Supporting Information

Supplementary methods and results

**This appendix was part of the submitted manuscript and has been peer reviewed.
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Supplementary methods and results

Table 1. International Statistical Classification of Diseases and Related Health Problems, tenth revision, Australian modification (ICD-10-AM) codes for detecting kidney failure in cause of death records

Disease (Elixhauser)	ICD-10-AM codes
Renal failure	I12.0, I13.1, N18.x, N19.x, N25.0, Z49.0 - Z49.2, Z94.0, Z99.2

Table 2. International Statistical Classification of Diseases and Related Health Problems, tenth revision, Australian modification (ICD-10-AM) codes for detecting diabetes in inpatient episode and cause of death records

Disease (Elixhauser)	ICD-10-AM codes
Diabetes, uncomplicated	E10.0, E10.1, E10.9, E11.0, E11.1, E11.9, E12.0, E12.1, E12.9, E13.0, E13.1, E13.9, E14.0, E14.1, E14.9
Diabetes, complicated	E10.2 - E10.8, E11.2 - E11.8, E12.2 - E12.8, E13.2 - E13.8, E14.2 - E14.8

Table 3. International Statistical Classification of Diseases and Related Health Problems, tenth revision, Australian modification (ICD-10-AM) diagnosis codes used to detect major cardiovascular disease (CVD) in inpatient episode and cause of death records[1]

Disease type	ICD-10-AM code
Selected hypertensive diseases	I11 Hypertensive heart disease
	I12 Hypertensive kidney disease
	I13 Hypertensive heart and kidney disease
Ischaemic heart disease	I20 Angina pectoris
	I21 Acute myocardial infarction
	I22 Subsequent myocardial infarction
	I23 Certain current complications following acute myocardial infarction
	I24 Other acute ischaemic heart diseases
	I25 Chronic ischaemic heart disease
Pulmonary heart disease and diseases of pulmonary circulation	I26 Pulmonary embolism
	I27 Other pulmonary heart diseases
	I28 Other diseases of pulmonary vessels
Selected other forms of heart disease	I34 Nonrheumatic mitral valve disorders
	I35 Nonrheumatic aortic valve disorders
	I36 Nonrheumatic tricuspid valve disorders
	I42 Cardiomyopathy
	I44 Atrioventricular and left bundle-branch block
	I46 Cardiac arrest
	I47 Paroxysmal tachycardia
	I48 Atrial fibrillation and flutter
	I49 Other cardiac arrhythmias
	I50 Heart failure
	I51 Complications and ill-defined descriptions of heart disease
Selected cerebrovascular disease	I61 Intracerebral haemorrhage
	I62 Other nontraumatic intracranial haemorrhage
	I63 Cerebral infarction
	I64 Stroke, not specified as haemorrhage or infarction
	I65 Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction
	I66 Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction
	I67 Other cerebrovascular diseases
	I69 Sequelae of cerebrovascular disease
Selected diseases of arteries, arterioles and capillaries	I70 Atherosclerosis
	I71 Aortic aneurysm and dissection
	I72 Other aneurysm and dissection
	I73 Other peripheral vascular diseases
	I74 Arterial embolism and thrombosis
	I77 Other disorders of arteries and arterioles
Selected diseases of veins, lymphatic vessels and lymph nodes, not elsewhere classified	I80 Phlebitis and thrombophlebitis
Selected episodic and paroxysmal disorders	G45 Transient cerebral ischaemic attacks and related syndromes
	G46 Vascular syndromes of brain in cerebrovascular diseases

Table 4. Procedure codes used to detect cardiovascular disease (CVD)-related intervention procedures, used to define major CVD[1]

