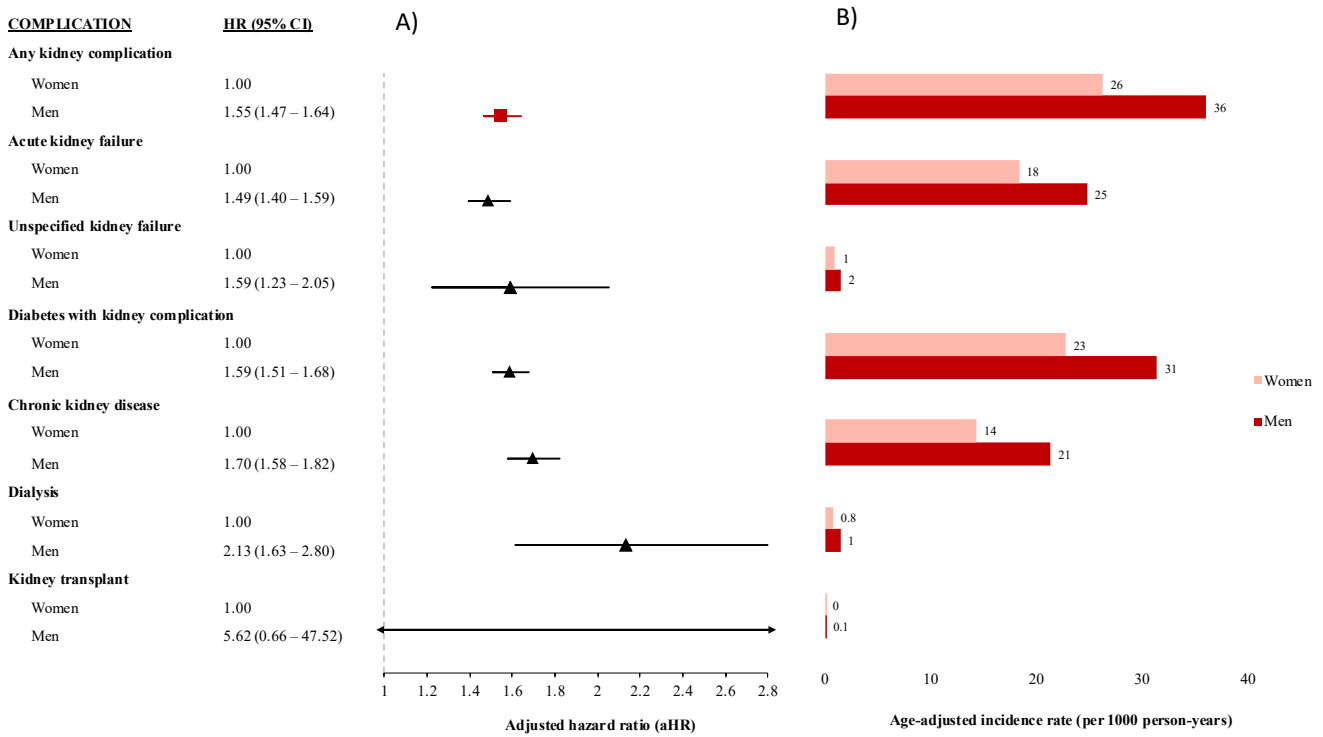
Hazards ratios are calculated from Cox proportional hazard models based on multiple imputed data adjusted for age, socio-demographics (education, SEIFA, income, language, country of birth, private insurance), lifestyle (BMI, smoking, diet and physical activity) and health history (family history of diabetes, cardiovascular disease, blood pressure and treatment for high cholesterol).

Supplementary Figure 4. A) Adjusted hazards ratio (aHR) (95% CI) for association between sex and incident lower limb complication subgroups, and B) age-adjusted incidence rates per 1000 person-years.



