

Supplementary Material

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Table S1. Description of iNET-CKD cohorts.

Acronyms	Full study name	Country/Countries	Age range (years)	Year of enrollment	Target population
4C	The Cardiovascular Comorbidity in Children with Chronic Kidney Disease study	Germany, Italy, France, United Kingdom, Poland, Portugal, Lithuania, Serbia, Czechia, Austria, Switzerland, Turkey	6-17	2009-2011	Non-dialysis early to advanced CKD in children and adolescents under nephrology care
CKDBIS	The Berlin Initiative Study	Germany	70-100	2009-2011	Non-dialysis early to advanced CKD in older adults
CanPREDDICT	Canadian study of prediction of death, dialysis and interim cardiovascular events	Canada	18+	2008-2009	Non-dialysis advanced CKD in adults under nephrology care
CKD.QLD	Chronic kidney disease registry in Queensland, Australia	Australia	18-99	2011	Non-dialysis early to advanced CKD in adults
CKD-JAC	Chronic Kidney Disease Japan Cohort Study	Japan	20-75	2007-2008	Non-dialysis early to advanced CKD in adults
CKDOPPS	CKD Outcomes and Practice Patterns Study	United States, Brazil, Germany	18+	2014-present	Non-dialysis advanced CKD in adults under nephrology care
CKD-REIN	The French Chronic Kidney Disease-Renal Epidemiology and Information Network cohort study	France	19-94	2013-2016	Non-dialysis advanced CKD in adults under nephrology care
CKiD	Chronic Kidney Disease in Children prospective cohort study	United States, Canada	2-20	2005-2019	Non-dialysis early to advanced CKD in children, adolescents and young adults under nephrology care

Acronyms	Full study name	Country/Countries	Age range (years)	Year of enrollment	Target population
CORE-CKD	Cohort of CKD patients with high risk for cardiovascular events or renal disease progression multicenter study (Thailand)	Thailand	20-75	2015-2017	Non-dialysis early to advanced CKD in adults
CRIC	The Chronic Renal Insufficiency Cohort Study	USA	21-79	2003-2008; 2013-2015; 2018-2019	Non-dialysis early to advanced CKD in adults
C-STRIDE	Chinese cohort study of chronic kidney disease	China	18-74	2011-2017	Non-dialysis early to advanced CKD in adults under nephrology care
EQUAL	European quality study on treatment in advanced CKD	Netherlands, Germany, Italy, Sweden, United Kingdom, Poland	65+	2012-2020	Non-dialysis stage 4 CKD in older adults
GCKD	German Chronic Kidney Disease Study	Germany	18-17	2010-2012	Non-dialysis early CKD in adults under nephrology care
H3AKDN EnuguH3AKDN Enugu	Human Heredity and Health in Africa Kidney Disease Research Network	Nigeria	17-80	2004-2021	Non-dialysis early to advanced CKD in children and adults
iCKD	Indian chronic kidney disease study	India	18-75	2015-2020	Non-dialysis early to advanced CKD in adults
KNOW Ped CKD	KoreaN cohort study for outcomes in patients with pediatric CKD	Korea	0-20	2011-2016; 2019-present	Non-dialysis early to advanced CKD in children, adolescents and young adults under nephrology care
KNOW-CKD	KoreaN cohort study for Outcome in patients With Chronic Kidney Disease	Korean	19-75	2011-2016	Non-dialysis early and advanced CKD in adults under nephrology care
NRHP-URU	National Renal Healthcare Program, Uruguay	Uruguay	15-99	2004-2021	Non-dialysis early CKD in adolescents and adults under nephrology care

Acronyms	Full study name	Country/Countries	Age range (years)	Year of enrollment	Target population
PROVALID	Prospective Cohort Study in Patients with Type 2 Diabetes Mellitus for Validation of Biomarkers Study	Austria, Hungary, Netherlands, Poland, Scotland	18-75	2011-2016	Adults with type 2 diabetes in primary care
PSI BIND-NL	Parelsnoer Initiative Biobank of Nephrological Diseases in the Netherlands	Netherlands	18-90	2010-2015	Non-dialysis early to advanced CKD in adults under nephrology care
RIISC	The Renal Impairment in Secondary Care Study	United Kingdom	19-92	2010-2015	Non-dialysis advanced CKD in adults under nephrology care
RRID	Renal Risk in Derby	United Kingdom (England only)	32-94	2008-2010	Non-dialysis early CKD in adults under primary care

Table S2a. Variable definitions.

Variable	Definition	Coding for Analysis	Technical Notes
Hemoglobin (Hg, in g/L)	First available measurement of hemoglobin.	Continuous	C-STRIDE: Cohort included extreme values. Excluding values <40 g/L and >200 g/L resulted in only 10 exclusions.
Year	Year when hemoglobin measurement performed.	Continuous	KNOW-CKD: provided the date of consent and this is used as the year.
Age	Age derived by subtracting the date of birth from the date of hemoglobin measurement (divided by 365.25) rounded down to the nearest integer. SAS function: <i>Floor ((Date of Hg measurement – DOB)/365.25)</i>	Continuous	NRHP: provided data from Age 1-99. Removed 142 participants with age<18 from the adult cohort. CKDBIS: Cohort consist of older participants with age>65 H3AKDN Enugu: Cohort consist of 5 participants with age 15-18. Excluded the 5 participants from adult cohort.
Sex	Self-defined biological sex at birth: male or female	Categorical	
Estimated glomerular filtration rate (eGFR)	eGFR value calculated from CKD-EPI formula: $GFR = 141 * \min(Scr/k, 1)^\alpha * \max(Scr/k, 1)^{-1.209} * 0.993 * Age * 1.018 [if female] * 1.159 [if black]$. <i>Scr</i> is serum creatinine “standardized” to isotope dilution mass spectrometry (mg/dL), k is 0.7 for females and 0.9 for males, α is -0.329 for females and -0.411 for males, min indicates the minimum of <i>Scr/k</i> or 1, and max indicates the maximum of <i>Scr/k</i> or 1, at Hg measurement (+/- 3 months)	Continuous	RRID: eGFR was calculated using original CKD-EPI equation without the ethnicity factor (only 4 participants identified as African-Caribbean).
Erythropoietin stimulating agent status (ESA)	indicating whether patient was receiving any ESA therapy at time of Hg measurement (+/- 3 months). Common generic drug names are as follows: Epoetin alfa/beta, Epoetin kappa, Darbepoetin alfa, Epoetin beta pegol. See ATC codes below.	0 = no 1 = yes 99 = unknown	RRID: Given that this is a primary care cohort restricted to CKD stage 3, it was assumed that no participants were receiving ESA. C-STRIDE: Cohort only registered the case of using ESA (1=yes), and 0 may contain both “not using” and “unknown” cases. Assumed ESA unknown as “no”.

Variable	Definition	Coding for Analysis	Technical Notes
Country	Country of where participant was enrolled.		<p>PROVALID: Cohort consist of data from 5 countries: Austria, Hungary, Netherlands, Poland and Scotland. Due to small sample size for each country, we considered the whole cohort as one.</p> <p>EQUAL: Cohort consist of data from 6 countries: Poland, Germany, Netherlands, Italy, UK and Sweden. Due to small sample size for each country, we considered the whole cohort as one.</p>
Atheromatous cardiovascular disease	Self-reported or physician-diagnosed history of atheromatous cardiovascular disease: any one of coronary artery disease, prior revascularization, stroke or peripheral vascular disease at or prior to Hg measurement. See below for ICD codes.	<p>0 = No</p> <p>1 = Yes</p> <p>99 = unknown</p>	
Congestive heart failure	Self-reported or physician-diagnosed history of congestive heart failure at or prior to Hg measurement. See below for ICD codes.	<p>0 = No</p> <p>1 = Yes</p> <p>99 = unknown</p>	RIISC: data not available.
Diabetes mellitus (DM)	History of diabetes including: serum fasting glucose ≥ 7.0 mmol/L (≥ 126 mg/dL), non-fasting glucose ≥ 11.1 mmol/L (≥ 200 mg/dL), glycated hemoglobin A1c $\geq 6.5\%$, and/or use of glucose lowering drugs. Self-report or physician diagnosed diabetes can be included at or prior to Hg measurement. See below for ICD codes.	<p>0 = No diabetes</p> <p>1 = Diabetes</p> <p>99 = unknown</p>	<p>KNOW-CKD: 4 patients with DM="Suspected" were removed from the cohort.</p> <p>PROVALID: Exclusively included participants with DM.</p>
KDIGO albuminuria categories	<p>Urinary albumin (mg) / Urinary creatinine (g) at Hg measurement (+/- 3 months).</p> <p>Normal ACR <30 mg/g or AER <30 mg/24h or PCR <150 mg/g or PER <150 mg/24h or Dipstick negative to trace</p> <p>Mild 30\leq ACR <300 mg/g or 30\leq AER</p>	<p>0 = normal</p> <p>1 = mild increase</p> <p>2 = severe increase</p> <p>99 = unknown</p>	<p>C-STRIDE: Only the urinary albumin to creatinine ratio (uACR) variable available.</p> <p>PSI BIND-NL: ACR data not available.</p>

Variable	Definition	Coding for Analysis	Technical Notes
	<p><300 mg/24h or 150≤ PCR <500 mg/g or 150≤ PER<500 mg/24h or Dipstick trace to 1+ Severe ACR ≥ 300 mg/g or AER ≥ 300 mg/24h or PCR ≥ 500 mg/g or PER ≥ 500 mg/24h or Dipstick 1+ or greater</p>		
Primary Cause of Kidney Disease	Underlying cause of kidney disease, biopsy-proven or physician diagnosed in the absence of a kidney biopsy	<p>1 = Diabetic kidney disease 2 = Hypertension 3 = Glomerulonephritis 4 = Polycystic kidney disease 5 = other or unknown</p>	<p>CKDBIS: data not available. RRID: data not available. As this is a primary care cohort, most participants would never have seen a nephrologist. Hence only those with diabetes have a specific diagnosis. PROVALID: data not available. CRIC: GN and PKD categories not available. C-STRIDE: HTN, PKD categories not available. CKD-JAC: Cohort did not enroll participants with PKD</p>
Body Mass Index	Calculated as weight (kg) / Height (m) ² . Use weight closest to Hg measurement. For pediatrics only, use height closest to Hg measurement	<p>1 = < 18.5 2 = 18.5-24.9 3 = 25.0-29.9 4 = ≥ 30 99 = unknown</p>	
Use of Renin-angiotensin-aldosterone system (RAAS) inhibitors	Whether participant was receiving RAAS inhibitors at time of Hg measurement (+/-3 months). Common generic drug names are as follows: Candesartan, Eprosartan, Irbesartan, Losartan, Olmesartan, Telmisartan, Valsartan, Benazepril, Captopril, Enalapril, Fosinopril, Lisinopril, Perindopril, Quinapril,	<p>0 = no 1 = yes 99 = unknown</p>	<p>CKD.QLD: unable to isolate time point at hemoglobin measure. Participants ever on RAAS were considered as 'yes'. C_STRIDE: Cohort only registered the case of using RAAS (1=yes). The value of 0 may contain both 'not using' and "unknown" cases.</p>

