Supplemental Materials

Table of Contents

Appendix 1. Data analysis overview and analytic notes for some individual cohorts

1.1 Overview:

As previously described,[1] the collaborating cohorts were asked to compile a dataset with approximately 20 variables (key exposures [serum creatinine to estimate GFR and albuminuria], covariates [e.g., age, sex, race/ethnicity, diabetes, hypertension], and end-stage renal disease outcome [event variable and corresponding follow-up times]). To be consistent across cohorts, the CKD-PC Data Coordinating Center sent definitions for those variables to participating cohorts. We instructed studies not to impute any variables.

For 41 of the 43 studies, the Data Coordination Center at Johns Hopkins University conducted the analysis; the remainder ran the standard code written in Stata by the Data Coordinating Center and shared the output with the Data Coordinating Center. The standard code was designed to automatically save all estimates and variance-covariance matrices needed for the meta-analysis. Then, the Data Coordinating Center meta-analyzed the estimates across cohorts using STATA. Cohorts with fewer than 10 outcomes in any particular analysis were excluded from that particular analysis.

As detailed in our previous reports,[2,3] each cohort was instructed to standardize their serum creatinine and report its method when available. The reported creatinine standardization allows grouping studies into studies that reported using a standard IDMS traceable method or conducted some serum creatinine standardization to IDMS traceable methods (CRIC, Geisinger, Go-DARTS, Maccabi, NephroTest, RCAV, SCREAM, SKS) and studies that were not standardized (ADVANCE). For those cohorts without standardization, the creatinine levels were reduced by 5%, the calibration factor used to adjust non-standardized MDRD Study samples to IDMS.[2,4] We did not adjust creatinine levels in those studies with unknown standardization status (OLDW all cohorts). Creatinine values less than 0.4 or greater than 25 were excluded.

We calculated eGFR using the 2021 CKD-EPI equation[5]:

Sex	**Serum Creatinine (mg/dL)**	**Equation**
Female	≤0.7	$GFR = 143 \times (Scr/0.7)^{-0.241} \times 0.9938^{Age}$
	>0.7	$GFR = 143 \times (Scr/0.7)^{-1.200} \times 0.9938^{Age}$
Male	≤0.9	$GFR = 142 \times (Scr/0.9)^{-0.302} \times 0.9938^{Age}$
	>0.9	$GFR = 142 \times (Scr/0.9)^{-1.200} \times 0.9938^{Age}$

Baseline for each study was considered first available creatinine unless otherwise noted. Other variables were taken either on baseline date or within one year before baseline date.

1.2 Cohort key design features:

Cohort	Study Design	Baseline Years	Previous slopes included	Albuminuria	KFRT	Future decline
ADVANCE	Clinical trial cohort	2003-05 Visit 15	2-year	ACR	Active	3-year
CRIC	Research cohort	2006-11 Visit 9	2,3-year	ACR, PCR	Active (with confirmation), Linkage	No
Geisinger	Healthcare administrative database	2011	1,2,3,5-year	ACR, PCR	Linkage	3-year
Go-DARTS	Research Cohort	2008-16	1,2,3,5-year	ACR	Linkage (plus eGFR<15 on two occasions at least 90 days apart)	3-year
Maccabi	Healthcare administrative database	2013	1,2,3,5-year	ACR	Active	3-year
NephroTest	Research cohort	2002-10	2,3,5-year	ACR, PCR	Linkage	No
OLDW	Healthcare administrative database	2013-16	1,2,3,5-year	ACR, PCR, Dipstick	Codes	2-year
RCAV	Healthcare administrative database	2008	1,2,3-year	ACR, PCR	Linkage	3-year
SCREAM	Health check-up database	2009	1,2,3-year	ACR, Dipstick	Active	2-year
SKS	Clinical database	2002-16	1,2,3-year	PCR	Active	No

KFRT: kidney failure requiring replacement therapy. **ACR**: urine albumin-to-creatinine ratio. **PCR:** urine protein-to-creatinine ratio. **Active**: self-report usually without specific chart validation. **Linkage**: linkage to a registry or database for the outcome. **Codes**: death certificate or registry coded cause or International Classification of Disease codes.

1.3 Data availability

1.3.a Availability of variables for cohorts with participants with eGFR ≥60 ml/min/1.73 m^2 and no diabetes

no DM eGFR 60+	Region	N	Decline	ACR/ PCR	Dipstick	HTN	SBP	HF	CHD	AF	Smoking	BMI
Development study												
Geisinger	USA	102562	60%	3.4%	22%	100%	92%	100%	100%	100%	100%	90%
OLDW cohort 1	USA	131822	49%	2.2%	35%	100%	93%	100%	100%	100%	96%	95%
OLDW cohort 2	USA	79319	50%	1.6%	26%	100%	64%	100%	100%	100%	76%	67%
OLDW cohort 3	USA	73562	55%	1.6%	46%	100%	94%	100%	100%	100%	91%	85%
OLDW cohort 4	USA	58612	44%	2.4%	33%	100%	97%	100%	100%	100%	99%	99%
OLDW cohort 5	USA	209060	47%	2.3%	54%	100%	89%	100%	100%	100%	91%	86%
OLDW cohort 6	USA	375215	56%	1.6%	43%	100%	81%	100%	100%	100%	86%	68%
OLDW cohort 7	USA	133350	42%	3.2%	42%	100%	67%	100%	100%	100%	77%	74%
OLDW cohort 8	USA	70880	49%	2.6%	37%	100%	91%	100%	100%	100%	94%	91%
OLDW cohort 9	USA	221481	45%	3.9%	45%	100%	84%	100%	100%	100%	88%	85%
OLDW cohort 10	USA	258606	56%	2.3%	39%	100%	44%	100%	100%	100%	51%	46%
OLDW cohort 11	USA	452036	43%	3.6%	36%	100%	77%	100%	100%	100%	83%	79%
OLDW cohort 12	USA	112720	55%	3.7%	32%	100%	88%	100%	100%	100%	95%	91%
OLDW cohort 13	USA	130706	34%	2.3%	25%	100%	82%	100%	100%	100%	91%	84%
OLDW cohort 14	USA	67668	48%	1.3%	21%	100%	93%	100%	100%	100%	49%	93%
OLDW cohort 15	USA	149243	43%	5.1%	30%	100%	49%	100%	100%	100%	55%	55%
OLDW cohort 16	USA	84917	41%	2.9%	30%	100%	86%	100%	100%	100%	86%	87%
OLDW cohort 17	USA	173440	44%	5.3%	21%	100%	27%	100%	100%	100%	29%	37%
SCREAM	Sweden	284169	59%	2.7%	15%	100%	0%	100%	100%	100%	0%	0%
Validation study												
Maccabi	Israel	620455	67%	4.1%	19%	100%	75%	100%	100%	100%	100%	84%
OLDW cohort 18	USA	32623	50%	0.53%	36%	100%	27%	100%	100%	100%	98%	39%
OLDW cohort 19	USA	121973	54%	0.82%	36%	100%	80%	100%	100%	100%	86%	64%
OLDW cohort 20	USA	130168	56%	7.2%	68%	100%	76%	100%	100%	100%	79%	77%
OLDW cohort 21	USA	431234	47%	1.5%	31%	100%	91%	100%	100%	100%	96%	93%
OLDW cohort 22	USA	86215	52%	0.44%	20%	100%	33%	100%	100%	100%	66%	33%

OLDW cohort 23	USA	52511	32%	5.9%	26%	100%	83%	100%	100%	100%	88%	88%
OLDW cohort 24	USA	63704	62%	2.3%	63%	100%	97%	100%	100%	100%	98%	99%
OLDW cohort 25	USA	323579	42%	1.4%	30%	100%	88%	100%	100%	100%	95%	90%
OLDW cohort 26	USA	240022	53%	3.8%	35%	100%	83%	100%	100%	100%	71%	83%
OLDW cohort 27	USA	288800	50%	3.0%	27%	100%	86%	100%	100%	100%	94%	89%
OLDW cohort 28	USA	132455	43%	1.8%	29%	100%	67%	100%	100%	100%	78%	68%
OLDW cohort 29	USA	205911	50%	5.5%	26%	100%	49%	100%	100%	100%	30%	52%
OLDW cohort 30	USA	94184	30%	2.0%	31%	100%	79%	100%	100%	100%	89%	83%
OLDW cohort 31	USA	53336	47%	0.82%	23%	100%	77%	100%	100%	100%	89%	83%
OLDW cohort 32	USA	78207	51%	4.1%	33%	100%	90%	100%	100%	100%	60%	92%
OLDW cohort 33	USA	126974	51%	1.7%	29%	100%	89%	100%	100%	100%	91%	86%
OLDW cohort 34	USA	1123972	44%	2.8%	35%	100%	46%	100%	100%	100%	69%	50%

1.3.b Availability of variables for cohorts with participants with eGFR ≥60 ml/min/1.73 m^2 and diabetes

DM eGFR 60+	Region	N	Decline	ACR/ PCR	HTN	SBP	HF	CHD	AF	Smoking	BMI	HbA1c
Development study												
ADVANCE	Multi	7843	94%	100%	100%	100%	100%	100%	0%	100%	100%	100%
Geisinger	USA	22478	78%	76%	100%	95%	100%	100%	100%	100%	93%	92%
OLDW cohort 1	USA	27742	70%	55%	100%	97%	100%	100%	100%	99%	98%	84%
OLDW cohort 2	USA	11915	72%	51%	100%	78%	100%	100%	100%	90%	81%	76%
OLDW cohort 3	USA	14568	71%	44%	100%	96%	100%	100%	100%	93%	87%	82%
OLDW cohort 4	USA	10206	62%	53%	100%	99%	100%	100%	100%	100%	99%	81%
OLDW cohort 5	USA	26534	67%	72%	100%	89%	100%	100%	100%	93%	86%	90%
OLDW cohort 6	USA	70403	74%	37%	100%	78%	100%	100%	100%	87%	68%	73%
OLDW cohort 7	USA	15965	62%	45%	100%	81%	100%	100%	100%	91%	86%	72%
OLDW cohort 8	USA	11758	76%	55%	100%	93%	100%	100%	100%	97%	93%	90%
OLDW cohort 9	USA	19898	64%	35%	100%	94%	100%	100%	100%	97%	94%	74%
OLDW cohort 10	USA	16172	77%	48%	100%	77%	100%	100%	100%	78%	81%	85%
OLDW cohort 11	USA	52464	64%	43%	100%	90%	100%	100%	100%	98%	92%	80%
OLDW cohort 12	USA	24894	72%	44%	100%	91%	100%	100%	100%	96%	93%	80%

OLDW cohort 13	USA	20344	55%	55%	100%	85%	100%	100%	100%	94%	88%	78%
OLDW cohort 14	USA	12683	70%	40%	100%	97%	100%	100%	100%	53%	97%	81%
OLDW cohort 15	USA	17828	62%	44%	100%	68%	100%	100%	100%	77%	74%	69%
OLDW cohort 16	USA	16048	62%	45%	100%	92%	100%	100%	100%	91%	92%	76%
OLDW cohort 17	USA	12290	69%	52%	100%	54%	100%	100%	100%	57%	67%	79%
SCREAM	Sweden	18183	84%	22%	100%	0%	100%	100%	100%	0%	0%	90%
Validation study												
Go-DARTs	UK	6765	92%	98%	100%	92%	100%	100%	100%	93%	92%	49%
Maccabi	Israel	91469	92%	46%	100%	93%	100%	100%	100%	100%	98%	99%
OLDW cohort 18	USA	3892	60%	9.4%	100%	34%	100%	100%	100%	99%	45%	69%
OLDW cohort 19	USA	23660	80%	61%	100%	86%	100%	100%	100%	89%	69%	90%
OLDW cohort 20	USA	17012	78%	57%	100%	76%	100%	100%	100%	79%	77%	87%
OLDW cohort 21	USA	70178	66%	40%	100%	94%	100%	100%	100%	98%	95%	83%
OLDW cohort 22	USA	13726	74%	33%	100%	35%	100%	100%	100%	77%	34%	62%
OLDW cohort 23	USA	19988	53%	59%	100%	90%	100%	100%	100%	95%	94%	84%
OLDW cohort 24	USA	14727	81%	41%	100%	99%	100%	100%	100%	99%	100%	89%
OLDW cohort 25	USA	57410	65%	55%	100%	91%	100%	100%	100%	97%	92%	82%
OLDW cohort 26	USA	37802	74%	64%	100%	90%	100%	100%	100%	88%	90%	83%
OLDW cohort 27	USA	47392	73%	44%	100%	89%	100%	100%	100%	97%	91%	84%
OLDW cohort 28	USA	16160	66%	39%	100%	82%	100%	100%	100%	95%	84%	79%
OLDW cohort 29	USA	6445	67%	61%	100%	80%	100%	100%	100%	50%	82%	84%
OLDW cohort 30	USA	14292	42%	31%	100%	79%	100%	100%	100%	93%	85%	60%
OLDW cohort 31	USA	8042	71%	44%	100%	80%	100%	100%	100%	92%	84%	88%
OLDW cohort 32	USA	11504	80%	80%	100%	93%	100%	100%	100%	71%	96%	92%
OLDW cohort 33	USA	17357	79%	69%	100%	89%	100%	100%	100%	92%	88%	90%
OLDW cohort 34	USA	225785	61%	41%	100%	53%	100%	100%	100%	81%	58%	74%
RCAV	USA	155462	81%	100%	100%	98%	100%	100%	100%	57%	88%	79%