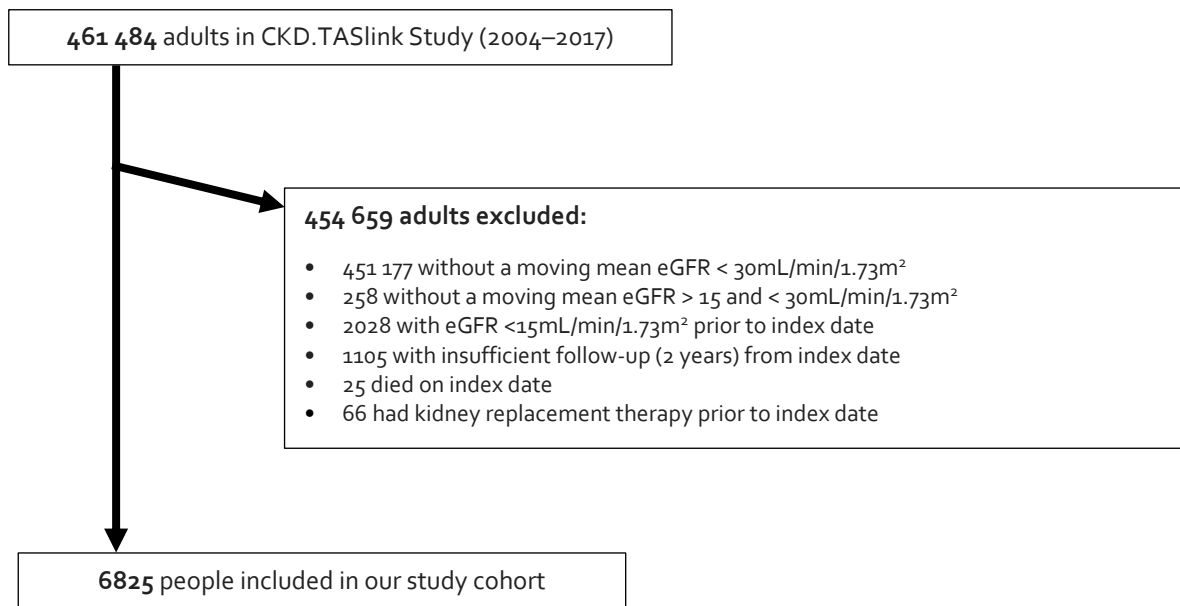| Procedures	Australian Classification of Health Interventions[2] codes
Percutaneous coronary interventions	35304-00, 35305-00, 35304-01, 35305-01, *38300-00, 38303-00* (block: 670) 35310-00, 35310-01, 35310-02, 35310-03, 35310-04, 35310-05, *38306-00, 38306-01, 38306-02, 38306-03, 38306-05* (block: 671) and diagnosis codes I20–I25
Coronary artery bypass grafting	38497-00 to 38497-07, 38500-00 to 38500-04, 38503-00 to 38503-04, 90201-00 to 90201-03, *38500-05, 38503-05* (blocks: 672–679) and diagnosis codes I20–I25, I34, I35
Heart transplant	90205-00, 90205-01 (block: 660)
Cardiac defibrillator implants	38524-00, 38521-01, 38521-02, 38521-03, *38393-00* (block:653) and diagnosis codes I20, I21, I25, I42–I51
Valve replacement, repair or reconstruction	**Aortic valve (blocks 621, 622, 623, 624)** 38456-10, 38483-00, 38270-01, 38480-00, 38481-00, 38488-00, 38488-01, 38489-00, 38489-01, 38456-15, 38653-04, 38475-02, 38477-02.
	Mitral valve (blocks 625, 626, 627, 628, 629, 630) 38487-00, 38485-01, 38270-02, 38480-01, 38481-01, 38475-00, 38477-00, 38488-02, 38488-03, 38489-02, 38485-00, 38456-16, 38653-05.
	Tricuspid valve (blocks 631, 632, 633, 634, 635) 38456-11, 38480-02, 38481-02, 38475-01, 38477-01, 38488-04, 38488-05, 38489-03, 38456-17, 38653-06. **Pulmonary valve (blocks 636, 637, 638)** 38456-01, 38270-03, 38488-06, 38488-07, 38489-04, 38489-05, 38456-18, 38653-07 and diagnosis codes I01–I09, I20–I25, I33–I39, I42–I52, Q20–Q25, T82
Pacemaker insertion	38281-00, 38281-01, 38281-02, 38281-03, 38281-04, 38281-05, 38281-06, 38281-07, 38281-08, 38281-09, 38281-10, 38281-11, 38281-12, 38281-13, *38353-00* (blocks: 650, 651, 652) and diagnosis codes I08, I20, I21, I25, I34–I39, I42–I52
Carotid endarterectomy	33500–00 (block: 700) and diagnosis codes G45, I63–I67

Figure 1. Selection of study cohort

461 484 adults in CKD.TASlink Study (2004–2017)

454 659 adults excluded:

- 451 177 without a moving mean eGFR < 30mL/min/1.73m²
- 258 without a moving mean eGFR > 15 and < 30mL/min/1.73m²
- 2028 with eGFR <15mL/min/1.73m² prior to index date
- 1105 with insufficient follow-up (2 years) from index date
- 25 died on index date
- 66 had kidney replacement therapy prior to index date