Variable	Definition	Coding for Analysis	Technical Notes
	Ramipril and Trandolapril. See below for ATC codes.		
Smoking Status	Self-reported history of smoking at time of Hg measurement.	0 = Never smoked 1 = Current smoker 2 = Former smoker 99 = unknown	CKDopps: data not available. ICKD: Cohort captured both smoking and smokeless tobacco use. CRIC: Only have "current smoker" and "Not current smoke" categories. Categorized 'Not current smoke' as "Never smoked". C-STRIDE: Cohort combined current and former smoking together; the value of 1 may include current smoker and former smokers alike.
City	City of the participant's resident or if unavailable, City of the center for study enrollment.		CKDopps: data not available. PROVALID: Data not collected during the study. CKDopps: Data not collected during the study. EQUAL: Data not collected during the study. PSI BIND-NL: Data not collected during the study.
State or Province	State or Province of the participant's resident or if unavailable, State or Province of the center for enrollment. Altitude will be derived from this.		PROVALID: Data not collected during the study. CKDopps: Data not collected during the study. EQUAL: Data not collected during the study. PSI BIND-NL: Data not collected during the study.
Altitude	Based on location of residence or, if unavailable, location of the center for study enrollment.	1 = <500m 2 = 500-1000m 3 = >1000m	NRHP: Altitude for the whole country is <50 m CKDBIS: Only city is Berlin with altitude 39m RRID: Only city is Derby with altitude 62m H3AKDN Enugu: Only city is Ituku with altitude

Variable	Definition	Coding for Analysis	Technical Notes	Other
Iron saturation (%)	Transferrin saturation (TSAT) measurement at time of Hg measurement (+/-3 months)	Continuous	200m Data available only for C-STIDE, ICKD, KNOW-CKD, CKD-JAC, CKDopps, NRHP, CKD-REIN	
Ferritin (µg/l)	Serum ferritin measurement at time of Hg measurement (+/- 3 months)	Continuous	Data available only for C-STIDE, ICKD, KNOW-CKD, CKD-JAC, CKDopps, NRHP, CKD-REIN, RIISC	
Hemoglobin value at ESA initiation	Measurement of hemoglobin (g/L) at time of ESA initiation (up to 1 month prior to ESA initiation).	Continuous	Data available only for CKDopps, NRHP	

Table S2b. Anatomical Therapeutic Chemical (ATC) codes.

Drug	ATC codes
ESA	B03XA01 - B03XA02 - B03XA03
RAAS inhibitors	C09AA01 - C09AA02 - C09AA03 - C09AA04 - C09AA05 - C09AA06 - C09AA07 - C09AA08 - C09AA09 - C09AA10 - C09AA15 - C09BB02 - C09BB04 - C09BB10 - C09BA01 - C09BA02 - C09BA03 - C09BA04 - C09BA05 - C09BA06 - C09BA07 - C09BA09 - C09BA15 C09CA01 - C09CA02 - C09CA03 - C09CA04 - C09CA06 - C09CA07 - C09CA08 - C09DA01 - C09DA03 - C09DA04 - C09DA06 - C09DA07 - C09DA08 - C09DB01 - C09DB02 - C09DB04 - C09DX01 C09XA02 - C09XA52 C03DA01, C03DA04, C03EA04

Table S2c. International Classification of Disease codes

Comorbidity	ICD-9^	ICD-10-AM or CA^
Diabetes	250.x	E10.0, E10.1, E10.9, E11.0, E11.1, E11.9, E12.0, E12.1, E12.9, E13.0, E13.1, E13.9, E14.0, E14.1, E14.9
Atheromatous cardiovascular disease	410.x, 412.x 430.x, 431.x, 433.x, 434.x, 435x 440.x, 441.x, 444.x, 445.x 415.1, 451.1, 451.2, 451.81, 451.83, 451.89, 451.9, 453.2, 453.8, 453.9	I21.x, I22.x, I25.2 I60 - I61, I63 - I64, G45 I70.x - I71.x, I74.x I80.2, I80.3, I80.1, I82.8, I80.9, I82.9, I80.8, O22.3, O22.9, O87.1, I26.9, I26.0
Congestive heart failure	428.x, 398.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 425.4-425.9, 428.x	I09.9, I11.0, I13.0, I13.2, I25.5, I42.0, I42.5-I42.9, I43.x, I50.x, P29.0

Table S3. Hemoglobin distribution (mean and standard deviation) in each cohort, overall and within strata of sex and eGFR categories.

Variable		Asia					Australia	North America			South America	
		CORE-CKD	C-STRIDE	ICKD	KNOW-CKD	CKD-JAC	CKD.QLD	CanPREDDICT	CRIC	CKDopps	CKDopps	NRHP
		Thailand	China	India	Korea	Japan	Australia	Canada	United States	United States	Brazil	Uruguay
Overall		125.7 (±24.3)	122.2 (±21.4)	118 (±19.1)	122.1 (±19.2)	119.5 (±18)	123.2 (±20)	123.2 (±15.6)	125.1 (±17.6)	118 (±18.8)	121 (±19.1)	126.5 (±19)
Sex	Male	131.5 (±25.7)	129.1 (±21.8)	122.4 (±19.5)	127.5 (±19.9)	123.3 (±18.7)	126.1 (±21.3)	125.8 (±16)	130.1 (±17.9)	122.3 (±20.2)	125.9 (±20.6)	130.9 (±19.7)
	Female	114.8 (±16.8)	112.8 (±16.9)	109.4 (±14.8)	113.4 (±14.2)	112.7 (±14.5)	119.7 (±17.9)	118.8 (±14)	118.8 (±14.9)	113.4 (±15.9)	115.6 (±15.6)	120.5 (±16.2)
eGFR Category	< 20	108.5 (±15.9)	107.5 (±18.1)	103.2 (±15.5)	108.3 (±13.8)	107.5 (±13.7)	110.4 (±18.9)	117.2 (±14.4)	111.2 (±15.7)	110.5 (±17.2)	111.1 (±16.6)	112.2 (±17.9)
	20-30	116.8 (±18.4)	117.3 (±18.8)	110.1 (±16)	116.3 (±15.6)	114.3 (±15.6)	120.5 (±18.7)	122.8 (±14.7)	118.5 (±16.4)	117.2 (±17.3)	121.1 (±16.5)	120.5 (±17.9)
	30-45	127.1 (±25.1)	126.3 (±20.8)	117.2 (±18.8)	125.9 (±17.9)	123.1 (±16.8)	127.2 (±18.3)	126.5 (±15.9)	123.4 (±17)	125.5 (±19)	130.5 (±18.8)	127.8 (±17.7)
	45-60	134.3 (±25)	132.9 (±19.6)	122.9 (±19.3)	133.7 (±18.9)	129.8 (±17.1)	133.1 (±18)	133 (±18.7)	129.4 (±17.2)	128.6 (±17.7)	133.8 (±17.8)	134.6 (±17.7)
GFR & Sex	<20 & Male	112.2 (±15.4)	111.9 (±19.7)	107.9 (±18.3)	110.7 (±14.9)	109.6 (±13.6)	111.3 (±18.7)	119.3 (±14.8)	112.9 (±16)	113.8 (±18.6)	113.5 (±17.9)	114.4 (±18.9)
	<20 & Female	103 (±15.2)	103.6 (±15.5)	101.6 (±14.7)	105.6 (±12)	104.2 (±13.4)	109.2 (±19.2)	114.1 (±13.2)	109.2 (±15.2)	107.2 (±14.9)	108.6 (±14.6)	110 (±16.4)
	20-30 & Male	122.7 (±18.9)	123.4 (±19.8)	118.1 (±16.9)	119.8 (±16.5)	117.4 (±16.3)	122.9 (±19.7)	125.3 (±15.1)	123.4 (±16.7)	121.6 (±18.7)	126 (±16.8)	123.4 (±19.6)
	20-30 & Female	110.1 (±15.3)	110.1 (±14.8)	105.4 (±13.4)	110.4 (±11.7)	109.3 (±12.9)	117.7 (±17.1)	119 (±13.2)	113.3 (±14.5)	112.8 (±14.6)	116.4 (±14.8)	117.7 (±15.5)
	30-45 & Male	132.6 (±27)	132.9 (±20.9)	120.7 (±19.5)	131.2 (±18)	127.5 (±16.9)	130.8 (±20)	129.1 (±16)	128.2 (±17.6)	130.2 (±20.1)	136.9 (±19.7)	131.9 (±18.4)
	30-45 & Female	116.5 (±16.7)	116.9 (±16.7)	110.2 (±15.1)	116.8 (±13.5)	114.7 (±13.2)	123.1 (±15.2)	121.7 (±14.4)	117.9 (±14.5)	119.9 (±15.9)	122.2 (±13.5)	122.5 (±15.3)
	45-60 & Male	137.8 (±26.2)	139 (±18.6)	125.9 (±19.4)	139.9 (±17.4)	134.7 (±17.3)	137.2 (±18.4)	135.5 (±18.7)	134.2 (±17.3)	131 (±19.7)	139.9 (±16.5)	138 (±17.6)
	45-60 & Female	122.8 (±15.6)	120.8 (±15.7)	112 (±14.4)	120.7 (±14.6)	121.3 (±13)	127.7 (±16.1)	125.4 (±17.1)	122.4 (±14.5)	125 (±13.4)	125 (±16.2)	126.3 (±15)

Variable		Africa		Europe							
		H3AKDN	CKD-REIN France	RIISC UK	CKDBIS Germany	EQUAL Various*	GCKD Germany	CKDopps Germany	RRID England	PROVALID Various*	PSI BIND-NL Netherlands
		Enugu Nigeria									
Overall		94.8 (±22.7)	129.9 (±16.5)	122.7 (±17)	131.6 (±14.1)	116 (±15.1)	134.9 (±16.9)	123.3 (±16.8)	130.7 (±14.5)	131 (±16.3)	129.4 (±17.9)
Sex	Male	95.1 (±24.5)	133.2 (±16.8)	125.9 (±18.1)	133.5 (±15.7)	116.9 (±15.5)	138.8 (±17.5)	125.8 (±18.1)	135.3 (±15.1)	134.4 (±17.1)	132.6 (±18.3)
	Female	94.4 (±20.5)	123.5 (±13.8)	117.1 (±13.2)	130 (±12.2)	114.3 (±14.1)	128.6 (±13.8)	120 (±14.3)	126.8 (±12.6)	128.5 (±15.3)	122.7 (±14.9)
eGFR Category	< 20	82.3 (±19.2)	121.4 (±14.6)	115.8 (±16.5)	117.1 (±12.5)	114.9 (±14.8)	124.2 (±16.8)	117 (±15.5)		112.2 (±12.7)	118.1 (±14.3)
	20-30	100.7 (±18.1)	126.7 (±15.7)	121.7 (±16.5)	126.8 (±14.4)	119.3 (±15.9)	128.1 (±16)	123.3 (±16)	119 (±15.6)	121.2 (±15.8)	126.3 (±16.9)
	30-45	102.1 (±22)	132.6 (±16.1)	124.4 (±16.1)	130.9 (±15.1)	117.1 (±11.9)	134 (±17.2)	130.9 (±17)	128 (±15)	130.6 (±15.8)	134.3 (±17.4)
	45-60	112.2 (±18.4)	138 (±15.2)	130.4 (±17.5)	133 (±13.2)	119.5 (±23.3)	138 (±16.1)	135.1 (±15)	132.5 (±13.7)	133.4 (±15.7)	138.3 (±15.8)
GFR & Sex	<20 & Male	79.2 (±18.3)	124.3 (±14.6)	116.5 (±17.3)	110 (±10)	115.9 (±15.2)	125.6 (±18.5)	118.3 (±16.3)		112.2 (±12.5)	119.3 (±14.9)
	<20 & Female	85.4 (±19.7)	116.9 (±13.6)	113.3 (±12.8)	122.5 (±12.6)	112.8 (±13.6)	120.8 (±12)	115.3 (±14.2)		112.3 (±13.9)	115.8 (±12.9)
	20-30 & Male	103.3 (±20.4)	129.3 (±16.3)	124.1 (±16.7)	127.5 (±15.6)	120.4 (±16.6)	131.6 (±16)	125.9 (±17.4)	121.8 (±14.1)	124 (±16.1)	128.5 (±17.1)
	20-30 & Female	98 (±15.2)	121.8 (±13.4)	115.5 (±14.1)	125.9 (±12.8)	117.9 (±14.8)	122.5 (±14.3)	120.2 (±13.6)	117.2 (±16.7)	118.5 (±15.3)	122.5 (±15.9)
	30-45 & Male	102.4 (±23.2)	136.1 (±16.3)	131.1 (±16.6)	131.4 (±17.2)	118.9 (±10.2)	137.9 (±18)	134.4 (±17.9)	131.6 (±15.6)	135.2 (±15.9)	138.3 (±17.3)
	30-45 & Female	101.9 (±20.9)	125.8 (±13.2)	118 (±12.7)	130.4 (±12.6)	114 (±14.2)	127.7 (±13.6)	125.5 (±13.9)	123.9 (±13.3)	126.7 (±14.6)	125.1 (±13.8)
	45-60 & Male	115 (±20.2)	141.3 (±15.2)	139.7 (±15.9)	136.2 (±14.1)	119.5 (±23.3)	142 (±16.5)	137.8 (±15.3)	137.8 (±14.2)	137.5 (±16.3)	141.9 (±15)
	45-60 & Female	107.1 (±13.7)	130.2 (±12.1)	119.7 (±12.7)	130.4 (±11.8)		131.5 (±13.1)	130.1 (±13.3)	128.3 (±11.7)	130.9 (±14.8)	128.8 (±13.9)

