Supplementary Online Content

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

eAppendix 1. Data analysis overview and analytic notes for some of individual studies

1.1 Overview:

As previously described,[1] the collaborating cohorts were asked to compile a dataset with approximately 30 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 22 of the 31 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 (ARIC, CCF, CRIC, GCKD, Geisinger, GLOMMS-1, HUNT, KEEP, KPNW, Maccabi, MMKD, Mt Sinai BioMe, NephroTest, NZDCS, Okinawa 83 and 93, ICES-KDT, REGARDS, Severance, SRR-CKD, VA CKD) and studies that were not standardized (AASK, BC CKD, CRIB, MASTERPLAN, MDRD, Pima, RENAAL, Sunnybrook). 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]

1.2 Notes for individual studies (references are included in eAppendix 3):

AASK: All participants were free of diabetes at baseline. Urine protein-to-creatinine ratios were converted to ACR by dividing by 2.655 for men and 1.7566 for women, as previously described.[5]

CCF: For the purposes of the meta-analyses, CCF was split into two cohorts depending on whether ACR or dipstick was available. Urinary dipsticks were converted to ACR (negative as 9, trace as 43, "+" as 81, "++" as 315, ">++" as 1073).[6,7] The cohort with dipstick was not included in the meta-analysis of pooled coefficients and mean baseline hazard.

CRIB: This study includes hospital nephrology outpatients with creatinine >130 µmol/L.

Geisinger: This study includes all Geisinger primary care recipients, 18 years or older as of index date, and who have CKD, defined as two or more outpatient eGFR values < 60 by CKD-EPI equation. Covariates obtained most closely to index date within a past year were included in models. Urine protein-to-creatinine ratios were converted to ACR by dividing by 2.655 for men and 1.7566 for women, as previously described.[5]

GLOMMS-1: Urine protein-to-creatinine ratios were converted to ACR by dividing by 2.655 for men and 1.7566 for women, as previously described.[5]

Gonryo: Urine protein-to-creatinine ratios were converted to ACR by dividing by 2.655 for men and 1.7566 for women, as previously described.[5]

HUNT: This study is a general-population study overall but measured urine albumin mainly in participants with treated hypertension or diabetes. However, this study was categorized as a general population cohort, since they measured albuminuria in a 5% random sample out of ≈65,000 participants and, thus, the relationship between kidney measures and risk was maintained. This study has not collected use of anti-diabetic medication, use of ACE inhibitors or ARB, use of statins, LDL cholesterol, or hypercholesterolemia. Most of the glucose measurements were non-fasting.

ICES-KDT: This study has only collected use of anti-diabetic or anti-hypertensive medications among those 66 years or older. Diabetes mellitus and hypertension were determined by physician or hospital admission diagnosis.

KEEP: Urinary dipsticks were converted to ACR (negative as 9, trace as 43, “+” as 81, “++” as 315, “>++” as 1073).[6,7] This study was not included in the meta-analysis of pooled coefficients and mean baseline hazard.

KPNW: This study included patients who were HMO members with CKD stage 3 or 4 without a history of renal replacement therapy. This study defined diabetes using their own clinical tool that includes diagnosis codes, treatment codes, and laboratory values, and has not collected use of anti-diabetic medications. Urinary dipsticks were converted to ACR (negative as 9, trace as 43, “+” as 81, “++” as 315, “>++” as 1073).[6,7] This study was not included in the meta-analysis of pooled coefficients and mean baseline hazard.

MASTERPLAN: Urine protein-to-creatinine ratios were converted to ACR by dividing by 2.655 for men and 1.7566 for women, as previously described.[5]

MDRD: This study has not collected use of anti-diabetic or anti-hypertensive medications. Urine protein-to-creatinine ratios were converted to ACR by dividing by 2.655 for men and 1.7566 for women, as previously described.[5]

MMKD: All participants were free of diabetes at baseline. Urine protein-to-creatinine ratios were converted to ACR by dividing by 2.655 for men and 1.7566 for women, as previously described. [5]

Mt Sinai BioMe: Creatinine standardization cannot be accurately determined in this study. Urine protein-to-creatinine ratios were converted to ACR by dividing by 2.655 for men and 1.7566 for women, as previously described.[5]

NephroTest: Urine protein-to-creatinine ratios were converted to ACR by dividing by 2.655 for men and 1.7566 for women, as previously described.[5]

NZDCS: All participants had a diagnosis of diabetes according to primary care provider.

Okinawa83: Urinary dipsticks were converted to ACR (negative as 9, trace as 43, “+” as 81, “++” as 315, “>++” as 1073).[6,7] This study was not included in the meta-analysis of pooled coefficients and mean baseline hazard.

Okinawa93: Urinary dipsticks were converted to ACR (negative as 9, trace as 43, “+” as 81, “++” as 315, “>++” as 1073).[6,7] This study was not included in the meta-analysis of pooled coefficients and mean baseline hazard.

Severance: ESRD was defined as hospitalization with ICD-10 code N17-N19. Urinary dipsticks were converted to ACR (negative as 9, trace as 43, “+” as 81, “++” as 315, “>++” as 1073).[6,7] This study was not included in the meta-analysis of pooled coefficients and mean baseline hazard.

SRR CKD: This study did not collect use of anti-diabetic or anti-hypertensive medications. Diabetes mellitus was diagnosed according to ICD-codes or determined by diabetes nephropathy. Hypertension was determined by hypertensive nephropathy.

Sunnybrook: This cohort includes patients seen in the nephrology clinics at Sunnybrook Hospital in Toronto, Ontario, Canada with CKD stage 3-5 or proteinuric CKD stage 1-2. Urine protein-to-creatinine ratios were converted to ACR by dividing by 2.655 for men and 1.7566 for women, as previously described.[5] There were some individuals in the Sunnybrook cohort who were also in the ICES-KDT cohort. The exact number is not able to be determined, but it would be a low proportion of overlap (~6%).

VA CKD: This cohort includes all United States veterans seeking care in the VA system during October 1, 2004-September 30, 2006 with stable CKD stage 1-5 but not on dialysis. Majority of participants are male (98%).

1.3 Cohort key design features:

Cohort	Study Design	Baseline Years	Country/Region	Missing Variables	Creatinine	Albuminuria	ESRD
AASK	Clinical trial	1995-98	USA	--	SL, Other	PCR	Active

	cohort						
ARIC	Research cohort	1996-98	USA	albumin, phosphorous, bicarbonate, calcium	SL, MDRD calibration	ACR	Linkage, Codes
BC CKD	Clinical database	2000	Canada	--	ML, Other	ACR	Active
CCF	Clinical database	2005	USA	--	SL,IDMS traceable	ACR and Dipstick	Linkage
CRIB	Research cohort	1996-98	UK	--	SL, Other	ACR	Active (with chart validation)
CRIC	Research cohort	2003-08	USA	--	SL, IDMS traceable	ACR	Active (with confirmation), Linkage
GCKD	Research cohort	2010-12	Germany	bicarbonate	SL, IDMS traceable	ACR	Active (with confirmation)
Geisinger	Clinical database	2004-09	USA	--	SL, IDMS traceable	ACR and PCR	Linkage
GLOMMS 1	Clinical database	2003	Scotland	albumin, phosphorous, bicarbonate, calcium	SL, IDMS traceable	ACR and PCR	Linkage
Gonryo	Research cohort	2006-08	Japan	bicarbonate	ML, IDMS traceable	PCR	Active
HUNT	Research cohort	1995-97	Norway	albumin, phosphorous, bicarbonate, calcium	SL, IDMS traceable	ACR	Active, Linkage
ICES-KDT	Healthcare administrative database	1999-2013	Canada	--	ML, Other*	ACR	Linkage, Codes
KEEP	Health screening program	2000-2008	USA	albumin, bicarbonate	SL, IDMS calibrated	Dipstick	Linkage
KPNW	Clinical database	1997-2000	USA	--	SL, IDMS traceable	Dipstick	Active
Maccabi	Clinical database	2007	Israel	bicarbonate	SL, IDMS calibration	ACR	Active
MASTERPLAN	Clinical trial cohort	2004-05	Netherlands	--	ML, Other	PCR	Active
MDRD	Clinical trial cohort	1989-93	USA	--	SL, Other	PCR	Active, Linkage
MMKD	Research cohort	1997	Austria/Germany / Italy	bicarbonate	SL, IDMS traceable	PCR	Active
Mt Sinai BioMe	Clinical database	2003-14	USA	--	ML, Other*	ACR and PCR	Codes
NephroTest	Research cohort	2003-08	France	--	ML, IDMS calibration	ACR and PCR	Linkage
NZDCS	Clinical database	2000-06	New Zealand	albumin, phosphorous, bicarbonate, calcium	ML, Other*	ACR	Linkage, Codes
Okinawa 83	Health screening	1983	Japan	hypertension, albumin,	SL, IDMS calibration	Dipstick	Linkage

				phosphorous, bicarbonate, calcium			
Okinawa 93	Health screening	1993	Japan	hypertension, albumin, phosphorous, bicarbonate, calcium	SL, IDMS calibration	Dipstick	Linkage
Pima	Research cohort	1982	USA	albumin, phosphorous, bicarbonate, calcium	SL, MDRD calibration	ACR	Active, Linkage
REGARDS	Research cohort	2003	USA	phosphorous, bicarbonate, calcium	SL, IDMS traceable	ACR	Linkage
RENAAL	Clinical trial cohort	1996-98	Multiple**	--	SL, Other	ACR	Active (with adjudication)
Severance	Health check-up database	1994-2001	Korea	phosphorous, bicarbonate, calcium	ML, IDMS calibration	Dipstick	Codes
SRR-CKD	Renal registry	2005-11	Sweden	--	ML, IDMS traceable	ACR	Linkage
Sunnybrook	Clinical database	2000	Canada	--	ML, Other	PCR	Linkage
VA CKD	Clinical database	2005-06	USA	phosphorous	ML, IDMS traceable	ACR	Linkage

ESRD: end-stage renal disease. **ACR**: urine albumin-to-creatinine ratio. **PCR:** urine protein-to-creatinine ratio. **SL**: single lab conducted all assays. **ML**: multiple labs conducted all assays. **IDMS calibration**: sending samples to a lab where methods have been directly demonstrated to be traceable to IDMS methods. **IDMS traceable**: methods which were developed to be IDMS traceable. **MDRD calibration**: calibration to the Cleveland Clinic either by exchange of samples or data comparison (typically regression). Results were multiplied by 0.95 to be comparable to IDMS methods. **Other**: we multiply by 0.95 assuming the methods were more comparable to the Cleveland Clinic serum creatinine for MDRD Study. **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.

*Given some serum creatinine measurements likely to be IDMS traceable, we used the original creatinine values for the analysis.

** RENAAL included participants from: Argentina, Austria, Brazil, Canada, Chile, China, Costa Rica, Czech Republic, Denmark, France, Germany, Hungary, Italy, Israel, Japan, Malaysia, Mexico, Netherlands, New Zealand, Peru, Portugal, Russia, Singapore, Slovakia, Spain, United Kingdom, United States of America, Venezuela

1.4 Missing covariates in each cohort:

Source	Cohort	Total N	Age	Sex	eGFR	ACR	DM	HTN	Alb	Phos	Bicarb	Calc
North America	AASK	898	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	ARIC	722	0%	0%	0%	1.2%	0.6%	0.6%	NA	NA	NA	NA
	BC CKD	11,131	0%	0%	0%	0%	0%	0%	1.2%	0.5%	0.8%	0.3%
	CCF ACR	4,102	0%	0%	0%	0%	0%	0%	7%	86%	0.4%	0.4%
	CCF DIP	12,275	0%	0%	0%	0%	0%	0%	10%	79%	0.2%	0.2%
	CRIC	3,099	0%	0%	0%	4.4%	0%	0%	1.5%	1.7%	0.8%	0.7%
	Geisinger	20,720	0%	0%	0%	76%	0%	0%	35%	94%	1.9%	1.7%
	ICES-KDT	100,569	0%	0%	0%	0%	0%	0%	68%	79%	83%	71%
	KEEP	16,425	0%	0%	0%	28%	0%	0%	NA	39%	NA	38.6%
	KPNW	1,486	0%	0%	0%	0%	0%	0%	63%	70%	47%	48%
	MDRD	1,459	0%	0%	0%	2.2%	0%	25%	0%	0.1%	0.7%	0.6%
	Mt Sinai BioMe	3,574	0%	0%	0%	36%	0%	0%	18%	59%	0.8%	7.0%
	Pima	78	0%	0%	0%	0%	0%	0%	NA	NA	NA	NA
	REGARDS	3,158	0%	0%	0%	5.5%	0.3%	0.5%	33%	NA	NA	NA
	Sunnybrook	3,098	0%	0%	0%	39%	0%	0%	26%	26%	7.4%	26%
	VA CKD	434,810	0%	0%	0%	91%	0%	0%	31%	NA	79%	80%
Non-North America	CRIB	382	0%	0%	0%	19%	0%	0%	0.3%	3.9%	13%	0%
	GCKD	3927	0%	0%	0%	1.4%	0%	0%	0.1%	0%	NA	0%
	GLOMMS-1	1,007	0%	0%	0%	0%	0%	0%	NA	NA	NA	NA
	Gonryo	1,088	0%	0%	0%	67%	0%	0%	0%	0%	NA	0%
	HUNT	1,060	0%	0%	0%	0%	0.8%	0.5%	NA	NA	NA	NA
	Maccabi	58,630	0%	0%	0%	46%	0%	0%	64%	85%	NA	61.7%
	MASTERPLAN	579	0%	0%	0%	0%	0%	0%	0.5%	0.2%	1.4%	0.2%
	MMKD	140	0%	0%	0%	0%	0%	0%	0%	0%	NA	0%
	NephroTest	1,317	0%	0%	0%	4.6%	0%	0.7%	3.3%	0.2%	0.6%	0.5%
	NZDCS	8,865	0%	0%	0%	8.6%	0%	12%	NA	NA	NA	NA
	Okinawa83	1,698	0%	0%	0%	0%	87%	NA	NA	NA	NA	NA
	Okinawa93	15,162	0%	0%	0%	0%	44%	NA	NA	NA	NA	NA
	RENAAL	1,434	0%	0%	0%	0%	0%	0%	1.7%	1.0%	0%	1.0%
	Severance	3,173	0%	0%	0%	0.3%	0%	0.4%	0%	NA	NA	NA
	SRR CKD	5,291	0%	0%	0%	0%	0.02%	0.02%	1.3%	3.1%	63%	8.4%

eGFR: estimated glomerular filtration rate, **ACR**: indicating availability of any urine albumin-to-creatinine ratio, urine protein-to-creatinine ratio or dipstick measurement, **DM**: diabetes mellitus, **HTN**: hypertension, **Alb**: serum albumin, **Phos**: serum phosphorous, **Bicarb**: serum bicarbonate, **Calc**: serum calcium, **NA**: variable not available.

1.5 Sample size and percent of total sample for each Kidney Failure Risk Equation (KFRE) analysis

Source	Cohort	Total N	4-variable KFRE	6-variable KFRE	8-variable KFRE
North America	AASK	898	898 (100%)	898 (100%)	898 (100%)
	ARIC	722	713 (98.8%)	707 (97.9%)	
	BC CKD	11,131	11,131 (100%)	11,131 (100%)	10,917 (98.1%)
	CCF ACR	4,102	4,102 (100%)	4,102 (100%)	565 (13.8%)
	CCF DIP	12,275	12,275 (100%)	12,275 (100%)	2,573 (21%)
	CRIC	3,099	2,962 (95.6%)	2,962 (95.6%)	2,896 (93.4%)
	Geisinger	20,720	4,409 (21.3%)	4,409 (21.3%)	414 (2%)
	ICES-KDT	100,569	100,569 (100%)	100,569 (100%)	12,955 (12.9%)
	KEEP	16,425	11,973 (72.9%)	11,972 (72.9%)	
	KPNW	1,486	1,486 (100%)	1,486 (100%)	317 (21.3%)
	MDRD	1,459	1,427 (97.8%)	1,083 (74.2%)	1,414 (96.9%)
	Mt Sinai BioMe	3,574	1,527 (42.7%)	1,527 (42.7%)	625 (17.5%)
	Pima	78	78 (100%)	78 (100%)	
	REGARDS	3,158	3,043 (96.4%)	3,025 (95.8%)	
	Sunnybrook	3,098	1,838 (59.3%)	1,838 (59.3%)	1,508 (48.7%)
	VA CKD	434,810	34,190 (7.9%)	34,190 (7.9%)	
	Sub-Total	**617,604**	**192,621 (31.2%)**	**192,252 (31.1%)**	**35,082 (5.7%)**
Non-North America	CRIB	382	308 (80.6%)	308 (80.6%)	263 (68.8%)
	GCKD	3927	3,871 (98.6%)	3,871 (98.6%)	
	GLOMMS-1	1,007	1,007 (100%)	1,007 (100%)	
	Gonryo	1,088	362 (33.3%)	362 (33.3%)	
	HUNT	1,060	1,060 (100%)	1,047 (98.8%)	
	Maccabi	58,630	31,426 (53.6%)	31,426 (53.6%)	
	MASTERPLAN	579	579 (100%)	579 (100%)	568 (98.1%)
	MMKD	140	140 (100%)	140 (100%)	
	NephroTest	1,317	1,257 (95.4%)	1,249 (94.8%)	1,205 (91.5%)
	NZDCS	8,865	8,099 (91.4%)	7,115 (80.3%)	
	Okinawa83	1,698	1,698 (100%)		
	Okinawa93	15,162	15,162 (100%)		
	RENAAL	1,434	1,434 (100%)	1,434 (100%)	1,409 (98.3%)
	Severance	3,173	3,164 (99.7%)	3,151 (99.3%)	
	SRR CKD	5,291	5,291 (100%)	5,290 (100%)	1,694 (32%)
	Sub-Total	**103,753**	**74,858 (72.2%)**	**56,979 (54.9%)**	**5,139 (5%)**
	Overall Total	721,357	267,479 (37.1%)	249,231 (34.6%)	40,221 (5.6%)

eAppendix 2. Equations to apply 2 or 5-year of the 4, 6, or 8-variable Kidney Failure Risk Prediction to an Individual Patient