6825 people included in our study cohort

Figure 2. Incidence of kidney replacement therapy in adults, Tasmania, 2004–2017 (source: ANZDATA registry data)
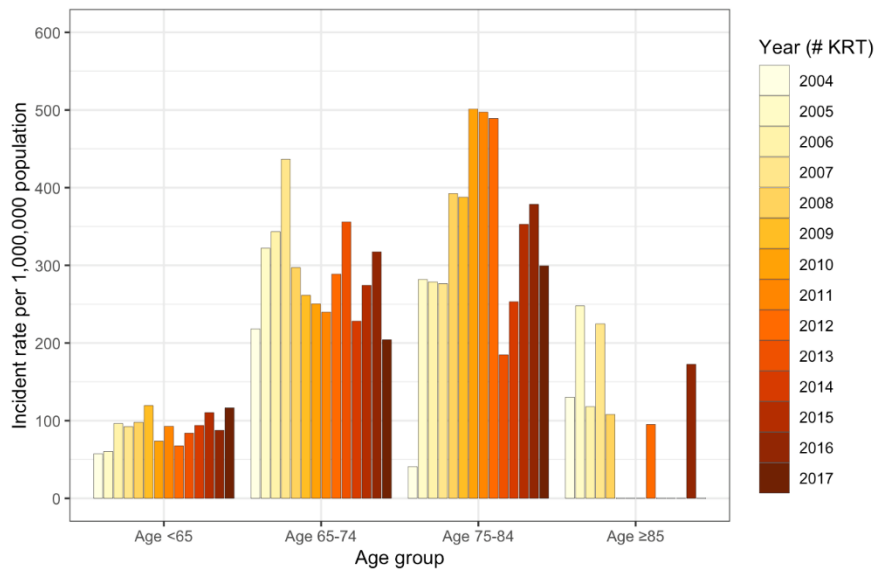

Table 5. Number of adults commencing kidney replacement therapy, Tasmania, 2004–2017 (source: ANZDATA registry data)

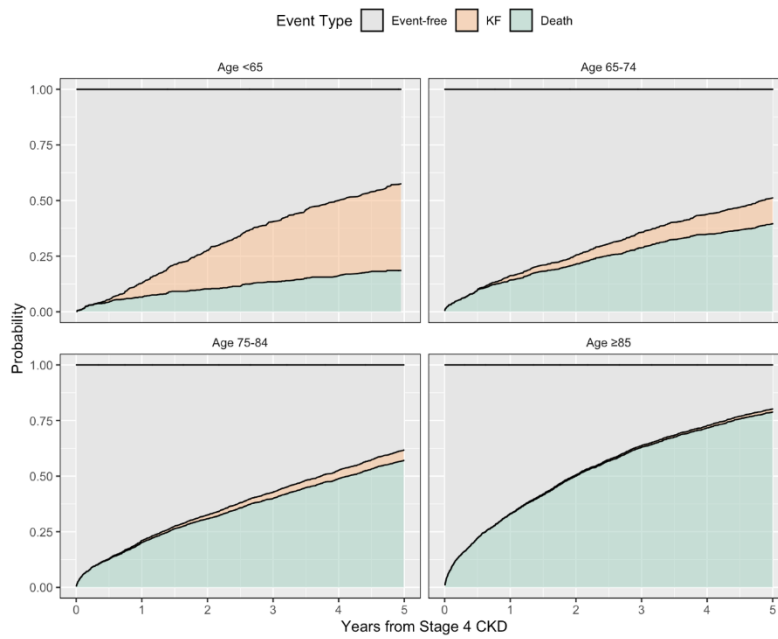| Year	Age <65	Age 65-74	Age 75-84	Age ≥85
2004	17	8	1	1
2005	18	12	7	2
2006	29	13	7	1
2007	28	17	7	2
2008	30	12	10	1
2009	37	11	10	0
2010	23	11	13	0
2011	29	11	13	0
2012	21	14	13	1
2013	26	18	5	0
2014	29	12	7	0
2015	34	15	10	0
2016	27	18	11	2
2017	36	12	9	0

Table 6. Numbers of people included in each stratified category in Box 6 (main text)

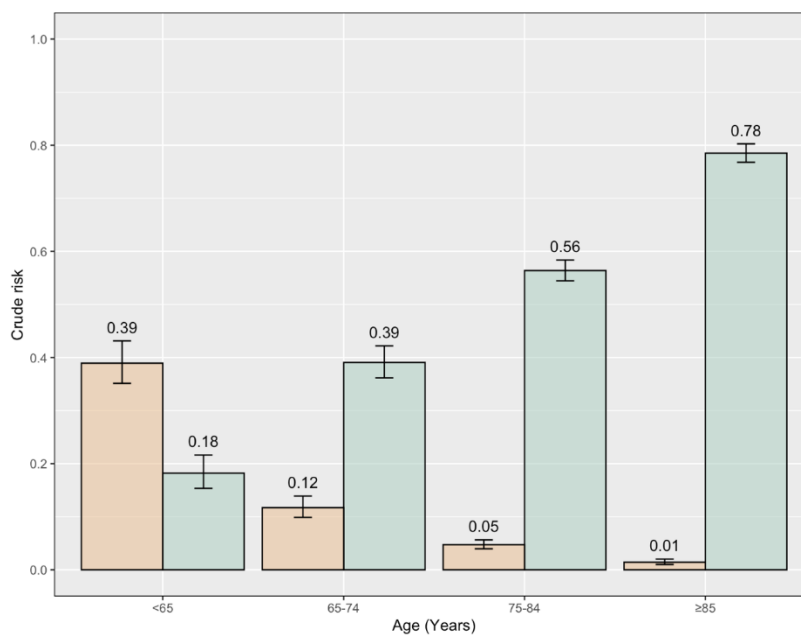| Age group	DM-; CVD-	DM+; CVD-	DM-; CVD+	DM+; CVD+
< 65	224	125	86	187
65-74	299	211	246	327
75-84	809	328	939	644
≥85	705	206	1100	389

DM = diabetes mellitus; CVD = cardiovascular disease.