*See Supplementary Table 1 for list of Countries

Variable		Pediatric		
		4C	CKiD	KNOW-Ped CKD
		Europe	US	KOREA
Overall		116.9 (±16.2)	120.2 (±16.5)	116.7 (±19.9)
Sex	Male	118 (±16.4)	121.5 (±17.8)	118.2 (±20.3)
	Female	114.8 (±15.6)	118.6 (±14.6)	113.3 (±18.7)
eGFR Category	< 20	112.6 (±16.2)	104.3 (±15.2)	106.4 (±18.6)
	20-30	116.3 (±15.4)	119.9 (±20.8)	110.9 (±16.2)
	30-45	120.3 (±15.5)	120.6 (±16.7)	121.3 (±18.5)
	45-60	126.2 (±15.3)	120.5 (±15.3)	125.6 (±19)
GFR & Sex	<20 & Male	113.1 (±16.1)	118.0 (±)	107.3 (±19.3)
	<20 & Female	111.5 (±16.4)	97.5 (±13.4)	103.9 (±16.6)
	20-30 & Male	117.6 (±16.1)	123.2 (±22.2)	111.2 (±16.3)
	20-30 & Female	113.5 (±13.6)	115.3 (±18.9)	109.9 (±16.9)
	30-45 & Male	121.7 (±15.6)	122.4 (±18.6)	123.6 (±18.3)
	30-45 & Female	117.8 (±15.2)	118.6 (±14.2)	116.6 (±18.5)
	45-60 & Male	128 (±13.9)	120.5 (±16.6)	128.8 (±18.4)
	45-60 & Female	122.3 (±17.6)	120.4 (±13.4)	119.2 (±18.9)

Table S4. Cohort-specific levels of iron saturation (mean and standard deviation)

	Asia				North America	South America		Europe	
	C-STRIDE CHINA	ICKD INDIA	KNOW-CKD KOREA	CKD-JAC JAPAN	CKDopps US US	CKDopps BR BRAZIL	NRHP URUGUAY	CKD-REIN FRANCE	CKDopps GER GERMANY
N	311	2042	1399	1304	533	199	2427	2220	1032
Available %	13.5%	58.2%	97.8%	52.3%	25.2%	27.6%	12.6%	75.4%	39.1%
Ascertainment	Routine care	Routine care	Study protocol	Routine care	Routine care	Routine care	Routine care	Study protocol	Routine care
Mean (SD)	25.3 (±10.2)	23.6 (±18.6)	30.9 (±11.3)	30.3 (±11.9)	23.2 (±11)	26.2 (±11.4)	26.2 (±12.7)	24.9 (±9.8)	22.8 (±9.7)

Table S5. Cohort-specific and pooled estimates for the interaction between eGFR and sex. Estimates represent the difference in the slope of the relationship between eGFR and hemoglobin between men and women. A negative beta coefficient indicates that women, on average, had a smaller increase in hemoglobin per unit increase in eGFR.

Cohort	Country	Estimate	S.E.	p
CORE-CKD	THAILAND	-1.0	1.1	0.39
C-STRIDE	CHINA	-2.2	0.6	<.001
ICKD	INDIA	-1.1	0.7	0.12
KNOW-CKD	KOREA	-3.4	0.6	<.001
CKD-JAC	JAPAN	-2.1	0.4	<.001
CKD.QLD	AUSTRALIA	-2.2	0.6	<.001
CanPREDDICT	CANADA	-1.3	0.7	0.07
CRIC	US	-1.1	0.4	0.01
CKDopps US	US	-1.0	0.7	0.14
CKDopps BR	BRAZIL	-3.4	1.0	<.001
NRHP	URUGUAY	-1.7	0.2	<.001
H3AKDN Enugu	NIGERIA	-1.8	1.3	0.18
CKD-REIN	FRANCE	-1.1	0.5	0.03
RIISC	UK	-4.4	1.0	<.001
CKDBIS	GERMANY	-2.7	0.9	0.034
EQUAL	EUROPE VARIOUS	0.4	1.4	0.75
GCKD	GERMANY	-0.8	0.5	0.12
CKDopps GER	GERMANY	-1.6	0.7	0.01
PSI BIND-NL	NETHERLANDS	-2.6	1.0	0.01
RRID	ENGLAND	-1.6	0.9	0.08
PROVALID	EUROPE VARIOUS	-1.4	1.1	0.20
	Pooled Stats [95%CI]	-1.8 [-2.2; -1.4]		<.001
Meta-analysis	τ^2 [95% CI]	0.6 [0.0; 1.5]		
	τ [95% CI]	0.8 [0.0; 1.2]		
	I^2 [95% CI]	39.6% [0.0%; 64.1%]		
	Q test	33.1	20	0.03

Table S6a. Cohort-specific and pooled estimates for the mean difference in hemoglobin in women compared to men at an eGFR value of 15mL/min per 1.73m².

Cohort	Country	Core Model			Extended MV Model		
		Estimate	S.E.	p	Estimate	S.E.	p
CORE-CKD	THAILAND	-12.4	2.7	<.001	-11.5	2.7	<.001
C-STRIDE	CHINA	-10.1	1.3	<.001	-9.9	1.3	<.001
ICKD	INDIA	-9.5	1.8	<.001	-10.0	1.7	<.001
KNOW-CKD	KOREA	-6.1	1.4	<.001	-7.5	1.3	<.001
CKD-JAC	JAPAN	-6.6	1.0	<.001	-6.5	1.0	<.001
CKD.QLD	AUSTRALIA	-2.4	1.3	0.07	-2.7	1.3	0.04
CanPREDICT	CANADA	-4.8	1.1	<.001	-5.2	1.1	<.001
CRIC	US	-7.6	1.3	<.001	-7.5	1.3	<.001
CKDopps US	US	-7.1	1.1	<.001	-7.5	1.1	<.001
CKDopps BR	BRAZIL	-5.4	1.6	0.001	-5.6	1.6	<.001
NRHP	URUGUAY	-4.8	0.5	<.001	-5.1	0.5	<.001
H3AKDN	NIGERIA						
Enugu		2.8	2.5	0.26	-	-	-
CKD-REIN	FRANCE	-7.3	1.0	<.001	-7.8	1.0	<.001
RIISC	UK	-4.1	2.1	0.05	-	-	-
CKDBIS	GERMANY	4.3	3.0	0.15	-	-	-
EQUAL	EUROPE VARIOUS	-2.9	0.8	<.001	-2.7	0.8	<.001
GCKD	GERMANY	-8.0	1.5	<.001	-7.9	1.5	<.001
CKDopps GER	GERMANY	-3.5	0.9	<.001	-3.9	0.9	<.001
PSI BIND-NL	NETHERLANDS	-4.6	2.1	0.02	-	-	-
RRID	ENGLAND	-3.4	3.2	0.28	-	-	-
PROVALID	EUROPE VARIOUS	-2.3	3.4	0.49	-	-	-
	Pooled Stats [95%CI]	-5.3 [-6.9; -3.7]		<.001	-6.5[-7.9; -5.1]		<.001
Meta-analysis	τ² [95% CI]	10.9 [3.8; 25.7]			4.9 [1.6; 14.3]		
	τ [95% CI]	3.3 [1.9; 5.1]			2.2 [1.3; 3.8]		
	I² [95% CI]	75.7% [63.0%; 84.0%]			76.3% [61.0%; 85.6%]		
	Q test	82.3	20	<.001	59.1	14	<.001

Reference = Male

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S6b. Cohort-specific and pooled estimates for the mean difference in hemoglobin in women compared to men at an eGFR value of 30mL/min per 1.73m².

Cohort	Country	Core Model			Extended MV Model		
		Estimate	S.E.	p	Estimate	S.E.	p
CORE-CKD	THAILAND	-13.8	1.5	<.001	-13.0	1.5	<.001
C-STRIDE	CHINA	-13.4	0.8	<.001	-13.0	0.8	<.001
ICKD	INDIA	-11.0	0.9	<.001	-11.7	0.9	<.001
KNOW-CKD	KOREA	-11.3	0.9	<.001	-12.0	0.8	<.001
CKD-JAC	JAPAN	-9.9	0.6	<.001	-9.7	0.6	<.001
CKD.QLD	AUSTRALIA	-5.7	0.8	<.001	-6.0	0.8	<.001
CanPREDDICT	CANADA	-6.7	0.6	<.001	-7.2	0.6	<.001
CRIC	US	-9.3	0.7	<.001	-9.6	0.7	<.001
CKDopps US	US	-8.6	0.8	<.001	-9.0	0.8	<.001
CKDopps BR	BRAZIL	-10.6	1.3	<.001	-10.3	1.3	<.001
NRHP	URUGUAY	-7.4	0.3	<.001	-7.6	0.3	<.001
H3AKDN Enugu	NIGERIA	0.2	2.3	0.93	-	-	-
CKD-REIN	FRANCE	-8.9	0.6	<.001	-9.4	0.6	<.001
RIISC	UK	-10.4	1.2	<.001	-	-	-
CKDBIS	GERMANY	0.1	1.7	0.98	-	-	-
EQUAL	EUROPE VARIOUS	-2.3	1.9	0.23	-2.1	1.9	0.27
GCKD	GERMANY	-9.2	0.8	<.001	-9.1	0.8	<.001
CKDopps GER	GERMANY	-6.1	0.7	<.001	-6.3	0.7	<.001
PSI BIND-NL	NETHERLANDS	-8.6	1.3	<.001	-	-	-
RRID	ENGLAND	-6.0	1.8	<.001	-	-	-
PROVALID	EUROPE VARIOUS	-4.6	2.0	0.02	-	-	-
Meta-analysis	Pooled Stats [95%CI]	-7.9 [-9.7; -6.3]		<.001	-9.1 [-10.7; -7.6]		<.001
	τ^2 [95% CI]	12.4 [6.1; 28.0]			7.0 [3.0; 19.3]		
	τ [95% CI]	3.5 [2.5; 5.3]			2.6 [1.7; 4.4]		
	I^2 [95% CI]	89.2% [84.9%; 92.3%]			89.0% [83.6%; 92.7%]		
	Q test	185.2	20	<.001	127.7	14	<.001

Reference = Male

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S6c. Cohort-specific and pooled estimates for the mean difference in hemoglobin in women compared to men at an eGFR value of 45mL/min per 1.73m².