1.3.c Availability of variables for cohorts with participants with eGFR <60 ml/min/1.73 m^2 and no diabetes

no DM eGFR <60	Region	N	Decline	ACR/ PCR	Dipstick	HTN	SBP	HF	CHD	AF	Smoking	BMI

Development study												
Geisinger	USA	11296	71%	22%	29%	100%	91%	100%	100%	100%	100%	87%
OLDW cohort 1	USA	12552	61%	6.3%	35%	100%	91%	100%	100%	100%	95%	92%
OLDW cohort 2	USA	10229	63%	4.5%	37%	100%	69%	100%	100%	100%	81%	71%
OLDW cohort 3	USA	10254	62%	4.4%	47%	100%	91%	100%	100%	100%	88%	82%
OLDW cohort 4	USA	3844	50%	4.7%	38%	100%	98%	100%	100%	100%	99%	97%
OLDW cohort 5	USA	10201	40%	3.7%	44%	100%	70%	100%	100%	100%	77%	64%
OLDW cohort 6	USA	39587	59%	14%	43%	100%	65%	100%	100%	100%	76%	54%
OLDW cohort 7	USA	10362	41%	11%	59%	100%	58%	100%	100%	100%	73%	65%
OLDW cohort 8	USA	11610	59%	24%	50%	100%	67%	100%	100%	100%	75%	67%
OLDW cohort 9	USA	17578	52%	11%	40%	100%	88%	100%	100%	100%	91%	90%
OLDW cohort 10	USA	23753	63%	4.8%	50%	100%	40%	100%	100%	100%	57%	45%
OLDW cohort 11	USA	42659	46%	9.9%	44%	100%	65%	100%	100%	100%	76%	67%
OLDW cohort 12	USA	16229	62%	11%	39%	100%	87%	100%	100%	100%	94%	89%
OLDW cohort 13	USA	8531	40%	11%	30%	100%	71%	100%	100%	100%	83%	74%
OLDW cohort 14	USA	5325	53%	3.6%	28%	100%	92%	100%	100%	100%	55%	91%
OLDW cohort 15	USA	14076	52%	12%	39%	100%	43%	100%	100%	100%	48%	48%
OLDW cohort 16	USA	10376	47%	8.5%	37%	100%	83%	100%	100%	100%	83%	83%
OLDW cohort 17	USA	15690	43%	13%	24%	100%	15%	100%	100%	100%	18%	27%
SCREAM	Sweden	25815	72%	7.7%	23%	100%	0%	100%	100%	100%	0%	0%
Validation study												
CRIC	USA	1853	66%	88%	0%	100%	100%	100%	100%	100%	100%	98%
Maccabi	Israel	18115	80%	21%	18%	100%	90%	100%	100%	100%	100%	92%
NephroTest	France	419	68%	100%	0%	100%	98%	100%	100%	0%	100%	100%
OLDW cohort 18	USA	3674	39%	3.7%	44%	100%	24%	100%	100%	100%	96%	33%
OLDW cohort 19	USA	15516	69%	2.0%	49%	100%	74%	100%	100%	100%	83%	58%
OLDW cohort 20	USA	7105	65%	14%	63%	100%	66%	100%	100%	100%	71%	66%
OLDW cohort 21	USA	38075	49%	4.7%	42%	100%	80%	100%	100%	100%	89%	83%
OLDW cohort 22	USA	11596	59%	1.7%	28%	100%	24%	100%	100%	100%	60%	24%
OLDW cohort 23	USA	2469	39%	9.0%	36%	100%	58%	100%	100%	100%	74%	74%
OLDW cohort 24	USA	8076	68%	12%	64%	100%	98%	100%	100%	100%	98%	99%

OLDW cohort 25	USA	30737	54%	3.1%	37%	100%	82%	100%	100%	100%	92%	83%
OLDW cohort 26	USA	15858	59%	13%	39%	100%	72%	100%	100%	100%	53%	72%
OLDW cohort 27	USA	21999	58%	10%	36%	100%	74%	100%	100%	100%	89%	77%
OLDW cohort 28	USA	17516	56%	4.8%	31%	100%	63%	100%	100%	100%	77%	64%
OLDW cohort 29	USA	15208	45%	17%	40%	100%	44%	100%	100%	100%	20%	49%
OLDW cohort 30	USA	7338	28%	4.0%	32%	100%	62%	100%	100%	100%	81%	69%
OLDW cohort 31	USA	4846	51%	2.1%	33%	100%	57%	100%	100%	100%	74%	63%
OLDW cohort 32	USA	5227	66%	16%	50%	100%	90%	100%	100%	100%	70%	89%
OLDW cohort 33	USA	8218	65%	17%	42%	100%	83%	100%	100%	100%	82%	81%
OLDW cohort 34	USA	117562	51%	7.5%	38%	100%	43%	100%	100%	100%	70%	48%
SKS	UK	996	97%	62%	0%	100%	99%	100%	100%	0%	100%	80%

1.3.d Availability of variables for cohorts with participants with eGFR <60 ml/min/1.73 m^2 and diabetes

DM eGFR 60+	Region	N	Decline	ACR/PCR	HTN	SBP	HF	CHD	AF	Smoking	BMI	HbA1c
Development study												
ADVANCE	Multi	1478	87%	100%	100%	100%	100%	100%	0%	100%	100%	100%
Geisinger	USA	6998	72%	73%	100%	94%	100%	100%	100%	100%	90%	87%
OLDW cohort 1	USA	8151	67%	51%	100%	96%	100%	100%	100%	99%	97%	77%
OLDW cohort 2	USA	4440	69%	51%	100%	80%	100%	100%	100%	91%	81%	76%
OLDW cohort 3	USA	5369	66%	38%	100%	92%	100%	100%	100%	92%	84%	71%
OLDW cohort 4	USA	2336	58%	39%	100%	99%	100%	100%	100%	99%	98%	70%
OLDW cohort 5	USA	4195	46%	54%	100%	78%	100%	100%	100%	87%	72%	79%
OLDW cohort 6	USA	22724	66%	45%	100%	69%	100%	100%	100%	85%	62%	65%
OLDW cohort 7	USA	4335	48%	44%	100%	72%	100%	100%	100%	88%	79%	62%
OLDW cohort 8	USA	4780	66%	62%	100%	69%	100%	100%	100%	82%	70%	69%
OLDW cohort 9	USA	6416	60%	35%	100%	95%	100%	100%	100%	97%	95%	66%
OLDW cohort 10	USA	4474	66%	44%	100%	71%	100%	100%	100%	83%	76%	80%
OLDW cohort 11	USA	14939	54%	37%	100%	83%	100%	100%	100%	96%	86%	66%
OLDW cohort 12	USA	8966	67%	44%	100%	90%	100%	100%	100%	96%	92%	73%
OLDW cohort 13	USA	4381	49%	51%	100%	81%	100%	100%	100%	94%	84%	67%

OLDW cohort 14	USA	2920	62%	36%	100%	97%	100%	100%	100%	52%	97%	72%
OLDW cohort 15	USA	4983	57%	41%	100%	63%	100%	100%	100%	70%	69%	61%
OLDW cohort 16	USA	5586	57%	42%	100%	90%	100%	100%	100%	89%	90%	66%
OLDW cohort 17	USA	2684	56%	42%	100%	50%	100%	100%	100%	59%	63%	59%
SCREAM	Sweden	5217	73%	28%	100%	0%	100%	100%	100%	0%	0%	89%
Validation study												
CRIC	USA	2428	54%	88%	100%	99%	100%	100%	100%	100%	98%	95%
Go-DARTs	UK	2013	85%	97%	100%	91%	100%	100%	100%	91%	91%	51%
Maccabi	Israel	13435	81%	62%	100%	94%	100%	100%	100%	100%	97%	98%
NephroTest	France	174	63%	99%	100%	98%	100%	100%	0%	100%	100%	99%
OLDW cohort 18	USA	1476	41%	14%	100%	35%	100%	100%	100%	99%	44%	51%
OLDW cohort 19	USA	6893	73%	49%	100%	83%	100%	100%	100%	88%	67%	86%
OLDW cohort 20	USA	3638	71%	59%	100%	69%	100%	100%	100%	74%	70%	87%
OLDW cohort 21	USA	17639	53%	38%	100%	87%	100%	100%	100%	97%	90%	74%
OLDW cohort 22	USA	4975	69%	30%	100%	32%	100%	100%	100%	76%	31%	61%
OLDW cohort 23	USA	2900	53%	48%	100%	79%	100%	100%	100%	92%	91%	75%
OLDW cohort 24	USA	5440	76%	48%	100%	99%	100%	100%	100%	99%	99%	86%
OLDW cohort 25	USA	16635	63%	49%	100%	88%	100%	100%	100%	96%	88%	75%
OLDW cohort 26	USA	7580	64%	57%	100%	89%	100%	100%	100%	85%	88%	71%
OLDW cohort 27	USA	11197	63%	43%	100%	80%	100%	100%	100%	95%	83%	71%
OLDW cohort 28	USA	5731	62%	35%	100%	79%	100%	100%	100%	96%	82%	71%
OLDW cohort 29	USA	1551	50%	52%	100%	81%	100%	100%	100%	43%	85%	78%
OLDW cohort 30	USA	3788	35%	20%	100%	68%	100%	100%	100%	89%	76%	43%
OLDW cohort 31	USA	2135	61%	36%	100%	72%	100%	100%	100%	87%	75%	78%
OLDW cohort 32	USA	3109	70%	79%	100%	93%	100%	100%	100%	79%	94%	88%
OLDW cohort 33	USA	4015	73%	69%	100%	88%	100%	100%	100%	88%	87%	85%
OLDW cohort 34	USA	65018	57%	40%	100%	51%	100%	100%	100%	83%	57%	67%
RCAV	USA	25068	75%	100%	100%	98%	100%	100%	100%	56%	85%	72%
SKS	UK	475	97%	56%	100%	100%	100%	100%	0%	100%	84%	44%

Appendix 2. Acronyms or abbreviations for cohorts included in the current report and their key references linked to the Web references

ADVANCE	The Action in Diabetes and Vascular Disease: Preterax and Diamicron Modified Release Controlled Evaluation (ADVANCE) trial[6]
CRIC	Chronic Renal Insufficiency Cohort Study[7]
Geisinger	Geisinger Health System[8]
Go-DARTS	Genetics of Diabetes Audit and Research in Tayside Scotland[9]
Maccabi	Maccabi Health System[10]
NephroTest	NephroTest Study[11]
OLDW	OptumLabs Data Warehouse
RCAV	Racial and Cardiovascular Risk Anomalies in CKD Cohort[12]
SCREAM	Stockholm CREAtinine Measurements Cohort[13]
SKS	Salford Kidney Study[14]

Appendix 3. Acknowledgements and funding for collaborating cohorts

Cohort	List of sponsors
ADVANCE	National Health and Medical Research Council (NHMRC) of Australia program grants 358395, 571281, 1052555 and 1149987 and project grant 211086 and Servier International
CRIC	Funding for the CRIC Study was obtained under a cooperative agreement from National Institute of Diabetes and Digestive and Kidney Diseases (U01DK060990, U01DK060984, U01DK061022, U01DK061021, U01DK061028, U01DK060980, U01DK060963, U01DK060902 and U24DK060990). In addition, this work was supported in part by: the Perelman School of Medicine at the University of Pennsylvania Clinical and Translational Science Award NIH/NCATS UL1TR000003, Johns Hopkins University UL1 TR-000424, University of Maryland GCRC M01 RR-16500, Clinical and Translational Science Collaborative of Cleveland, UL1TR000439 from the National Center for Advancing Translational Sciences (NCATS) component of the National Institutes of Health and NIH roadmap for Medical Research, Michigan Institute for Clinical and Health Research (MICHR) UL1TR000433, University of Illinois at Chicago CTSA UL1RR029879, Tulane COBRE for Clinical and Translational Research in Cardiometabolic Diseases P20 GM109036, Kaiser Permanente NIH/NCRR UCSF-CTSI UL1 RR-024131, Department of Internal Medicine, University of New Mexico School of Medicine Albuquerque, NM R01DK119199.
Geisinger	Geisinger Clinic; NIDDK R01DK100446
Go-DARTS	The Wellcome Trust United Kingdom Type 2 Diabetes Case Control Collection (supporting GoDARTS) was funded by the Wellcome Trust, under grants 072960/Z/03/Z, 084726/Z/08/Z, 084727/Z/08/Z, 085475/Z/08/Z, and 085475/B/08/Z.
Maccabi	
NephroTest	The NephroTest CKD cohort study is supported by grants from: Inserm GIS-IReSP AO 8113LS TGIR; French Ministry of Health AOM 09114 and AOM 10245; Inserm AO 8022LS; Agence de la Biomédecine R0 8156LL, AURA, and Roche 2009-152-447G. The Nephrotest initiative was also sponsored by unrestricted grants from F.Hoffman-La Roche Ltd. The authors thank the collaborators and the staff of the NephroTest Study: François Vrtovsnik, Eric Daugas, Martin Flamant, Emmanuelle Vidal-Petiot (Bichat Hospital); Alexandre Karras, Eric Thervet, P. Houillier, M. Courbebaisse, D. Eladari (European Georges Pompidou Hospital); Jean-Jacques Boffa, Pierre Ronco, H. Fessi, Eric Rondeau, Emmanuel Letavernier, Jean Philippe Haymann, P. Urena-Torres (Tenon Hospital)
OLDW	
RCAV	This study was supported by grant R01DK096920 from NIH-NIDDK and is the result of work supported with resources and the use of facilities at the Memphis VA Medical Center and the Long Beach VA Medical Center. Support for VA/CMS data is provided by the Department of Veterans Affairs, Veterans Health Administration, Office of Research and Development, Health Services Research and Development, VA Information Resource Center (project numbers SDR 02-237 and 98-004).
SCREAM	This study was supported by Stockholm County Council and the Swedish Heart and Lung Foundation.
SKS	Unrestricted educational grant from SHIRE