Figure 3. Sensitivity analysis: kidney failure defined as initiation of kidney replacement therapy, or eGFR persistently below 10mL/min/1.73m^2.

A. Crude probabilities of kidney failure and death, by age group

B. Crude 5-year risks of kidney failure and death, by age group

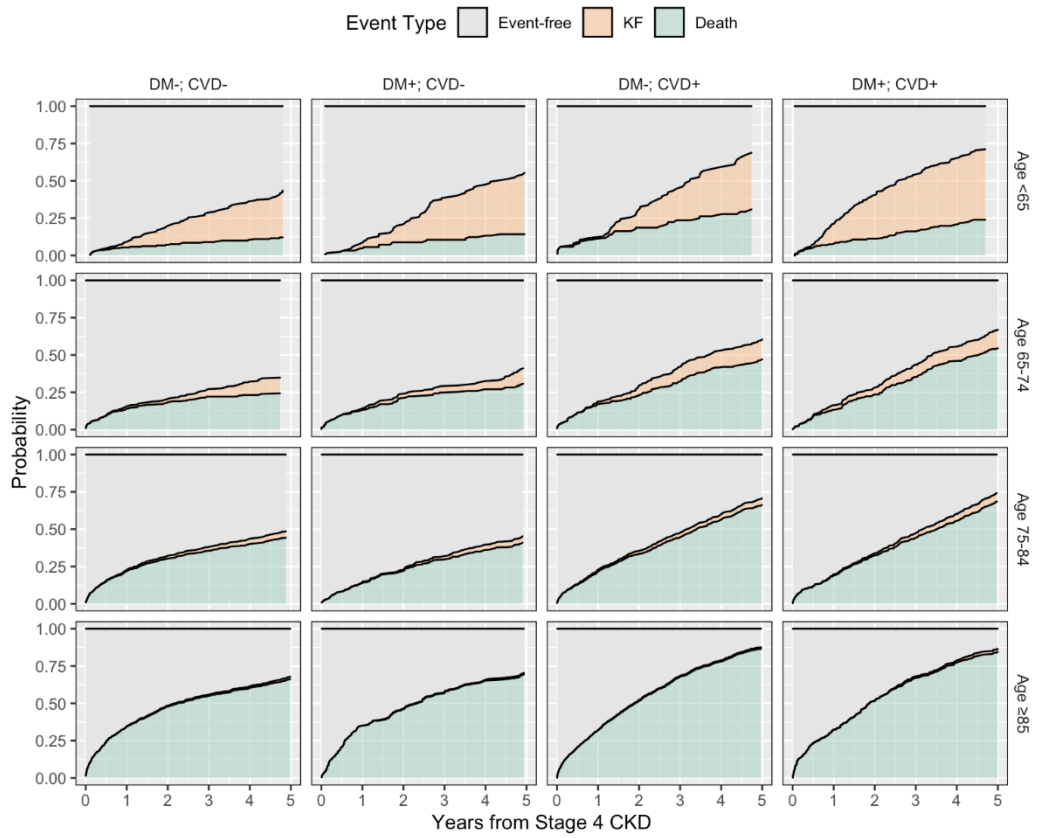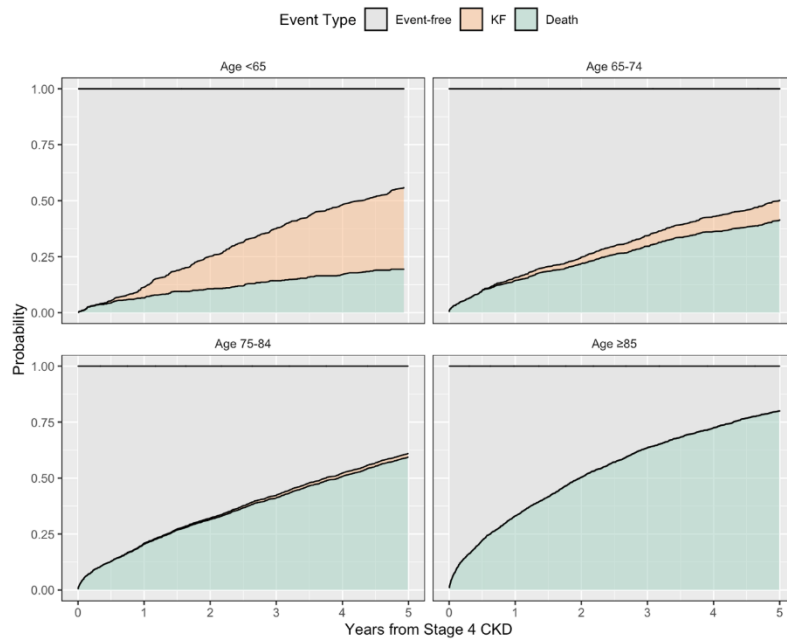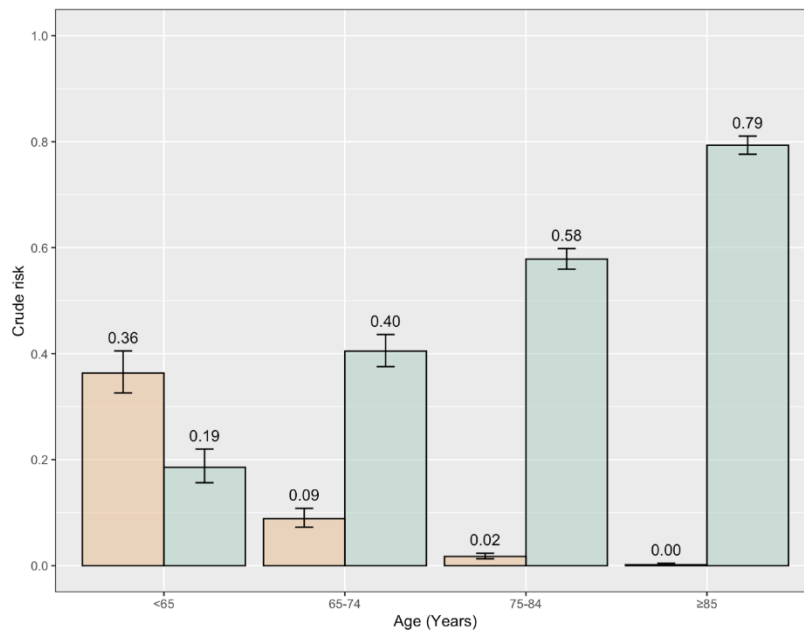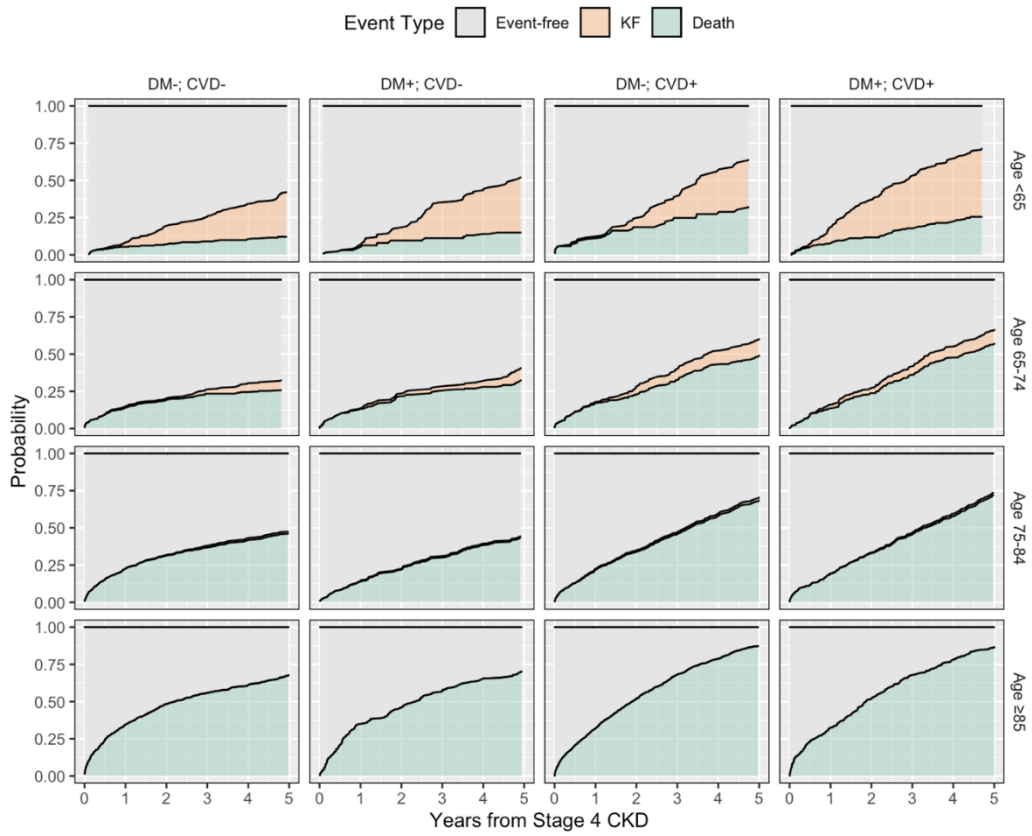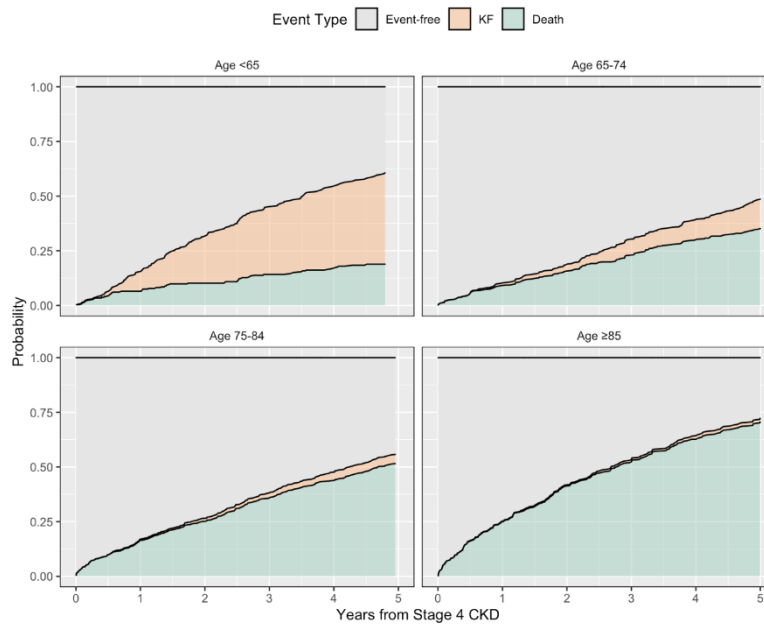## C. Stacked cumulative incidence functions, by age group and comorbidity