Cohort	Country	Core Model			Extended MV Model			
		Estimate	S.E.	p	Estimate	S.E.	p	
CORE-CKD	THAILAND	-15.2	1.7	<.001	-14.4	1.7	<.001	
C-STRIDE	CHINA	-16.7	1.0	<.001	-16.0	1.0	<.001	
ICKD	INDIA	-12.5	0.8	<.001	-13.4	0.8	<.001	
KNOW-CKD	KOREA	-16.5	1.1	<.001	-16.4	1.1	<.001	
CKD-JAC	JAPAN	-13.1	0.8	<.001	-12.8	0.8	<.001	
CKD.QLD	AUSTRALIA	-9.0	1.2	<.001	-9.4	1.2	<.001	
CanPREDDICT	CANADA	-8.6	1.4	<.001	-9.2	1.3	<.001	
CRIC	US	-11.0	0.5	<.001	-11.7	0.5	<.001	
CKDopps US	US	-10.1	1.5	<.001	-10.4	1.5	<.001	
CKDopps BR	BRAZIL	-15.7	2.3	<.001	-15.0	2.3	<.001	
NRHP	URUGUAY	-9.9	0.3	<.001	-10.2	0.3	<.001	
H3AKDN Enugu	NIGERIA	-2.4	3.5	0.49	-	-	-	
CKD-REIN	FRANCE	-10.6	0.9	<.001	-11.0	0.9	<.001	
RIISC	UK	-16.8	1.8	<.001	-	-	-	
CKDBIS	GERMANY	-4.2	1.0	<.001	-	-	-	
EQUAL	EUROPE VARIOUS	-1.6	3.8	0.68	-1.4	3.8	0.71	
GCKD	GERMANY	-10.3	0.5	<.001	-10.4	0.6	<.001	
CKDopps GER	GERMANY	-8.6	1.4	<.001	-8.7	1.4	<.001	
PSI BIND-NL	NETHERLANDS	-12.6	1.9	<.001	-	-	-	
RRID	ENGLAND	-8.6	0.8	<.001	-	-	-	
PROVALID	EUROPE VARIOUS	-6.9	1.2	<.001	-	-	-	
Meta-analysis	Pooled Stats [95%CI]	-10.8 [-12.6; -8.9]			<.001	-11.7 [-13.5; -10.0]		<.001
	τ^2 [95% CI]	15.2 [7.0; 35.0]				9.3 [2.9; 27.3]		
	τ [95% CI]	3.9 [2.7; 5.9]				3.0 [1.7; 5.2]		
	I^2 [95% CI]	89.0% [84.6%; 92.2%]				84.9% [76.5%; 90.3%]		
	Q test	182.3	20	<.001	92.6	14	<.001	

Reference = Male

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S6d. Cohort-specific and pooled estimates for the mean difference in hemoglobin in women compared to men at an eGFR value of 60mL/min per 1.73m².

Cohort	Country	Core Model			Extended MV Model			
		Estimate	S.E.	p	Estimate	S.E.	p	
CORE-CKD	THAILAND	-16.6	3.1	<.001	-15.9	3.0	<.001	
C-STRIDE	CHINA	-20.0	1.8	<.001	-19.1	1.7	<.001	
ICKD	INDIA	-14.0	1.6	<.001	-15.2	1.6	<.001	
KNOW-CKD	KOREA	-21.7	1.8	<.001	-20.9	1.8	<.001	
CKD-JAC	JAPAN	-16.4	1.3	<.001	-16.0	1.3	<.001	
CKD.QLD	AUSTRALIA	-12.3	2.0	<.001	-12.7	1.9	<.001	
CanPREDDICT	CANADA	-10.5	2.3	<.001	-11.3	2.3	<.001	
CRIC	US	-12.6	0.9	<.001	-13.7	0.9	<.001	
CKDopps US	US	-11.6	2.5	<.001	-11.9	2.4	<.001	
CKDopps BR	BRAZIL	-20.9	3.7	<.001	-19.8	3.7	<.001	
NRHP	URUGUAY	-12.5	0.6	<.001	-12.8	0.6	<.001	
H3AKDN								
Enugu	NIGERIA	-5.0	5.2	0.34	-	-	-	
CKD-REIN	FRANCE	-12.2	1.6	<.001	-12.6	1.6	<.001	
RIISC	UK	-23.1	3.1	<.001	-	-	-	
CKDBIS	GERMANY	-8.5	1.7	<.001	-	-	-	
EQUAL	EUROPE VARIOUS	-0.9	5.8	0.87	-0.8	5.8	0.90	
GCKD	GERMANY	-11.5	1.1	<.001	-11.6	1.1	<.001	
CKDopps GER	GERMANY	-11.1	2.4	<.001	-11.2	2.3	<.001	
PSI BIND-NL	NETHERLANDS	-16.6	3.2	<.001	-	-	-	
RRID	ENGLAND	-11.3	1.4	<.001	-	-	-	
PROVALID	EUROPE VARIOUS	-9.2	2.0	<.001	-	-	-	
Meta-analysis	Pooled Stats [95%CI]	-13.5 [-15.7; -11.4]			<.001	-14.1 [-16.3; -12.0]		<.001
	τ^2 [95% CI]	20.1 [7.0; 47.5]				13.3 [2.7; 39.8]		
	τ [95% CI]	4.5 [2.7; 6.9]				3.6 [1.7; 6.3]		
	I^2 [95% CI]	76.9% [65.0%; 84.7%]				71.5% [52.0%; 83.1%]		
	Q test	86.5	20	<.001	49.2	14	<.001	

Reference = Male

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S7a. Cohort-specific and pooled estimates for the mean difference in hemoglobin per 10 mL/min per 1.73m² increase in eGFR in men.

Cohort	Country	Core Model			Extended MV Model		
		Estimate	S.E.	p	Estimate	S.E.	p
CORE-CKD	THAILAND	6.0	0.7	<.001	4.8	0.7	<.001
C-STRIDE	CHINA	7.1	0.4	<.001	6.9	0.4	<.001
ICKD	INDIA	3.6	0.4	<.001	3.3	0.4	<.001
KNOW-CKD	KOREA	7.7	0.4	<.001	6.7	0.4	<.001
CKD-JAC	JAPAN	6.7	0.3	<.001	6.4	0.3	<.001
CKD.QLD	AUSTRALIA	6.7	0.4	<.001	6.4	0.4	<.001
CanPREDDICT	CANADA	4.8	0.4	<.001	4.5	0.4	<.001
CRIC	US	5.0	0.3	<.001	4.3	0.3	<.001
CKDopps US	US	6.4	0.5	<.001	6.0	0.5	<.001
CKDopps BR	BRAZIL	8.6	0.7	<.001	8.4	0.7	<.001
NRHP	URUGUAY	5.9	0.1	<.001	5.7	0.1	<.001
H3AKDN							
Enugu	NIGERIA	7.9	0.9	<.001	-	-	-
CKD-REIN	FRANCE	5.0	0.3	<.001	4.8	0.3	<.001
RIISC	UK	6.2	0.6	<.001	-	-	-
CKDBIS	GERMANY	3.8	0.7	<.001	-	-	-
EQUAL	EUROPE VARIOUS	4.9	0.8	<.001	4.7	0.8	<.001
GCKD	GERMANY	3.9	0.3	<.001	3.9	0.3	<.001
CKDopps GER	GERMANY	6.0	0.4	<.001	5.8	0.4	<.001
PSI BIND-NL	NETHERLANDS	6.2	0.6	<.001	-	-	-
RRID	ENGLAND	5.1	0.7	<.001	-	-	-
PROVALID	EUROPE VARIOUS	5.1	0.8	<.001	-	-	-
Meta-analysis	Pooled Stats [95%CI]	5.8 [5.2; 6.4]		<.001	5.5 [4.8; 6.2]		<.001
	τ^2 [95% CI]	1.5 [0.8; 3.4]			1.6 [0.7; 4.2]		
	τ [95% CI]	1.2 [0.9; 1.9]			1.3 [0.9; 2.1]		
	I^2 [95% CI]	88.4% [83.7%; 91.8%]			90.3% [85.6%; 93.4%]		
	Q test	173.1	20	<.001	143.8	14	<.001

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S7b. Cohort-specific and pooled estimates for the mean difference in hemoglobin per 10 mL/min per 1.73m² increase in eGFR in women.

Cohort	Country	Core Model			Extended MV Model		
		Estimate	S.E.	p	Estimate	S.E.	p
CORE-CKD	THAILAND	5.1	0.9	<.001	3.9	0.9	<.001
C-STRIDE	CHINA	4.9	0.4	<.001	4.8	0.4	<.001
ICKD	INDIA	2.6	0.5	<.001	2.1	0.5	<.001
KNOW-CKD	KOREA	4.2	0.5	<.001	3.7	0.5	<.001
CKD-JAC	JAPAN	4.5	0.3	<.001	4.3	0.3	<.001
CKD.QLD	AUSTRALIA	4.5	0.5	<.001	4.2	0.5	<.001
CanPREDDICT	CANADA	3.5	0.6	<.001	3.2	0.6	<.001
CRIC	US	3.9	0.3	<.001	2.9	0.3	<.001
CKDopps US	US	5.4	0.5	<.001	5.0	0.5	<.001
CKDopps BR	BRAZIL	5.2	0.7	<.001	5.2	0.8	<.001
NRHP	URUGUAY	4.2	0.2	<.001	4.0	0.2	<.001
H3AKDN							
Enugu	NIGERIA	6.2	1.0	<.001	-	-	-
CKD-REIN	FRANCE	3.9	0.4	<.001	3.7	0.4	<.001
RIISC	UK	2.0	0.8	0.02	-	-	-
CKDBIS	GERMANY	1.0	0.7	0.14	-	-	-
EQUAL	EUROPE VARIOUS	5.4	1.1	<.001	5.2	1.1	<.001
GCKD	GERMANY	3.1	0.4	<.001	3.0	0.4	<.001
CKDopps GER	GERMANY	4.3	0.5	<.001	4.2	0.5	<.001
PSI BIND-NL	NETHERLANDS	3.5	0.8	<.001	-	-	-
RRID	ENGLAND	3.4	0.6	<.001	-	-	-
PROVALID	EUROPE VARIOUS	3.6	0.7	<.001	-	-	-
Meta-analysis	Pooled Stats [95%CI]	4.0 [3.5; 4.5]		<.001	3.9 [3.4; 4.4]		<.001
	τ^2 [95% CI]	1.1 [0.4; 2.5]			0.6 [0.1; 1.6]		
	τ [95% CI]	1.0 [0.6; 1.6]			0.7 [0.4; 1.3]		
	I^2 [95% CI]	69.7% [52.6%; 80.6%]			66.5% [42.3%; 80.5%]		
	Q test	66.0	20	<.001	41.8	14	<.001

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S8a. Cohort-specific and pooled estimates for the mean difference in hemoglobin according to etiology of CKD using an unadjusted model.