Preferred equations are in bold

4-variable equation, Patient 2-year risk:

Original	**1 – 0.9750 ^ exp (-0.2201 × (age/10 – 7.036) + 0.2467 × (male – 0.5642) – 0.5567 × (eGFR/5 – 7.222) + 0.4510 × (logACR – 5.137))**
Regional Calibrated Original – North America	1 – 0.9751 ^ exp (-0.2201 × (age/10 – 7.036) + 0.2467 × (male – 0.5642) – 0.5567 × (eGFR/5 – 7.222) + 0.4510 × (logACR – 5.137))
Regional Calibrated Original – non-North America	**1 – 0.9832 ^ exp (-0.2201 × (age/10 – 7.036) + 0.2467 × (male – 0.5642) – 0.5567 × (eGFR/5 – 7.222) + 0.4510 × (logACR – 5.137))**
Pooled	1 – 0.9676 ^ exp (-0.2245 × (age/10 – 7.036) + 0.3212 × (male – 0.5642) – 0.4553 × (eGFR/5 – 7.222) + 0.4469 × (logACR – 5.137))

4-variable equation, Patient 5-year risk:

Original	**1 – 0.9240 ^ exp (-0.2201 × (age/10 – 7.036) + 0.2467 × (male – 0.5642) – 0.5567 × (eGFR/5 – 7.222) + 0.4510 × (logACR – 5.137))**
Regional Calibrated Original – North America	1 – 0.8996 ^ exp (-0.2201 × (age/10 – 7.036) + 0.2467 × (male – 0.5642) – 0.5567 × (eGFR/5 – 7.222) + 0.4510 × (logACR – 5.137))
Regional Calibrated Original – non-North America	**1 – 0.9365 ^ exp (-0.2201 × (age/10 – 7.036) + 0.2467 × (male – 0.5642) – 0.5567 × (eGFR/5 – 7.222) + 0.4510 × (logACR – 5.137))**
Pooled	1 – 0.8762 ^ exp (-0.2245 × (age/10 – 7.036) + 0.3212 × (male – 0.5642) – 0.4553 × (eGFR/5 – 7.222) + 0.4469 × (logACR – 5.137))

6-variable equation, Patient 2-year risk:

Original	**1 – 0.9750 ^ exp (-0.2218 × (age/10 – 7.036) + 0.2553 × (male – 0.5642) – 0.5541 × (eGFR/5 – 7.222) + 0.4562 × (logACR – 5.137) – 0.1475 × (dm – 0.5106) + 0.1426 × (htn – 0.8501))**
Regional Calibrated Original – North America	1 – 0.9755 ^ exp (-0.2218 × (age/10 – 7.036) + 0.2553 × (male – 0.5642) – 0.5541 × (eGFR/5 – 7.222) + 0.4562 × (logACR – 5.137) – 0.1475 × (dm – 0.5106) + 0.1426 × (htn – 0.8501))
Regional Calibrated Original – non-North America	**1 – 0.9830 ^ exp (-0.2218 × (age/10 – 7.036) + 0.2553 × (male – 0.5642) – 0.5541 × (eGFR/5 – 7.222) + 0.4562 × (logACR – 5.137) – 0.1475 × (dm – 0.5106) + 0.1426 × (htn – 0.8501))**
Pooled	1 – 0.9707 ^ exp (-0.2401 × (age/10 – 7.036) + 0.3209 × (male – 0.5642) – 0.4650 × (eGFR/5 – 7.222) + 0.4384 × (logACR – 5.137) + 0.3018 × (dm – 0.5106) + 0.1710 × (htn – 0.8501))

6-variable equation, Patient 5-year risk:

Original	**1 – 0.9240 ^ exp (-0.2218 × (age/10 – 7.036) + 0.2553 × (male – 0.5642) – 0.5541 × (eGFR/5 – 7.222) + 0.4562 × (logACR – 5.137) – 0.1475 × (dm – 0.5106) + 0.1426 × (htn – 0.8501))**
Regional Calibrated Original – North America	1 – 0.9018 ^ exp (-0.2218 × (age/10 – 7.036) + 0.2553 × (male – 0.5642) – 0.5541 × (eGFR/5 – 7.222) + 0.4562 × (logACR – 5.137) – 0.1475 × (dm – 0.5106) + 0.1426 × (htn – 0.8501))
Regional Calibrated Original – non-North America	**1 – 0.9370 ^ exp (-0.2218 × (age/10 – 7.036) + 0.2553 × (male – 0.5642) – 0.5541 × (eGFR/5 – 7.222) + 0.4562 × (logACR – 5.137) – 0.1475 × (dm – 0.5106) + 0.1426 × (htn – 0.8501))**
Pooled	1 – 0.8839 ^ exp (-0.2401 × (age/10 – 7.036) + 0.3209 × (male – 0.5642) – 0.4650 × (eGFR/5 – 7.222) + 0.4384 × (logACR – 5.137) + 0.3018 × (dm – 0.5106) + 0.1710 × (htn – 0.8501))

8-variable equation, Patient 2-year risk:

Original	**1 – 0.9780 ^ exp (-0.1992 × (age/10 – 7.036) + 0.1602 × (male – 0.5642) – 0.4919 × (eGFR/5 – 7.222) + 0.3364 × (logACR – 5.137) – 0.3441 × (albumin – 3.997) + 0.2604 × (phosphorous – 3.916) – 0.07354 × (bicarbonate – 25.57) – 0.2228 × (calcium – 9.355))**
Regional Calibrated Original – North America	1 – 0.9757 ^ exp (-0.1992 × (age/10 – 7.036) + 0.1602 × (male – 0.5642) – 0.4919 × (eGFR/5 – 7.222) + 0.3364 × (logACR – 5.137) – 0.3441 × (albumin – 3.997) + 0.2604 × (phosphorous – 3.916) – 0.07354 × (bicarbonate – 25.57) – 0.2228 × (calcium – 9.355))
Regional Calibrated Original – non-North America	**1 – 0.9827 ^ exp (-0.1992 × (age/10 – 7.036) + 0.1602 × (male – 0.5642) – 0.4919 × (eGFR/5 – 7.222) + 0.3364 × (logACR – 5.137) – 0.3441 × (albumin – 3.997) + 0.2604 × (phosphorous – 3.916) – 0.07354 × (bicarbonate – 25.57) – 0.2228 × (calcium – 9.355))**
Pooled	1 – 0.9629 ^ exp (-0.1848 × (age/10 – 7.036) + 0.2906 × (male – 0.5642) – 0.4156 × (eGFR/5 – 7.222) + 0.3480 × (logACR – 5.137) – 0.3569 × (albumin – 3.997) + 0.1582 × (phosphorous – 3.916) – 0.01199 × (bicarbonate – 25.57) – 0.1581 × (calcium – 9.355))

8-variable equation, Patient 5-year risk:

Original	**1 – 0.9301 ^ exp (-0.1992 × (age/10 – 7.036) + 0.1602 × (male – 0.5642) – 0.4919 × (eGFR/5 – 7.222) + 0.3364 × (logACR – 5.137) – 0.3441 × (albumin – 3.997) + 0.2604 × (phosphorous – 3.916) – 0.07354 × (bicarbonate – 25.57) – 0.2228 × (calcium – 9.355))**
Regional Calibrated Original – North America	1 – 0.9096 ^ exp (-0.1992 × (age/10 – 7.036) + 0.1602 × (male – 0.5642) – 0.4919 × (eGFR/5 – 7.222) + 0.3364 × (logACR – 5.137) – 0.3441 × (albumin – 3.997) + 0.2604 × (phosphorous – 3.916) – 0.07354 × (bicarbonate – 25.57) – 0.2228 × (calcium – 9.355))
Regional Calibrated Original – non-North America	**1 – 0.9245 ^ exp (-0.1992 × (age/10 – 7.036) + 0.1602 × (male – 0.5642) – 0.4919 × (eGFR/5 – 7.222) + 0.3364 × (logACR – 5.137) – 0.3441 × (albumin – 3.997) + 0.2604 × (phosphorous – 3.916) – 0.07354 × (bicarbonate – 25.57) – 0.2228 × (calcium – 9.355))**
Pooled	1 – 0.8636 ^ exp (-0.1848 × (age/10 – 7.036) + 0.2906 × (male – 0.5642) – 0.4156 × (eGFR/5 – 7.222) + 0.3480 × (logACR – 5.137) – 0.3569 × (albumin – 3.997) + 0.1582 × (phosphorous – 3.916) – 0.01199 × (bicarbonate – 25.57) – 0.1581 × (calcium – 9.355))

These equations do not take into account the competing risk of death. However, we tested the difference in mean predicted risk between the Cox model and the competing risk model in two studies (one North American, one non-North American) and found that the absolute risk difference was <1.7% in all categories of risk using the 2-year, 4-variable equation:

Mean Predicted Risk, 2 years (%)

	Very Low risk 0 to <2%		Low risk 2 to <6%		Median risk 6 to <10%		High risk 10 to <20%		Very high risk ≥20%	
	North American	Non-North American	North American	Non-North American	North American	Non-North American	North American	Non-North American	North American	Non-North American
Cox	0.42	0.14	3.42	3.45	7.85	7.71	14.07	14.07	33.95	32.69
Competing	0.41	0.13	3.25	3.14	7.43	7.13	13.65	12.93	32.34	32.06

eAppendix 3. Acronyms or abbreviations for studies included in the current report and their key references linked to the Web references

AASK:	African American Study of Kidney Disease and Hypertension[8]
ARIC:	Atherosclerosis Risk in Communities Study[9]
BC CKD:	British Columbia CKD Study[10]
CCF:	Cleveland Clinic CKD Registry Study[11]
CRIB:	Chronic Renal Impairment in Birmingham[12]
CRIC:	Chronic Renal Insufficiency Cohort Study[13]
GCKD:	German Chronic Kidney Disease Study[14]
Geisinger:	Geisinger CKD Study[15]
GLOMMS-1:	GLOMMS-1: Grampian Laboratory Outcomes, Morbidity and Mortality Studies – 1[16]
Gonryo:	Gonryo Study[17]
HUNT:	Nord Trøndelag Health Study[18]
ICES-KDT:	Institute for Clinical Evaluative Sciences, Provincial Kidney, Dialysis and Transplantation program (ICES KDT)[19]
KEEP:	Kidney Early Evaluation Program[20]
KPNW:	Kaiser Permanente Northwest[21]
Maccabi:	Maccabi Health System[22]
MASTERPLAN:	Multifactorial Approach and Superior Treatment Efficacy in Renal Patients with the Aid of a Nurse Practitioner[23]
MDRD:	Modification of Diet in Renal Disease Study[24]
MMKD:	Mild to Moderate Kidney Disease Study[25]
Mt. Sinai BioMe:	Mount Sinai BioMe Biobank Platform[26]
NephroTest:	NephroTest Study[27]
NZDCS:	New Zealand Diabetes Cohort Study[28]
Okinawa83:	Okinawa 83 Cohort[29]
Okinawa93:	Okinawa 93 Cohort[30]
Pima:	Pima Indian Study[31]
REGARDS:	Reasons for Geographic And Racial Differences in Stroke Study[32]
RENAAL:	Reduction of Endpoints in Non-insulin Dependent Diabetes Mellitus with the Angiotensin II Antagonist Losartan[33]
Severance:	Severance Cohort Study[34]
Sunnybrook:	Sunnybrook Cohort[35]
SRR-CKD:	Swedish Renal Registry CKD Cohort[36]
VA CKD:	Veterans Administration CKD Study[37]

eAppendix 4. Acknowledgements and funding for collaborating cohorts

Study	List of sponsors
AASK	AASK was supported by grants to each clinical center and the coordinating center from the National Institute of Diabetes and Digestive and Kidney Diseases. In addition, AASK was supported by the Office of Research in Minority Health (now the National Center on Minority Health and Health Disparities, NCMHD) and the following institutional grants from the National Institutes of Health: M01 RR-00080, M01 RR-00071, M0100032, P20-RR11145, M01 RR00827, M01 RR00052, 2P20 RR11104, RR029887, and DK 2818-02. King Pharmaceuticals provided monetary support and antihypertensive medications to each clinical center. Pfizer Inc, AstraZeneca Pharmaceuticals, Glaxo Smith Kline, Forest Laboratories, Pharmacia and Upjohn also donated antihypertensive medications.
ARIC	The Atherosclerosis Risk in Communities Study is carried out as a collaborative study supported by National Heart, Lung, and Blood Institute contracts (HHSN268201100005C, HHSN268201100006C, HHSN268201100007C, HHSN268201100008C, HHSN268201100009C, HHSN268201100010C, HHSN268201100011C, and HHSN268201100012C). The authors thank the staff and participants of the ARIC study for their important contributions.
BC CKD	BC Provincial Renal Agency, an Agency of the Provincial Health Services Authority in collaboration with University of British Columbia.
CCF	Supported by an unrestricted educational grant from Amgen to the Department of Nephrology and Hypertension.
CRIB	British Renal Society Project Grant Award British Heart Foundation Project Grant Award.
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, and U01DK060902). 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 University Translational Research in Hypertension and Renal Biology P30GM103337, Kaiser Permanente NIH/NCRR UCSF-CTSI UL1 RR-024131.
GCKD	The GCKD is funded by the German Ministry of Research and education (Bundesminsterium für Bildung und Forschung, BMBF) and the foundation KfH Stiftung Präventivmedizin. Unregistered grants were provided by Bayer, Fresenius Medical Care and Amgen.
Geisinger	Geisinger Clinic
GLOMMS-1	Chief Scientist Office CZH/4/656
Gonryo	This study was supported by grants from Astellas Pharm Inc. and the Miyagi Kidney Foundation.
HUNT	Faculty of Medicine, Norwegian University of Science and Technology; The Norwegian Institute of Public Health; Nord-Trøndelag County Council; and Central Norway Regional Health Authority
ICES-KDT	This study was conducted at the Institute for Clinical Evaluative Sciences (ICES) Western Site. ICES is funded by an annual grant from the Ontario Ministry of Health and Long-Term Care. ICES Western is funded by an operating grant from the Academic Medical Organization of Southwestern Ontario. This project was conducted with members of the

	provincial ICES Kidney, Dialysis and Transplantation Research Program (www.ices.on.ca/kdt), which receives programmatic grant funding from the Canadian Institutes of Health Research. Dr. Amit Garg is supported by the Dr. Adam Linton Chair in Kidney Health Analytics. Research personnel who worked on this project were supported by the Lilibeth Caberto Kidney Clinical Research Unit. We thank Gamma-Dynacare for the linked laboratory values used in this analysis.
KEEP	US National Kidney Foundation
KPNW	Amgen
Maccabi	
MASTERPLAN	The MASTERPLAN study is a clinical trial with trial registration ISRCTN registry: 73187232. Sources of funding: The MASTERPLAN Study was supported by grants from the Dutch Kidney Foundation (Nierstichting Nederland, number PV 01), and the Netherlands Heart Foundation (Nederlandse Hartstichting, number 2003 B261). Unrestricted grants were provided by Amgen, Genzyme, Pfizer and Sanofi-Aventis.
MDRD	NIDDK UO1 DK35073 and K23 DK67303, K23 DK02904
MMKD	The MMKD study was funded by the Austrian Heart Fund and by the Innsbruck Medical University.
Mt. Sinai BioMe	
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); Christian Jacquot, Alexandre Karras, Eric Thervet, Christian d'Auzac, P. Houillier, M. Courbebaisse, D. Eladari et G. Maruani (European Georges Pompidou Hospital); Jean-Jacques Boffa, Pierre Ronco, H. Fessi, Eric Rondeau, Emmanuel Letavernier, Jean Philippe Haymann, P. Urena-Torres (Tenon Hospital)
NZDCS	New Zealand Health Research Council, Auckland Medical Research Foundation and New Zealand Society for the Study of Diabetes
Okinawa 83/93	
Pima	This work was supported by the Intramural Research Program of the National Institute of Diabetes and Digestive and Kidney Diseases.
REGARDS	This research project is supported by a cooperative agreement U01 NS041588 from the National Institute of Neurological Disorders and Stroke, National Institutes of Health, Department of Health and Human Service. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Neurological Disorders and Stroke or the National Institutes of Health. Representatives of the funding agency have been involved in the review of the manuscript but not directly involved in the collection, management, analysis or interpretation of the data. The authors thank the other investigators, the staff, and the participants of the REGARDS study for their valuable contributions. A full list of participating REGARDS investigators and institutions can be found at http://www.regardsstudy.org Additional funding was provided by an investigator-initiated grant-in-aid from Amgen and an investigator-initiated National Heart, Lung, and Blood Institute (NHLBI) grant R01 HL080477. Representatives from Amgen or NHLBI did not have any role in the design and conduct of the study, the collection, management, analysis, and interpretation of the data, or the preparation or approval of the manuscript.
RENAAL	The RENAAL trial was supported by Merck and Company.
Severance	This study was funded by a grant of the Korean Health Technology R&D Project, Ministry of Health & Welfare, Republic of Korea (HI14C2686).