Figure 4. Sensitivity analysis: kidney failure defined as initiation of kidney replacement therapy only

A. Crude probabilities of kidney failure and death, by age group

B. Crude 5-year risks of kidney failure and death, by age group

C. Stacked cumulative incidence functions, by age group and comorbidity
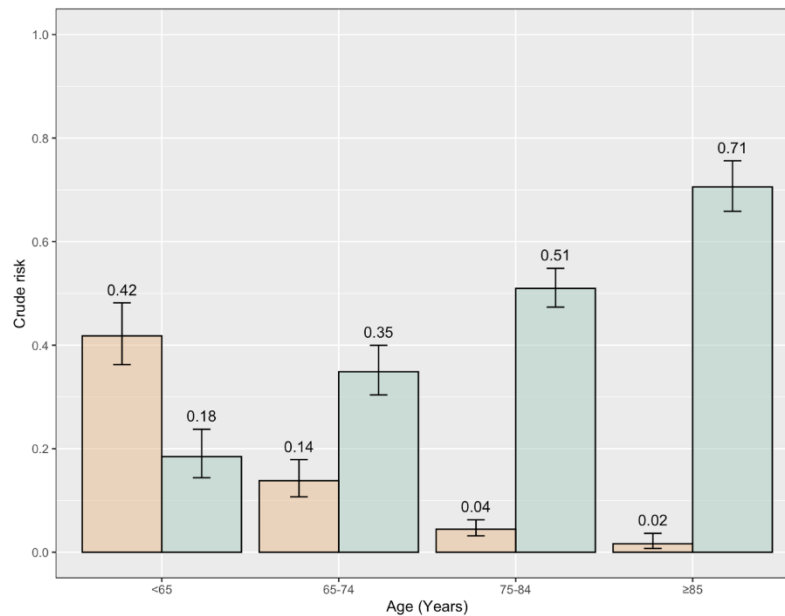
Figure 5. Sensitivity analysis: analysis restricted to 1942 people for whom complete albuminuria testing data were available (28.5% of cohort)