Cohort	Country	HTN			PKD			GN			Other		
		Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p
CORE-CKD	THAILAND	10.5	1.7	<0.001	10.4	3.9	0.01	9.7	3.0	0.001	13.6	1.6	<0.001
C-STRIDE	CHINA	-	-	-	-	-	-	10.9	1.3	<0.001	10.5	1.3	<0.001
ICKD	INDIA	9.9	1.3	<0.001	8.8	1.9	<0.001	7.3	1.1	<0.001	7.1	0.8	<0.001
KNOW-CKD	KOREA	14.9	1.3	<0.001	9.5	1.8	<0.001	10.4	1.2	<0.001	7.8	2.2	<0.001
CKD-JAC	JAPAN	8.4	1.1	<0.001	-	-	-	6.7	0.9	<0.001	8.0	1.2	<0.001
CKD.QLD	AUSTRALIA	4.8	1.4	<0.001	4.0	2.9	0.17	5.5	1.8	0.002	6.0	1.2	<0.001
CanPREDDICT	CANADA	3.8	0.8	<0.001	6.5	1.6	<0.001	5.8	1.1	<0.001	4.7	0.8	<0.001
CRIC	US	10.3	0.8	<0.001	-	-	-	-	-	-	9.2	0.6	<0.001
CKDopps US	US	4.7	1.2	<0.001	5.4	3.5	0.12	0.3	2.0	0.87	3.0	1.0	0.004
CKDopps BR	BRAZIL	5.5	1.8	0.002	3.4	3.7	0.35	4.1	2.7	0.13	4.3	1.9	0.02
NRHP	URUGUAY	4.8	0.5	<0.001	5.4	1.2	<0.001	1.0	0.8	0.20	3.3	0.5	<0.001
H3AKDN	NIGERIA	3.3	5.8	0.56	-13.4	8.3	0.11	-8.7	3.4	0.01	2.2	3.3	0.50
CKD-REIN	FRANCE	4.8	0.9	<0.001	5.4	1.4	<0.001	2.6	1.0	0.01	3.6	0.8	<0.001
RIISC	UK	7.9	1.9	<0.001	8.0	2.9	0.01	14.4	2.4	<0.001	7.2	1.8	<0.001
CKDBIS	GERMANY	-	-	-	-	-	-	-	-	-	-	-	-
EQUAL	EUROPE VARIOUS	2.3	1.0	0.02	5.3	2.4	0.03	0.9	1.4	0.52	0.9	1.0	0.36
GCKD	GERMANY	4.7	0.9	<0.001	3.2	1.5	0.03	1.0	0.9	0.29	1.7	0.8	0.03
CKDopps GER	GERMANY	1.6	0.8	0.04	5.1	2.0	0.01	0.0	1.3	0.98	0.7	0.9	0.42
PSI BIND-NL	NETHERLANDS	9.9	3.6	0.01	15.9	4.2	<0.001	10.4	3.3	<0.001	9.5	2.9	<0.001
RRID	ENGLAND	-	-	-	-	-	-	-	-	-	-	-	-
PROVALID	EUROPE VARIOUS	-	-	-	-	-	-	-	-	-	-	-	-
Meta-Analysis	Pooled Stats [95%CI]	6.6 [4.7; 8.4]		<.001	6.2 [3.9; 8.5]		<.001	4.8 [2.1; 7.6]		0.002	5.6 [3.9; 7.4]		<.001
	τ^2 [95% CI]	10.7 [5.2; 26.9]			17.6 [0.0; 51.5]			25.6 [11.4; 65.7]			11.0 [5.4; 26.9]		
	τ [95% CI]	3.3 [2.3; 5.2]			4.2 [0.0; 7.2]			5.1 [3.4; 8.1]			3.3 [2.3; 5.2]		
	I^2 [95% CI]	89.8% [85.3%; 92.9%]			41.8% [0.0%; 68.4%]			89.6% [85.0%; 92.8%]			90.9% [87.2%; 93.6%]		
	Q test	156.9	16	<.001	24.1	14	0.05	154.5	16	<.001	187.8	17	<.001

Reference = Diabetic kidney disease

Table S8b. Cohort-specific and pooled estimates for the mean difference in hemoglobin according to etiology of CKD using the extended multivariable model for patients with diabetes mellitus.

Cohort	Country	HTN			PKD			GN			Other		
		Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p
CORE-CKD	THAILAND	4.8	2.0	0.02	8.0	3.8	0.04	7.8	3.2	0.01	7.9	1.8	<.0001
C-STRIDE	CHINA	-	-	-	-	-	-	9.1	1.5	<.0001	9.6	1.5	<.0001
ICKD	INDIA	5.0	1.3	<0.001	3.6	1.9	0.06	2.3	1.2	0.06	3.0	1.0	0.002
KNOW-CKD	KOREA	9.5	1.6	<0.001	4.9	2.0	0.02	8.9	1.7	<.0001	5.9	1.8	<.0001
CKD-JAC	JAPAN	6.4	1.1	<0.001	-	-	-	6.0	1.0	<.0001	6.8	1.2	<.0001
CKD.QLD	AUSTRALIA	3.2	1.4	0.03	0.6	2.8	0.84	-0.8	1.8	0.67	2.3	1.3	0.07
CanPREDDICT	CANADA	1.4	1.0	0.16	3.8	1.6	0.02	3.1	1.2	0.01	2.3	0.9	0.01
CRIC	US	5.2	0.9	<0.001	-	-	-	-	-	-	4.2	0.7	<.0001
CKDopps US	US	2.6	1.2	0.04	5.1	3.2	0.12	-0.6	1.9	0.77	1.9	1.2	0.12
CKDopps BR	BRAZIL	3.7	2.0	0.06	6.8	3.7	0.07	2.8	2.9	0.32	2.7	2.1	0.19
NRHP	URUGUAY	4.2	0.5	<0.001	6.2	1.1	<0.001	1.1	0.8	0.15	2.6	0.5	<.0001
H3AKDN Enugu	NIGERIA	-	-	-	-	-	-	-	-	-	-	-	-
CKD-REIN	FRANCE	2.7	1.0	0.004	5.3	1.5	<0.001	0.5	1.0	0.61	2.8	0.9	0.002
RIISC	UK	-	-	-	-	-	-	-	-	-	-	-	-
BIS	GERMANY	-	-	-	-	-	-	-	-	-	-	-	-
EQUAL	EUROPE VARIOUS	2.3	1.2	0.05	5.5	2.5	0.03	0.0	1.6	0.98	1.1	1.2	0.34
GCKD	GERMANY	3.0	0.9	0.001	3.9	1.5	0.01	0.0	1.0	0.99	1.4	0.8	0.10
CKDopps GER	GERMANY	2.7	1.0	0.01	5.6	2.0	0.01	-0.6	1.4	0.67	0.9	1.1	0.39
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-	-	-	-	-	-	-
RRID	ENGLAND	-	-	-	-	-	-	-	-	-	-	-	-
PROVALID	EUROPE VARIOUS	-	-	-	-	-	-	-	-	-	-	-	-
Meta-Analysis	Pooled Stats [95%CI]	3.9 [2.8; 5.1]		<.001	4.8 [3.9; 5.8]		<.001	2.7 [0.6; 4.8]		0.01	3.5 [2.1; 4.9]		0.001
	χ^2[95% CI]	3.0 [0.6; 9.3]			1.1 [0.0; 2.9]			10.6 [4.1; 31.1]			5.3 [1.8; 15.2]		
	I^2[95% CI]	1.7 [0.8; 3.1]			1.0 [0.0; 1.7]			3.3 [2.0; 5.6]			2.3 [1.3; 3.9]		
	P_{het}[95% CI]	62.8% [33.8%; 79.1%]			0.0% [0.0%; 58.3%]			82.6% [72.1%; 89.2%]			74.6% [57.9%; 84.7%]		
	Q test	34.9	13	0.001	6.5	11	0.84	74.8	13	<.001	55.1	14	<.001

Reference = Diabetic kidney disease

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S8c. Cohort-specific and pooled estimates for the mean difference in hemoglobin according to etiology of CKD using the extended multivariable model for patients without diabetes mellitus.

Cohort	Country	HTN			PKD			GN			Other		
		Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p
CORE-CKD	THAILAND	8.6	1.7	<.001	11.9	3.6	<.001	11.7	2.9	<.001	11.7	1.7	<.001
C-STRIDE	CHINA	-	-	-	-	-	-	10.2	1.2	<.001	10.7	1.2	<.001
ICKD	INDIA	9.7	1.2	<.001	8.2	1.8	<.001	7.0	1.0	<.001	7.7	0.8	<.001
KNOW-CKD	KOREA	11.3	1.1	<.001	6.6	1.6	<.001	10.7	1.1	<.001	7.6	2.0	<.001
CKD-JAC	JAPAN	7.6	0.9	<.001	-	-	-	7.2	0.8	<.001	7.9	1.0	<.001
CKD.QLD	AUSTRALIA	6.0	1.4	<.001	3.4	2.6	0.20	2.0	1.6	0.21	5.1	1.2	<.001
CanPREDDICT	CANADA	4.8	0.8	<.001	7.2	1.5	<.001	6.5	1.1	<.001	5.8	0.8	<.001
CRIC	US	11.8	0.8	<.001	-	-	-	-	-	-	10.8	0.6	<.001
CKDopps US	US	5.5	1.2	<.001	8.0	3.2	0.01	2.4	1.9	0.21	4.8	1.2	<.001
CKDopps BR	BRAZIL	4.1	1.7	0.01	7.2	3.3	0.03	3.2	2.5	0.19	3.2	1.8	0.07
NRHP	URUGUAY	5.6	0.4	<.001	7.6	1.1	<.001	2.5	0.7	0.001	4.0	0.4	<.001
H3AKDN	NIGERIA	-	-	-	-	-	-	-	-	-	-	-	-
Enugu	NIGERIA	-	-	-	-	-	-	-	-	-	-	-	-
CKD-REIN	FRANCE	5.1	0.9	<.001	7.6	1.4	<.001	2.9	1.0	0.003	5.1	0.8	<.001
RIISC	UK	-	-	-	-	-	-	-	-	-	-	-	-
CKDBIS	GERMANY	-	-	-	-	-	-	-	-	-	-	-	-
EQUAL	EUROPE VARIOUS	4.0	1.1	<.001	7.2	2.4	0.003	1.7	1.5	0.24	2.8	1.1	0.01
GCKD	GERMANY	5.5	0.8	<.001	6.4	1.5	<.001	2.5	1.0	0.01	3.9	0.8	<.001
CKDopps GER	GERMANY	2.4	0.8	0.003	5.3	1.9	0.01	-0.9	1.2	0.46	0.6	0.9	0.51
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-	-	-	-	-	-	-
RRID	ENGLAND	-	-	-	-	-	-	-	-	-	-	-	-
PROVALID	EUROPE VARIOUS	-	-	-	-	-	-	-	-	-	-	-	-
Meta-Analysis	Pooled Stats [95%CI]	6.5 [4.9; 8.2]		<.001	7.1 [6.2; 8.0]		<.001	4.9 [2.7; 7.1]		<.001	6.1 [4.3; 7.8]		<.001
	I²[95% CI]	7.0 [3.2; 19.5]			1.2 [0.0; 3.1]			12.6 [5.5; 36.0]			9.1 [4.3; 24.4]		
	H²[95% CI]	2.6 [1.8; 4.4]			1.1 [0.0; 1.8]			3.5 [2.3; 6.0]			3.0 [2.1; 4.9]		
	P^{adj}[95% CI]	89.4% [83.9%; 93.0%]			0.0% [0.0%; 58.3%]			89.1% [83.5%; 92.8%]			91.6% [87.8%; 94.2%]		
	Q test	122.3	13	<.001	5.8	11	0.88	119.6	13	<.001	166.6	14	<.001

Reference = Diabetic kidney disease

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S9. Cohort-specific and pooled estimates for the independent association between covariates and hemoglobin from the extended multivariable model.