Supplemental Table S1. Characteristics of cohorts with participants with eGFR ≥60 ml/min/1.73 m^2 and no diabetes

	Region	N	40%	Age,y	Female	eGFR	% ACR/PCR	ACR€	Dipstick +, %	SBP	HTN med, %	HF, %	CHD, %	AF, %	Cur Smk, %	For Smk, %	BMI
Development study		**492669**	**6355**	**54 (15)**	**60**	**92 (16)**	**7.2**	**9 (5-21)**	**6.9**	**125 (16)**	**27**	**2.2**	**9.2**	**3.8**	**5.6**	**13**	**29 (7)**
Geisinger	USA	13195	293	58 (16)	64	92 (17)	17	9 (5-21)	12	125 (16)	59	3.2	16	6.0	18	33	30 (7)
OLDW cohort 1	USA	25860	262	56 (14)	67	89 (15)	6.1	8 (5-21)	6.7	126 (17)	30	2.9	12	4.0	7.3	19	30 (7)
OLDW cohort 2	USA	10262	188	59 (16)	65	86 (16)	4.2	9 (6-21)	8.9	127 (17)	27	7.6	17	6.7	16	20	30 (7)
OLDW cohort 3	USA	18175	245	58 (14)	60	89 (16)	3.2	10 (5-22)	7.8	127 (16)	37	2.6	11	5.2	5.4	12	30 (7)
OLDW cohort 4	USA	10809	65	53 (13)	58	91 (16)	8.3	9 (5-18)	7.9	127 (16)	28	1.7	8.9	2.5	4.6	16	30 (7)
OLDW cohort 5	USA	55002	137	49 (12)	55	93 (16)	4.4	5 (3-13)	3.6	123 (15)	22	0.41	3.1	1.1	3.0	6.2	29 (7)
OLDW cohort 6	USA	82415	821	53 (14)	60	93 (16)	2.1	12 (5-30)	6.0	125 (16)	28	2.0	8.4	3.3	6.6	14	29 (6)
OLDW cohort 7	USA	19183	459	50 (15)	60	95 (17)	7.2	14 (6-42)	13	125 (16)	15	2.8	10	4.7	6.6	14	30 (7)
OLDW cohort 8	USA	13574	156	58 (14)	55	85 (15)	2.5	16 (8-39)	7.0	127 (17)	39	2.0	9.8	4.9	7.4	24	31 (7)
OLDW cohort 9	USA	44623	295	53 (16)	57	92 (16)	7.5	9 (5-19)	4.2	122 (17)	15	1.7	11	3.2	2.3	7.4	27 (6)
OLDW cohort 10	USA	28229	610	56 (16)	62	92 (17)	3.1	9 (5-20)	8.0	126 (16)	23	1.2	7.6	2.6	3.9	9.0	29 (7)
OLDW cohort 11	USA	63395	912	53 (14)	59	91 (16)	8.9	8 (4-17)	9.0	126 (17)	24	2.5	10	4.2	6.0	19	29 (7)
OLDW cohort 12	USA	22417	561	59 (15)	60	89 (16)	11	12 (6-20)	8.8	129 (17)	23	4.8	20	6.2	8.6	24	30 (7)
OLDW cohort 13	USA	13546	95	53 (14)	66	93 (17)	7.6	11 (4-21)	9.1	126 (17)	24	2.1	7.1	3.5	9.2	15	31 (7)
OLDW cohort 14	USA	3534	86	54 (15)	66	93 (17)	7.8	32 (7-103)	7.3	130 (19)	29	5.0	16	4.5	6.8	17	31 (8)
OLDW cohort 15	USA	11530	170	55 (15)	65	91 (17)	16	7 (4-15)	7.4	127 (16)	19	2.7	10	4.5	7.1	12	31 (8)
OLDW cohort 16	USA	11653	378	55 (15)	63	92 (17)	10	7 (4-17)	8.6	127 (17)	27	2.4	11	3.9	6.4	11	30 (7)
OLDW cohort 17	USA	8727	78	50 (13)	56	97 (16)	10	8 (4-18)	7.4	125 (16)	24	0.76	4.8	2.0	1.2	3.8	31 (8)
SCREAM	Sweden	36540	544	61 (15)	58	91 (16)	17	11 (5-37)	4.0	NA	50	2.0	3.8	5.6	NA	NA	NA
Validation study		**556014**	**6643**	**55 (15)**	**60**	**92 (17)**	**9.1**	**9 (5-20)**	**9.1**	**126 (17)**	**28**	**2.8**	**12**	**4.6**	**9.3**	**15**	**30 (7)**
Maccabi	Israel	76738	394	54 (15)	58	97 (17)	25	16 (9-36)	16	124 (16)	29	0.79	7.2	NA	25	10	28 (5)
OLDW cohort 18	USA	2445	48	50 (15)	67	93 (17)	3.9	17 (5-30)	11	122 (15)	16	2.5	11	5.3	7.6	20	30 (7)
OLDW cohort 19	USA	16797	339	60 (15)	61	89 (16)	1.9	9 (5-18)	9.9	126 (17)	41	6.4	18	8.2	7.2	18	31 (7)
OLDW cohort 20	USA	43798	204	54 (15)	60	94 (16)	11	6 (3-11)	7.4	121 (15)	18	0.99	6.8	3.1	2.3	9.1	28 (6)
OLDW cohort 21	USA	72744	831	55 (15)	60	90 (16)	5.3	8 (5-18)	7.4	127 (16)	29	2.8	11	4.5	6.3	19	30 (7)
OLDW cohort 22	USA	4342	65	61 (15)	61	88 (15)	0.94	15 (9-49)	12	125 (17)	29	4.8	16	8.6	8.2	24	30 (7)
OLDW cohort 23	USA	5533	173	50 (13)	62	103 (17)	21	9 (6-17)	6.7	129 (18)	27	3.7	11	2.0	12	6.0	31 (8)
OLDW cohort 24	USA	26452	320	57 (15)	61	87 (16)	3.1	10 (6-20)	5.4	131 (18)	27	1.8	10	4.5	3.3	15	29 (6)
OLDW cohort 25	USA	44570	778	57 (15)	62	90 (16)	5.5	8 (4-17)	8.6	126 (16)	31	3.1	12	5.3	6.8	22	31 (7)
OLDW cohort 26	USA	39918	785	55 (14)	58	101 (16)	6.0	10 (6-24)	9.3	126 (17)	34	2.2	8.9	3.1	3.7	12	30 (7)
OLDW cohort 27	USA	43739	489	53 (15)	63	92 (17)	10	11 (6-25)	9.8	125 (16)	29	2.2	9.7	3.9	7.5	18	31 (8)
OLDW cohort 28	USA	14255	175	58 (15)	63	86 (16)	4.3	10 (5-21)	8.1	127 (17)	26	2.7	11	5.0	7.8	15	29 (7)
OLDW cohort 29	USA	11627	100	52 (14)	52	93 (15)	11	7 (4-19)	6.8	125 (16)	11	0.58	5.4	3.0	2.8	8.1	29 (6)
OLDW cohort 30	USA	10148	153	51 (14)	52	93 (16)	7.3	8 (4-18)	6.7	126 (16)	22	2.0	7.5	2.7	4.2	12	30 (7)
OLDW cohort 31	USA	6052	78	57 (14)	64	92 (16)	3.8	9 (6-21)	8.7	125 (16)	14	2.3	9.5	5.3	59	13	29 (7)
OLDW cohort 32	USA	11464	172	54 (16)	65	92 (17)	10	6 (3-14)	11	125 (17)	28	3.5	12	6.2	6.7	14	30 (7)
OLDW cohort 33	USA	19283	257	56 (15)	63	93 (16)	6.1	9 (4-22)	12	125 (17)	26	2.5	8.3	4.6	4.7	11	30 (7)
OLDW cohort 34	USA	106109	1282	56 (15)	60	90 (16)	5.6	7 (4-17)	6.8	126 (17)	30	5.0	23	5.3	8.3	14	30 (7)

€ PCR or dipstick were converted to ACR; Cohorts with <25 events were not included in the analyses.

Supplemental Table S2. Characteristics of cohorts with participants with eGFR ≥60 ml/min/1.73 m^2 and diabetes