A. Crude probabilities of kidney failure and death, by age group

B. Crude 5-year risks of kidney failure and death, by age group

C. Stacked cumulative incidence functions, by age group and comorbidity, by age group
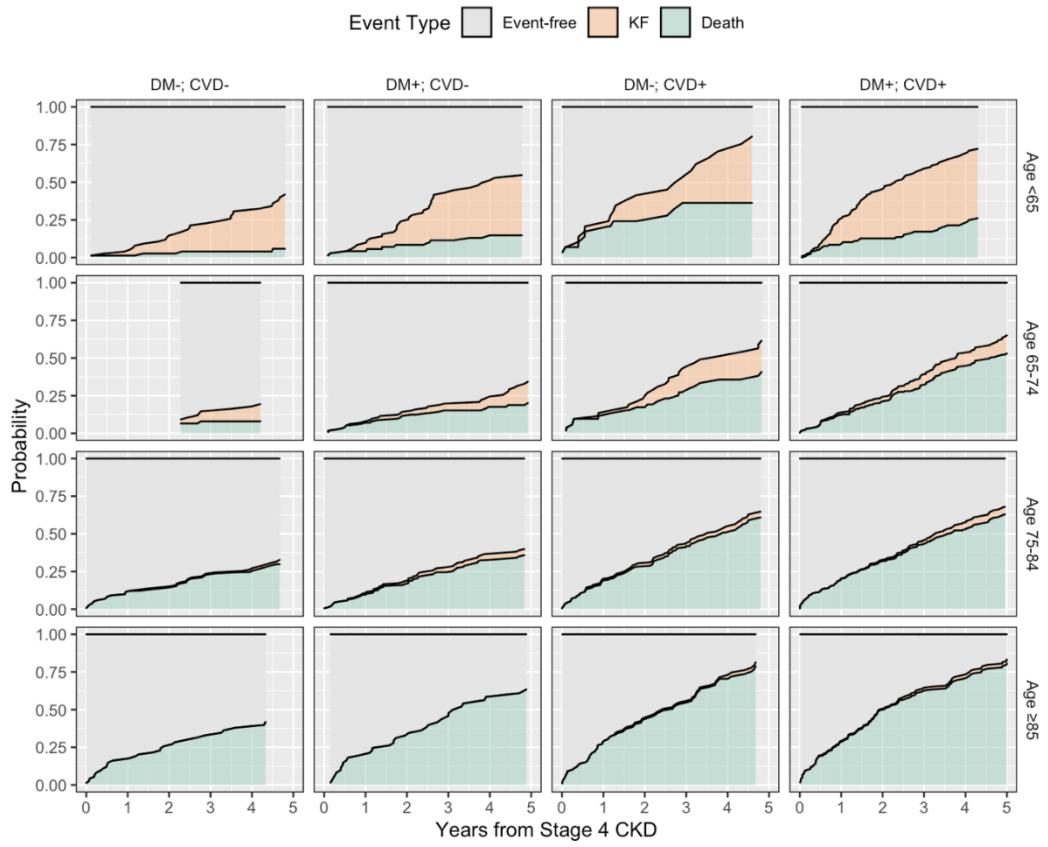
Figure 6. Sensitivity analysis: crude probabilities of kidney failure and death, by index eGFR (final eGFR of at least two measures at study entry) and age group