Cohort	Country	Age (per 10-year increase)			DM			CVD			CHF														
		Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p												
CORE-CKD	THAILAND	-0.7	0.6	0.31	-3.9	1.7	0.02	0.7	1.7	0.67	-4.5	6.1	0.46												
C-STRIDE	CHINA	-1.1	0.3	<.001	-1.1	1.2	0.38	2.1	1.3	0.10	3.5	3.4	0.29												
ICKD	INDIA	-1.3	0.3	<.001	-4.7	0.9	<.001	-2.3	1.0	0.02	-1.9	1.2	0.13												
KNOW-CKD	KOREA	0.1	0.4	0.86	-1.8	1.4	0.22	-0.2	1.1	0.86	-1.4	2.7	0.59												
CKD-JAC	JAPAN	-1.4	0.3	<.001	-1.1	0.8	0.16	-0.6	0.7	0.38	-0.6	1.4	0.65												
CKD.QLD	AUSTRALIA	-1.4	0.3	<.001	-2.8	1.0	0.01	-1.5	1.1	0.19	-1.8	1.6	0.27												
CanPREDDICT	CANADA	-0.4	0.3	0.16	-3.5	0.8	<.001	1.7	0.8	0.04	-2.9	0.9	0.001												
CRIC	US	0.0	0.3	0.86	-6.6	0.6	<.001	-0.9	0.5	0.10	-0.6	0.8	0.44												
CKDopps US	US	-0.3	0.3	0.26	-2.9	0.9	0.001	-2.6	0.9	0.003	-3.3	1.0	0.002												
CKDopps BR	BRAZIL	0.0	0.5	0.95	-0.4	1.8	0.81	0.8	1.6	0.63	-3.1	1.8	0.09												
NRHP	URUGUAY	-0.6	0.1	<.001	-1.4	0.3	<.001	-0.3	0.3	0.35	-1.3	0.4	0.002												
H3AKDN Enugu	NIGERIA	-	-	-	-	-	-	-	-	-	-	-	-												
CKD-REIN	FRANCE	-0.3	0.2	0.25	-2.3	0.7	0.001	-1.5	0.6	0.02	-1.7	0.8	0.04												
RIISC	UK	-	-	-	-	-	-	-	-	-	-	-	-												
CKDBIS	GERMANY	-	-	-	-	-	-	-	-	-	-	-	-												
EQUAL	EUROPE VARIOUS	-1.9	0.6	<.001	-1.7	0.9	0.07	1.4	0.9	0.10	-0.2	1.0	0.83												
GCKD	GERMANY	0.4	0.3	0.14	-2.5	0.6	<.001	-0.4	0.6	0.47	-1.1	0.7	0.11												
CKDopps GER	GERMANY	-0.9	0.3	<.001	0.3	0.9	0.72	-0.7	0.7	0.32	-0.2	0.9	0.84												
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-	-	-	-	-	-	-												
RRID	ENGLAND	-	-	-	-	-	-	-	-	-	-	-	-												
PROVALID	EUROPE VARIOUS	-	-	-	-	-	-	-	-	-	-	-	-												
Meta-Analysis	Pooled Stats [95%CI]	-0.6 [-0.99; -0.27]			0.002			-2.5 [-3.5; -1.5]			<.001			-0.4 [-1.1; 0.3]			0.26			-1.4 [-2.1; -0.7]			0.001		
	r² [95% CI]	0.3 [0.1; 1.0]						2.4 [0.9; 6.8]						1.3 [0.1; 3.8]						1.1 [0.0; 2.4]					
	τ [95% CI]	0.6 [0.4; 0.9]						1.6 [0.9; 2.6]						1.1 [0.4; 1.9]						1.1 [0.0; 1.6]					
	I² [95% CI]	76.6% [61.6%; 85.8%]						83.8% [74.6%; 89.6%]						54.7% [19.0%; 74.7%]						3.7% [0.0%; 55.3%]					
	Q test	59.9	14	<.001	86.4	14	<.001	30.9	14	0.01	14.5	14	0.41												

Reference: No DM

Reference: No CVD

Reference: No CHF

Cohort	Country	ACR = A3			ACR = A2			BMI = <18.5			BMI = 25 - 29.9			BMI = ≥30																	
		Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p															
CORE-CKD	THAILAND	-1.7	1.7	0.33	0.4	1.8	0.80	-13.1	4.1	0.001	5.6	1.3	<.001	6.2	1.8	<.001															
C-STRIDE	CHINA	0.2	1.2	0.87	1.6	1.3	0.20	-8.7	2.4	<.001	4.8	0.9	<.001	9.9	1.7	<.001															
ICKD	INDIA	-0.9	0.8	0.26	1.2	0.7	0.09	-7.8	1.2	<.001	3.1	0.7	<.001	6.7	0.9	<.001															
KNOW-CKD	KOREA	-2.7	1.5	0.07	0.0	1.5	0.99	-2.1	2.5	0.39	5.3	0.8	<.001	9.5	1.6	<.001															
CKD-JAC	JAPAN	1.1	1.1	0.30	1.9	1.1	0.11	-4.5	1.2	<.001	5.0	0.7	<.001	9.9	1.4	<.001															
CKD.QLD	AUSTRALIA	-1.0	1.2	0.40	-0.3	1.8	0.87	4.8	3.9	0.22	1.6	1.3	0.21	3.2	1.2	0.01															
CanPREDDICT	CANADA	-1.7	0.8	0.05	-1.1	0.8	0.18	8.4	4.4	0.06	3.0	1.6	0.06	2.4	1.5	0.12															
CRIC	US	-1.4	0.7	0.06	0.0	0.7	1.00	-5.7	3.3	0.08	3.1	0.8	<.001	3.5	0.7	<.001															
CKDopps US	US	-1.8	1.3	0.16	-2.7	1.5	0.08	-3.6	3.7	0.33	1.4	1.3	0.28	3.8	1.2	0.001															
CKDopps BR	BRAZIL	-2.0	2.3	0.39	-0.9	2.3	0.71	-10.2	7.5	0.17	3.5	1.9	0.06	4.8	2.0	0.02															
NRHP	URUGUAY	1.8	0.8	0.02	-	-	-	-3.5	1.6	0.03	3.1	0.4	<.001	4.9	0.4	<.001															
H3AKDN Enugu	NIGERIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-															
CKD-REIN	FRANCE	-1.0	0.8	0.18	0.0	0.8	0.96	-1.0	2.3	0.67	3.6	0.7	<.001	4.3	0.8	<.001															
RIISC	UK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-															
CKDBIS	GERMANY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-															
EQUAL	EUROPE VARIOUS	0.5	1.2	0.68	-	-	-	0.9	3.4	0.78	2.6	0.9	0.01	3.5	1.0	<.001															
GCKD	GERMANY	0.1	0.7	0.89	0.7	0.6	0.29	-6.4	3.7	0.09	3.6	0.7	<.001	4.7	0.7	<.001															
CKDopps GER	GERMANY	-0.2	1.1	0.89	0.1	1.1	0.96	-6.5	3.0	0.03	2.3	0.8	0.004	3.9	0.8	<.001															
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-															
RRID	ENGLAND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-															
PROVALID	EUROPE VARIOUS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-															
Meta-Analysis	Pooled Stats [95%CI]	-0.5 [-1.2; 0.1]			0.11			0.2 [-0.5; 0.9]			0.50			-3.9 [-6.8; -1.1]			0.01			3.5 [2.8; 4.1]			<.001			5.2 [3.9; 6.6]			<.001		
	τ² [95% CI]	0.9 [0.0; 2.6]						0.6 [0.0; 2.2]						20.1 [2.9; 60.8]						0.9 [0.0; 2.8]						4.6 [1.4; 13.5]					
	τ [95% CI]	0.9 [0.0; 1.6]						0.8 [0.0; 1.5]						4.5 [1.7; 7.8]						0.9 [0.0; 1.7]						2.2 [1.2; 3.7]					
	I² [95% CI]	34.0% [0.0%; 64.5%]						3.8% [0.0%; 58.2%]						62.3% [34.2%; 78.5%]						39.1% [0.0%; 67.0%]						70.2% [49.5%; 82.4%]					
	Q test	21.2	14	0.10	12.5	12	0.41	37.2	14	0.001	23.0	14	0.06	47.0	14	<.001															

Reference: ACR A1 category

Reference: BMI 18.5-24.9

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S10. R-squared values for linear regression models applied in participating cohorts.

Cohort	Core Model	Extended MV Model
CORE-CKD	18.1%	23.7%
C-STRIDE	30.0%	35.1%
ICKD	14.1%	21.0%
KNOW-CKD	35.6%	44.3%
CKD-JAC	32.0%	36.9%
CKD.QLD	19.7%	22.1%
CanPREDICT	11.1%	14.5%
CRIC	17.2%	24.9%
CKDopps US	17.6%	20.6%
CKDopps BR	28.2%	30.6%
NRHP	18.7%	20.4%
CKD-REIN	18.3%	21.5%
EQUAL	4.7%	6.9%
GCKD	13.0%	15.3%
CKDopps GER	13.8%	15.7%
Range	[4.7% - 35.6%]	[6.9% - 44.3%]
Median	18.1%	21.5%

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S11. Cohort-specific and pooled estimates for the independent association between smoking status and hemoglobin

Cohort	Country	Current Smoker			Former Smoker		
		Estimate	S.E.	p	Estimate	S.E.	p
CORE-CKD	THAILAND	-0.1	2.5	0.96	0.5	1.5	0.75
C-STRIDE	CHINA	0.8	1.0	0.43	-	-	-
ICKD	INDIA	-0.3	0.8	0.72	2.0	0.9	0.03
KNOW-CKD	KOREA	1.1	1.3	0.43	-2.5	1.1	0.03
CKD-JAC	JAPAN	4.3	0.9	<.001	2.1	0.8	0.01
CKD.QLD	AUSTRALIA	3.3	1.6	0.04	1.7	1.0	0.10
CanPREDDICT	CANADA	-	-	-	-	-	-
CRIC	US	3.0	0.7	<.001	-	-	-
CKDopps US	US	-	-	-	-	-	-
CKDopps BR	BRAZIL	-	-	-	-	-	-
NRHP	URUGUAY	3.3	0.5	<.001	-	-	-
H3AKDN	NIGERIA	-	-	-	-	-	-
Enugu	NIGERIA	-	-	-	-	-	-
CKD-REIN	FRANCE	2.5	0.9	0.01	-0.2	0.6	0.81
RIISC	UK	-	-	-	-	-	-
CKDBIS	GERMANY	-	-	-	-	-	-
EQUAL	EUROPE VARIOUS	0.6	1.5	0.71	-1.4	0.9	0.11
GCKD	GERMANY	2.4	0.8	0.003	-1.5	0.6	0.01
CKDopps GER	GERMANY	-	-	-	-	-	-
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-
RRID	ENGLAND	-	-	-	-	-	-
PROVALID	EUROPE VARIOUS	-	-	-	-	-	-
Meta-analysis	Pooled Stats [95%CI]	2.1 [1.1; 3.1]		0.001	0.1 [-1.4; 1.5]		0.92
	τ^2 [95% CI]	1.5 [0.2; 5.8]			2.4 [0.6; 12.0]		
	τ [95% CI]	1.2 [0.4; 2.4]			1.5 [0.8; 3.5]		
	I^2 [95% CI]	61.1% [24.8%; 79.9%]			76.2% [52.5%; 88.1%]		
	Q test	25.7	10	0.004	29.4	7	<.001

Notes:

Addition of smoking status to the extended multivariable model

Reference: Never Smoker

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S12. Cohort-specific and pooled estimates for the independent association between altitude and hemoglobin