Sunnybrook	
SRR-CKD	The SRR-CKD is a national health care quality register funded by The Swedish Association of Local Authorities and Regions, which is an organisation that represents and advocates for local government in Sweden. All of Sweden's municipalities, county councils and regions are members.
VA CKD	This study was supported by resources from the US Department of Veterans Affairs. 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) Opinions expressed in this paper are those of the authors' and do not represent the official opinion of the US Department of Veterans Affairs.

eTable1: Baseline characteristics of the participating cohorts

Source	Cohort	N (%)		Mean (SD)			
		Diabetes	Hypertension	Serum Calcium	Serum Phosphorous	Serum Bicarbonate	Serum Albumin
North America	AASK	0 (0%)	898 (100%)	9.1 (0.5)	3.6 (0.7)	25 (3)	4.2 (0.4)
	ARIC	192 (27%)	519 (72%)	NA	NA	NA	NA
	BC CKD	6407 (58%)	9264 (83%)	9.3 (0.6)	3.8 (0.8)	26 (4)	4.0 (0.5)
	CCF ACR	3261 (79%)	3900 (95%)	9.6 (0.6)	3.5 (0.7)	26 (3)	4.1 (0.4)
	CCF DIP	1711 (14%)	9202 (75%)	9.4 (0.6)	3.5 (0.8)	26 (4)	4.0 (0.5)
	CRIC	1728 (56%)	2807 (91%)	9.2 (0.5)	3.8 (0.7)	24 (3)	3.9 (0.5)
	Geisinger	6443 (31%)	13491 (65%)	9.5 (0.5)	3.5 (0.7)	28 (3)	4.2 (0.4)
	ICES-KDT	46816 (47%)	85160 (85%)	9.5 (0.6)	3.7 (0.7)	26 (3)	4.2 (0.4)
	KEEP	7014 (43%)	14335 (87%)	9.7 (0.5)	3.7 (0.6)	NA	NA
	KPNW	571 (38%)	624 (42%)	9.2 (0.6)	3.3 (0.7)	27 (4)	3.6 (0.5)
	MDRD	91 (6%)	967 (88%)	9.1 (0.6)	3.9 (0.8)	23 (4)	4.0 (0.4)
	Mt Sinai BioMe	1595 (45%)	2888 (81%)	9.5 (0.7)	3.8 (1.0)	25 (4)	4.0 (0.6)
	Pima	66 (85%)	57 (73%)	NA	NA	NA	NA
	REGARDS	1083 (34%)	2542 (81%)	NA	NA	NA	4.1 (0.4)
	Sunnybrook	1228 (40%)	2733 (88%)	9.4 (0.7)	3.9 (0.9)	25 (4)	4.0 (0.9)
	VA CKD	176063 (40%)	378126 (87%)	8.9 (0.5)	NA	27 (3)	4.0 (0.4)
	Sub-Total	**254269 (41%)**	**527513 (85%)**	**9.1 (0.6)**	**3.7 (0.7)**	**27 (3)**	**4.0 (0.4)**
Non-North America	CRIB	66 (17%)	359 (94%)	9.4 (0.8)	4.5 (1.3)	24 (16)	4.2 (0.4)
	GCKD	1457 (37%)	3817 (97%)	9.1 (0.6)	3.5 (0.6)	NA	3.9 (0.4)
	GLOMMS1	604 (60%)	629 (62%)	NA	NA	NA	NA
	Gonryo	357 (33%)	994 (91%)	7.7 (3.1)	3.1 (1.5)	NA	3.2 (1.5)
	HUNT	231 (22%)	1011 (96%)	NA	NA	NA	NA
	Maccabi	17290 (29%)	43500 (74%)	9.5 (0.5)	3.7 (0.6)	NA	4.2 (0.3)
	MASTERPLAN	211 (36%)	554 (96%)	9.5 (0.6)	3.5 (0.8)	25 (4)	4.0 (0.4)
	MMKD	0 (0%)	134 (96%)	9.3 (1.0)	3.7 (0.9)	NA	4.4 (0.5)
	NephroTest	378 (29%)	1242 (95%)	9.0 (0.5)	3.4 (0.7)	26 (3)	3.9 (0.5)
	NZDCS	8865 (100%)	7036 (91%)	NA	NA	NA	NA
	Okinawa83	24 (11%)	NA	NA	NA	NA	NA
	Okinawa93	526 (6%)	NA	NA	NA	NA	NA
	RENAAL	1434 (100%)	1390 (97%)	9.4 (0.5)	3.9 (0.6)	24 (4)	3.8 (0.4)
	Severance	384 (12%)	1639 (52%)	NA	NA	NA	4.5 (0.3)
	SRR-CKD	1640 (31%)	1148 (22%)	9.2 (0.6)	4.0 (0.9)	23 (3)	3.6 (0.5)
	Sub-Total	**33467 (33%)**	**63453 (74%)**	**9.4 (0.7)**	**3.7 (0.7)**	**24 (5)**	**4.1 (0.4)**
	Overall Total	**287736 (40%)**	**590966 (84%)**	**9.1 (0.6)**	**3.7 (0.7)**	**27 (3)**	**4.0 (0.4)**

SD: standard deviation, NA: not available. Serum calcium, serum phosphorous are in mg/dl, serum bicarbonate is in mEq/L, and serum albumin is in g/dl.

eTable 2: C statistics for original vs. pooled for 4-variable 2 year equation

Study	Pooled	Original	Difference
Overall	0.9022 (0.8857, 0.9187)	0.9030 (0.8876, 0.9183)	-0.0001 (-0.0011, 0.0009)
AASK	0.8849 (0.8355, 0.9343)	0.8829 (0.8333, 0.9324)	0.0020 (-0.0008, 0.0049)
ARIC	0.9033 (0.8059, 1.0007)	0.8950 (0.7886, 1.0014)	0.0083 (-0.0010, 0.0176)
BC CKD	0.8824 (0.8729, 0.8919)	0.8835 (0.8740, 0.8929)	-0.0011 (-0.0023, 0.0002)
CCF ACR	0.9211 (0.8860, 0.9563)	0.9205 (0.8845, 0.9566)	0.0006 (-0.0026, 0.0039)
CCF Dip*	0.9206 (0.8995, 0.9416)	0.9194 (0.8981, 0.9407)	0.0012 (-0.0007, 0.0030)
CRIC	0.8896 (0.8702, 0.9089)	0.8882 (0.8689, 0.9074)	0.0014 (-0.0009, 0.0037)
Geisinger	0.8885 (0.8420, 0.9350)	0.8829 (0.8344, 0.9314)	**0.0056 (0.0013, 0.0098)**
ICES-KDT	0.9399 (0.9330, 0.9467)	0.9385 (0.9314, 0.9456)	**0.0014 (0.0008, 0.0019)**
KEEP*	0.9617 (0.9500, 0.9735)	0.9585 (0.9460, 0.9711)	**0.0032 (0.0014, 0.0050)**
KPNW*	0.9373 (0.8916, 0.9830)	0.9353 (0.8883, 0.9823)	0.0020 (-0.0017, 0.0057)
MDRD	0.8813 (0.8639, 0.8987)	0.8835 (0.8662, 0.9009)	-0.0023 (-0.0046, 0.0001)
Mt Sinai BioMe	0.8837 (0.8508, 0.9166)	0.8846 (0.8522, 0.9170)	-0.0009 (-0.0041, 0.0023)
Pima	0.8493 (0.7820, 0.9165)	0.8512 (0.7828, 0.9196)	-0.0019 (-0.0099, 0.0060)
REGARDS	0.9276 (0.8521, 1.0030)	0.9225 (0.8400, 1.0049)	0.0051 (-0.0021, 0.0123)
Sunnybrook	0.9069 (0.8819, 0.9319)	0.9108 (0.8871, 0.9344)	**-0.0038 (-0.0070, -0.0007)**
VA CKD	0.8802 (0.8622, 0.8982)	0.8871 (0.8695, 0.9047)	**-0.0069 (-0.0088, -0.0050)**
CRIB	0.8784 (0.8456, 0.9113)	0.8883 (0.8572, 0.9195)	**-0.0099 (-0.0152, -0.0046)**
GCKD	0.8191 (0.7651, 0.8731)	0.8223 (0.7682, 0.8765)	-0.0032 (-0.0102, 0.0038)
GLOMMS1	0.8990 (0.8579, 0.9401)	0.8969 (0.8535, 0.9403)	0.0021 (-0.0055, 0.0097)
Gonryo	0.9195 (0.8987, 0.9404)	0.9219 (0.9010, 0.9429)	-0.0024 (-0.0059, 0.0011)
HUNT	0.7814 (0.5508, 1.0119)	0.8001 (0.5877, 1.0124)	-0.0187 (-0.0377, 0.0003)
Maccabi	0.9467 (0.9262, 0.9672)	0.9483 (0.9279, 0.9688)	-0.0016 (-0.0035, 0.0002)
MASTERPLAN	0.8683 (0.8099, 0.9268)	0.8840 (0.8345, 0.9336)	**-0.0157 (-0.0268, -0.0045)**
MMKD	0.7876 (0.7105, 0.8646)	0.7943 (0.7170, 0.8716)	-0.0067 (-0.0187, 0.0053)
NephroTest	0.9144 (0.8922, 0.9366)	0.9164 (0.8949, 0.9380)	-0.0020 (-0.0051, 0.0011)
NZDCS	0.8638 (0.8329, 0.8947)	0.8591 (0.8282, 0.8900)	**0.0047 (0.0024, 0.0070)**
Okinawa83*	0.9897 (0.9770, 1.0024)	0.9861 (0.9683, 1.0040)	0.0035 (-0.0020, 0.0091)
Okinawa93*	0.9850 (0.9623, 1.0077)	0.9851 (0.9626, 1.0075)	-0.0001 (-0.0006, 0.0005)
RENAAL	0.8321 (0.8034, 0.8608)	0.8220 (0.7918, 0.8522)	**0.0100 (0.0067, 0.0134)**
Severance	0.9728 (0.9405, 1.0050)	0.9727 (0.9403, 1.0050)	0.0001 (-0.0006, 0.0009)
SRR-CKD	0.8512 (0.8341, 0.8683)	0.8558 (0.8390, 0.8726)	**-0.0046 (-0.0064, -0.0028)**

C statistics and 95% confidence intervals. The difference represents the pooled statistic minus the original statistic. Black bolded numbers represent a statistically significant positive value (improvement of pooled KFRE over original KFRE); red bolded numbers represent a statistically significant negative value (original KFRE is better than pooled KFRE). *Indicates cohorts measuring dipstick proteinuria.

eTable 3: C statistics for original vs. pooled for 6-variable 2 year equation

Study	Pooled	Original	Difference
Overall	0.8964 (0.8809, 0.9118)	0.8952 (0.8805, 0.9100)	0.0011 (-0.0004, 0.0025)
AASK	0.8850 (0.8357, 0.9342)	0.8831 (0.8335, 0.9327)	0.0018 (-0.0008, 0.0045)
ARIC	0.8980 (0.7958, 1.0002)	0.8975 (0.7941, 1.0009)	0.0005 (-0.0030, 0.0041)
BC CKD	0.8854 (0.8760, 0.8947)	0.8828 (0.8733, 0.8923)	**0.0026 (0.0006, 0.0045)**
CCF ACR	0.9216 (0.8873, 0.9558)	0.9187 (0.8822, 0.9553)	0.0028 (-0.0013, 0.0070)
CCF Dip*	0.9212 (0.9002, 0.9421)	0.9180 (0.8964, 0.9397)	0.0031 (-0.0004, 0.0067)
CRIC	0.8903 (0.8710, 0.9096)	0.8872 (0.8679, 0.9065)	0.0031 (-0.0006, 0.0068)
Geisinger	0.8876 (0.8422, 0.9330)	0.8839 (0.8362, 0.9316)	0.0038 (-0.0017, 0.0093)
ICES-KDT	0.9408 (0.9340, 0.9475)	0.9381 (0.9310, 0.9452)	**0.0026 (0.0016, 0.0037)**
KEEP*	0.9627 (0.9516, 0.9737)	0.9581 (0.9453, 0.9709)	**0.0046 (0.0018, 0.0073)**
KPNW*	0.9388 (0.8923, 0.9853)	0.9332 (0.8846, 0.9817)	0.0056 (-0.0026, 0.0138)
MDRD	0.8770 (0.8546, 0.8994)	0.8781 (0.8555, 0.9007)	-0.0011 (-0.0046, 0.0025)
Mt Sinai BioMe	0.8842 (0.8518, 0.9167)	0.8834 (0.8506, 0.9161)	0.0008 (-0.0034, 0.0050)
Pima	0.8473 (0.7796, 0.9151)	0.8486 (0.7807, 0.9165)	-0.0013 (-0.0121, 0.0095)
REGARDS	0.9266 (0.8524, 1.0007)	0.9208 (0.8358, 1.0058)	0.0058 (-0.0100, 0.0216)
Sunnybrook	0.9043 (0.8790, 0.9295)	0.9099 (0.8859, 0.9338)	**-0.0056 (-0.0105, -0.0007)**
VA CKD	0.8826 (0.8647, 0.9005)	0.8861 (0.8684, 0.9037)	**-0.0034 (-0.0056, -0.0013)**
CRIB	0.8772 (0.8449, 0.9095)	0.8885 (0.8575, 0.9196)	**-0.0114 (-0.0193, -0.0034)**
GCKD	0.8245 (0.7720, 0.8770)	0.8198 (0.7651, 0.8746)	0.0047 (-0.0048, 0.0142)
GLOMMS1	0.9015 (0.8618, 0.9411)	0.8955 (0.8517, 0.9392)	0.0060 (-0.0062, 0.0182)
Gonryo	0.9193 (0.8984, 0.9401)	0.9200 (0.8987, 0.9413)	-0.0007 (-0.0078, 0.0063)
HUNT	0.7747 (0.5401, 1.0094)	0.8033 (0.5933, 1.0133)	-0.0286 (-0.0547, -0.0024)
Maccabi	0.9475 (0.9276, 0.9674)	0.9483 (0.9278, 0.9688)	-0.0008 (-0.0035, 0.0019)
MASTERPLAN	0.8784 (0.8257, 0.9312)	0.8791 (0.8269, 0.9312)	-0.0006 (-0.0135, 0.0123)
MMKD	0.7856 (0.7091, 0.8622)	0.7910 (0.7137, 0.8682)	-0.0053 (-0.0172, 0.0065)
NephroTest	0.9146 (0.8923, 0.9369)	0.9154 (0.8938, 0.9371)	-0.0008 (-0.0059, 0.0043)
NZDCS	0.8627 (0.8299, 0.8956)	0.8594 (0.8266, 0.8921)	**0.0034 (0.0013, 0.0055)**
Okinawa83*			
Okinawa93*			
RENAAL	0.8317 (0.8030, 0.8605)	0.8228 (0.7927, 0.8529)	**0.0089 (0.0059, 0.0119)**
Severance	0.9753 (0.9474, 1.0032)	0.9688 (0.9298, 1.0077)	0.0066 (-0.0048, 0.0179)
SRR-CKD	0.8511 (0.8340, 0.8681)	0.8556 (0.8388, 0.8724)	**-0.0045 (-0.0077, -0.0014)**

C statistics and 95% confidence intervals. The difference represents the pooled statistic minus the original statistic. Black bolded numbers represent a statistically significant positive value (improvement of pooled KFRE over original KFRE); red bolded numbers represent a statistically significant negative value (original KFRE is better than pooled KFRE). *Indicates cohorts measuring dipstick proteinuria.

eTable 4: C statistics for original vs. pooled for 8-variable 2 year equation

Study	Pooled	Original	Difference
Overall	0.8939 (0.8820, 0.9059)	0.8937 (0.8810, 0.9063)	0.0011 (-0.0007, 0.0029)
AASK	0.8861 (0.8373, 0.9349)	0.8843 (0.8372, 0.9313)	0.0018 (-0.0044, 0.0080)
ARIC			
BC CKD	0.8880 (0.8788, 0.8971)	0.8878 (0.8786, 0.8970)	0.0002 (-0.0019, 0.0023)
CCF ACR	0.9197 (0.8564, 0.9830)	0.9220 (0.8612, 0.9828)	-0.0022 (-0.0086, 0.0041)
CCF Dip*	0.9376 (0.9182, 0.9571)	0.9389 (0.9207, 0.9571)	-0.0013 (-0.0058, 0.0033)
CRIC	0.8933 (0.8739, 0.9127)	0.8889 (0.8693, 0.9086)	**0.0044 (0.0009, 0.0079)**
Geisinger	0.9218 (0.8756, 0.9680)	0.9089 (0.8577, 0.9600)	**0.0130 (0.0018, 0.0241)**
ICES-KDT	0.9089 (0.8954, 0.9224)	0.9082 (0.8947, 0.9217)	0.0007 (-0.0011, 0.0024)
KEEP*			
KPNW*	0.9011 (0.8412, 0.9610)	0.9000 (0.8408, 0.9591)	0.0011 (-0.0075, 0.0097)
MDRD	0.8888 (0.8720, 0.9056)	0.8842 (0.8670, 0.9015)	**0.0045 (0.0003, 0.0088)**
Mt Sinai BioMe	0.8457 (0.7945, 0.8969)	0.8527 (0.8037, 0.9017)	-0.0070 (-0.0141, 0.0002)
Pima			
REGARDS			
Sunnybrook	0.9002 (0.8749, 0.9255)	0.9000 (0.8751, 0.9248)	0.0003 (-0.0039, 0.0044)
VA CKD			
CRIB	0.8707 (0.8322, 0.9091)	0.8802 (0.8408, 0.9195)	-0.0095 (-0.0220, 0.0030)
GCKD			
GLOMMS1			
Gonryo			
HUNT			
Maccabi			
MASTERPLAN	0.9010 (0.8577, 0.9443)	0.9235 (0.8847, 0.9623)	**-0.0226 (-0.0417, -0.0034)**
MMKD			
NephroTest	0.9184 (0.8963, 0.9405)	0.9171 (0.8959, 0.9384)	0.0012 (-0.0040, 0.0065)
NZDCS			
Okinawa83*			
Okinawa93*			
RENAAL	0.8518 (0.8257, 0.8779)	0.8427 (0.8157, 0.8697)	**0.0092 (0.0027, 0.0157)**
Severance			
SRR-CKD	0.8558 (0.8263, 0.8854)	0.8538 (0.8235, 0.8842)	0.0020 (-0.0034, 0.0074)