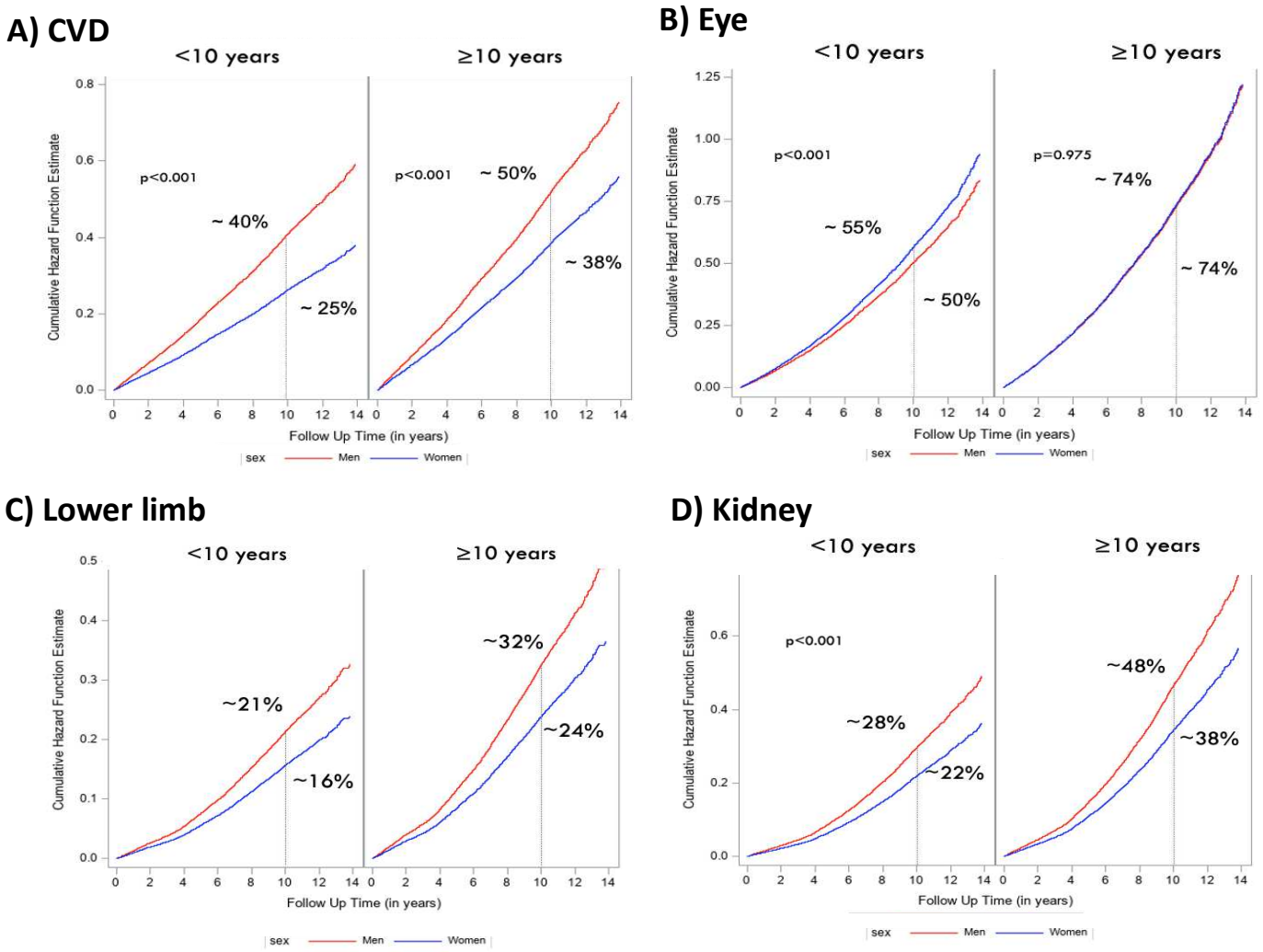
Hazards ratios are calculated from Cox proportional hazard models based on multiple imputed data adjusted for age, socio-demographics (education, SEIFA, income, language, country of birth, private insurance), lifestyle (BMI, smoking, diet and physical activity) and health history (family history of diabetes, cardiovascular disease, blood pressure and treatment for high cholesterol).

Supplementary Figure 5. A) Adjusted hazards ratio (aHR) (95% CI) for association between sex and incident kidney complication subgroups, and B) age-adjusted incidence rates per 1000 person-years.



Hazards ratios are calculated from Cox proportional hazard models based on multiple imputed data adjusted for age, socio-demographics (education, SEIFA, income, language, country of birth, private insurance), lifestyle (BMI, smoking, diet and physical activity) and health history (family history of diabetes, cardiovascular disease, blood pressure and treatment for high cholesterol).