Cohort	Country	Altitude 500 – 1000m			Altitude >=1000m			
		Estimate	S.E.	p	Estimate	S.E.	p	
CORE-CKD	THAILAND	-7.6	4.3	0.08	-	-	-	
C-STRIDE	CHINA	1.0	1.4	0.47	4.6	0.9	<.001	
ICKD	INDIA	-4.8	0.7	<.001	9.8	2.1	<.001	
KNOW-CKD	KOREA	-	-	-	-	-	-	
CKD-JAC	JAPAN	0.8	1.5	0.58	-	-	-	
CKD.QLD	AUSTRALIA	2.0	1.0	0.04	-	-	-	
CanPREDDICT	CANADA	0.6	1.5	0.69	2.6	2.1	0.23	
CRIC	US	-	-	-	-	-	-	
CKDopps US	US	-	-	-	-	-	-	
CKDopps BR	BRAZIL	-	-	-	-	-	-	
NRHP	URUGUAY	-	-	-	-	-	-	
H3AKDN	NIGERIA	-	-	-	-	-	-	
Enugu	NIGERIA	-	-	-	-	-	-	
CKD-REIN	FRANCE	1.2	1.5	0.44	4.9	4.5	0.27	
RIISC	UK	-	-	-	-	-	-	
CKDBIS	GERMANY	-	-	-	-	-	-	
EQUAL	EUROPE VARIOUS	-	-	-	-	-	-	
GCKD	GERMANY	1.1	0.9	0.19	-	-	-	
CKDopps GER	GERMANY	-	-	-	-	-	-	
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-	
RRID	ENGLAND	-	-	-	-	-	-	
PROVALID	EUROPE VARIOUS	-	-	-	-	-	-	
Meta-analysis	Pooled Stats [95%CI]	-0.2 [-2.6; 2.3]			0.87	5.4 [0.5; 10.4]		0.04
	τ^2 [95% CI]	7.3 [1.8; 41.6]				5.8 [0; >100]		
	τ [95% CI]	2.7 [1.3; 6.5]				2.4 [0; >10]		
	I^2 [95% CI]	87.5% [77.6%; 93.0%]				54.4% [0.0%; 84.9%]		
	Q test	56.0	7	<.001	6.6	3	0.09	

Notes:

Addition of altitude to the extended multivariable model

Reference: Altitude=<500m

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S13. Cohort-specific and pooled estimates for the independent association between use of RAAS inhibitors and hemoglobin

Cohort	Country	RAASi use		
		Estimate	S.E.	p
CORE-CKD	THAILAND	0.8	1.3	0.51
C-STRIDE	CHINA	2.7	0.8	<.001
ICKD	INDIA	2.2	0.6	<.001
KNOW-CKD	KOREA	-0.3	1.1	0.80
CKD-JAC	JAPAN	-2.5	0.8	0.001
CKD.QLD	AUSTRALIA	-2.0	2.5	0.43
CanPREDDICT	CANADA	-0.3	0.8	0.71
CRIC	US	-1.7	0.5	0.002
CKDopps US	US	-	-	-
CKDopps BR	BRAZIL	-	-	-
NRHP	URUGUAY	0.6	0.3	0.03
H3AKDN Enugu	NIGERIA	-	-	-
CKD-REIN	FRANCE	-1.0	0.7	0.13
RIISC	UK	-	-	-
CKDBIS	GERMANY	-	-	-
EQUAL	EUROPE VARIOUS	0.1	0.7	0.90
GCKD	GERMANY	5.3	3.9	0.18
CKDopps GER	GERMANY	-	-	-
PSI BIND-NL	NETHERLANDS	-	-	-
RRID	ENGLAND	-	-	-
PROVALID	EUROPE VARIOUS	-	-	-
	Pooled Stats [95%CI]	0.07 [-1.1; 1.2]		0.89
Meta-analysis	τ^2 [95% CI]	2.6 [0.7; 9.2]		
	τ [95% CI]	1.6 [0.8; 3.0]		
	I^2 [95% CI]	79.7% [65.4%; 88.1%]		
	Q test	54.3	11	<.001

Notes:

Addition of RAASi use to the extended multivariable model

Reference: No RAASi

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S14a. Cohort-specific and pooled estimates for the mean difference in hemoglobin in women compared to men at an eGFR value of 15mL/min per 1.73m² in ESA-unexposed subgroup.

Cohort	Country	Core Model			Extended MV Model			
		Estimate	S.E.	p	Estimate	S.E.	p	
CORE-CKD	THAILAND	-12.5	2.8	<.001	-11.8	2.8	<.001	
C-STRIDE	CHINA	-10.3	1.5	<.001	-10.1	1.5	<.001	
ICKD	INDIA	-9.3	1.8	<.001	-9.9	1.8	<.001	
KNOW-CKD	KOREA	-5.4	1.7	0.001	-7.5	1.6	<.001	
CKD-JAC	JAPAN	-7.0	1.2	<.001	-7.1	1.2	<.001	
CKD.QLD	AUSTRALIA	-2.7	1.4	0.05	-3.0	1.4	0.03	
CanPREDDICT	CANADA	-5.2	1.3	<.001	-5.9	1.3	<.001	
CRIC	US	-8.3	1.4	<.001	-8.1	1.3	<.001	
CKDopps US	US	-7.6	1.1	<.001	-7.8	1.1	<.001	
CKDopps BR	BRAZIL	-5.9	1.8	0.001	-6.2	1.8	0.001	
NRHP	URUGUAY	-5.7	0.5	<.001	-6.0	0.5	<.001	
H3AKDN Enugu	NIGERIA	2.9	2.5	0.25	-	-	-	
CKD-REIN	FRANCE	-6.7	1.1	<.001	-7.2	1.1	<.001	
RIISC	UK	-3.9	2.3	0.10	-	-	-	
CKDBIS	GERMANY	3.8	3.0	0.21	-	-	-	
EQUAL	EUROPE VARIOUS	-2.1	1.0	0.04	-1.8	1.1	0.09	
GCKD	GERMANY	-9.1	1.5	<.001	-8.8	1.5	<.001	
CKDopps GER	GERMANY	-4.7	1.0	<.001	-4.9	1.0	<.001	
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-	
RRID	ENGLAND	-3.4	3.2	0.28	-	-	-	
PROVALID	EUROPE VARIOUS	-3.4	4.0	0.39	-	-	-	
	Pooled Stats [95%CI]	-5.6 [-7.3; -3.8]			< 0.001	-6.8 [-8.2; -5.4]		< 0.001
	τ^2 [95% CI]	11.5 [3.9; 27.9]				4.9 [1.4; 14.4]		
Meta-analysis	τ [95% CI]	3.4 [1.9; 5.3]				2.2 [1.2; 3.8]		
	I² [95% CI]	73.8% [59.3%; 83.1%]				71.3% [51.7%; 83.0%]		
	Q test	72.5	19	< 0.001	48.9	14	< 0.001	

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S14b. Cohort-specific and pooled estimates for the mean difference in hemoglobin in women compared to men at an eGFR value of 30mL/min per 1.73m² in ESA-unexposed subgroup.

Cohort	Country	Core Model			Extended MV Model				
		Estimate	S.E.	p	Estimate	S.E.	p		
CORE-CKD	THAILAND	-13.8	1.5	<.001	-13.1	1.5	<.001		
C-STRIDE	CHINA	-13.1	0.9	<.001	-12.8	0.9	<.001		
ICKD	INDIA	-10.9	0.9	<.001	-11.7	0.9	<.001		
KNOW-CKD	KOREA	-10.9	1.0	<.001	-12.0	1.0	<.001		
CKD-JAC	JAPAN	-10.1	0.7	<.001	-10.0	0.7	<.001		
CKD.QLD	AUSTRALIA	-5.8	0.9	<.001	-6.1	0.9	<.001		
CanPREDDICT	CANADA	-6.8	0.7	<.001	-7.4	0.7	<.001		
CRIC	US	-9.8	0.8	<.001	-10.0	0.7	<.001		
CKDopps US	US	-8.9	0.8	<.001	-9.0	0.8	<.001		
CKDopps BR	BRAZIL	-11.2	1.3	<.001	-11.0	1.4	<.001		
NRHP	URUGUAY	-7.7	0.3	<.001	-8.0	0.3	<.001		
H3AKDN Enugu	NIGERIA	0.1	2.3	0.96	-	-	-		
CKD-REIN	FRANCE	-8.7	0.6	<.001	-9.2	0.6	<.001		
RIISC	UK	-10.4	1.3	<.001	-	-	-		
CKDBIS	GERMANY	-0.3	1.7	0.88	-	-	-		
EQUAL	EUROPE VARIOUS	-2.2	2.1	0.30	-2.4	2.2	0.26		
GCKD	GERMANY	-9.8	0.8	<.001	-9.7	0.8	<.001		
CKDopps GER	GERMANY	-6.6	0.7	<.001	-6.8	0.7	<.001		
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-		
RRID	ENGLAND	-6.0	1.8	0.001	-	-	-		
PROVALID	EUROPE VARIOUS	-5.3	2.3	0.02	-	-	-		
	Pooled Stats [95%CI]	-8.1 [-9.9; -6.4]			< 0.001			-9.4 [-10.8; -7.9]	< 0.001
	τ² [95% CI]	12.4 [5.8; 28.9]						6.2 [2.4; 17.6]	
Meta-analysis	τ [95% CI]	3.5 [2.4; 5.4]						2.5 [1.5; 4.2]	
	I² [95% CI]	87.2% [81.6%; 91.1%]						85.5% [77.6%; 90.6%]	
	Q test	148.1	19	< 0.001	96.5	14	< 0.001		

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S14c. Cohort-specific and pooled estimates for the mean difference in hemoglobin in women compared to men at an eGFR value of 45mL/min per 1.73m² in ESA-unexposed subgroup.

Cohort	Country	Core Model			Extended MV Model			
		Estimate	S.E.	p	Estimate	S.E.	p	
CORE-CKD	THAILAND	-15.1	1.7	<.001	-14.3	1.7	<.001	
C-STRIDE	CHINA	-16.0	1.1	<.001	-15.5	1.1	<.001	
ICKD	INDIA	-12.5	0.8	<.001	-13.5	0.8	<.001	
KNOW-CKD	KOREA	-16.4	1.1	<.001	-16.4	1.1	<.001	
CKD-JAC	JAPAN	-13.3	0.8	<.001	-12.9	0.8	<.001	
CKD.QLD	AUSTRALIA	-8.8	1.2	<.001	-9.2	1.2	<.001	
CanPREDDICT	CANADA	-8.4	1.5	<.001	-8.8	1.5	<.001	
CRIC	US	-11.2	0.5	<.001	-11.9	0.5	<.001	
CKDopps US	US	-10.2	1.5	<.001	-10.3	1.5	<.001	
CKDopps BR	BRAZIL	-16.5	2.4	<.001	-15.9	2.4	<.001	
NRHP	URUGUAY	-9.8	0.3	<.001	-10.1	0.3	<.001	
H3AKDN Enugu	NIGERIA	-2.7	3.4	0.43	-	-	-	
CKD-REIN	FRANCE	-10.8	0.9	<.001	-11.2	0.9	<.001	
RIISC	UK	-16.8	1.8	<.001	-	-	-	
CKDBIS	GERMANY	-4.3	1.0	<.001	-	-	-	
EQUAL	EUROPE VARIOUS	-2.2	4.5	0.62	-3.0	4.6	0.51	
GCKD	GERMANY	-10.6	0.5	<.001	-10.5	0.6	<.001	
CKDopps GER	GERMANY	-8.5	1.5	<.001	-8.7	1.5	<.001	
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-	
RRID	ENGLAND	-8.6	0.8	<.001	-	-	-	
PROVALID	EUROPE VARIOUS	-7.2	1.3	<.001	-	-	-	
	Pooled Stats [95%CI]	-10.8 [-12.7; -8.9]			< 0.001	-11.8 [-13.4; -10.2]		< 0.001
Meta-analysis	τ^2 [95% CI]	14.8 [6.7; 35.2]				7.7 [2.4; 22.5]		
	τ [95% CI]	3.9 [2.6; 5.9]				2.8 [1.5; 4.7]		
	I^2 [95% CI]	88.7% [84.0%; 92.0%]				83.7% [74.5%; 89.6%]		
	Q test	168.4	19	< 0.001	85.9	14	< 0.001	

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S14d. Cohort-specific and pooled estimates for the mean difference in hemoglobin in women compared to men at an eGFR value of 60mL/min per 1.73m² in ESA-unexposed subgroup.