C statistics and 95% confidence intervals. The difference represents the pooled statistic minus the original statistic. Black bolded numbers represent a statistically significant positive value (improvement of pooled KFRE over original KFRE); red bolded numbers represent a statistically significant negative value (original KFRE is better than pooled KFRE). *Indicates cohorts measuring dipstick proteinuria.

eTable 5: C statistics for original vs. pooled for 4-variable 5 year equation

Study	Pooled	Original	Difference
Overall	0.8847 (0.8666, 0.9028)	0.8836 (0.8657, 0.9016)	0.0010 (-0.0002, 0.0023)
AASK	0.8381 (0.8072, 0.8689)	0.8329 (0.8016, 0.8642)	**0.0052 (0.0027, 0.0077)**
ARIC	0.9278 (0.8854, 0.9702)	0.9237 (0.8784, 0.9689)	**0.0042 (0.0002, 0.0081)**
BC CKD	0.8618 (0.8539, 0.8697)	0.8604 (0.8524, 0.8684)	**0.0014 (0.0003, 0.0024)**
CCF ACR			
CCF Dip*			
CRIC	0.8633 (0.8508, 0.8759)	0.8595 (0.8468, 0.8723)	**0.0038 (0.0022, 0.0055)**
Geisinger	0.8827 (0.8513, 0.9140)	0.8761 (0.8436, 0.9085)	**0.0066 (0.0033, 0.0099)**
ICES-KDT	0.9329 (0.9275, 0.9384)	0.9307 (0.9251, 0.9363)	**0.0023 (0.0018, 0.0027)**
KEEP*	0.9457 (0.9350, 0.9564)	0.9420 (0.9308, 0.9531)	**0.0037 (0.0024, 0.0051)**
KPNW*	0.8891 (0.8492, 0.9290)	0.8834 (0.8427, 0.9241)	**0.0057 (0.0017, 0.0097)**
MDRD	0.8339 (0.8192, 0.8485)	0.8344 (0.8197, 0.8491)	-0.0005 (-0.0024, 0.0013)
Mt Sinai BioMe	0.8693 (0.8413, 0.8972)	0.8679 (0.8401, 0.8957)	0.0014 (-0.0016, 0.0043)
Pima	0.8231 (0.7632, 0.8830)	0.8198 (0.7587, 0.8810)	0.0033 (-0.0046, 0.0112)
REGARDS	0.9359 (0.8906, 0.9813)	0.9330 (0.8839, 0.9821)	0.0030 (-0.0011, 0.0070)
Sunnybrook	0.8961 (0.8747, 0.9176)	0.8974 (0.8766, 0.9182)	-0.0013 (-0.0040, 0.0014)
VA CKD			
CRIB	0.8575 (0.8290, 0.8859)	0.8667 (0.8394, 0.8939)	**-0.0092 (-0.0137, -0.0047)**
GCKD			
GLOMMS1	0.8869 (0.8557, 0.9181)	0.8816 (0.8485, 0.9147)	0.0053 (-0.0009, 0.0114)
Gonryo	0.9005 (0.8803, 0.9207)	0.9009 (0.8802, 0.9216)	-0.0003 (-0.0035, 0.0028)
HUNT	0.9082 (0.8405, 0.9759)	0.9075 (0.8413, 0.9738)	0.0007 (-0.0060, 0.0074)
Maccabi	0.9501 (0.9400, 0.9601)	0.9507 (0.9407, 0.9607)	-0.0007 (-0.0015, 0.0002)
MASTERPLAN	0.7542 (0.7110, 0.7975)	0.7734 (0.7320, 0.8147)	**-0.0192 (-0.0246, -0.0138)**
MMKD	0.7984 (0.7465, 0.8503)	0.8037 (0.7525, 0.8549)	-0.0053 (-0.0138, 0.0033)
NephroTest	0.8830 (0.8644, 0.9017)	0.8848 (0.8664, 0.9032)	-0.0018 (-0.0041, 0.0006)
NZDCS	0.8316 (0.8131, 0.8500)	0.8244 (0.8060, 0.8428)	**0.0072 (0.0055, 0.0089)**
Okinawa83*	0.9535 (0.9201, 0.9869)	0.9468 (0.9094, 0.9843)	**0.0067 (0.0008, 0.0125)**
Okinawa93*	0.9645 (0.9455, 0.9836)	0.9610 (0.9408, 0.9813)	**0.0035 (0.0009, 0.0060)**
RENAAL			
Severance	0.9160 (0.8499, 0.9821)	0.9180 (0.8520, 0.9840)	-0.0020 (-0.0043, 0.0002)
SRR-CKD	0.8421 (0.8265, 0.8578)	0.8466 (0.8312, 0.8619)	**-0.0044 (-0.0061, -0.0028)**

C statistics and 95% confidence intervals. The difference represents the pooled statistic minus the original statistic. Black bolded numbers represent a statistically significant positive value (improvement of pooled KFRE over original KFRE); red bolded numbers represent a statistically significant negative value (original KFRE is better than pooled KFRE). *Indicates cohorts measuring dipstick proteinuria.

eTable 6: C statistics for original vs. pooled for 6-variable 5 year equation

Study	Pooled	Original	Difference
Overall	0.8790 (0.8603, 0.8976)	0.8765 (0.8579, 0.8950)	**0.0022 (0.0007, 0.0037)**
AASK	0.8376 (0.8067, 0.8684)	0.8333 (0.8021, 0.8646)	**0.0042 (0.0020, 0.0065)**
ARIC	0.9271 (0.8837, 0.9704)	0.9255 (0.8818, 0.9691)	0.0016 (-0.0014, 0.0047)
BC CKD	0.8653 (0.8574, 0.8731)	0.8599 (0.8519, 0.8679)	**0.0053 (0.0037, 0.0070)**
CCF ACR			
CCF Dip*			
CRIC	0.8653 (0.8528, 0.8777)	0.8585 (0.8457, 0.8712)	**0.0068 (0.0042, 0.0094)**
Geisinger	0.8779 (0.8462, 0.9096)	0.8758 (0.8437, 0.9079)	0.0021 (-0.0026, 0.0069)
ICES-KDT	0.9340 (0.9286, 0.9394)	0.9301 (0.9245, 0.9358)	**0.0039 (0.0030, 0.0047)**
KEEP*	0.9482 (0.9381, 0.9583)	0.9409 (0.9295, 0.9523)	**0.0074 (0.0049, 0.0098)**
KPNW*	0.8955 (0.8576, 0.9334)	0.8803 (0.8383, 0.9223)	**0.0152 (0.0070, 0.0234)**
MDRD	0.8202 (0.8022, 0.8383)	0.8196 (0.8014, 0.8378)	0.0006 (-0.0019, 0.0032)
Mt Sinai BioMe	0.8698 (0.8421, 0.8976)	0.8669 (0.8389, 0.8949)	0.0029 (-0.0010, 0.0068)
Pima	0.8231 (0.7632, 0.8830)	0.8189 (0.7580, 0.8798)	0.0042 (-0.0054, 0.0138)
REGARDS	0.9383 (0.8958, 0.9809)	0.9312 (0.8802, 0.9821)	0.0072 (-0.0033, 0.0176)
Sunnybrook	0.8950 (0.8735, 0.9165)	0.8962 (0.8753, 0.9172)	-0.0012 (-0.0055, 0.0030)
VA CKD			
CRIB	0.8554 (0.8271, 0.8837)	0.8664 (0.8392, 0.8936)	**-0.0110 (-0.0171, -0.0049)**
GCKD			
GLOMMS1	0.8894 (0.8589, 0.9199)	0.8799 (0.8466, 0.9131)	**0.0095 (0.0002, 0.0189)**
Gonryo	0.9004 (0.8801, 0.9207)	0.8994 (0.8786, 0.9202)	0.0010 (-0.0048, 0.0067)
HUNT	0.9066 (0.8398, 0.9735)	0.9041 (0.8309, 0.9773)	0.0025 (-0.0139, 0.0189)
Maccabi	0.9506 (0.9409, 0.9603)	0.9506 (0.9405, 0.9606)	0.0000 (-0.0014, 0.0015)
MASTERPLAN	0.7647 (0.7227, 0.8067)	0.7701 (0.7284, 0.8117)	-0.0054 (-0.0122, 0.0014)
MMKD	0.7985 (0.7470, 0.8501)	0.8020 (0.7507, 0.8533)	-0.0034 (-0.0113, 0.0045)
NephroTest	0.8828 (0.8641, 0.9016)	0.8851 (0.8667, 0.9035)	-0.0022 (-0.0061, 0.0016)
NZDCS	0.8325 (0.8129, 0.8522)	0.8271 (0.8075, 0.8466)	**0.0054 (0.0039, 0.0069)**
Okinawa83*			
Okinawa93*			
RENAAL			
Severance	0.9172 (0.8518, 0.9825)	0.9182 (0.8548, 0.9815)	-0.0010 (-0.0065, 0.0045)
SRR-CKD	0.8423 (0.8267, 0.8578)	0.8461 (0.8307, 0.8614)	**-0.0038 (-0.0068, -0.0009)**

C statistics and 95% confidence intervals. The difference represents the pooled statistic minus the original statistic. Black bolded numbers represent a statistically significant positive value (improvement of pooled KFRE over original KFRE); red bolded numbers represent a statistically significant negative value (original KFRE is better than pooled KFRE). *Indicates cohorts measuring dipstick proteinuria.

eTable 7: C statistics for original vs. pooled for 8-variable 5 year equation

Study	Pooled	Original	Difference
Overall	0.8650 (0.8497, 0.8803)	0.8636 (0.8478, 0.8793)	0.0018 (-0.0008, 0.0045)
AASK	0.8340 (0.8033, 0.8648)	0.8260 (0.7946, 0.8575)	**0.0080 (0.0031, 0.0129)**
ARIC			
BC CKD	0.8650 (0.8572, 0.8727)	0.8612 (0.8533, 0.8691)	**0.0038 (0.0020, 0.0056)**
CCF ACR			
CCF Dip*			
CRIC	0.8663 (0.8538, 0.8789)	0.8578 (0.8448, 0.8708)	**0.0085 (0.0059, 0.0111)**
Geisinger	0.8864 (0.8426, 0.9302)	0.8764 (0.8310, 0.9218)	0.0100 (-0.0000, 0.0201)
ICES-KDT	0.9032 (0.8919, 0.9146)	0.9018 (0.8904, 0.9132)	0.0014 (-0.0001, 0.0030)
KEEP*			
KPNW*	0.8661 (0.8153, 0.9169)	0.8597 (0.8083, 0.9110)	0.0064 (-0.0030, 0.0158)
MDRD	0.8389 (0.8244, 0.8534)	0.8333 (0.8186, 0.8480)	**0.0056 (0.0026, 0.0086)**
Mt Sinai BioMe	0.8241 (0.7794, 0.8687)	0.8260 (0.7826, 0.8695)	-0.0020 (-0.0088, 0.0048)
Pima			
REGARDS			
Sunnybrook	0.8904 (0.8683, 0.9124)	0.8879 (0.8660, 0.9099)	0.0024 (-0.0013, 0.0062)
VA CKD			
CRIB	0.8527 (0.8209, 0.8845)	0.8605 (0.8277, 0.8933)	-0.0078 (-0.0189, 0.0033)
GCKD			
GLOMMS1			
Gonryo			
HUNT			
Maccabi			
MASTERPLAN	0.7930 (0.7538, 0.8321)	0.8227 (0.7881, 0.8573)	**-0.0297 (-0.0393, -0.0201)**
MMKD			
NephroTest	0.8868 (0.8681, 0.9055)	0.8850 (0.8665, 0.9035)	0.0018 (-0.0026, 0.0062)
NZDCS			
Okinawa83*			
Okinawa93*			
RENAAL			
Severance			
SRR-CKD	0.8452 (0.8188, 0.8715)	0.8426 (0.8156, 0.8696)	0.0026 (-0.0023, 0.0075)

C statistics and 95% confidence intervals. The difference represents the pooled statistic minus the original statistic. Black bolded numbers represent a statistically significant positive value (improvement of pooled KFRE over original KFRE); red bolded numbers represent a statistically significant negative value (original KFRE is better than pooled KFRE). *Indicates cohorts measuring dipstick proteinuria.

eTable 8: C statistics overall and by subgroup for nested original equations for 6-variable vs. 4 variable and 8-variable vs. 4-variable

2 year	4-variable	6-variable	8-variable	Difference of 6-variable vs. 4-variable	Difference of 8-variable vs. 4-variable
Overall	0.9030 (0.8876, 0.9183)	0.8952 (0.8805, 0.9100)	0.8937 (0.8810, 0.9063)	**-0.0005 (-0.0008, -0.0002)**	**0.0055 (0.0027, 0.0083)**
DM	0.8968 (0.8693, 0.9243)	0.8917 (0.8739, 0.9094)	0.8897 (0.8736, 0.9058)	0.0001 (-0.0001, 0.0004)	**0.0072 (0.0034, 0.0111)**
No DM	0.9176 (0.8982, 0.9370)	0.9113 (0.8920, 0.9307)	0.9024 (0.8894, 0.9153)	0.0001 (-0.0002, 0.0003)	**0.0030 (0.0004, 0.0055)**
Black	0.9097 (0.8917, 0.9276)	0.9100 (0.8920, 0.9280)	0.8916 (0.8743, 0.9089)	-0.0003 (-0.0008, 0.0002)	0.0033 (-0.0018, 0.0084)
White	0.8963 (0.8788, 0.9138)	0.8910 (0.8734, 0.9085)	0.8983 (0.8858, 0.9108)	**-0.0006 (-0.0010, -0.0002)**	**0.0046 (0.0018, 0.0075)**
Age ≥65 years	0.9027 (0.8790, 0.9265)	0.8980 (0.8732, 0.9229)	0.9046 (0.8819, 0.9272)	**-0.0005 (-0.0009, -0.0000)**	**0.0044 (0.0019, 0.0069)**
Age <65 years	0.8978 (0.8739, 0.9216)	0.8934 (0.8778, 0.9091)	0.8909 (0.8765, 0.9054)	-0.0005 (-0.0009, 0.0000)	**0.0061 (0.0021, 0.0101)**
5 year					
Overall	0.8836 (0.8657, 0.9016)	0.8765 (0.8579, 0.8950)	0.8636 (0.8478, 0.8793)	**-0.0005 (-0.0009, -0.0002)**	**0.0042 (0.0009, 0.0074)**
DM	0.8814 (0.8627, 0.9001)	0.8751 (0.8560, 0.8941)	0.8618 (0.8482, 0.8755)	0.0002 (-0.0001, 0.0005)	**0.0041 (0.0003, 0.0079)**
No DM	0.8933 (0.8725, 0.9140)	0.8859 (0.8641, 0.9077)	0.8669 (0.8466, 0.8871)	0.0002 (-0.0001, 0.0004)	0.0033 (-0.0002, 0.0067)
Black	0.8837 (0.8557, 0.9117)	0.8830 (0.8550, 0.9111)	0.8515 (0.8269, 0.8760)	-0.0003 (-0.0009, 0.0003)	-0.0014 (-0.0059, 0.0031)
White	0.8781 (0.8569, 0.8993)	0.8722 (0.8502, 0.8942)	0.8670 (0.8501, 0.8838)	**-0.0006 (-0.0010, -0.0002)**	**0.0051 (0.0013, 0.0089)**
Age ≥65 years	0.8885 (0.8613, 0.9158)	0.8847 (0.8565, 0.9129)	0.8736 (0.8581, 0.8892)	-0.0003 (-0.0006, 0.0000)	0.0018 (-0.0007, 0.0042)
Age <65 years	0.8741 (0.8513, 0.8970)	0.8652 (0.8441, 0.8864)	0.8529 (0.8344, 0.8714)	**-0.0007 (-0.0012, -0.0001)**	**0.0056 (0.0013, 0.0099)**

C statistics and 95% confidence intervals. The difference represents the 6-variable or 8-variable C statistic minus the 4-variable C statistic. Black bolded numbers represent a statistically significant positive value (e.g., 8-variable performed better than 4-variable for the original KFREs); red bolded numbers represent a statistically significant negative value (e.g., 6-variable performed worse than 4-variable for the original KFREs).

eTable 9: C statistics overall and by subgroup for nested pooled equations for 6-variable vs. 4 variable and 8-variable vs. 4-variable