DM eGFR 60+	Region	N	40%	Age,y	Female	eGFR	ACR€	SBP	HTN med, %	HF, %	CHD, %	AF, %	Curr Smk, %	Former Smk, %	BMI	HbA1c	Oral DM med, %	Insulin, %
Development study		**126638**	**4183**	**59 (13)**	**48**	**90 (16)**	**12 (6-31)**	**130 (16)**	**47**	**5.4**	**19**	**5.8**	**8.1**	**20**	**34 (8)**	**7.5 (1.7)**	**48**	**21**
ADVANCE	Multi	7314	112	67 (6)	41	85 (13)	13 (7-33)	137 (18)	75	2.7	15	NA	16	26	28 (5)	7.0 (1.2)	79	18
Geisinger	USA	13389	637	62 (13)	49	90 (16)	11 (5-30)	126 (15)	84	6.9	26	7.6	14	39	34 (7)	7.2 (1.4)	61	24
OLDW cohort 1	USA	10614	324	60 (12)	49	86 (15)	15 (7-30)	130 (16)	47	7.7	23	6.7	7.4	25	34 (8)	7.4 (1.7)	49	23
OLDW cohort 2	USA	3967	140	62 (13)	46	84 (15)	12 (7-31)	129 (16)	38	14	28	9.5	18	23	34 (8)	7.3 (1.6)	44	19
OLDW cohort 3	USA	3770	119	61 (12)	53	87 (16)	11 (5-30)	131 (16)	52	5.8	20	6	5.5	13	34 (7)	7.5 (1.8)	51	17
OLDW cohort 4	USA	3579	57	55 (12)	51	91 (16)	11 (6-24)	130 (16)	35	3.2	16	3.7	4.3	17	33 (7)	7.4 (1.6)	43	25
OLDW cohort 5	USA	11231	151	53 (10)	46	94 (16)	8 (4-22)	127 (15)	37	1.4	8.3	1.8	4.4	7.9	34 (8)	7.7 (1.8)	51	14
OLDW cohort 6	USA	12351	526	58 (13)	50	90 (17)	15 (6-30)	130 (17)	45	7.2	20	5.9	10	18	33 (8)	7.5 (1.8)	48	20
OLDW cohort 7	USA	3854	198	56 (13)	44	92 (16)	13 (6-32)	131 (16)	25	5.3	18	6.2	6.8	15	34 (8)	7.7 (1.7)	30	14
OLDW cohort 8	USA	4463	114	59 (12)	43	88 (16)	14 (7-35)	129 (16)	43	4.3	17	6.1	8.1	30	34 (7)	7.5 (1.7)	49	20
OLDW cohort 9	USA	3959	77	62 (12)	50	88 (15)	11 (5-32)	129 (17)	36	5.6	27	6.4	1.8	8.7	31 (7)	7.5 (1.7)	44	12
OLDW cohort 10	USA	3864	170	60 (13)	48	91 (16)	12 (6-30)	129 (16)	38	2.8	16	4.2	2.4	9.2	33 (7)	7.3 (1.6)	39	26
OLDW cohort 11	USA	14228	450	58 (12)	47	91 (16)	10 (5-28)	130 (16)	38	4.6	18	5.4	6.4	24	34 (8)	7.6 (1.7)	44	23
OLDW cohort 12	USA	7704	386	61 (13)	47	88 (16)	12 (6-31)	130 (16)	31	6.6	28	7.2	8.6	27	34 (8)	7.4 (1.6)	31	19
OLDW cohort 13	USA	6531	138	56 (12)	50	92 (16)	10 (5-32)	129 (16)	36	4.7	13	4.9	6.6	17	35 (8)	7.7 (1.8)	47	25
OLDW cohort 14	USA	2306	106	58 (13)	50	93 (16)	43 (10-109)	133 (19)	40	6.0	24	5.2	6.0	22	34 (8)	7.6 (1.7)	40	25
OLDW cohort 15	USA	3457	96	59 (12)	48	90 (16)	11 (6-27)	130 (15)	26	4.8	17	6.0	5.7	13	35 (8)	7.4 (1.6)	34	7.6
OLDW cohort 16	USA	4612	165	60 (12)	55	88 (16)	10 (5-32)	131 (17)	43	5.0	18	4.9	7.4	13	33 (7)	7.9 (1.9)	45	22
OLDW cohort 17	USA	2041	56	53 (12)	50	97 (16)	12 (6-30)	128 (16)	35	2.1	9.4	3.2	1.4	5.0	35 (8)	7.8 (1.8)	48	17
SCREAM	Sweden	3404	161	61 (14)	37	92 (17)	16 (7-56)	NA	74	6.5	13	9.8	NA	NA	NA	6.9 (1.5)	30	58
Validation study		**244476**	**8642**	**61 (12)**	**36**	**89 (16)**	**12 (6-31)**	**131 (16)**	**38**	**6.2**	**25**	**6.3**	**16**	**23**	**33 (7)**	**7.4 (1.6)**	**49**	**19**
Go-DARTs	UK	2966	192	66 (11)	41	86 (14)	71 (22-88)	141 (18)	79	2.4	23	5.0	16	45	32 (6)	7.5 (1.5)	62	17
Maccabi	Israel	37017	952	63 (12)	41	92 (15)	24 (13-64)	133 (16)	65	2.6	20	NA	28	16	31 (6)	7.4 (1.5)	55	13
OLDW cohort 18	USA	310	<25	57 (12)	47	91 (16)	30 (11-30)	127 (16)	31	11	28	12	6.8	26	37 (9)	7.6 (1.8)	31	11
OLDW cohort 19	USA	6769	259	61 (12)	48	90 (16)	9 (5-23)	126 (15)	44	8.3	26	9.0	6.7	18	35 (8)	7.3 (1.5)	43	15
OLDW cohort 20	USA	5004	101	61 (13)	43	91 (15)	9 (5-26)	127 (15)	36	3.7	20	7.0	1.8	9.8	32 (7)	7.1 (1.6)	45	17
OLDW cohort 21	USA	19212	501	58 (13)	46	91 (16)	12 (6-33)	130 (16)	42	6.2	20	6.2	6.3	22	34 (8)	7.6 (1.7)	51	19
OLDW cohort 22	USA	1043	38	60 (13)	42	89 (15)	14 (8-35)	126 (15)	36	6.0	19	7.9	12	28	34 (8)	7.5 (1.6)	45	20
OLDW cohort 23	USA	6185	543	55 (11)	59	99 (16)	17 (8-57)	134 (19)	39	6.5	20	2.7	9.9	4.0	34 (8)	8.0 (2.0)	45	28
OLDW cohort 24	USA	4104	175	64 (12)	48	84 (15)	12 (7-29)	135 (18)	47	5.2	25	9.3	3.8	22	33 (7)	7.3 (1.4)	47	15
OLDW cohort 25	USA	21265	807	60 (12)	47	88 (16)	11 (6-30)	128 (15)	41	5.8	20	6.8	7.6	26	35 (8)	7.5 (1.6)	47	18
OLDW cohort 26	USA	14812	750	61 (12)	49	96 (16)	14 (7-37)	131 (17)	51	5.2	15	4.9	3.3	15	34 (8)	7.5 (1.8)	49	21
OLDW cohort 27	USA	14280	468	56 (12)	45	92 (16)	14 (7-35)	127 (15)	39	4.3	17	5.6	7.1	20	35 (8)	7.5 (1.6)	52	21
OLDW cohort 28	USA	3592	98	60 (12)	47	87 (16)	12 (6-33)	130 (17)	37	5.1	17	6.1	6.4	16	33 (7)	7.7 (1.8)	49	21
OLDW cohort 29	USA	1037	28	57 (12)	37	91 (15)	9 (4-25)	131 (16)	18	2.1	12	4.6	2.9	10	32 (7)	7.5 (1.6)	30	10
OLDW cohort 30	USA	2128	57	56 (11)	46	91 (16)	12 (6-29)	131 (16)	37	4.0	14	3.7	7.8	17	34 (8)	7.6 (1.8)	54	17
OLDW cohort 31	USA	2421	117	60 (12)	44	91 (16)	14 (8-34)	129 (15)	21	4.8	20	7.1	55	15	34 (8)	7.5 (1.5)	29	14
OLDW cohort 32	USA	4755	165	61 (13)	46	88 (16)	8 (4-21)	130 (17)	39	7.1	23	9.8	6.9	17	33 (7)	7.4 (1.6)	39	17
OLDW cohort 33	USA	8291	290	60 (12)	43	92 (16)	8 (4-25)	128 (15)	33	4.9	17	7.0	4.0	11	34 (8)	7.6 (1.6)	40	19
OLDW cohort 34	USA	33464	1214	61 (12)	49	88 (16)	10 (5-28)	130 (16)	43	9.0	34	7.7	9.9	18	34 (8)	7.4 (1.7)	46	19
RCAV	USA	55821	1887	65 (10)	2.9	83 (13)	11 (5-32)	131 (16)	7.6	8.5	34	5.4	28	40	32 (6)	7.3 (1.5)	49	20

€ PCR were converted to ACR; Cohorts with <25 events were not included in the analyses.

Supplemental Table S3. Characteristics of cohorts with participants with eGFR <60 ml/min/1.73 m^2 and no diabetes

	Region	N	40%	Age,y	Female	eGFR	% ACR/PCR	ACR€	Dipstick +, %	SBP	HTNmed, %	HF, %	CHD, %	AF, %	CurSmk, %	ForSmk, %	BMI
Development study		**58094**	**3516**	**71 (12)**	**62**	**47 (11)**	**20**	**19 (9-98)**	**17**	**130 (18)**	**53**	**12**	**26**	**14**	**5.2**	**20**	**29 (6)**
Geisinger	USA	3019	296	75 (12)	67	46 (10)	60	15 (6-52)	24	129 (17)	88	15	34	17	6.9	38	29 (6)
OLDW cohort 1	USA	3253	122	71 (11)	69	48 (10)	14	17 (7-57)	15	130 (18)	56	14	31	13	6.4	27	30 (7)
OLDW cohort 2	USA	2400	112	72 (10)	69	48 (10)	8.6	17 (8-58)	17	129 (18)	47	21	33	17	15	24	29 (6)
OLDW cohort 3	USA	2939	159	72 (9)	62	47 (10)	7.7	14 (6-55)	16	131 (18)	57	12	29	15	5.6	17	29 (6)
OLDW cohort 4	USA	963	29	69 (12)	60	49 (10)	11	13 (6-41)	15	131 (16)	49	10	23	12	2.8	22	30 (6)
OLDW cohort 5	USA	2044	<25	63 (11)	58	51 (9)	8.5	11 (4-40)	11	127 (17)	48	4.2	11	6.4	3.1	9.0	30 (7)
OLDW cohort 6	USA	7901	366	69 (11)	64	48 (10)	14	30 (10-155)	15	130 (19)	52	12	27	14	6.3	21	29 (6)
OLDW cohort 7	USA	1961	174	69 (14)	59	46 (12)	21	44 (11-228)	24	131 (19)	34	16	32	19	6.0	18	29 (6)
OLDW cohort 8	USA	2967	109	71 (11)	64	48 (10)	16	40 (17-179)	13	129 (17)	54	8.8	23	13	5.7	31	30 (6)
OLDW cohort 9	USA	4241	202	72 (11)	54	48 (10)	21	38 (10-227)	16	130 (18)	36	12	33	13	2.7	12	28 (5)
OLDW cohort 10	USA	3240	234	72 (10)	63	47 (11)	5.1	19 (8-57)	19	130 (19)	43	6.0	19	8.8	4.0	11	29 (6)
OLDW cohort 11	USA	7183	485	68 (13)	55	47 (11)	20	22 (9-154)	21	131 (20)	46	12	27	14	5.5	27	29 (6)
OLDW cohort 12	USA	4644	294	72 (11)	65	46 (11)	23	23 (12-127)	18	130 (18)	41	15	33	16	5.7	30	30 (7)
OLDW cohort 13	USA	1403	54	68 (13)	65	48 (10)	26	17 (10-98)	21	130 (18)	52	13	22	13	6.0	21	30 (7)
OLDW cohort 14	USA	555	37	69 (12)	62	47 (10)	17	58 (14-163)	13	134 (22)	45	14	29	15	5.0	23	30 (7)
OLDW cohort 15	USA	1508	64	71 (12)	64	47 (10)	22	12 (5-37)	16	129 (17)	34	14	27	16	3.8	13	31 (7)
OLDW cohort 16	USA	1924	183	69 (12)	59	44 (13)	24	32 (9-229)	28	132 (20)	48	14	28	13	6.8	17	29 (7)
OLDW cohort 17	USA	466	26	67 (12)	62	47 (11)	18	18 (7-65)	17	130 (17)	42	7.7	19	7.6	<3	4.5	31 (7)
SCREAM	Sweden	5483	570	75 (13)	59	45 (12)	30	52 (14-285)	14	NA	85	11	11	17	NA	NA	NA
Validation study		**64183**	**3815**	**72 (11)**	**62**	**47 (10)**	**19**	**23 (8-104)**	**18**	**130 (18)**	**54**	**14**	**31**	**16**	**7.8**	**22**	**29 (6)**
CRIC	USA	1061	258	61 (11)	49	41 (13)	100	19 (6-173)	NA	123 (20)	91	5.1	16	18	11.0	41	30 (7)
Maccabi	Israel	4975	456	74 (12)	46	47 (11)	63	45 (18-177)	15	133 (17)	74	6	25	NA	18	16	28 (5)
NephroTest	France	279	88	60 (14)	32	36 (13)	100	99 (17-412)	NA	133 (19)	94	1.4	11	NA	19	37	26 (4)
OLDW cohort 18	USA	302	<25	67 (13)	58	46 (12)	14	52 (17-421)	23	127 (18)	26	14	30	19	5.0	27	30 (7)
OLDW cohort 19	USA	3462	193	73 (9)	67	47 (10)	3.7	16 (7-40)	20	126 (18)	60	22	37	21	5.1	22	30 (7)
OLDW cohort 20	USA	2304	82	73 (10)	59	49 (10)	22	20 (7-88)	19	127 (16)	47	9.5	24	17	1.2	12	28 (5)
OLDW cohort 21	USA	8801	317	72 (11)	66	49 (9)	9.2	17 (7-60)	15	130 (18)	50	13	30	16	6.3	26	29 (6)
OLDW cohort 22	USA	729	40	74 (10)	67	48 (10)	3.4	32 (15-185)	22	126 (17)	50	14	33	19	4.9	35	29 (6)
OLDW cohort 23	USA	372	55	60 (13)	58	44 (12)	25	28 (7-122)	28	133 (21)	59	17	27	9.0	15	7.0	31 (7)
OLDW cohort 24	USA	3968	148	73 (10)	64	49 (10)	14	26 (12-88)	12	136 (21)	52	9.2	29	14	2.7	21	29 (6)
OLDW cohort 25	USA	6960	379	72 (11)	68	47 (10)	7.5	14 (6-59)	19	128 (17)	52	15	30	16	4.8	29	30 (7)
OLDW cohort 26	USA	2541	229	70 (12)	59	46 (11)	21	46 (13-259)	25	131 (19)	63	15	26	13	3.0	19	29 (6)
OLDW cohort 27	USA	4769	234	70 (13)	65	48 (10)	20	23 (10-98)	20	127 (17)	49	14	29	15	5.1	23	30 (7)
OLDW cohort 28	USA	2821	109	72 (10)	68	48 (10)	10	19 (7-104)	15	131 (18)	47	11	25	15	4.9	18	29 (6)
OLDW cohort 29	USA	794	44	69 (12)	52	47 (11)	20	23 (9-96)	19	132 (18)	24	5.4	20	9.5	2.0	12	29 (6)
OLDW cohort 30	USA	713	58	64 (14)	50	47 (12)	13	19 (7-149)	24	133 (20)	37	12	22	12	4.3	17	30 (7)
OLDW cohort 31	USA	658	50	73 (11)	67	47 (11)	7.4	38 (10-125)	22	130 (17)	27	16	34	20	56	18	29 (6)
OLDW cohort 32	USA	1596	96	74 (11)	63	47 (10)	22	18 (7-90)	21	132 (19)	59	17	35	20	8.5	20	29 (6)
OLDW cohort 33	USA	2305	132	71 (11)	62	47 (11)	30	20 (8-72)	25	127 (18)	46	14	25	15	4.0	11	30 (6)
OLDW cohort 34	USA	14258	677	72 (11)	65	48 (10)	12	17 (6-69)	16	130 (18)	52	17	40	17	10	19	29 (7)
SKS	UK	515	170	65 (16)	38	31 (13)	100	89 (19-352)	NA	137 (20)	90	13	10	NA	13	51	27 (8)

€ PCR or dipstick were converted to ACR; Cohorts with <25 events were not included in the analyses.