Supplementary Figure 6. Hazard function survival curves by sex and duration of diabetes at baseline for each complication group; A) CVD complications, B) eye complications, C) lower limb complications, and D) kidney complications. P-values in the figures represents the results for the log-rank test.



Supplementary Table 4. Results from cox proportional hazards model exploring the relationship between sex and incident diabetes-related complications by group and subgroup, stratified by duration of diabetes. (Imputed data, fully adjusted model[1]).

	Male vs Female					
	Imputed					
Duration of Diabetes	**Missing (n=6 436)**		**Less than 10 years s baseline (n=11 211)**		**Greater than or equal to 10 years at baseline (n=8 066)**	
	Unadjusted	**Adjusted**	**Unadjusted**	**Adjusted**	**Unadjusted**	**Adjusted**
CVD complications	1.31 (1.19 - 1.45)	1.39 (1.25 - 1.54)	1.55 (1.43 - 1.67)	1.67 (1.53 - 1.82)	1.42 (1.31 - 1.55)	1.37 (1.25 - 1.50)
Diabetic cardiomyopathy	5.21 (1.14 - 23.78)	4.95 (0.98 - 25.0)	2.48 (0.89 - 6.90)	3.10 (1.04 - 9.23)	1.28 (0.60 - 2.7)	1.17 (0.52 - 2.61)
IHD:MI	1.43 (1.19 - 1.73)	1.60 (1.31 - 1.95)	1.60 (1.37 - 1.88)	1.78 (1.50 - 2.11)	1.40 (1.20 - 1.64)	1.46 (1.24 - 1.73)
IHD: Other CHD	1.87 (1.62 - 2.16)	1.96 (1.68 - 2.28)	1.99 (1.79 - 2.22)	2.08 (1.86 - 2.33)	1.61 (1.44 - 1.81)	1.53 (1.35 - 1.73)
TIA	0.96 (0.71 - 1.30)	0.98 (0.71 - 1.37)	1.28 (0.99 - 1.64)	1.31 (1.00 - 1.73)	1.20 (0.92 - 1.56)	1.12 (0.84 - 1.49)
Stroke	1.03 (0.82 - 1.29)	1.17 (0.91 - 1.49)	1.47 (1.22 - 1.78)	1.58 (1.28 - 1.95)	1.41 (1.15 - 1.73)	1.34 (1.07 - 1.67)
Heart Failure	1.20 (1.03 - 1.39)	1.29 (1.10 - 1.51)	1.23 (1.08 - 1.40)	1.49 (1.30 - 1.72)	1.34 (1.18 - 1.52)	1.33 (1.16 - 1.53)
Eye complications	0.96 (0.88 - 1.05)	0.9 (0.82 - 0.99)	0.93 (0.87 - 0.99)	0.87 (0.81 - 0.94)	1.06 (0.99 - 1.14)	1.00 (0.93 - 1.09)
Diabetes 'with any ophthalmic complications'	1.06 (0.94 - 1.19)	1.09 (0.96 - 1.24)	0.97 (0.89 - 1.05)	0.94 (0.86 - 1.03)	1.08 (0.98 - 1.17)	1.04 (0.94 - 1.14)
Cataract	0.97 (0.88 - 1.06)	0.90 (0.81 - 0.99)	0.89 (0.83 - 0.95)	0.83 (0.77 - 0.89)	1.06 (0.98 - 1.15)	0.99 (0.90 - 1.08)
Diabetic retinopathy	1.04 (0.85 - 1.27)	1.01 (0.81 - 1.26)	1.16 (1.00 - 1.34)	1.12 (0.95 - 1.31)	1.09 (0.94 - 1.26)	1.16 (0.99 - 1.36)
Lower limb complications	1.36 (1.20 - 1.53)	1.41 (1.24 - 1.61)	1.46 (1.33 - 1.60)	1.55 (1.40 - 1.71)	1.33 (1.21 - 1.46)	1.36 (1.23 - 1.51)
Peripheral neuropathy	1.22 (0.97 - 1.53)	1.36 (1.07 - 1.74)	1.34 (1.15 - 1.56)	1.44 (1.22 - 1.70)	1.23 (1.07 - 1.43)	1.23 (1.05 - 1.44)
Ulcer	1.49 (1.20 - 1.84)	1.57 (1.25 - 1.98)	1.54 (1.29 - 1.84)	1.68 (1.38 - 2.04)	1.44 (1.22 - 1.69)	1.38 (1.16 - 1.65)
Cellulitis (toe, foot or lower limb)	1.28 (1.08 - 1.52)	1.36 (1.13 - 1.64)	1.28 (1.11 - 1.47)	1.43 (1.22 - 1.67)	1.14 (0.99 - 1.32)	1.17 (1.00 - 1.37)
Charcot toe	1.88 (0.34 - 10.3)	1.70 (0.26 - 11.25)	1.41 (0.55 - 3.58)	1.14 (0.42 - 3.07)	0.91 (0.42 - 2.01)	0.88 (0.37 - 2.10)
Osteomyelitis	2.57 (1.36 - 4.85)	2.72 (1.38 - 5.34)	2.00 (1.29 - 3.11)	2.40 (1.50 - 3.85)	2.45 (1.68 - 3.57)	2.48 (1.66 - 3.71)