2 year	4-variable	6-variable	8-variable	Difference of 6-variable vs. 4-variable	Difference of 8-variable vs. 4-variable
Overall	0.9022 (0.8857, 0.9187)	0.8964 (0.8809, 0.9118)	0.8939 (0.8820, 0.9059)	0.0005 (-0.0001, 0.0011)	**0.0078 (0.0054, 0.0102)**
DM	0.8966 (0.8700, 0.9232)	0.8919 (0.8740, 0.9098)	0.8917 (0.8757, 0.9077)	0.0004 (-0.0000, 0.0008)	**0.0094 (0.0060, 0.0128)**
No DM	0.9167 (0.8973, 0.9361)	0.9100 (0.8904, 0.9297)	0.9009 (0.8886, 0.9131)	**0.0004 (0.0001, 0.0006)**	**0.0055 (0.0030, 0.0079)**
Black	0.9109 (0.8919, 0.9299)	0.9097 (0.8902, 0.9292)	0.8938 (0.8765, 0.9111)	0.0002 (-0.0010, 0.0014)	**0.0066 (0.0011, 0.0122)**
White	0.8941 (0.8756, 0.9126)	0.8909 (0.8724, 0.9094)	0.8975 (0.8850, 0.9099)	0.0006 (-0.0001, 0.0012)	**0.0077 (0.0050, 0.0104)**
Age ≥65 years	0.9009 (0.8769, 0.9249)	0.8985 (0.8748, 0.9221)	0.9043 (0.8841, 0.9245)	0.0005 (-0.0003, 0.0013)	**0.0069 (0.0051, 0.0087)**
Age <65 years	0.8970 (0.8733, 0.9206)	0.8941 (0.8778, 0.9104)	0.8915 (0.8774, 0.9057)	0.0007 (-0.0002, 0.0016)	**0.0085 (0.0050, 0.0119)**
5 year					
Overall	0.8847 (0.8666, 0.9028)	0.8790 (0.8603, 0.8976)	0.8650 (0.8497, 0.8803)	**0.0008 (0.0000, 0.0015)**	**0.0066 (0.0042, 0.0090)**
DM	0.8834 (0.8648, 0.9019)	0.8764 (0.8574, 0.8953)	0.8656 (0.8518, 0.8793)	0.0002 (-0.0002, 0.0006)	**0.0071 (0.0042, 0.0101)**
No DM	0.8930 (0.8716, 0.9143)	0.8856 (0.8634, 0.9079)	0.8666 (0.8470, 0.8862)	**0.0004 (0.0000, 0.0009)**	**0.0051 (0.0025, 0.0077)**
Black	0.8877 (0.8603, 0.9152)	0.8850 (0.8557, 0.9144)	0.8604 (0.8364, 0.8845)	-0.0004 (-0.0015, 0.0008)	0.0039 (-0.0013, 0.0091)
White	0.8780 (0.8563, 0.8998)	0.8747 (0.8525, 0.8968)	0.8667 (0.8495, 0.8840)	**0.0009 (0.0001, 0.0018)**	**0.0074 (0.0046, 0.0102)**
Age ≥65 years	0.8882 (0.8615, 0.9149)	0.8857 (0.8591, 0.9122)	0.8744 (0.8591, 0.8897)	0.0005 (-0.0001, 0.0010)	**0.0048 (0.0026, 0.0070)**
Age <65 years	0.8752 (0.8526, 0.8979)	0.8684 (0.8475, 0.8893)	0.8549 (0.8370, 0.8728)	0.0011 (-0.0001, 0.0022)	**0.0080 (0.0046, 0.0114)**

C statistics and 95% confidence intervals. The difference represents the 6-variable or 8-variable C statistic minus the 4-variable C statistic. Black bolded numbers represent a statistically significant positive value (e.g., 8-variable performed better than 4-variable for the pooled KFREs).

eTable 10: Regional Calibration Performance (Brier Scores)

	2-year		5-year	
4-Variable KFRE	Original	R cal	Original	R cal
non-NA	0.05610	**0.05202**	0.08935	**0.08263**
CRIB	0.10656	**0.10089**	0.14741	**0.13790**
GCKD	0.01345	**0.01287**		
GLOMMS1	0.03860	**0.03813**	0.07013	**0.06578**
Gonryo	**0.07532**	0.08134	0.10487	**0.10367**
HUNT	0.00356	**0.00295**	0.01683	**0.01632**
Maccabi	0.00609	**0.00503**	0.01456	**0.01349**
MASTERPLAN	0.03324	**0.02952**	**0.13116**	0.13119
MMKD	0.12641	**0.12226**	**0.13815**	0.13952
NephroTest	0.04590	**0.04441**	0.08792	**0.08516**
NZDCS	0.01811	**0.01741**	0.05399	**0.05223**
Okinawa83*	0.00206	**0.00202**	0.00779	**0.00761**
Okinawa93*	**0.00135**	0.00143	**0.00456**	0.00462
RENAAL	**0.08037**	0.08144		
Severance*	0.00513	**0.00410**	0.01275	**0.01223**
SRR-CKD	0.08717	**0.07340**	0.19351	**0.17056**

	2-year		5-year	
8- Variable KFRE	Original	R cal	Original	R cal
non-NA	0.08746	**0.08115**	**0.16660**	0.17281
CRIB	0.10867	**0.10578**	**0.14011**	0.14235
MASTERPLAN	0.02780	**0.02690**	0.11955	**0.11875**
NephroTest	**0.04633**	0.04648	**0.08588**	0.08647
RENAAL	**0.07767**	0.07876		
SRR-CKD	0.09617	**0.08572**	**0.20231**	0.21195

Bold indicates best Brier Score

Brier Score=mean(yi-pi)^2 ; yi: case (1) or non-case (0); pi: risk score

A perfect model has a Brier Score of 0, and a non-informative model has a Brier Score of 0.25.

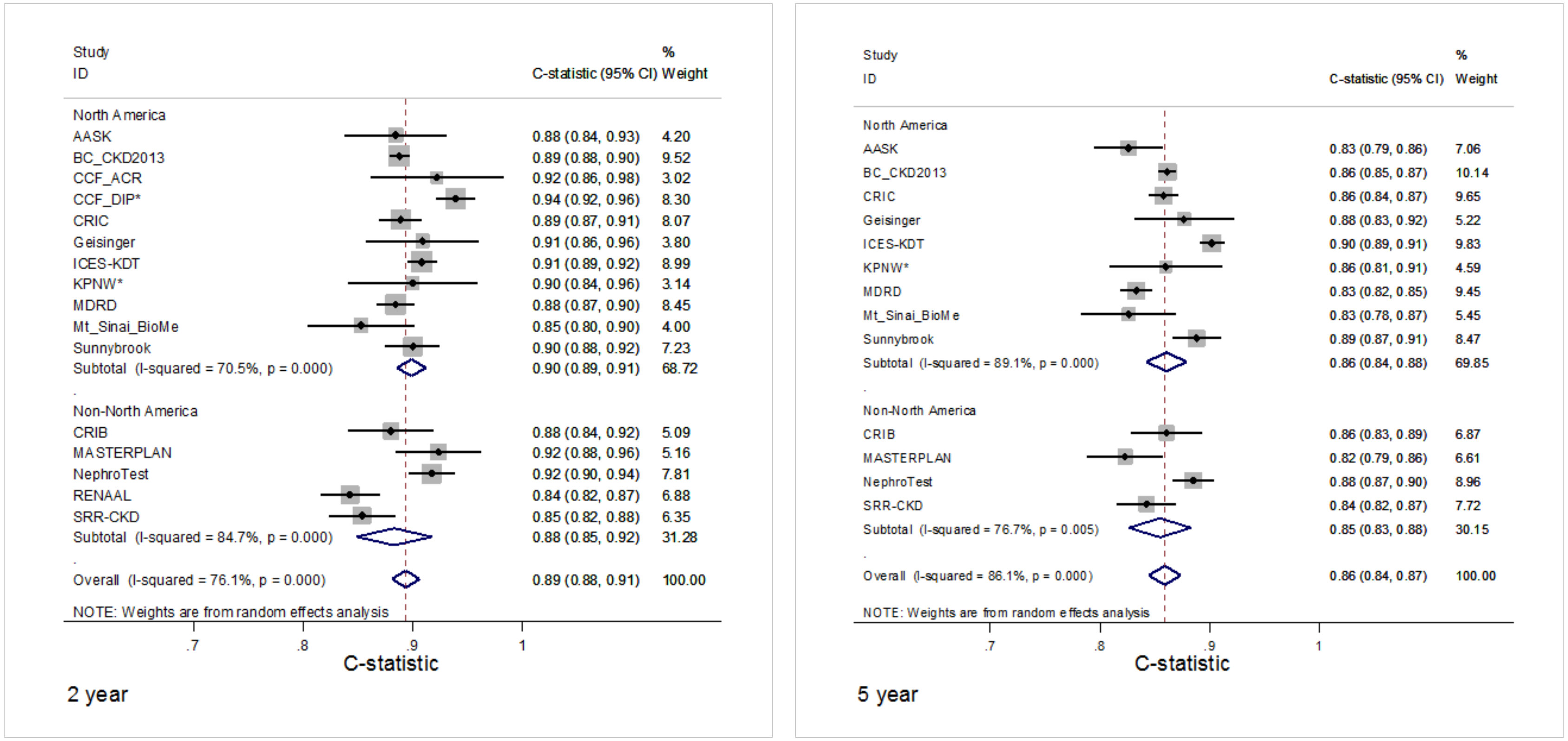
R cal = regional-calibrated original

* means dipstick cohort

	2-year		5-year	
4- Variable KFRE	Original	R cal	Original	R cal
NA	0.02296	**0.02295**	**0.06985**	0.07391
AASK	**0.04077**	0.04079	0.11089	**0.10465**
ARIC	0.01005	**0.01005**	0.03558	**0.03483**
BC CKD	0.05830	**0.05827**	**0.10812**	0.12038
CCF ACR	0.01107	**0.01106**		
CCF Dip*	**0.01167**	0.01167		
CRIC	**0.05070**	0.05071	0.11248	**0.10953**
Geisinger	**0.01068**	0.01068	**0.02383**	0.02484
ICES-KDT	0.01115	**0.01113**	**0.02464**	0.02871
KEEP*	**0.01292**	0.01293	**0.02395**	0.02431
KPNW*	**0.01593**	0.01595	**0.03907**	0.03967
MDRD	**0.08697**	0.08700	0.15914	**0.15161**
Mt Sinai BioMe	0.04253	**0.04252**	**0.08018**	0.08560
Pima	**0.13963**	0.13963	0.21872	**0.20837**
REGARDS	0.01542	**0.01537**	**0.02972**	0.03543
Sunnybrook	0.04363	**0.04362**	**0.07666**	0.08549
VA CKD	0.00996	**0.00995**		

	2-year		5-year	
8- Variable KFRE	Original	R cal	Original	R cal
NA	**0.04793**	0.04821	**0.09197**	0.09656
AASK	0.04233	**0.04180**	0.11788	**0.11128**
BC CKD	**0.05990**	0.05997	**0.10545**	0.11171
CCF ACR	0.02985	**0.02951**		
CCF Dip*	0.02284	**0.02283**		
CRIC	0.05088	**0.05074**	0.11477	**0.11178**
Geisinger	0.03633	**0.03578**	**0.06557**	0.06721
ICES-KDT	**0.03433**	0.03509	**0.06450**	0.07309
KPNW*	0.05405	**0.05270**	**0.09526**	0.09605
MDRD	0.08761	**0.08752**	0.16030	**0.15341**
Mt Sinai BioMe	**0.06109**	0.06149	**0.11636**	0.12358
Sunnybrook	**0.05169**	0.05213	**0.08445**	0.09215

eFigure 1: Discrimination of original 8-variable equation at 2 and 5 years



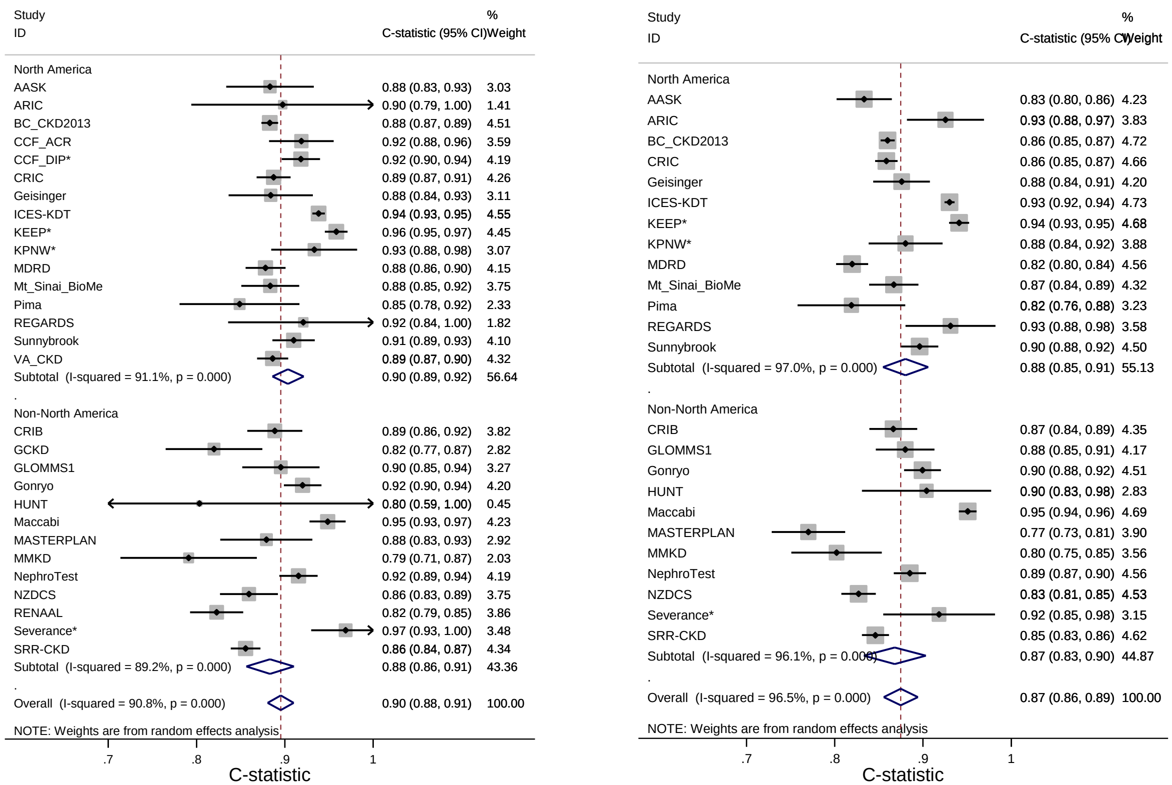
Size is the proportional to the weight of the study in a random effects meta-analysis.

eFigure 2: Coefficients of the original and pooled 6-variable equation (A) and discrimination of original 6-variable equation at 2 and 5 years (B)

A.

6-variable Equation	Age per 10 years older	Male sex	eGFR per 5 ml/min/1.73m^2	ACR per log increase	Diabetes	Hypertension
Original	0.80 (0.75, 0.86)	1.29 (1.04, 1.60)	0.57 (0.54, 0.61)	1.58 (1.45, 1.72)	0.86 (0.70, 1.06)	1.15 (0.76, 1.75)
Pooled	0.79 (0.75, 0.82)	1.38 (1.28, 1.48)	0.63* (0.59, 0.67)	1.55 (1.46, 1.65)	1.35*** (1.24, 1.47)	1.19 (0.97, 1.46)

Coefficients (95% confidence intervals). Statistically significant differences between original and pooled estimates at * p<0.05; ** p<0.001; *** p<0.0001