Supplemental Table S4. Characteristics of cohorts with participants with eGFR <60 ml/min/1.73 m^2 and diabetes

	Region	N	40%	Age,y	Female	eGFR	ACR€	SBP	HTN med, %	HF, %	CHD, %	AF, %	Cur Smk, %	Former Smk, %	BMI	HbA1c	Oral DM med, %	Insulin, %
Development study		**30530**	**3345**	**70 (10)**	**55**	**46 (11)**	**27 (10-109)**	**132 (18)**	**65**	**18**	**38**	**15**	**6.3**	**26**	**33 (7)**	**7.2 (1.5)**	**39**	**27**
ADVANCE	Multi	1282	52	71 (6)	55	50 (9)	19 (9-58)	138 (18)	83	5.1	18	NA	9.1	29	29 (5)	7.0 (1.2)	77	20
Geisinger	USA	3663	561	74 (10)	57	46 (11)	25 (8-99)	128 (17)	97	23	48	19	6.7	45	33 (7)	7.0 (1.2)	50	34
OLDW cohort 1	USA	2918	210	70 (9)	56	47 (10)	27 (10-96)	131 (18)	61	20	41	15	6.1	31	34 (7)	7.2 (1.5)	42	31
OLDW cohort 2	USA	1534	133	72 (9)	56	46 (10)	23 (9-72)	131 (18)	59	28	44	20	17	27	33 (8)	7.2 (1.4)	37	25
OLDW cohort 3	USA	1154	116	71 (8)	62	46 (11)	23 (8-96)	132 (17)	68	20	38	14	5.2	18	33 (7)	7.3 (1.5)	46	22
OLDW cohort 4	USA	608	35	68 (11)	57	48 (10)	21 (8-74)	135 (18)	54	14	31	11	4.8	20	33 (7)	7.4 (1.5)	38	29
OLDW cohort 5	USA	1060	45	64 (10)	52	48 (10)	18 (6-69)	128 (16)	57	10	20	6.5	5.2	8.0	34 (8)	7.4 (1.5)	45	17
OLDW cohort 6	USA	3822	437	68 (10)	57	45 (11)	30 (11-129)	133 (20)	61	21	38	13	8.3	24	33 (8)	7.3 (1.6)	36	26
OLDW cohort 7	USA	838	137	70 (10)	51	45 (12)	33 (12-143)	132 (17)	43	21	43	18	5.8	21	33 (7)	7.5 (1.5)	23	19
OLDW cohort 8	USA	1260	79	71 (10)	54	46 (11)	28 (10-93)	129 (16)	64	15	33	15	4.4	37	33 (7)	7.1 (1.4)	40	25
OLDW cohort 9	USA	1093	93	72 (9)	50	45 (11)	37 (11-151)	132 (19)	51	18	51	15	1.6	13	31 (6)	7.3 (1.5)	39	14
OLDW cohort 10	USA	945	140	72 (8)	60	46 (11)	27 (11-91)	131 (18)	58	9.3	32	10	2.9	10	33 (7)	7.0 (1.3)	41	26
OLDW cohort 11	USA	2944	377	69 (11)	51	46 (11)	30 (10-156)	134 (19)	60	18	38	16	5.3	31	33 (7)	7.3 (1.5)	35	27
OLDW cohort 12	USA	2360	296	71 (10)	55	45 (11)	28 (10-119)	131 (18)	48	19	42	15	5.8	34	34 (8)	7.2 (1.5)	26	24
OLDW cohort 13	USA	1131	107	69 (11)	58	47 (10)	29 (9-146)	132 (18)	59	16	33	13	5.6	21	34 (8)	7.3 (1.5)	39	30
OLDW cohort 14	USA	432	59	69 (10)	58	47 (11)	67 (21-135)	135 (20)	58	21	42	16	4.9	27	34 (8)	7.4 (1.4)	34	29
OLDW cohort 15	USA	773	54	72 (10)	58	47 (10)	22 (9-81)	130 (15)	35	16	35	15	3.2	13	34 (7)	7.2 (1.4)	29	9.4
OLDW cohort 16	USA	1329	159	69 (10)	58	44 (12)	27 (9-194)	134 (18)	62	16	30	11	8.5	18	33 (7)	7.7 (1.8)	35	30
OLDW cohort 17	USA	250	<25	66 (11)	53	47 (10)	29 (10-127)	132 (18)	49	11	25	11	<5	6.8	34 (8)	7.5 (1.5)	36	21
SCREAM	Sweden	1134	255	72 (11)	41	40 (13)	79 (21-419)	NA	96	22	24	19	NA	NA	NA	6.6 (1.5)	24	61
Validation study		**49215**	**5491**	**71 (10)**	**46**	**47 (11)**	**28 (10-124)**	**132 (18)**	**59**	**19**	**42**	**16**	**11**	**27**	**33 (7)**	**7.3 (1.4)**	**40**	**25**
CRIC	USA	1044	437	62 (9)	44	37 (13)	94 (12-712)	133 (24)	99	14	32	21	10	46	34 (8)	7.3 (1.6)	38	56
Go-DARTs	UK	885	144	76 (8)	52	46 (11)	88 (27-141)	145 (21)	93	10	34	13	10	52	31 (6)	7.3 (1.4)	53	26
Maccabi	Israel	6672	1019	74 (9)	41	46 (11)	70 (25-291)	135 (18)	84	12	38	NA	20	19	31 (5)	7.3 (1.3)	49	20
NephroTest	France	107	30	67 (11)	25	35 (13)	148 (32-518)	140 (22)	100	5.6	29	NA	7	50	29 (6)	7.2 (1.3)	38	50
OLDW cohort 19	USA	1490	130	71 (8)	61	47 (10)	19 (8-58)	126 (16)	66	25	48	20	5.4	20	34 (8)	7.1 (1.3)	36	22
OLDW cohort 20	USA	970	88	73 (9)	50	46 (10)	29 (9-140)	129 (16)	56	16	39	18	<2	10	32 (7)	6.9 (1.4)	42	20
OLDW cohort 21	USA	3836	323	71 (10)	55	47 (10)	24 (9-92)	131 (17)	62	21	41	16	6.0	31	33 (7)	7.2 (1.5)	42	23
OLDW cohort 22	USA	292	28	72 (9)	55	46 (11)	28 (14-124)	127 (16)	58	15	35	18	8.6	34	33 (7)	7.4 (1.4)	37	28
OLDW cohort 23	USA	712	204	62 (11)	58	44 (12)	103 (19-1027)	138 (24)	68	23	40	7.0	8.0	5.1	34 (8)	8.0 (1.9)	28	46
OLDW cohort 24	USA	1680	189	73 (8)	53	45 (11)	25 (10-88)	138 (22)	66	17	44	19	2.3	26	33 (7)	7.3 (1.3)	38	22
OLDW cohort 25	USA	5496	484	72 (9)	58	46 (10)	24 (9-84)	128 (16)	61	19	39	17	5.4	32	34 (8)	7.3 (1.5)	38	25
OLDW cohort 26	USA	2113	265	71 (10)	56	46 (11)	41 (13-202)	133 (18)	72	17	31	11	2.9	19	33 (7)	7.2 (1.6)	35	30
OLDW cohort 27	USA	2599	264	69 (11)	54	46 (11)	28 (11-111)	128 (17)	61	18	39	17	5.8	25	35 (8)	7.3 (1.5)	42	28
OLDW cohort 28	USA	1143	80	71 (10)	56	47 (10)	21 (8-88)	133 (19)	58	17	36	15	6.9	21	33 (7)	7.4 (1.5)	39	24
OLDW cohort 30	USA	289	<25	65 (10)	54	46 (11)	21 (8-107)	136 (19)	56	16	34	13	6.2	20	33 (7)	7.5 (1.7)	37	28
OLDW cohort 31	USA	492	62	71 (10)	55	46 (11)	36 (14-137)	130 (17)	35	22	48	19	57	21	33 (8)	7.4 (1.3)	17	20
OLDW cohort 32	USA	1288	145	75 (8)	54	46 (10)	21 (8-84)	133 (18)	67	25	46	23	8.5	25	32 (7)	7.2 (1.3)	32	22
OLDW cohort 33	USA	1686	186	71 (9)	52	46 (11)	27 (8-139)	129 (17)	56	20	34	17	3.0	9.1	34 (8)	7.4 (1.4)	27	27
OLDW cohort 34	USA	8801	946	71 (9)	58	46 (10)	23 (8-116)	132 (18)	64	23	51	18	11	22	34 (8)	7.2 (1.4)	38	25
RCAV	USA	7525	438	70 (9)	3	52 (8)	17 (7-59)	132 (18)	11	18	45	8.9	20	44	32 (6)	7.4 (1.4)	43	27
SKS	UK	95	29	67 (12)	34	29 (11)	127 (27-784)	139 (21)	97	23	15	NA	13	47	31 (10)	7.6 (1.7)	22	34

€ PCR or dipstick were converted to ACR; Cohorts with <25 events were not included in the analyses.

Supplemental Table S5. Risk equations for eGFR 40% decline over 2-3 years

			eGFR ≥60		eGFR <60	
			Non-Diabetics	Diabetics	Non-Diabetics	Diabetics
Variable names	**i**	**Variable center and scale: x_i**	**Coefficients: $beta_i$**			
Age, 10y	1	(age - 60) /10	0.3690	0.1465	-0.0796	-0.1725
Male	2	male - 0.5	-0.1433	-0.2481	0.0626	-0.1452
eGFR, 5ml	3	(egfr - E*) /5	0.0325	-0.0562	-0.1672	-0.0769
lnACR*	4	ln (acr /10)	0.4190	0.4098	0.3915	0.4658
Systolic blood pressure, 20mmHg	6	(sbp - 130) /20	0.3048	0.1518	0.2373	0.2068
Anti-hypertensive medication use	7	1 or 0	0.2656	0.2846	0.0790	0.1665
SBP*HTN meds	8	[(sbp - 130) /20] × (1 or 0)	-0.1140	-0.0321	-0.0214	-0.0549
History of HF	9	hx_hf-0.05	1.0534	0.9234	0.4898	0.4216
History of CHD	10	hx_chd-0.15	0.4102	0.2168	0.2343	0.2173
History of Afib	11	1 or 0	0.1140	0.3087	0.0739	0.0456
Current smoker	12	1 or 0	0.3803	0.1186	0.2903	-0.0338
Former smoker	13	1 or 0	0.1862	0.0777	0.1725	0.1386
BMI, 5 kg/m^2	14	(bmi-30)/5	0.0425	0.0308	-0.0231	0.0253
HbA1c, mmol	15	hba1c-7		0.0987		-0.0031
Oral antiDM medication	16	1 or 0		-0.0638		-0.1232
Insulin	17	1 or 0		0.2359		0.0980
Constant			-4.7045	-4.2125	-3.4540	-3.2874
Risk equation: exp (constant + sum (x_i × $beta_i$)) / [1 + exp (constant + sum (x_i × $beta_i$))]						

* E = 85 when eGFR ≥60, E = 45 when eGFR <60

The discontinuity at eGFR=60 ml/min/1.73 m^2 is inherent to stratified models. On the website, we show risk every 5 ml/min/1.73 m^2 and have chosen to average the two models's estimates at eGFR=60 ml/min/1.73 m^2 for a smoother transition.

Supplemental Table S6. Models predicting the composite outcome of ≥40% decline in eGFR or kidney failure using hypertension instead of systolic blood pressure and anti-hypertension medications in eGFR ≥60 ml/min/1.73 m^2

	No diabetes		Diabetes	
	Model 4	**Model 5**	**Model 4**	**Model 5**
Age, 10y	**1.47 (1.38, 1.57)**	**1.41 (1.31, 1.52)**	**1.16 (1.10, 1.22)**	**1.13 (1.05, 1.22)**
Male	**0.89 (0.80, 0.98)**	**0.80 (0.70, 0.91)**	**0.76 (0.69, 0.83)**	**0.75 (0.67, 0.85)**
eGFR, 5ml	**1.03 (1.00, 1.05)**	1.01 (0.98, 1.04)	**0.94 (0.92, 0.96)**	**0.95 (0.93, 0.98)**
lnACR†	**1.54 (1.45, 1.63)**	**1.49 (1.39, 1.59)**	**1.53 (1.49, 1.58)**	**1.49 (1.44, 1.55)**
History of hypertension	**1.38 (1.18, 1.62)**	**1.54 (1.30, 1.82)**	**1.56 (1.33, 1.82)**	**1.53 (1.21, 1.94)**
History of HF	**2.83 (2.46, 3.24)**	**2.69 (2.29, 3.17)**	**2.50 (2.17, 2.88)**	**2.61 (2.20, 3.10)**
History of CHD	**1.43 (1.29, 1.60)**	**1.52 (1.32, 1.74)**	**1.23 (1.10, 1.38)**	1.15 (0.99, 1.33)
History of Afib	1.12 (0.92, 1.35)	1.17 (0.93, 1.46)	**1.34 (1.07, 1.68)**	**1.48 (1.15, 1.89)**
Current smoker	**1.47 (1.19, 1.81)**	**1.44 (1.12, 1.85)**	1.11 (0.98, 1.27)	**1.18 (1.00, 1.39)**
Former smoker	**1.19 (1.08, 1.30)**	**1.22 (1.07, 1.40)**	1.07 (0.95, 1.20)	1.05 (0.93, 1.19)
BMI, 5 kg/m^2	**1.07 (1.03, 1.11)**	**1.05 (1.01, 1.10)**	**1.03 (1.01, 1.06)**	1.03 (0.99, 1.07)
HbA1c, mmol			**1.10 (1.07, 1.14)**	**1.27 (1.06, 1.52)**
Oral antiDM medication			0.99 (0.88, 1.12)	1.06 (0.86, 1.31)
Insulin			**1.32 (1.13, 1.54)**	**1.49 (1.27, 1.73)**
Slope‡ <-3 ml		**1.24 (1.04, 1.48)**		**1.09 (1.05, 1.13)**
-3ml ≤ Slope‡ < -1 ml		1.14 (0.95, 1.37)		0.99 (0.86, 1.14)
Slope‡ ≥ 1 ml		**1.68 (1.46, 1.93)**		**1.26 (1.04, 1.52)**
Development population, N	492,667	199,611	126,606	80,430
Median C-statistic (IQR)	0.743 (0.699, 0.772)	0.748 (0.705, 0.768)	0.757 (0.742, 0.774)	0.757 (0.729, 0.765)
Change in c-statistic from previous model/column (using same N) [£]		**0.004 (0.000, 0.009)**		**0.004 (0.002, 0.006)**
Validation population, N	550,179	236,380	238440	142673
Median C-statistic (IQR)	0.740 (0.718, 0.762)	0.759 (0.721, 0.774)	0.770 (0.754, 0.784)	0.770 (0.744, 0.793)
Change in c-statistic from previous model/column (using same N) [£]		**0.008 (0.004, 0.012)**		**0.004 (0.002, 0.006)**

†lnACR was converted by urine dipstick protein using published equation as: lnACR = 2.4732 + 0.7537 × (if trace) + 1.7346 × (if +) + 3.3624 × (if ++) + 4.6676 × (if more than ++); ‡Reference: -1 ml/min/1.73 m^2/year ≤ Slope < 1 ml/min/1.73 m^2/year; [£]Change in Model 5 c-statistic is from Model 4, run with the same sample size.