A. eGFR: 15–26mL/min/1.73m^2 (N = 1866)   **B. eGFR: 27–30mL/min/1.73m^2 (N = 4959)**
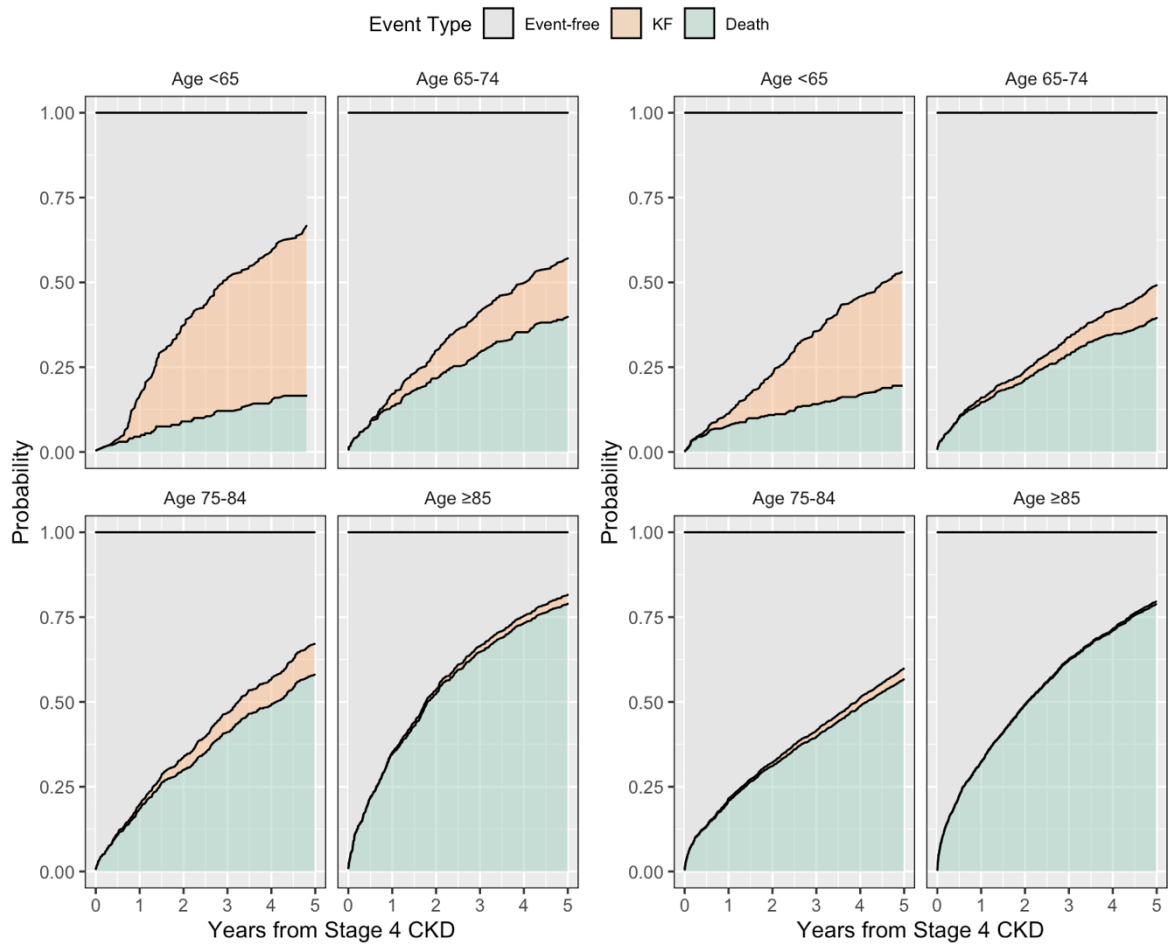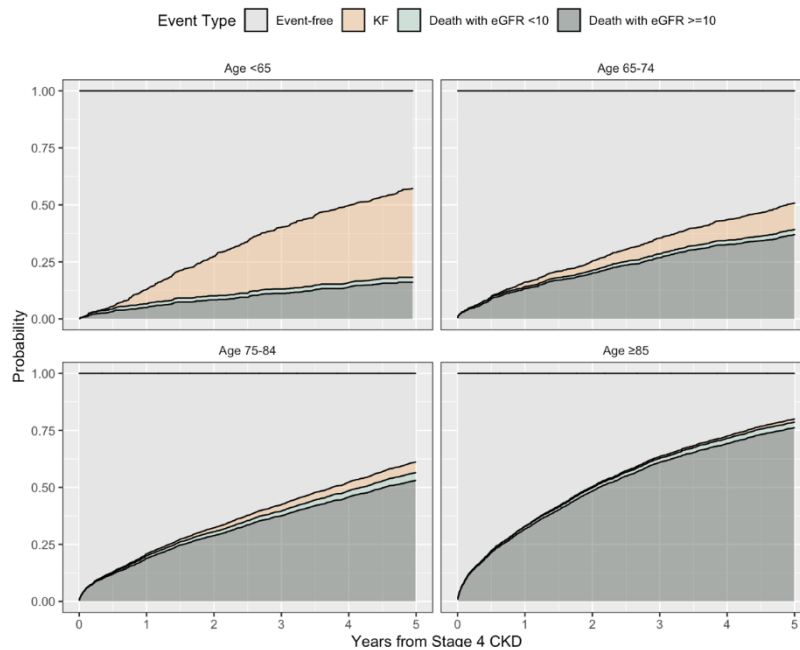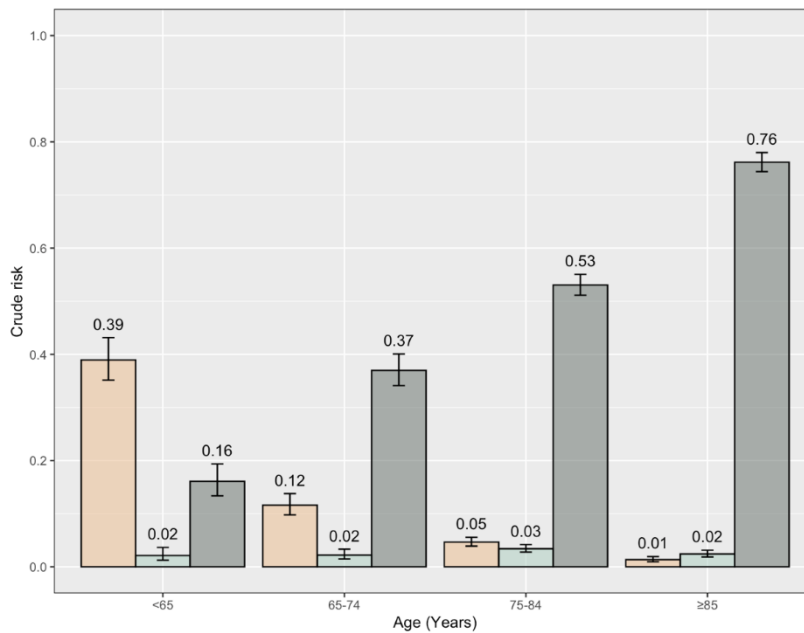
Figure 7. Sensitivity analysis: analysis restricted to people with cause of death coded as "renal failure", by eGFR greater or less than 10mL/min/1.73m²

A. Crude probabilities of kidney failure and death, by age group

B. Crude 5-year risks of kidney failure and death, by age group

References

1. Joshy G, Korda RJ, Abhayaratna WP, et al. Categorising major cardiovascular disease hospitalisations from routinely collected data. Public Health Res Pract 2015; 25: e2531532.

2. National Centre for Classification in Health. The Australian Classification of Health Interventions (ACHI). Tabular list of interventions and Alphabetic index of interventions. Seventh ed. Sydney: NCCH (University of Sydney), 2010.