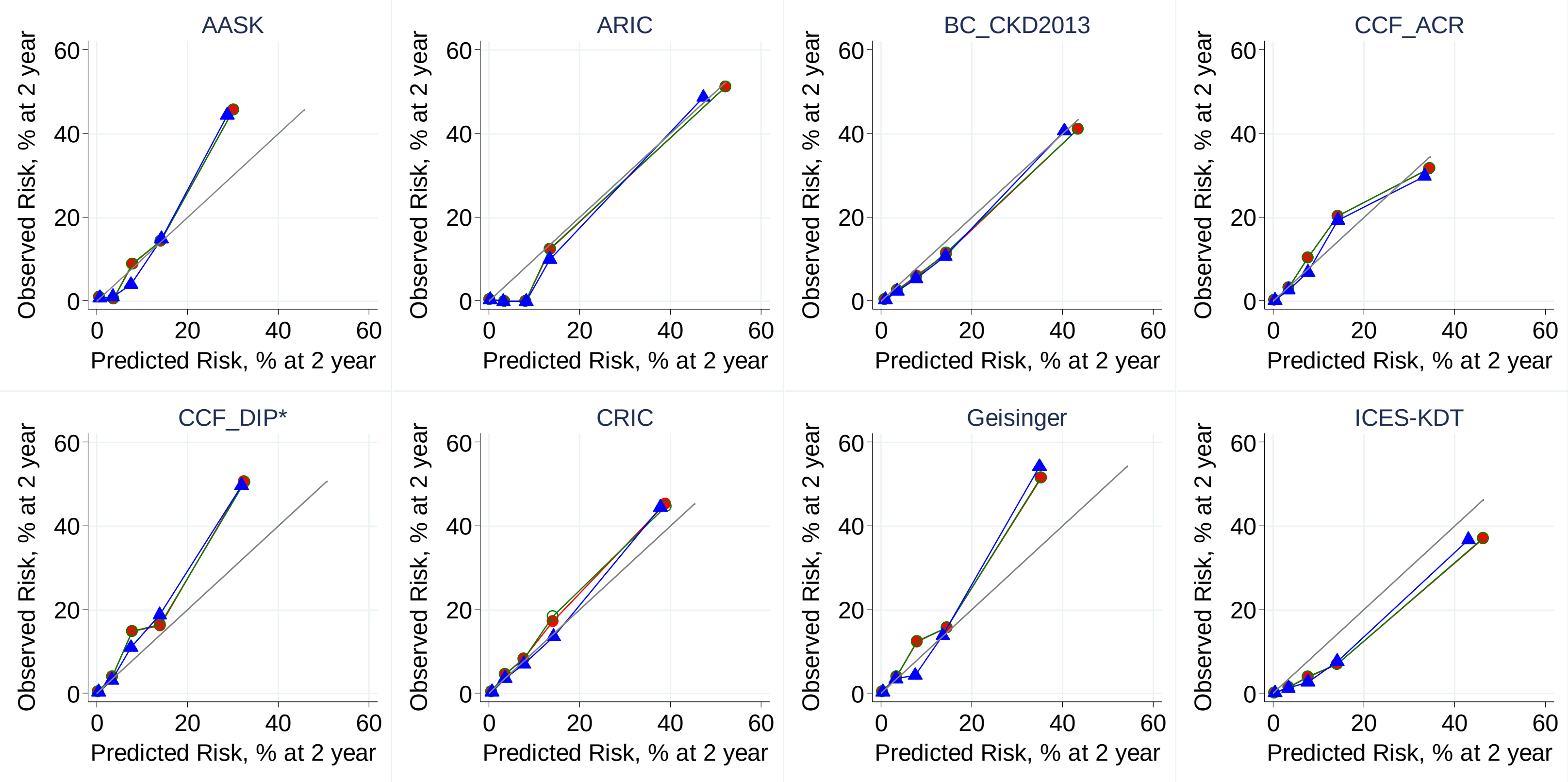


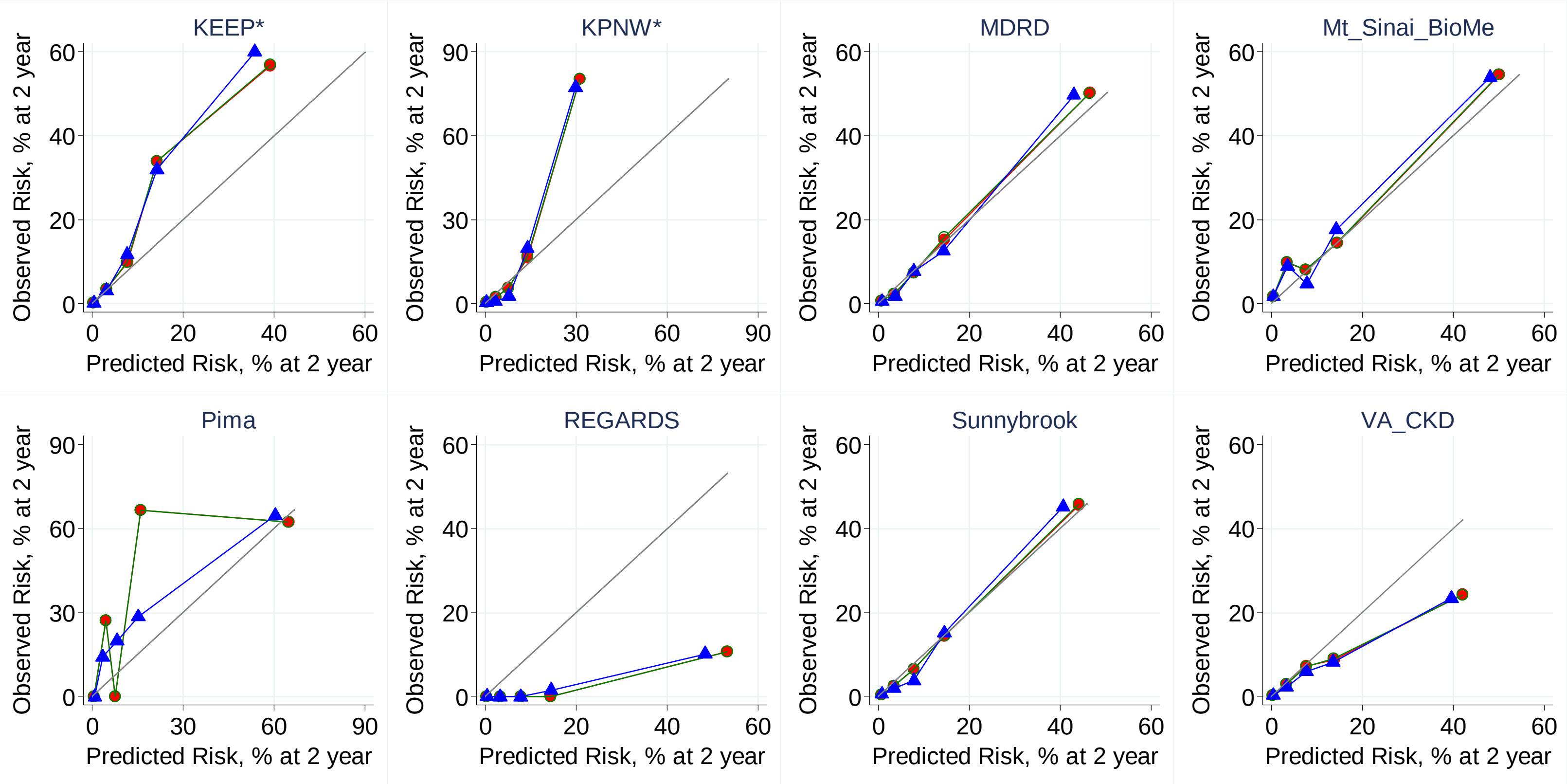
2 year 5 year

B.

Size is the proportional to the weight of the study in a random effects meta-analysis. Due to a limited number of events, confidence intervals were wide in some studies and therefore capped at 1.00 (maximum value for C statistic). Arrows indicate that the true values are beyond the range of the axis.

eFigure 3: Visual plots of calibration for original (red circle), pooled (blue triangle), and regionally recalibrated original (green open circle) 4-variable equation, 2 year in North American cohorts

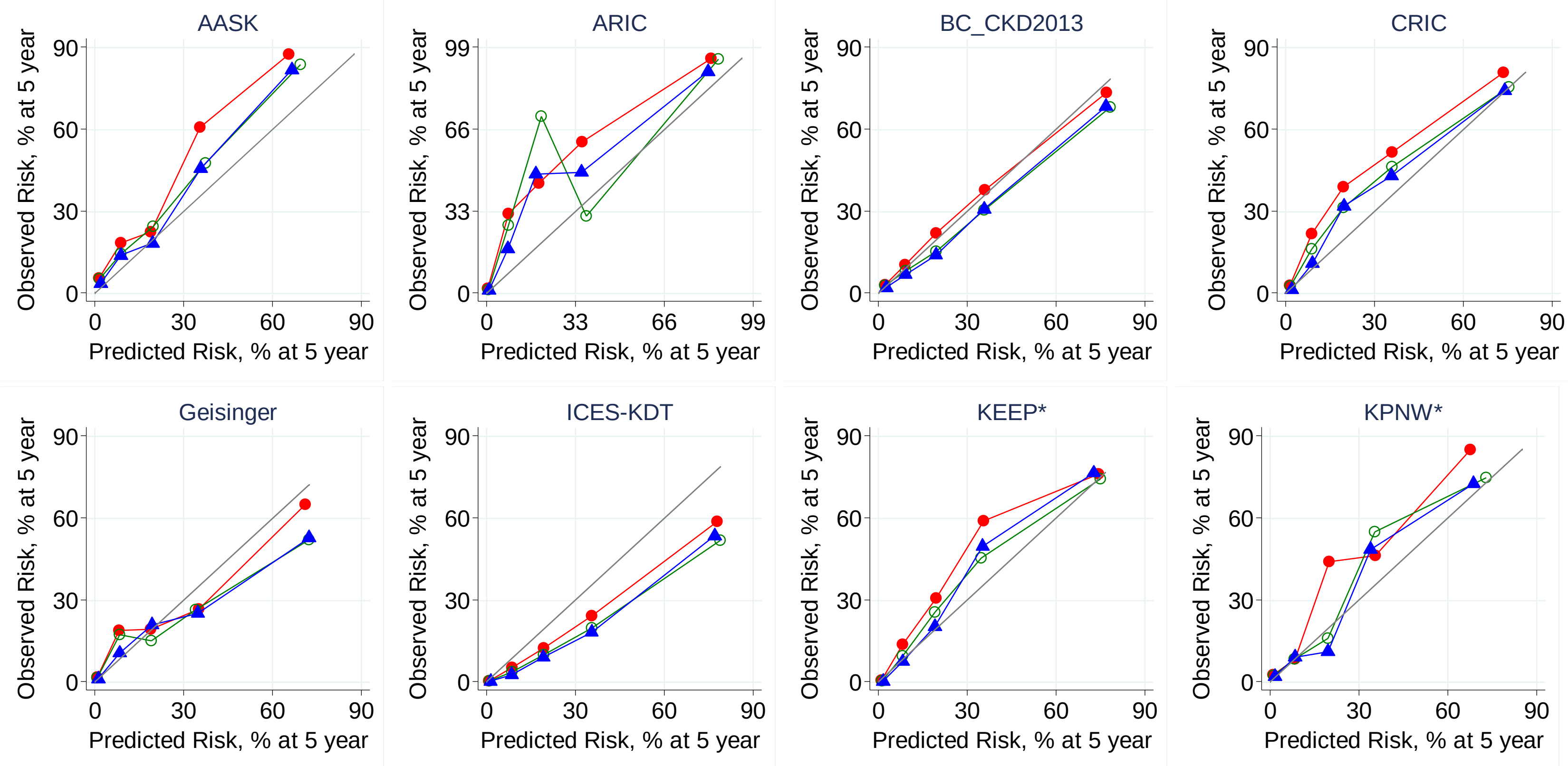


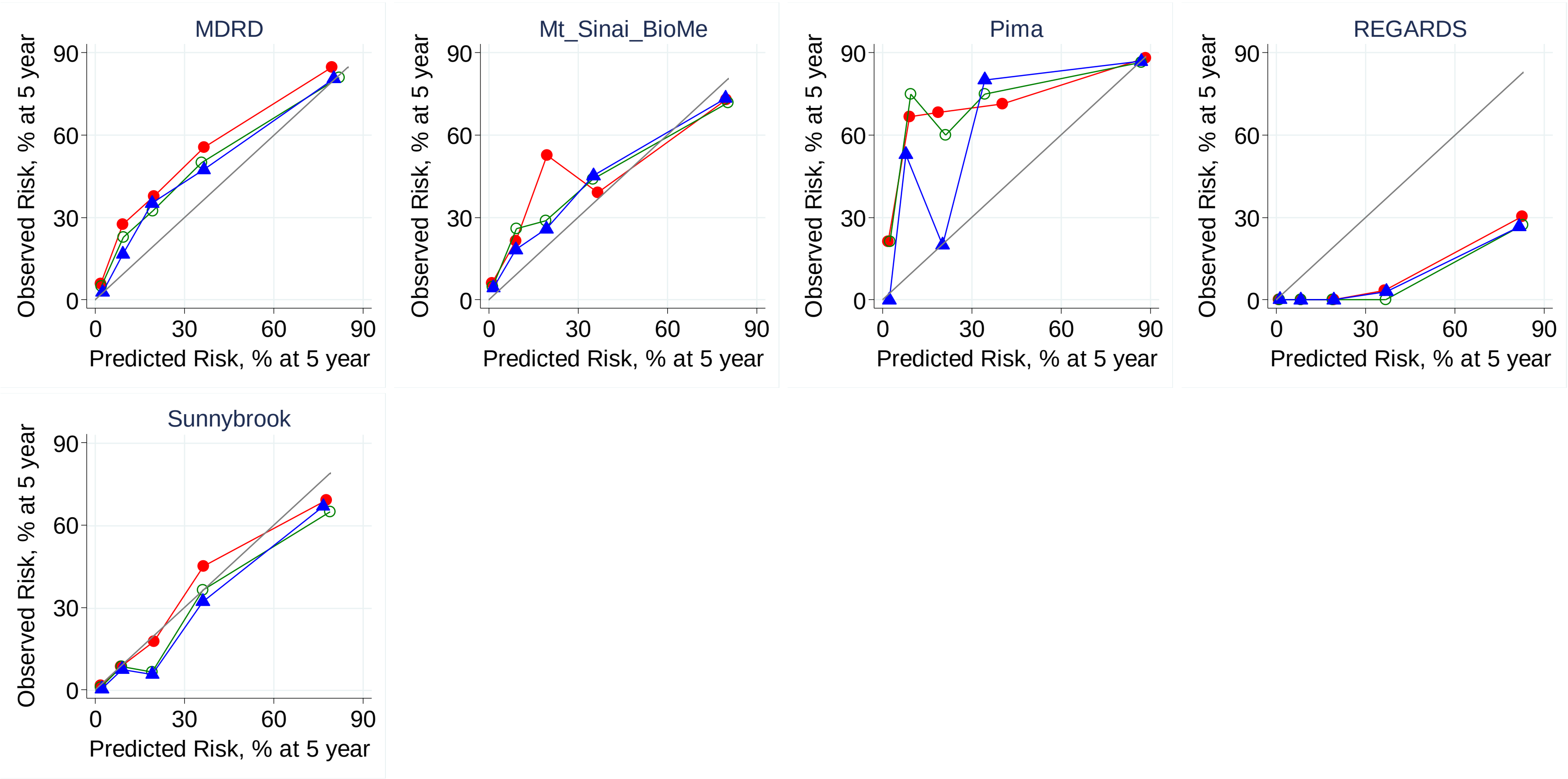


*Indicates cohorts measuring dipstick proteinuria

Points on the lines represent the mean observed and predicted risk for each of the following 5 risk categories: for 2 years, 0 to <2%, 2 to <6%, 6 to <10%, 10 to <20%, and ≥20%; for 5 years, 0 to <5%, 5 to <15%, 15 to <25%, 25 to <50%, ≥50%. The gray line represents the line of identity. Regional recalibration refers to performance of the original equation with a calibration factor multiplier (one for North America cohorts, one for non-North America cohorts) applied to the estimate of baseline risk.

eFigure 4: Visual plots of calibration for original (red circle), pooled (blue triangle), and regionally recalibrated original (green open circle) 4-variable equation, 5 year in North American cohorts

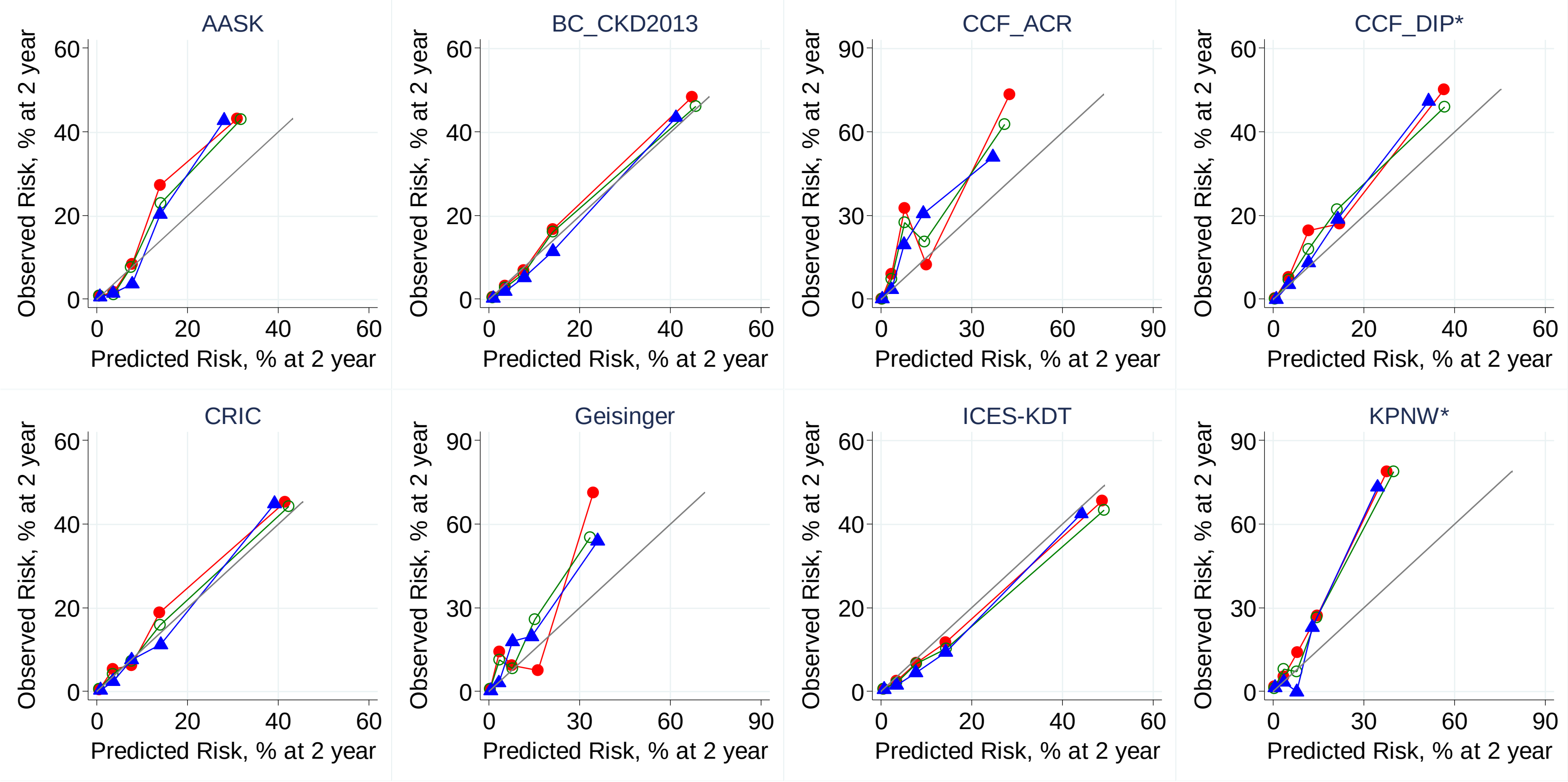


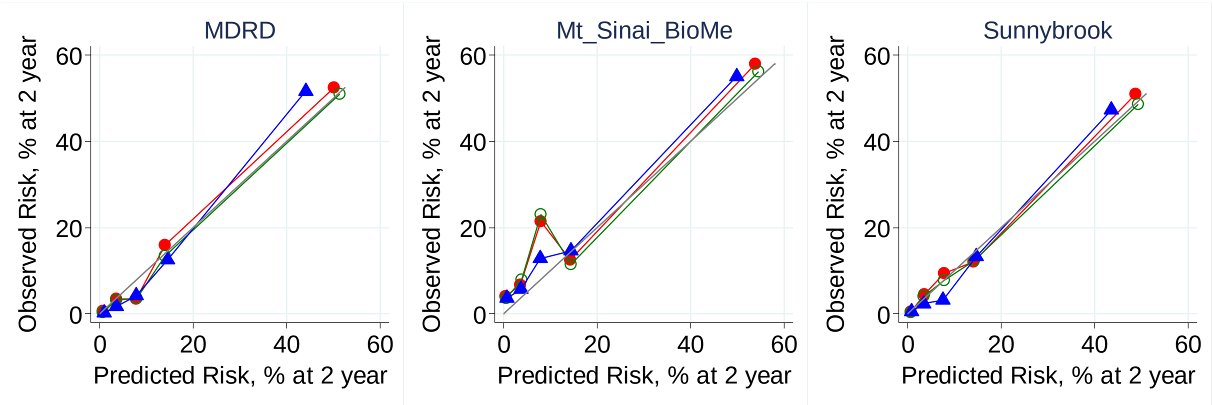


*Indicates cohorts measuring dipstick proteinuria

Points on the lines represent the mean observed and predicted risk for each of the following 5 risk categories: for 2 years, 0 to <2%, 2 to <6%, 6 to <10%, 10 to <20%, and ≥20%; for 5 years, 0 to <5%, 5 to <15%, 15 to <25%, 25 to <50%, ≥50%. The gray line represents the line of identity. Regional recalibration refers to performance of the original equation with a calibration factor multiplier (one for North America cohorts, one for non-North America cohorts) applied to the estimate of baseline risk.