Bold indicates statistically significant result

Supplemental Table S7. Models predicting the composite outcome of ≥40% decline in eGFR or kidney failure using hypertension instead of systolic blood pressure and anti-hypertension medications in eGFR <60 ml/min/1.73 m^2

	No diabetes		Diabetes	
	Model 4	**Model 5**	**Model 4**	**Model 5**
Age, 10y	**0.93 (0.88, 0.98)**	**0.87 (0.81, 0.94)**	**0.85 (0.78, 0.91)**	**0.85 (0.78, 0.93)**
Male	1.05 (0.96, 1.15)	1.02 (0.90, 1.15)	**0.86 (0.77, 0.97)**	0.88 (0.77, 1.00)
eGFR, 5ml	**0.84 (0.81, 0.87)**	**0.82 (0.79, 0.85)**	**0.92 (0.88, 0.96)**	**0.91 (0.87, 0.96)**
lnACR†	**1.50 (1.46, 1.55)**	**1.48 (1.43, 1.54)**	**1.64 (1.56, 1.72)**	**1.61 (1.53, 1.69)**
History of hypertension	1.17 (0.99, 1.39)	1.21 (0.98, 1.48)	0.87 (0.69, 1.10)	0.88 (0.64, 1.21)
History of HF	**1.62 (1.44, 1.83)**	**1.66 (1.44, 1.92)**	**1.51 (1.33, 1.72)**	**1.61 (1.38, 1.88)**
History of CHD	**1.22 (1.10, 1.36)**	**1.24 (1.09, 1.40)**	**1.22 (1.07, 1.38)**	1.12 (0.96, 1.32)
History of Afib	1.01 (0.83, 1.23)	1.05 (0.83, 1.33)	1.04 (0.87, 1.24)	0.95 (0.77, 1.17)
Current smoker	**1.34 (1.09, 1.65)**	1.33 (0.98, 1.80)	0.97 (0.77, 1.23)	0.97 (0.73, 1.28)
Former smoker	**1.18 (1.06, 1.32)**	1.15 (0.98, 1.34)	**1.14 (1.02, 1.28)**	**1.14 (1.01, 1.29)**
BMI, 5 kg/m^2	0.99 (0.95, 1.03)	0.97 (0.92, 1.01)	**1.04 (1.00, 1.07)**	**1.07 (1.03, 1.11)**
HbA1c, mmol			0.99 (0.95, 1.03)	0.98 (0.79, 1.22)
Oral antiDM medication			0.91 (0.79, 1.05)	1.04 (0.81, 1.34)
Insulin			1.12 (0.97, 1.29)	1.22 (0.92, 1.60)
Slope‡ <-3 ml		0.94 (0.77, 1.15)		0.98 (0.94, 1.03)
-3ml ≤ Slope‡ < -1 ml		0.97 (0.79, 1.19)		0.95 (0.80, 1.14)
Slope‡ ≥ 1 ml		**1.44 (1.16, 1.79)**		1.18 (0.99, 1.40)
Development population, N	56,050	32,923	30,279	22,422
Median C-statistic (IQR)	0.732 (0.700, 0.757)	0.743 (0.687, 0.769)	0.780 (0.737, 0.804)	0.771 (0.729, 0.786)
Change in c-statistic from previous model/column (using same N) [£]		**0.004 (0.001, 0.007)**		**0.001 (0.000, 0.003)**
Validation population, N	63,211	38,729	47,950	34,291
Median C-statistic (IQR)	0.737 (0.718, 0.771)	0.731 (0.710, 0.783)	0.767 (0.747, 0.804)	0.764 (0.754, 0.805)
Change in c-statistic from previous model/column (using same N) [£]		0.003 (-0.002, 0.007)		0.001 (-0.000, 0.001)

†lnACR was converted by urine dipstick protein using published equation as: lnACR = 2.4732 + 0.7537 × (if trace) + 1.7346 × (if +) + 3.3624 × (if ++) + 4.6676 × (if more than ++); ‡Reference: -1 ml/min/1.73 m^2/year ≤ Slope < 1 ml/min/1.73 m^2/year; [£]Change in Model 5 c-statistic is from Model 4, run with the same sample size.

Bold indicates statistically significant result

Supplemental Table S8. Models predicting the composite outcome of ≥30% decline in eGFR or kidney failure in eGFR ≥60 ml/min/1.73 m^2

	No diabetes			Diabetes		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Age, 10y	**1.55 (1.48, 1.63)**	**1.43 (1.36, 1.50)**	**1.37 (1.29, 1.46)**	**1.24 (1.20, 1.28)**	**1.23 (1.19, 1.28)**	**1.20 (1.15, 1.25)**
Male	**0.86 (0.81, 0.92)**	**0.78 (0.73, 0.84)**	**0.74 (0.68, 0.81)**	**0.81 (0.75, 0.87)**	**0.78 (0.72, 0.85)**	**0.77 (0.70, 0.85)**
eGFR, 5ml	**1.03 (1.01, 1.05)**	**1.04 (1.02, 1.06)**	1.01 (0.99, 1.04)	**0.94 (0.92, 0.96)**	**0.95 (0.93, 0.97)**	**0.95 (0.93, 0.97)**
lnACR†	**1.48 (1.41, 1.56)**	**1.42 (1.35, 1.49)**	**1.38 (1.31, 1.45)**	**1.50 (1.46, 1.54)**	**1.40 (1.36, 1.44)**	**1.37 (1.32, 1.42)**
Systolic blood pressure, 20mmHg		**1.32 (1.26, 1.38)**	**1.32 (1.24, 1.39)**		**1.18 (1.08, 1.30)**	**1.22 (1.10, 1.35)**
Anti-hypertensive medication use		**1.30 (1.15, 1.47)**	**1.33 (1.19, 1.48)**		**1.34 (1.26, 1.42)**	**1.29 (1.20, 1.39)**
SBP*HTN meds		**0.91 (0.86, 0.96)**	**0.87 (0.80, 0.95)**		0.94 (0.87, 1.03)	**0.88 (0.79, 0.98)**
History of HF		**2.46 (2.18, 2.77)**	**2.57 (2.20, 3.00)**		**2.12 (1.90, 2.36)**	**2.18 (1.92, 2.47)**
History of CHD		**1.49 (1.37, 1.62)**	**1.49 (1.34, 1.65)**		**1.30 (1.18, 1.42)**	**1.26 (1.14, 1.38)**
History of Afib		**1.18 (1.00, 1.40)**	1.06 (0.88, 1.28)		**1.28 (1.10, 1.48)**	**1.33 (1.11, 1.59)**
Current smoker		**1.31 (1.12, 1.53)**	**1.42 (1.21, 1.67)**		1.09 (0.98, 1.22)	1.10 (0.97, 1.26)
Former smoker		**1.15 (1.06, 1.25)**	**1.21 (1.09, 1.34)**		1.07 (0.98, 1.16)	1.03 (0.94, 1.13)
BMI, 5 kg/m^2		**1.05 (1.02, 1.08)**	**1.05 (1.02, 1.09)**		**1.03 (1.01, 1.06)**	1.03 (1.00, 1.07)
HbA1c, mmol					**1.09 (1.07, 1.11)**	1.10 (0.95, 1.28)
Oral antiDM medication					0.95 (0.87, 1.04)	0.97 (0.82, 1.15)
Insulin					**1.24 (1.10, 1.41)**	**1.73 (1.54, 1.95)**
Slope‡ <-3 ml			1.13 (0.99, 1.28)			**1.09 (1.06, 1.11)**
-3ml ≤ Slope‡ < -1 ml			1.04 (0.93, 1.17)			0.98 (0.89, 1.09)
Slope‡ ≥ 1 ml			**1.87 (1.69, 2.08)**			**1.30 (1.14, 1.48)**
Development population, N	456,129	456,129	181,619	123,201	123,201	78,285
Median C-statistic (IQR)	0.692 (0.656, 0.708)	0.711 (0.690, 0.734)	0.706 (0.686, 0.726)	0.704 (0.681, 0.718)	0.731 (0.716, 0.753)	0.723 (0.706, 0.745)
Change in c-statistic from previous model/column (using same N) [£]		**0.028 (0.022, 0.035)**	**0.014 (0.010, 0.017)**		**0.029 (0.024, 0.035)**	**0.012 (0.007, 0.017)**
Validation population, N	550,179	550,179	236,380	238,750	238,750	142,871
Median C-statistic (IQR)	0.687 (0.665, 0.707)	0.721 (0.690, 0.732)	**0.714 (0.690, 0.731)**	0.723 (0.694, 0.740)	0.749 (0.728, 0.758)	0.748 (0.724, 0.775)
Change in c-statistic from previous model/column (using same N) [£]		**0.027 (0.023, 0.030)**	**0.016 (0.012, 0.020)**		**0.026 (0.020, 0.032)**	**0.006 (0.004, 0.008)**

†lnACR was converted by urine dipstick protein using published equation as: lnACR = 2.4732 + 0.7537 × (if trace) + 1.7346 × (if +) + 3.3624 × (if ++) + 4.6676 × (if more than ++); ‡Reference: -1 ml/min/1.73 m^2/year ≤ Slope < 1 ml/min/1.73 m^2/year; [£]Change in Model 2 c-statistic is from Model 1, run with the same sample size. Change in Model 3 c-statistic is from Model 2, re-run with the smaller sample size of Model 3.

Bold indicates statistically significant result

Supplemental Table S9. Models predicting the composite outcome of ≥50% decline in eGFR or kidney failure in eGFR ≥60 ml/min/1.73 m^2

	No diabetes			Diabetes		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Age, 10y	**1.49 (1.40, 1.59)**	**1.37 (1.26, 1.48)**	**1.28 (1.15, 1.44)**	**1.09 (1.03, 1.14)**	**1.08 (1.02, 1.15)**	**1.10 (1.00, 1.21)**
Male	1.06 (0.93, 1.20)	0.95 (0.83, 1.08)	0.89 (0.75, 1.05)	0.96 (0.84, 1.09)	0.89 (0.77, 1.03)	0.91 (0.75, 1.10)
eGFR, 5ml	1.01 (0.98, 1.04)	1.02 (0.99, 1.05)	1.01 (0.98, 1.04)	**0.94 (0.92, 0.96)**	**0.96 (0.93, 0.98)**	0.98 (0.95, 1.00)
lnACR†	**1.71 (1.61, 1.83)**	**1.63 (1.53, 1.74)**	**1.56 (1.44, 1.70)**	**1.69 (1.64, 1.74)**	**1.54 (1.49, 1.60)**	**1.48 (1.41, 1.56)**
Systolic blood pressure, 20mmHg		**1.33 (1.22, 1.46)**	**1.32 (1.14, 1.52)**		**1.21 (1.08, 1.36)**	**1.27 (1.07, 1.52)**
Anti-hypertensive medication use		**1.28 (1.08, 1.51)**	**1.30 (1.10, 1.55)**		**1.36 (1.17, 1.57)**	**1.35 (1.10, 1.64)**
SBP*HTN meds		**0.88 (0.79, 0.98)**	0.90 (0.74, 1.08)		0.94 (0.81, 1.07)	0.84 (0.69, 1.02)
History of HF		**2.81 (2.36, 3.35)**	**2.73 (2.12, 3.51)**		**2.51 (2.02, 3.10)**	**2.49 (1.93, 3.21)**
History of CHD		**1.47 (1.24, 1.73)**	**1.70 (1.40, 2.05)**		**1.27 (1.09, 1.48)**	**1.23 (1.01, 1.49)**
History of Afib		1.05 (0.78, 1.40)	1.01 (0.71, 1.44)		1.24 (0.90, 1.72)	**1.44 (1.02, 2.05)**
Current smoker		**1.59 (1.27, 1.98)**	**1.60 (1.21, 2.10)**		1.12 (0.90, 1.39)	1.17 (0.93, 1.47)
Former smoker		**1.28 (1.13, 1.45)**	**1.32 (1.12, 1.56)**		1.14 (0.99, 1.31)	1.08 (0.88, 1.32)
BMI, 5 kg/m^2		1.05 (1.00, 1.10)	**1.07 (1.01, 1.14)**		1.02 (0.97, 1.06)	1.02 (0.97, 1.08)
HbA1c, mmol					**1.12 (1.07, 1.16)**	**1.34 (1.06, 1.69)**
Oral antiDM medication					0.96 (0.83, 1.10)	1.01 (0.74, 1.38)
Insulin					**1.29 (1.06, 1.58)**	**1.28 (1.00, 1.65)**
Slope‡ <-3 ml			1.22 (0.87, 1.71)			**1.09 (1.04, 1.14)**
-3ml ≤ Slope‡ < -1 ml			1.33 (0.97, 1.82)			0.97 (0.80, 1.17)
Slope‡ ≥ 1 ml			**1.49 (1.16, 1.90)**			1.25 (0.95, 1.65)
Development population, N	445,320	445,320	177,304	117,581	117,581	75,594
Median C-statistic (IQR)	0.720 (0.699, 0.736)	0.742 (0.722, 0.770)	0.741 (0.700, 0.753)	0.722 (0.700, 0.744)	0.766 (0.741, 0.771)	0.743 (0.726, 0.775)
Change in c-statistic from previous model/column (using same N) [£]		**0.029 (0.019, 0.040)**	0.002 (-0.002, 0.006)		0.039 (0.029, 0.050)	**0.003 (0.001, 0.006)**
Validation population, N	550,179	550,179	236,139	236,360	236,360	141,641
Median C-statistic (IQR)	0.707 (0.695, 0.725)	0.737 (0.712, 0.760)	0.740 (0.709, 0.771)	0.744 (0.733, 0.765)	0.781 (0.766, 0.791)	0.773 (0.764, 0.788)
Change in c-statistic from previous model/column (using same N) [£]		**0.029 (0.022, 0.036)**	0.003 (-0.002, 0.009)		0.029 (0.021, 0.037)	**0.003 (0.000, 0.005)**