Peripheral vascular disease	2.20 (1.79 - 2.72)	2.22 (1.77 - 2.78)	2.32 (1.97 - 2.74)	2.41 (2.02 - 2.87)	1.75 (1.50 - 2.03)	1.75 (1.49 - 2.06)
Minor or major amputation	2.30 (1.41 - 3.73)	2.44 (1.46 - 4.06)	2.36 (1.58 - 3.53)	2.50 (1.63 - 3.85)	2.52 (1.76 - 3.59)	2.5 (1.71 - 3.64)
Kidney complications	1.40 (1.27 - 1.54)	1.58 (1.42 - 1.75)	1.36 (1.26 - 1.47)	1.57 (1.44 - 1.71)	1.37 (1.27 - 1.48)	1.43 (1.31 - 1.56)
Diabetes with kidney complication	1.39 (1.24 - 1.56)	1.64 (1.46 - 1.85)	1.37 (1.26 - 1.49)	1.59 (1.45 - 1.74)	1.37 (1.26 - 1.49)	1.44 (1.32 - 1.57)
Acute kidney failure	1.33 (1.18 - 1.48)	1.47 (1.30 - 1.67)	1.41 (1.28 - 1.55)	1.61 (1.45 - 1.78)	1.32 (1.20 - 1.45)	1.32 (1.19 - 1.46)
Chronic kidney disease	1.49 (1.31 - 1.70)	1.70 (1.48 - 1.95)	1.48 (1.33 - 1.64)	1.71 (1.52 - 1.92)	1.46 (1.32 - 1.62)	1.57 (1.41 - 1.75)
Unspecified kidney failure	1.75 (1.11 - 2.74)	1.82 (1.12 - 2.97)	1.72 (1.15 - 2.59)	1.76 (1.13 - 2.74)	1.26 (0.87 - 1.83)	1.28 (0.85 - 1.92)
Dialysis	2.20 (1.33 - 3.62)	2.46 (1.45 - 4.16)	1.80 (1.16 - 2.79)	1.97 (1.23 - 3.15)	1.76 (1.18 - 2.64)	1.99 (1.30 - 3.05)
Transplantation	1.91 (0.17 - 21.1)	1.61 (0.08 – 31.0)	-	-	-	-

[1]Model adjusted for age, SEIFA, household income, education, language at home, country of birth, private health insurance, BMI category, smoking status, physical activity, fruit and vegetable consumption, family history of diabetes, ever diagnosed with; heart disease, high blood pressure or stroke, blood pressure or cholesterol medication use.

Supplementary Table 5. Rates of CVD complications (hospitalisations or death) among the study cohort.

Sex	Case	Frequency	Percent
All (n=25 713)	No CVD hospitalisation or death	13 187	51.3
	CVD hospitalisation only	10 627	41.3
	CVD death after hospitalisation	1 640	6.4
	CVD death first	259	1.0
Males (n=14 697)	No CVD hospitalisation or death	6 695	45.6
	CVD hospitalisation only	6 734	45.8
	CVD death after hospitalisation	1 105	7.5
	CVD death first	163	1.1
Female (n=11 016)	No CVD hospitalisation or death	6 492	58.9
	CVD hospitalisation only	3 893	35.3
	CVD death after hospitalisation	535	5.9
	CVD death first	96	0.9