eFigure 5: Visual plots of calibration for original (red circle), pooled (blue triangle), and regionally recalibrated original (green open circle) 8-variable equation, 2 year in North American cohorts

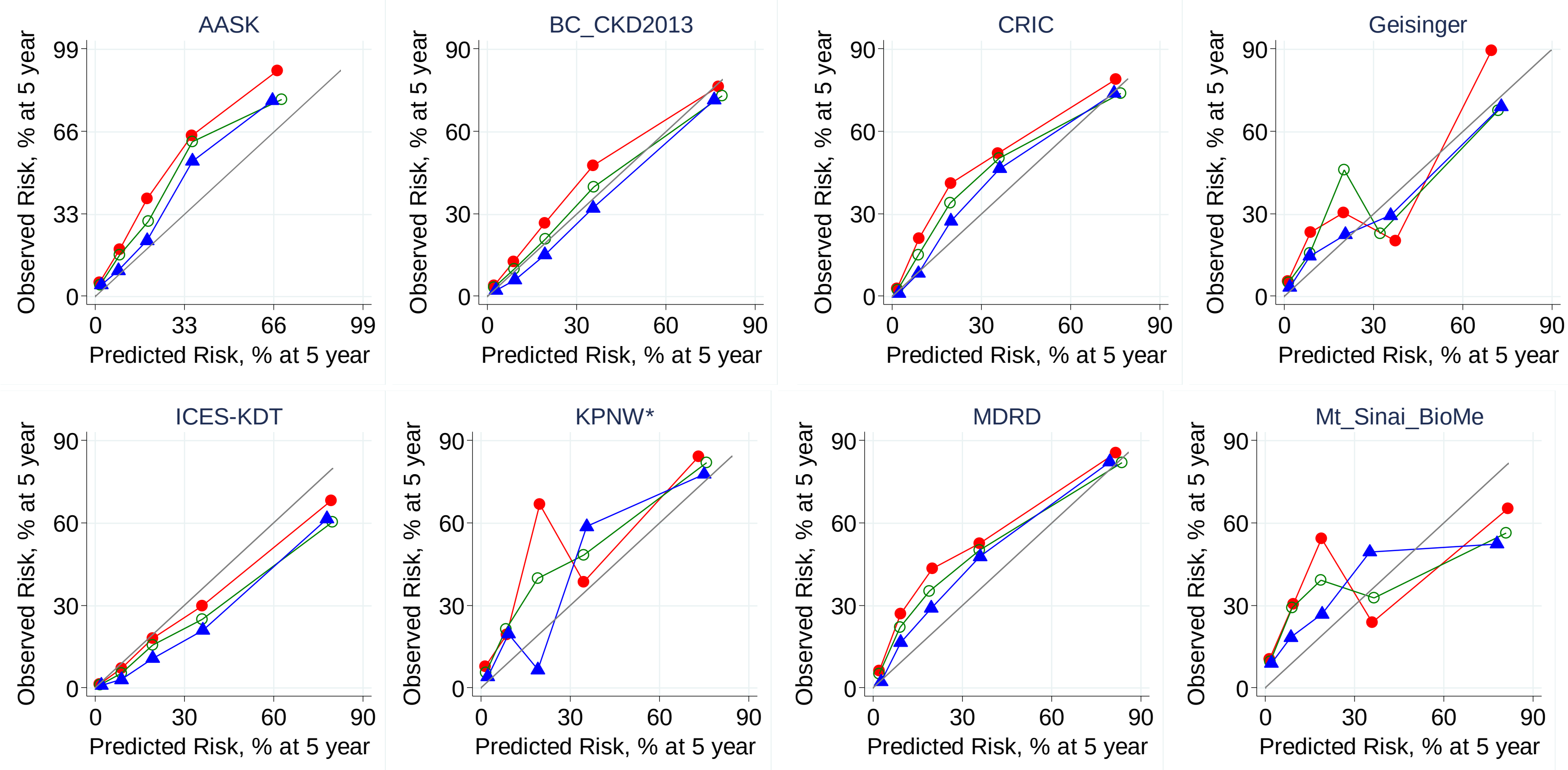


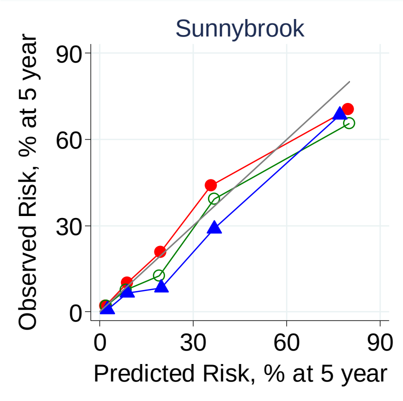


*Indicates cohorts measuring dipstick proteinuria

Points on the lines represent the mean observed and predicted risk for each of the following 5 risk categories: for 2 years, 0 to <2%, 2 to <6%, 6 to <10%, 10 to <20%, and ≥20%; for 5 years, 0 to <5%, 5 to <15%, 15 to <25%, 25 to <50%, ≥50%. The gray line represents the line of identity. Regional recalibration refers to performance of the original equation with a calibration factor multiplier (one for North America cohorts, one for non-North America cohorts) applied to the estimate of baseline risk.

eFigure 6: Visual plots of calibration for original (red circle), pooled (blue triangle), and regionally recalibrated original (green open circle) 8-variable equation, 5 year in North American cohorts

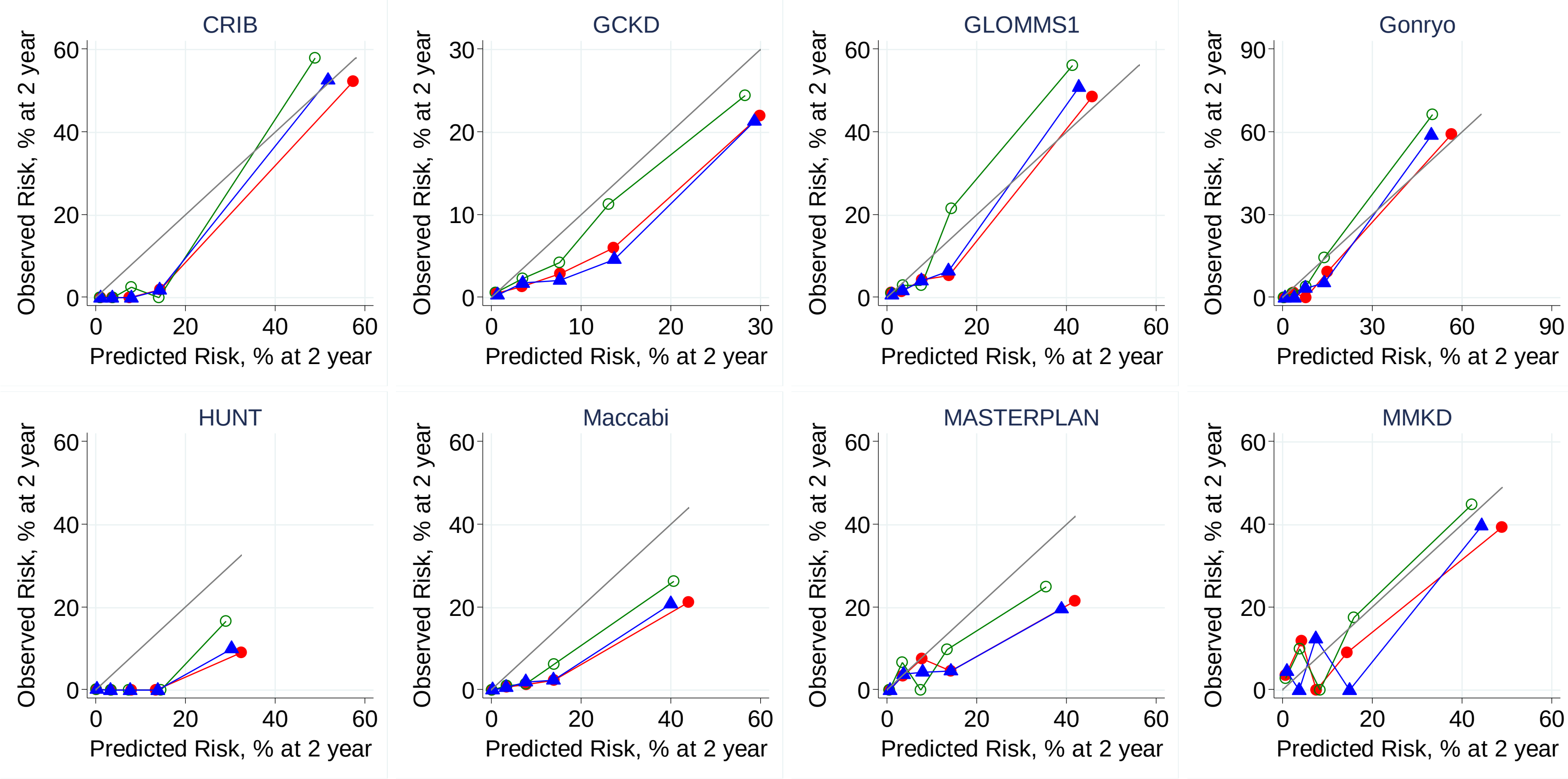


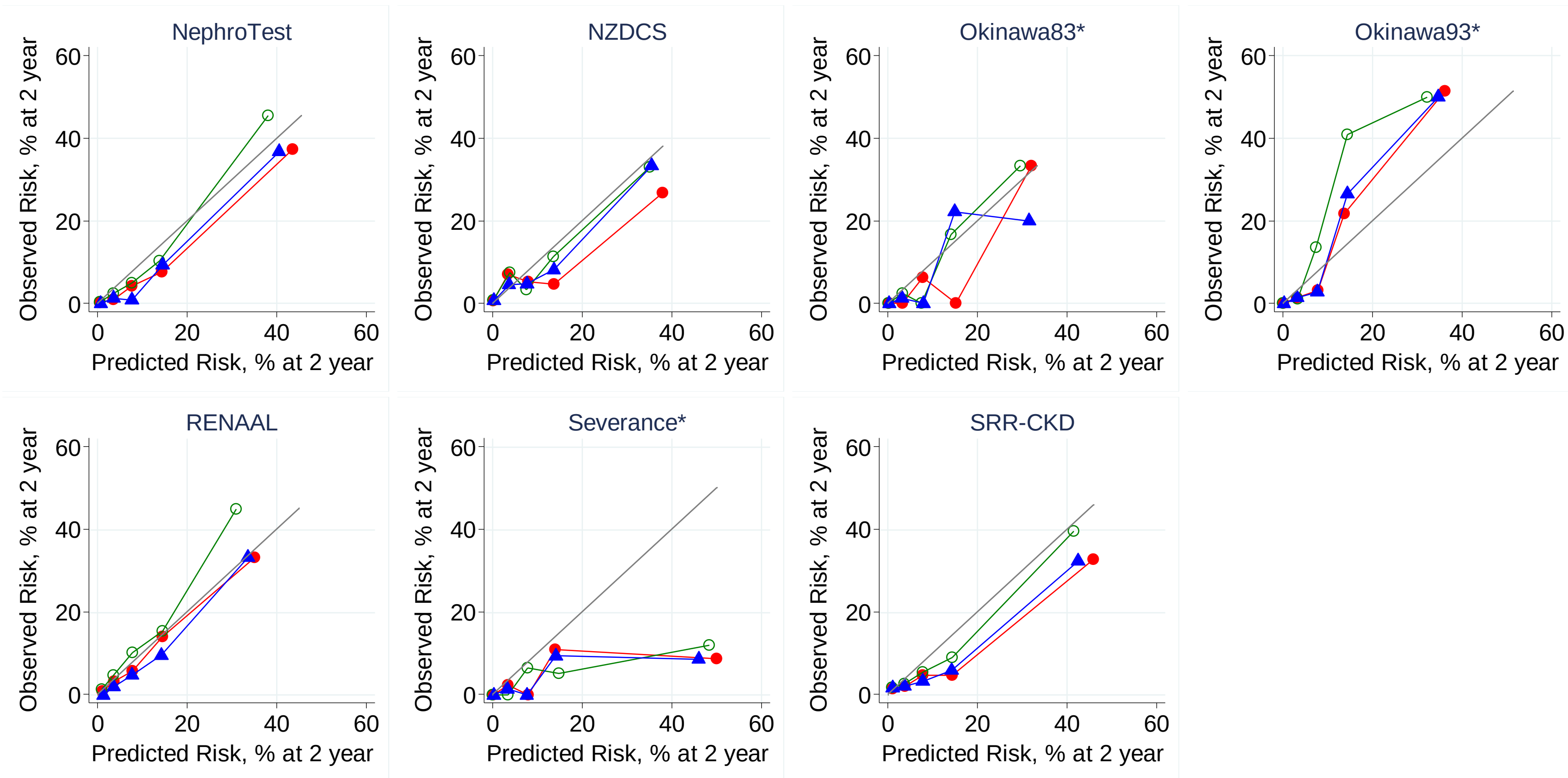


*Indicates cohorts measuring dipstick proteinuria

Points on the lines represent the mean observed and predicted risk for each of the following 5 risk categories: for 2 years, 0 to <2%, 2 to <6%, 6 to <10%, 10 to <20%, and ≥20%; for 5 years, 0 to <5%, 5 to <15%, 15 to <25%, 25 to <50%, ≥50%. The gray line represents the line of identity. Regional recalibration refers to performance of the original equation with a calibration factor multiplier (one for North America cohorts, one for non-North America cohorts) applied to the estimate of baseline risk.

eFigure 7: Visual plots of calibration for original (red circle), pooled (blue triangle), and regionally recalibrated original (green open circle) 4-variable equation, 2 year in non-North American cohorts