†lnACR was converted by urine dipstick protein using published equation as: lnACR = 2.4732 + 0.7537 × (if trace) + 1.7346 × (if +) + 3.3624 × (if ++) + 4.6676 × (if more than ++); ‡Reference: -1 ml/min/1.73 m^2/year ≤ Slope < 1 ml/min/1.73 m^2/year; [£]Change in Model 2 c-statistic is from Model 1, run with the same sample size. Change in Model 3 c-statistic is from Model 2, re-run with the smaller sample size of Model 3.

Bold indicates statistically significant result

Supplemental Table S10. Models predicting the composite outcome of ≥30% decline in eGFR or kidney failure in eGFR <60 ml/min/1.73 m^2

	No diabetes			Diabetes		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Age, 10y	**1.06 (1.02, 1.10)**	1.01 (0.96, 1.06)	0.95 (0.88, 1.01)	**0.92 (0.87, 0.98)**	**0.91 (0.85, 0.97)**	**0.89 (0.83, 0.95)**
Male	1.02 (0.96, 1.09)	0.97 (0.89, 1.05)	0.98 (0.88, 1.09)	**0.85 (0.78, 0.93)**	**0.84 (0.77, 0.92)**	**0.86 (0.78, 0.94)**
eGFR, 5ml	**0.86 (0.84, 0.88)**	**0.87 (0.85, 0.89)**	**0.86 (0.84, 0.88)**	**0.94 (0.91, 0.97)**	**0.95 (0.93, 0.98)**	**0.94 (0.91, 0.97)**
lnACR†	**1.47 (1.43, 1.51)**	**1.45 (1.41, 1.48)**	**1.41 (1.36, 1.46)**	**1.59 (1.54, 1.65)**	**1.53 (1.47, 1.59)**	**1.51 (1.45, 1.57)**
Systolic blood pressure, 20mmHg		**1.26 (1.16, 1.37)**	**1.23 (1.10, 1.37)**		**1.22 (1.13, 1.32)**	**1.19 (1.08, 1.32)**
Anti-hypertensive medication use		1.09 (0.97, 1.22)	**1.21 (1.07, 1.36)**		1.10 (0.98, 1.23)	**1.15 (1.00, 1.32)**
SBP*HTN meds		0.99 (0.90, 1.08)	1.06 (0.92, 1.21)		0.96 (0.88, 1.05)	0.98 (0.88, 1.10)
History of HF		**1.81 (1.60, 2.05)**	**1.82 (1.58, 2.10)**		**1.49 (1.32, 1.68)**	**1.60 (1.40, 1.81)**
History of CHD		**1.26 (1.14, 1.39)**	**1.34 (1.18, 1.52)**		**1.19 (1.06, 1.34)**	1.12 (0.99, 1.27)
History of Afib		1.15 (0.97, 1.37)	1.09 (0.90, 1.32)		1.10 (0.92, 1.33)	0.98 (0.82, 1.18)
Current smoker		**1.37 (1.17, 1.59)**	**1.25 (1.02, 1.54)**		1.02 (0.86, 1.21)	0.99 (0.80, 1.22)
Former smoker		**1.16 (1.06, 1.28)**	**1.19 (1.04, 1.37)**		**1.18 (1.06, 1.32)**	**1.23 (1.10, 1.37)**
BMI, 5 kg/m^2		1.00 (0.97, 1.04)	0.99 (0.94, 1.05)		1.03 (1.00, 1.07)	**1.05 (1.01, 1.09)**
HbA1c, mmol					1.00 (0.97, 1.04)	0.89 (0.75, 1.07)
Oral antiDM medication					0.92 (0.83, 1.02)	1.02 (0.82, 1.26)
Insulin					**1.16 (1.02, 1.32)**	**1.28 (1.03, 1.59)**
Slope‡ <-3 ml			**0.81 (0.69, 0.95)**			1.00 (0.96, 1.04)
-3ml ≤ Slope‡ < -1 ml			0.87 (0.70, 1.07)			0.99 (0.88, 1.11)
Slope‡ ≥ 1 ml			**1.34 (1.11, 1.61)**			**1.26 (1.08, 1.47)**
Development population, N	52,611	52,611	30,779	29,395	29,395	21,717
Median C-statistic (IQR)	0.682 (0.667, 0.710)	0.721 (0.703, 0.733)	0.718 (0.693, 0.731)	0.716 (0.690, 0.748)	0.738 (0.704, 0.769)	0.738 (0.689, 0.760)
Change in c-statistic from previous model/column (using same N)[£]		**0.030 (0.024, 0.035)**	**0.006 (0.003, 0.009)**		**0.018 (0.014, 0.022)**	**0.003 (0.001, 0.005)**
Validation population, N	64,019	64,019	39,231	48,330	48,330	34,517
Median C-statistic (IQR)	0.687 (0.642, 0.703)	0.709 (0.683, 0.726)	0.708 (0.683, 0.729)	0.728 (0.695, 0.758)	0.745 (0.724, 0.766)	0.751 (0.733, 0.773)
Change in c-statistic from previous model/column (using same N)[£]		**0.025 (0.015, 0.036)**	**0.006 (0.001, 0.012)**		**0.016 (0.011, 0.022)**	0.001 (-0.000, 0.002)

†lnACR was converted by urine dipstick protein using published equation as: lnACR = 2.4732 + 0.7537 × (if trace) + 1.7346 × (if +) + 3.3624 × (if ++) + 4.6676 × (if more than ++); ‡Reference: -1 ml/min/1.73 m^2/year ≤ Slope < 1 ml/min/1.73 m^2/year; [£]Change in Model 2 c-statistic is from Model 1, run with the same sample size. Change in Model 3 c-statistic is from Model 2, re-run with the smaller sample size of Model 3.

Bold indicates statistically significant result

Supplemental Table S11. Models predicting the composite outcome of ≥50% decline in eGFR or kidney failure in eGFR <60 ml/min/1.73 m^2

	No diabetes			Diabetes		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Age, 10y	**0.88 (0.84, 0.93)**	**0.84 (0.80, 0.89)**	**0.80 (0.74, 0.87)**	**0.75 (0.69, 0.82)**	**0.75 (0.69, 0.82)**	**0.75 (0.68, 0.83)**
Male	**1.15 (1.03, 1.29)**	1.12 (0.99, 1.26)	1.16 (0.98, 1.37)	0.97 (0.81, 1.15)	0.94 (0.78, 1.14)	0.93 (0.76, 1.15)
eGFR, 5ml	**0.80 (0.76, 0.85)**	**0.83 (0.79, 0.86)**	**0.80 (0.76, 0.85)**	**0.88 (0.83, 0.93)**	**0.90 (0.85, 0.94)**	**0.88 (0.83, 0.94)**
lnACR†	**1.52 (1.45, 1.59)**	**1.49 (1.42, 1.56)**	**1.48 (1.40, 1.57)**	**1.72 (1.63, 1.82)**	**1.65 (1.55, 1.75)**	**1.62 (1.51, 1.72)**
Systolic blood pressure, 20mmHg		**1.20 (1.08, 1.33)**	**1.23 (1.04, 1.46)**		**1.30 (1.14, 1.49)**	**1.31 (1.12, 1.53)**
Anti-hypertensive medication use		1.07 (0.91, 1.26)	1.21 (0.97, 1.50)		**1.32 (1.11, 1.56)**	**1.36 (1.11, 1.66)**
SBP*HTN meds		1.01 (0.89, 1.15)	1.05 (0.85, 1.31)		0.89 (0.76, 1.04)	0.90 (0.75, 1.09)
History of HF		**1.66 (1.40, 1.97)**	**1.81 (1.43, 2.29)**		**1.41 (1.19, 1.67)**	**1.49 (1.22, 1.83)**
History of CHD		**1.26 (1.10, 1.45)**	**1.25 (1.05, 1.48)**		**1.21 (1.02, 1.44)**	1.14 (0.92, 1.41)
History of Afib		0.82 (0.62, 1.07)	0.84 (0.62, 1.14)		0.92 (0.71, 1.21)	0.80 (0.56, 1.14)
Current smoker		1.26 (0.98, 1.63)	1.16 (0.78, 1.71)		1.05 (0.80, 1.38)	1.07 (0.78, 1.48)
Former smoker		1.11 (0.94, 1.32)	1.09 (0.86, 1.38)		1.09 (0.94, 1.28)	1.11 (0.94, 1.31)
BMI, 5 kg/m^2		0.97 (0.92, 1.03)	0.95 (0.89, 1.02)		1.01 (0.94, 1.07)	1.04 (0.99, 1.10)
HbA1c, mmol					1.00 (0.95, 1.06)	0.87 (0.68, 1.11)
Oral antiDM medication					0.83 (0.68, 1.00)	0.96 (0.71, 1.31)
Insulin					1.07 (0.88, 1.30)	1.10 (0.80, 1.51)
Slope‡ <-3 ml			0.97 (0.76, 1.22)			1.00 (0.93, 1.06)
-3ml ≤ Slope‡ < -1 ml			0.92 (0.69, 1.21)			0.88 (0.70, 1.12)
Slope‡ ≥ 1 ml			1.22 (0.90, 1.65)			1.09 (0.85, 1.41)
Development population, N	48,583	48,583	28,609	27477	27477	20471
Median C-statistic (IQR)	0.751 (0.717, 0.778)	0.769 (0.733, 0.794)	0.773 (0.748, 0.809)	0.802 (0.743, 0.828)	0.809 (0.757, 0.837)	0.797 (0.758, 0.833)
Change in c-statistic from previous model/column (using same N)[£]		**0.016 (0.010, 0.021)**	0.002 (-0.001, 0.004)		**0.010 (0.006, 0.014)**	**0.002 (0.001, 0.004)**
Validation population, N	62,330	62,330	38,136	47749	47749	34165
Median C-statistic (IQR)	0.752 (0.701, 0.835)	0.772 (0.735, 0.845)	0.756 (0.729, 0.829)	0.796 (0.747, 0.842)	0.806 (0.761, 0.846)	0.791 (0.752, 0.847)
Change in c-statistic from previous model/column (using same N)[£]		**0.018 (0.009, 0.026)**	0.000 (-0.002, 0.002)		**0.011 (0.006, 0.017)**	0.000 (-0.002, 0.002)

†lnACR was converted by urine dipstick protein using published equation as: lnACR = 2.4732 + 0.7537 × (if trace) + 1.7346 × (if +) + 3.3624 × (if ++) + 4.6676 × (if more than ++); ‡Reference: -1 ml/min/1.73 m^2/year ≤ Slope < 1 ml/min/1.73 m^2/year; [£]Change in Model 2 c-statistic is from Model 1, run with the same sample size. Change in Model 3 c-statistic is from Model 2, re-run with the smaller sample size of Model 3.

Bold indicates statistically significant result

Supplemental Table S12. Risk reclassification using a model 2 developed adjusting for the competing event of death (vertical strata) vs. without adjustment for death (horizontal strata), stratified by eGFR <60 ml/min/1.73 m^2 and diabetes status

(A) No Diabetes, eGFR ≥60 ml/min/1.73 m^2

	>10%	>5% to 10%	>1% to 5%	≤1%
>10%			126 (1.0%)	3616 (89.4%)
>5% to 10%		493 (0.2%)	11881 (95.0%)	429 (10.6%)
>1% to 5%	1433 (0.6%)	202016 (98.0%)	501 (4.0%)	
≤1%	255250 (99.4%)	3531 (1.7%)		

(B) Diabetes, eGFR ≥60 ml/min/1.73 m^2

	>10%	>5% to 10%	>1% to 5%	≤1%
>10%			145 (1.0%)	7444 (97.3%)
>5% to 10%		235 (0.2%)	14094 (96.0%)	204 (2.7%)
>1% to 5%	75 (0.3%)	94517 (97.8%)	436 (3.0%)	
≤1%	29592 (99.7%)	1930 (2.0%)		

(C) No Diabetes, eGFR <60 ml/min/1.73 m^2

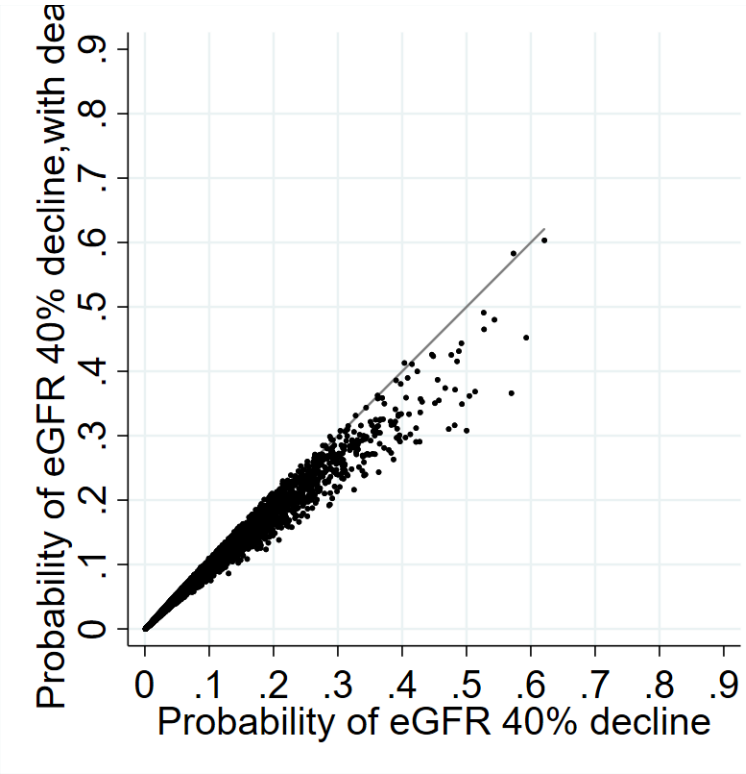
	>10%	>5% to 10%	>1% to 5%	≤1%
>10%			151 (1.4%)	6204 (96.0%)
>5% to 10%		471 (1.2%)	10272 (95.7%)	260 (4.0%)
>1% to 5%	<11 (NA)	39559 (98.7%)	309 (2.9%)	
≤1%	90 (NA)	34 (0.1%)		

(D) Diabetes, eGFR <60 ml/min/1.73 m^2

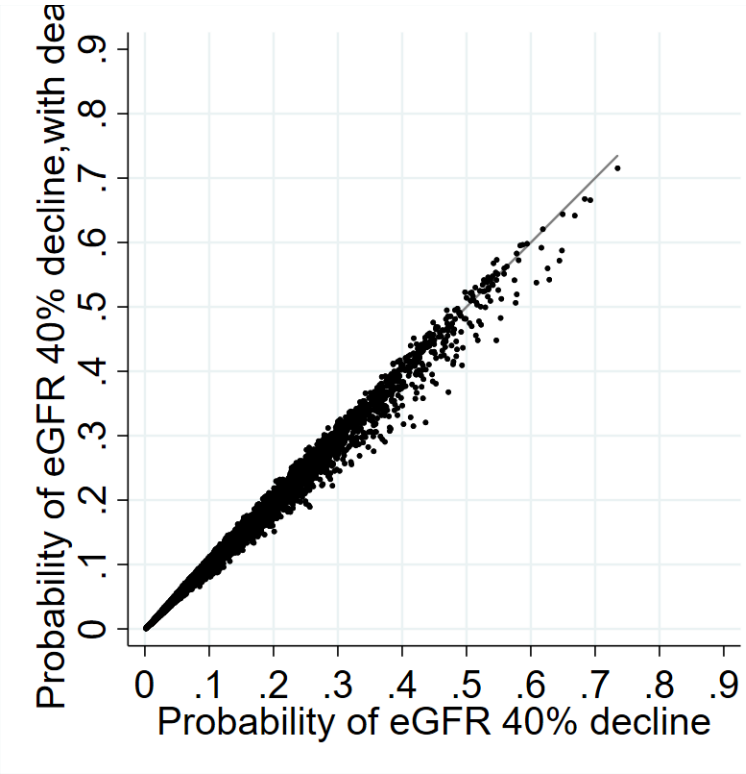
	>10%	>5% to 10%	>1% to 5%	≤1%
>10%			87 (1.0%)	9622 (97.5%)
>5% to 10%		97 (0.7%)	7905 (93.5%)	246 (2.5%)
>1% to 5%	<11 (NA)	14483 (98.8%)	464 (5.5%)	
≤1%	140 (NA)	74 (0.5%)		

Supplemental Figure S1. Comparison of absolute risk prediction of model 2 developed adjusting for the competing event of death vs. without adjustment for death, stratified by eGFR <60 ml/min/1.73 m^2 and diabetes status

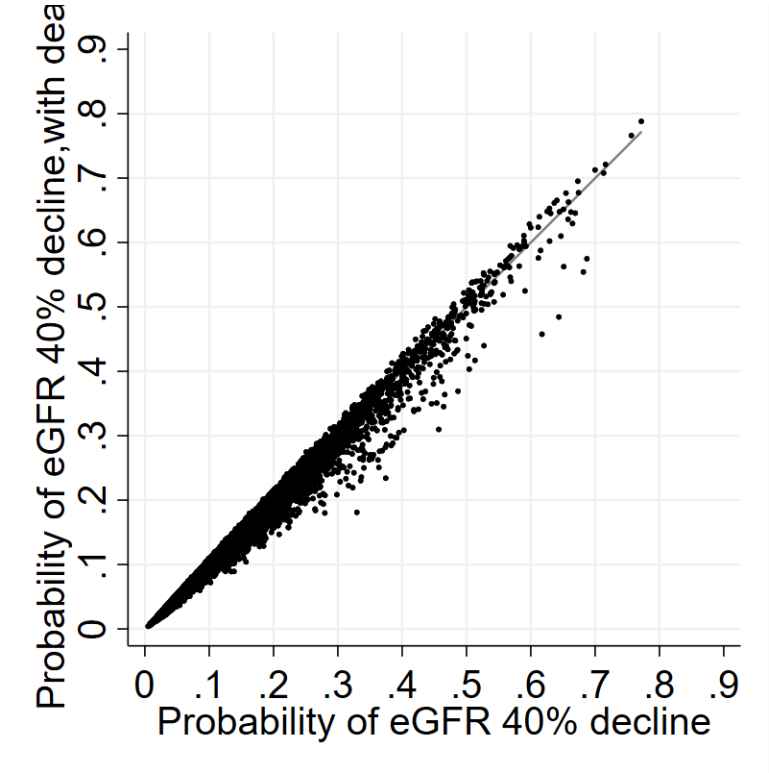
(A) No Diabetes, eGFR ≥60 ml/min/1.73 m^2



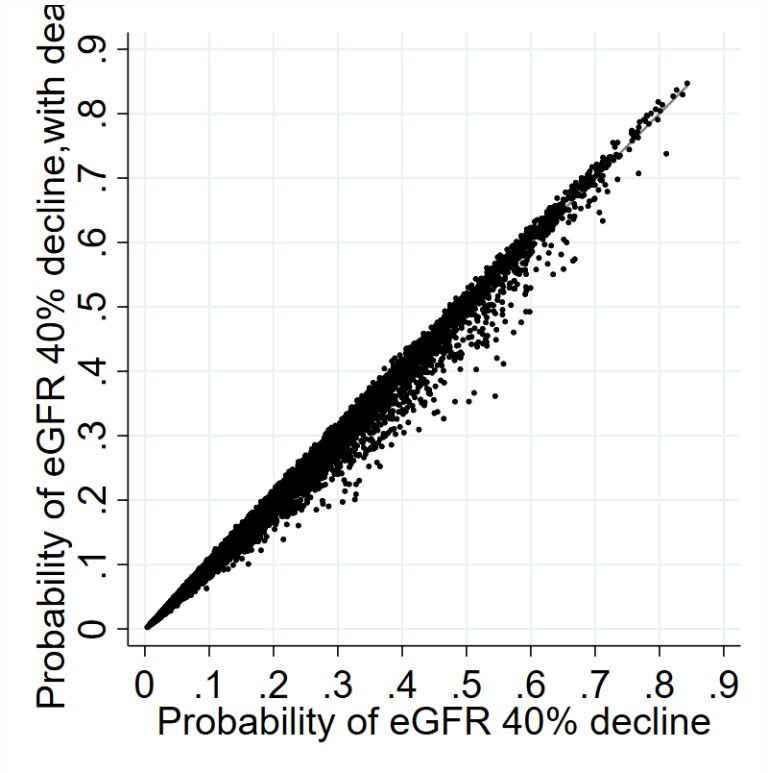
(B) Diabetes, eGFR ≥60 ml/min/1.73 m^2



(C) No Diabetes, eGFR <60 ml/min/1.73 m^2



(D) Diabetes, eGFR <60 ml/min/1.73 m^2



References

1. Matsushita K, van der Velde M, Astor BC, Woodward M, Levey AS, de Jong PE, et al. Association of estimated glomerular filtration rate and albuminuria with all-cause and cardiovascular mortality in general population cohorts: a collaborative meta-analysis. *Lancet* 2010; **375**(9731): 2073-81.
2. Matsushita K, Mahmoodi BK, Woodward M, Emberson JR, Jafar TH, Jee SH, et al. Comparison of risk prediction using the CKD-EPI equation and the MDRD study equation for estimated glomerular filtration rate. *JAMA* 2012; **307**(18): 1941-51.
3. Hallan SI, Matsushita K, Sang Y, Mahmoodi BK, Black C, Ishani A, et al. Age and Association of Kidney Measures With Mortality and End-stage Renal Disease. *JAMA* 2012; **308**(22): 2349-60.
4. Levey AS, Coresh J, Greene T, Marsh J, Stevens LA, Kusek JW, et al. Expressing the Modification of Diet in Renal Disease Study Equation for Estimating Glomerular Filtration Rate with Standardized Serum Creatinine Values. *Clin Chem* 2007; **53**(4): 766-72.
5. Inker LA, Eneanya ND, Coresh J, Tighiouart H, Wang D, Sang Y, et al. New Creatinine- and Cystatin C-Based Equations to Estimate GFR without Race. *N Engl J Med* 2021; **385**(19): 1737-49.
6. Patel A, MacMahon S, Chalmers J, Neal B, Woodward M, Billot L, et al. Effects of a fixed combination of perindopril and indapamide on macrovascular and microvascular outcomes in patients with type 2 diabetes mellitus (the ADVANCE trial): a randomised controlled trial. *Lancet* 2007; **370**(9590): 829-40.
7. Denker M, Boyle S, Anderson AH, Appel LJ, Chen J, Fink JC, et al. Chronic Renal Insufficiency Cohort Study (CRIC): Overview and Summary of Selected Findings. *Clin J Am Soc Nephrol* 2015; **10**(11): 2073-83.
8. Perkins RM, Bucaloiu ID, Kirchner HL, Ashouian N, Hartle JE, Yahya T. GFR decline and mortality risk among patients with chronic kidney disease. *Clin J Am Soc Nephrol* 2011; **6**(8): 1879-86.
9. Hebert HL, Shepherd B, Milburn K, Veluchamy A, Meng W, Carr F, et al. Cohort Profile: Genetics of Diabetes Audit and Research in Tayside Scotland (GoDARTS). *Int J Epidemiol* 2018; **47**(2): 380-1j.
10. Shalev V, Chodick G, Goren I, Silber H, Kokia E, Heymann AD. The use of an automated patient registry to manage and monitor cardiovascular conditions and related outcomes in a large health organization. *Int J Cardiol* 2011; **152**(3): 345-9.
11. Moranne O, Froissart M, Rossert J, Gauci C, Boffa JJ, Haymann JP, et al. Timing of onset of CKD-related metabolic complications. *J Am Soc Nephrol* 2009; **20**(1): 164-71.
12. Kovesdy CP, Norris KC, Boulware LE, Lu JL, Ma JZ, Streja E, et al. Association of Race With Mortality and Cardiovascular Events in a Large Cohort of US Veterans. *Circulation* 2015; **132**(16): 1538-48.
13. Gasparini A, Evans M, Coresh J, Grams ME, Norin O, Qureshi AR, et al. Prevalence and recognition of chronic kidney disease in Stockholm healthcare. *Nephrol Dial Transplant* 2016; **31**(12): 2086-94.
14. Tollitt J, Odudu A, Flanagan E, Chinnadurai R, Smith C, Kalra PA. Impact of prior stroke on major clinical outcome in chronic kidney disease: the Salford kidney cohort study. *BMC Nephrol* 2019; **20**(1): 432.