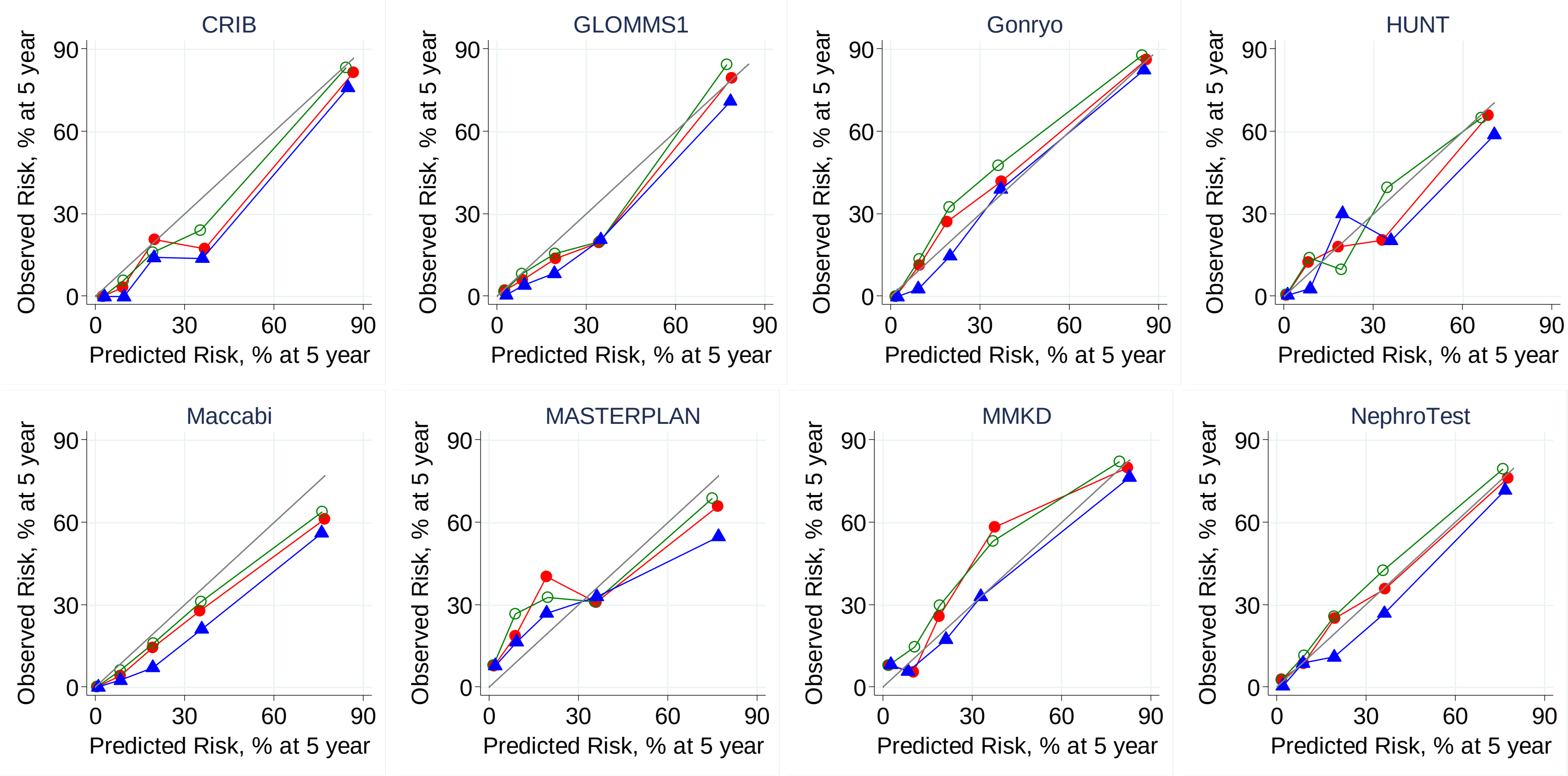


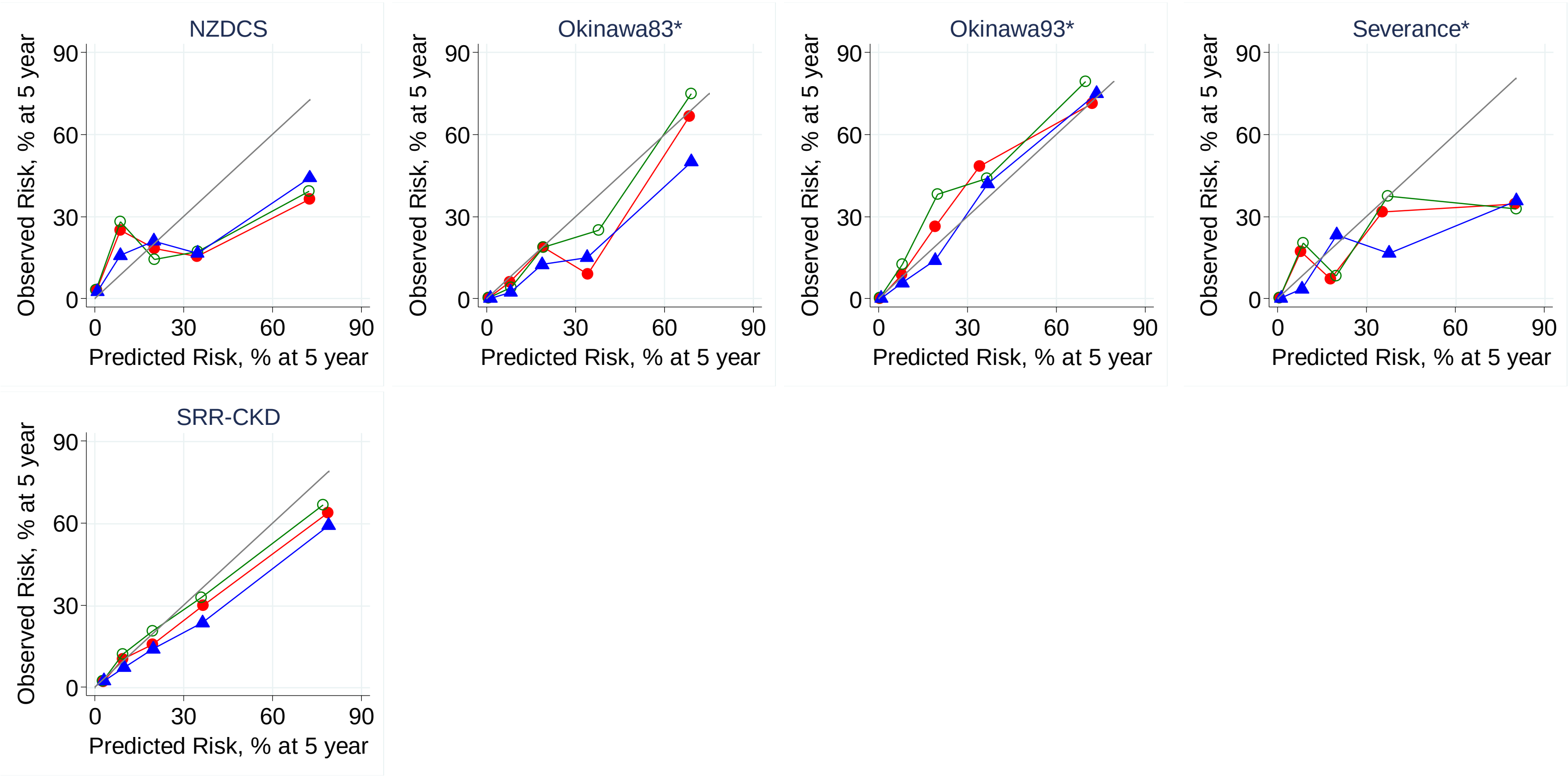


*Indicates cohorts measuring dipstick proteinuria

Points on the lines represent the mean observed and predicted risk for each of the following 5 risk categories: for 2 years, 0 to <2%, 2 to <6%, 6 to <10%, 10 to <20%, and ≥20%; for 5 years, 0 to <5%, 5 to <15%, 15 to <25%, 25 to <50%, ≥50%. The gray line represents the line of identity. Regional recalibration refers to performance of the original equation with a calibration factor multiplier (one for North America cohorts, one for non-North America cohorts) applied to the estimate of baseline risk.

eFigure 8: Visual plots of calibration for original (red circle), pooled (blue triangle), and regionally recalibrated original (green open circle) 4-variable equation, 5 year in non-North American cohorts

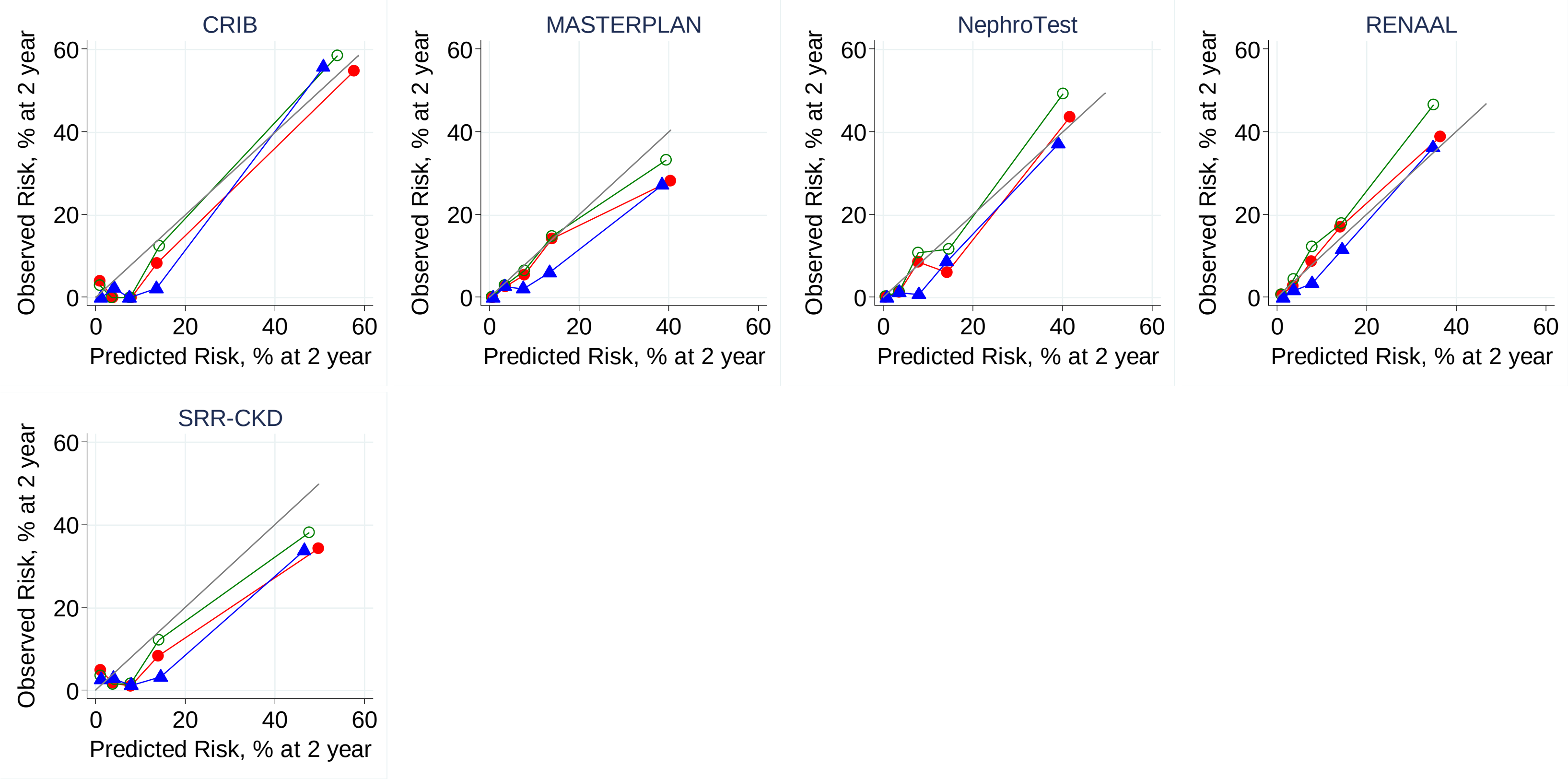




*Indicates cohorts measuring dipstick proteinuria

Points on the lines represent the mean observed and predicted risk for each of the following 5 risk categories: for 2 years, 0 to <2%, 2 to <6%, 6 to <10%, 10 to <20%, and ≥20%; for 5 years, 0 to <5%, 5 to <15%, 15 to <25%, 25 to <50%, ≥50%. The gray line represents the line of identity. Regional recalibration refers to performance of the original equation with a calibration factor multiplier (one for North America cohorts, one for non-North America cohorts) applied to the estimate of baseline risk.

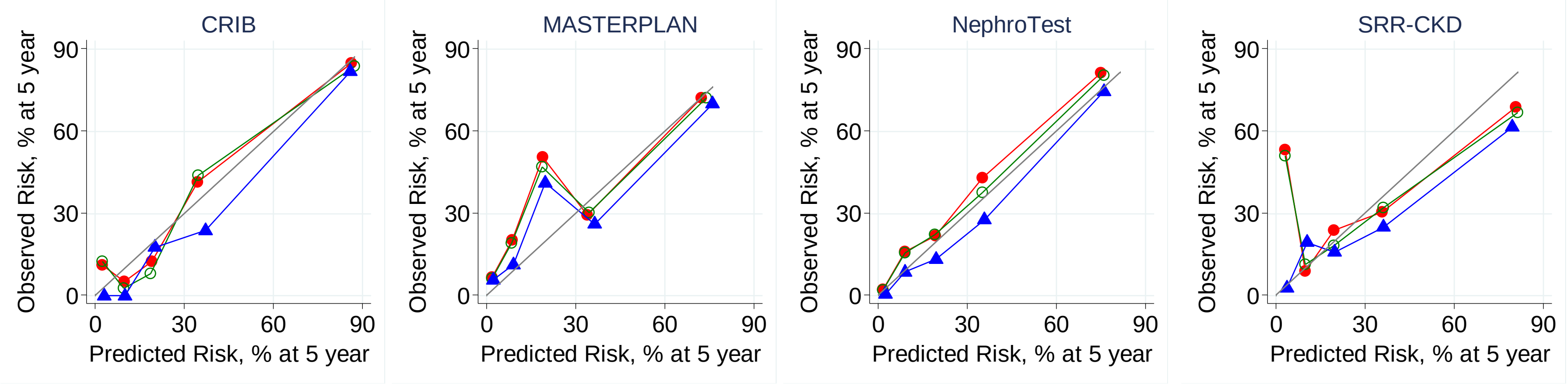
eFigure 9: Visual plots of calibration for original (red circle), pooled (blue triangle), and regionally recalibrated original (green open circle) 8-variable equation, 2 year in non-North American cohorts



*Indicates cohorts measuring dipstick proteinuria

Points on the lines represent the mean observed and predicted risk for each of the following 5 risk categories: for 2 years, 0 to <2%, 2 to <6%, 6 to <10%, 10 to <20%, and ≥20%; for 5 years, 0 to <5%, 5 to <15%, 15 to <25%, 25 to <50%, ≥50%. The gray line represents the line of identity. Regional recalibration refers to performance of the original equation with a calibration factor multiplier (one for North America cohorts, one for non-North America cohorts) applied to the estimate of baseline risk.

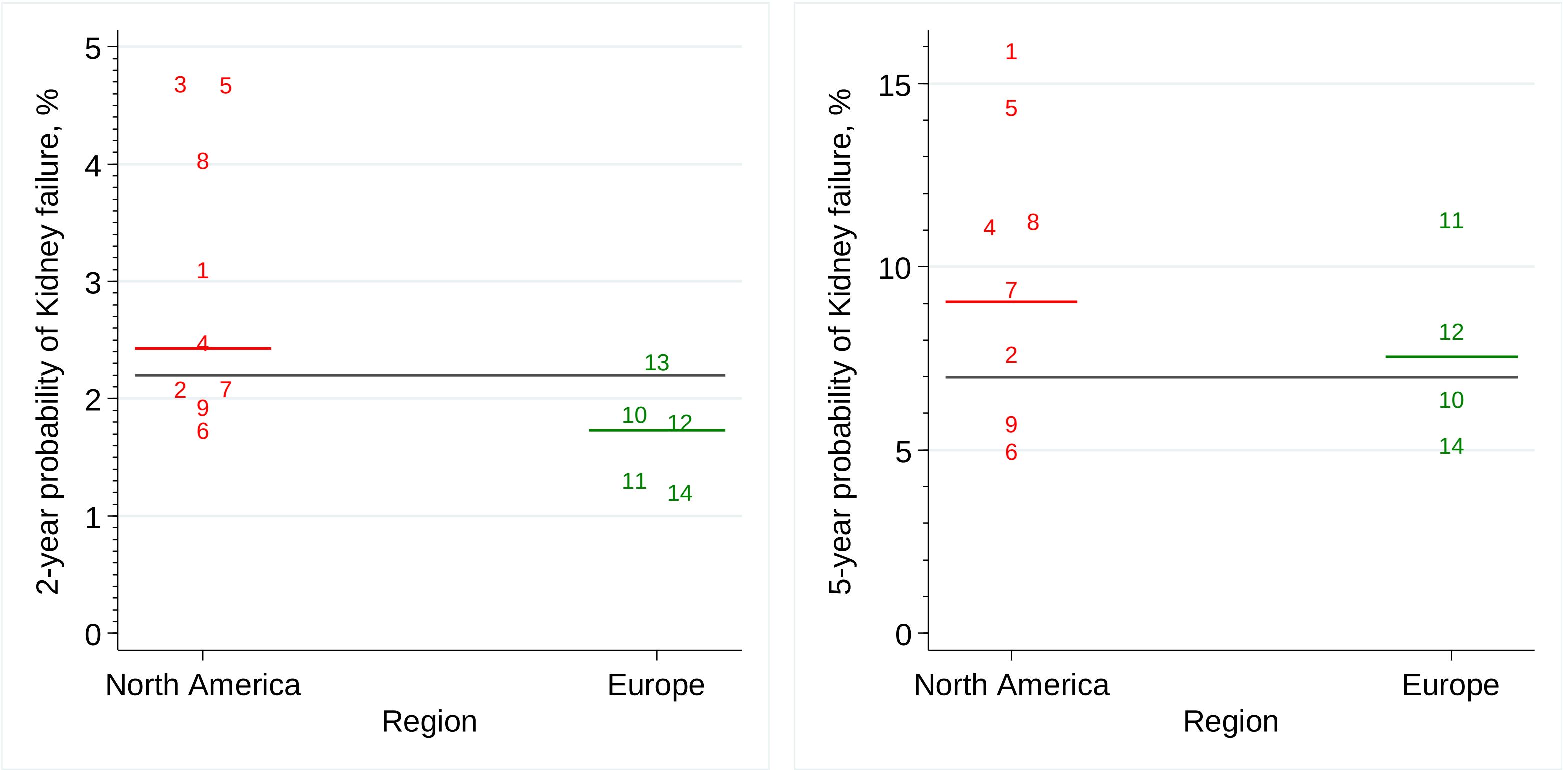
eFigure 10: Visual plots of calibration for original (red circle), pooled (blue triangle), and regionally recalibrated original (green open circle) 8-variable, 5 year in non-North American cohorts



*Indicates cohorts measuring dipstick proteinuria

Points on the lines represent the mean observed and predicted risk for each of the following 5 risk categories: for 2 years, 0 to <2%, 2 to <6%, 6 to <10%, 10 to <20%, and ≥20%; for 5 years, 0 to <5%, 5 to <15%, 15 to <25%, 25 to <50%, ≥50%. The gray line represents the line of identity. Regional recalibration refers to performance of the original equation with a calibration factor multiplier (one for North America cohorts, one for non-North America cohorts) applied to the estimate of baseline risk.

eFigure 11: Refit baseline hazard of original 8-variable equation at 2 years and 5 years in individual cohorts stratified by region



	North America									Europe				
Cohort #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Cohort Name	AASK	BC CKD	CCF ACR	CRIC	Geisinger	ICES-KDT	MDRD	Mt Sinai BioMe	Sunnybrook	CRIB	MASTERPLAN	Nephrotest	RENAAL	SRR-CKD

Horizontal gray line represents the baseline hazard for the original 8-variable KFRE at age 70 years, male 56%, eGFR 36 ml/min/1.73 m^2, ACR 170 mg/g, phosphate 3.9 mg/dL, albumin 4.0 mg/dL, bicarbonate 25.6 mEq/L, and calcium 9.4 mg/dL; the red and green horizontal line represent the weighted mean refit baseline hazard within each region (North America and non-North America). The 14 cohorts included represent studies with available urine albumin-to-creatinine ratio. Studies with dipstick proteinuria were not included in the calculation.

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