Cohort	Country	Core Model			Extended MV Model			
		Estimate	S.E.	p	Estimate	S.E.	p	
CORE-CKD	THAILAND	-16.4	3.1	<.001	-15.6	3.0	<.001	
C-STRIDE	CHINA	-18.8	1.9	<.001	-18.2	1.8	<.001	
ICKD	INDIA	-14.1	1.6	<.001	-15.3	1.6	<.001	
KNOW-CKD	KOREA	-21.9	2.0	<.001	-20.9	1.9	<.001	
CKD-JAC	JAPAN	-16.4	1.4	<.001	-15.8	1.3	<.001	
CKD.QLD	AUSTRALIA	-11.9	2.0	<.001	-12.3	2.0	<.001	
CanPREDDICT	CANADA	-10.0	2.6	<.001	-10.3	2.6	<.001	
CRIC	US	-12.7	1.0	<.001	-13.9	0.9	<.001	
CKDopps US	US	-11.5	2.5	<.001	-11.6	2.5	<.001	
CKDopps BR	BRAZIL	-21.8	3.8	<.001	-20.8	3.9	<.001	
NRHP	URUGUAY	-11.8	0.6	<.001	-12.2	0.6	<.001	
H3AKDN Enugu	NIGERIA	-5.5	5.2	0.29	-	-	-	
CKD-REIN	FRANCE	-12.8	1.6	<.001	-13.2	1.6	<.001	
RIISC	UK	-23.3	3.3	<.001	-	-	-	
CKDBIS	GERMANY	-8.4	1.8	<.001	-	-	-	
EQUAL	EUROPE VARIOUS	-2.3	6.9	0.74	-3.7	7.0	0.60	
GCKD	GERMANY	-11.3	1.1	<.001	-11.4	1.1	<.001	
CKDopps GER	GERMANY	-10.5	2.5	<.001	-10.6	2.5	<.001	
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-	
RRID	ENGLAND	-11.3	1.4	<.001	-	-	-	
PROVALID	EUROPE VARIOUS	-9.0	2.1	<.001	-	-	-	
	Pooled Stats [95%CI]	-13.4 [-15.6; -11.2]			< 0.001	-14.1 [-16.0; -12.1]		< 0.001
Meta-analysis	τ^2 [95% CI]	19.6 [6.5; 47.4]				10.7 [2.03; 31.4]		
	τ [95% CI]	4.4 [2.5; 6.9]				3.3 [1.4; 5.6]		
	I^2 [95% CI]	76.0% [63.1%; 84.4%]				69.5% [48.1%; 82.0%]		
	Q test	79.3	19	< 0.001	45.8	14	< 0.001	

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S15a. Cohort-specific and pooled estimates for the mean difference in hemoglobin according to etiology of CKD using an unadjusted model in ESA-unexposed subgroup.

Cohort	Country	HTN			PKD			GN			Other		
		Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p
CORE-CKD	THAILAND	10.0	1.7	<0.001	9.7	3.9	0.01	9.0	3.0	0.003	13.4	1.6	<0.001
C-STRIDE	CHINA	-	-	-	-	-	-	12.0	1.4	<0.001	12.7	1.4	<0.001
ICKD	INDIA	9.9	1.3	<0.001	8.7	2.0	<0.001	7.1	1.1	<0.001	7.1	0.8	<0.001
KNOW-CKD	KOREA	14.7	1.4	<0.001	9.9	1.9	<0.001	10.3	1.3	<0.001	9.1	2.3	<0.001
CKD-JAC	JAPAN	7.7	1.2	<0.001	-	-	-	5.8	1.0	<0.001	8.0	1.2	<0.001
CKD.QLD	AUSTRALIA	4.4	1.4	0.001	5.1	3.0	0.08	5.8	1.8	0.001	5.8	1.2	<0.001
CanPREDDICT	CANADA	3.0	0.9	0.001	5.0	1.6	0.002	5.4	1.2	<0.001	4.2	0.9	<0.001
CRIC	US	10.1	0.8	<0.001	-	-	-	-	-	-	9.2	0.6	<0.001
CKDopps US	US	5.2	1.3	<0.001	6.7	3.5	0.06	1.0	2.0	0.61	3.6	1.1	<0.001
CKDopps BR	BRAZIL	5.1	1.9	0.01	2.8	3.8	0.46	3.2	2.9	0.26	4.3	2.0	0.03
NRHP	URUGUAY	4.5	0.5	<0.001	5.4	1.3	<0.001	1.0	0.9	0.25	3.1	0.5	<0.001
H3AKDN Enugu	NIGERIA	4.5	5.9	0.45	-14.1	8.3	0.09	-9.3	3.5	0.01	1.9	3.4	0.58
CKD-REIN	FRANCE	4.3	1.0	<0.001	4.0	1.4	0.005	2.7	1.0	0.01	3.9	0.9	<0.001
RIISC	UK	7.9	2.0	<0.001	8.0	3.0	0.01	14.6	2.5	<0.001	7.7	1.8	<0.001
CKDBIS	GERMANY	-	-	-	-	-	-	-	-	-	-	-	-
EQUAL	EUROPE VARIOUS	1.8	1.2	0.13	4.2	2.6	0.11	1.8	1.7	0.30	1.4	1.2	0.26
GCKD	GERMANY	4.7	0.9	<0.001	3.2	1.5	0.03	1.3	1.0	0.19	1.9	0.8	0.02
CKDopps GER	GERMANY	0.8	0.9	0.38	3.7	2.1	0.08	-0.8	1.4	0.57	1.0	1.0	0.33
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-	-	-	-	-	-	-
RRID	ENGLAND	-	-	-	-	-	-	-	-	-	-	-	-
PROVALID	EUROPE VARIOUS	-	-	-	-	-	-	-	-	-	-	-	-
Meta-Analysis	Pooled Stats [95%CI]	6.2 [4.2; 8.1]		< 0.001	5.4 [3.3; 7.5]		< 0.001	4.5 [1.7; 7.4]		< 0.001	5.8 [3.8; 7.7]		< 0.001
	τ^2 [95% CI]	11.5 [5.6; 29.6]			13.9 [0.0; 41.2]			26.7 [11.7; 70.9]			12.4 [5.9; 31.1]		
	τ [95% CI]	3.4 [2.4; 5.4]			3.7 [0.0; 6.4]			5.2 [3.4; 8.4]			3.5 [2.4; 5.6]		
	I^2 [95% CI]	90.1% [85.6%; 93.2%]			37.8% [0.0%; 67.0%]			89.5% [84.6%; 92.8%]					
	Q test	151.9	15	< 0.001	20.9	13	0.07	142.9	15	< 0.001	181.8	16	< 0.001

Reference = Diabetic kidney disease

Table S15b. Cohort-specific and pooled estimates for the mean difference in hemoglobin according to etiology of CKD using the extended multivariable model for patients with diabetes mellitus in ESA-unexposed subgroup.

Cohort	Country	HTN			PKD			GN			Other		
		Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p
CORE-CKD	THAILAND	4.5	2.0	0.03	7.5	3.8	0.05	7.5	3.2	0.02	7.8	1.9	<0.001
C-STRIDE	CHINA	-	-	-	-	-	-	9.7	1.6	<0.001	10.0	1.6	<0.001
ICKD	INDIA	4.9	1.4	<0.001	3.5	1.9	0.07	2.0	1.2	0.10	2.8	1.0	0.005
KNOW-CKD	KOREA	10.1	1.7	<0.001	5.4	2.2	0.01	9.2	1.8	<0.001	6.9	1.9	<0.001
CKD-JAC	JAPAN	7.2	1.2	<0.001	-	-	-	7.2	1.1	<0.001	8.3	1.2	<0.001
CKD.QLD	AUSTRALIA	2.8	1.4	0.05	0.7	2.8	0.80	-0.8	1.8	0.66	1.9	1.3	0.14
CanPREDDICT	CANADA	1.0	1.1	0.36	3.2	1.7	0.07	2.7	1.4	0.05	2.2	1.0	0.03
CRIC	US	5.1	0.9	<0.001	-	-	-	-	-	-	4.5	0.7	<0.001
CKDopps US	US	3.0	1.3	0.02	6.3	3.3	0.06	0.4	2.0	0.85	2.9	1.3	0.02
CKDopps BR	BRAZIL	4.1	2.1	0.06	7.6	3.8	0.05	4.1	3.1	0.17	3.8	2.3	0.09
NRHP	URUGUAY	3.9	0.5	<0.001	5.5	1.2	<0.001	0.7	0.8	0.42	2.3	0.5	<0.001
H3AKDN Enugu	NIGERIA	-	-	-	-	-	-	-	-	-	-	-	-
CKD-REIN	FRANCE	2.9	1.0	0.003	4.5	1.5	0.002	0.9	1.1	0.42	3.3	0.9	<0.001
RIISC	UK	-	-	-	-	-	-	-	-	-	-	-	-
CKDBIS	GERMANY	-	-	-	-	-	-	-	-	-	-	-	-
EQUAL	EUROPE VARIOUS	2.0	1.4	0.14	4.5	2.8	0.11	1.1	1.8	0.54	1.6	1.4	0.25
GCKD	GERMANY	3.0	0.9	0.001	3.7	1.5	0.01	0.2	1.0	0.82	1.7	0.8	0.04
CKDopps GER	GERMANY	1.2	1.0	0.27	3.4	2.1	0.11	-1.6	1.5	0.29	0.5	1.2	0.68
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-	-	-	-	-	-	-
RRID	ENGLAND	-	-	-	-	-	-	-	-	-	-	-	-
PROVALID	EUROPE VARIOUS	-	-	-	-	-	-	-	-	-	-	-	-
Meta-Analysis	Pooled Stats [95%CI]	3.9 [2.5; 5.2]		< 0.001	4.4 [3.4; 5.3]		< 0.001	2.9 [0.7; 5.1]		< 0.001	3.8 [2.3; 5.4]		< 0.001
	τ^2 [95% CI]	4.2 [1.1; 12.9]			1.1 [0.0; 2.6]			11.8 [4.7; 34.3]			6.4 [2.3; 18.2]		
	τ [95% CI]	2.0 [1.0; 3.6]			1.1 [0.0; 1.6]			3.4 [2.2; 5.9]			2.5 [1.5; 4.3]		
	I^2 [95% CI]	68.8% [45.8%; 82.1%]			0.0% [0.0%; 58.3%]			83.9% [74.3%; 89.9%]			78.1% [64.4%; 86.6%]		
	Q test	41.7	13	< 0.001	5.7	11	0.90	80.5	13	< 0.001	63.9	14	< 0.001

Reference = Diabetic kidney disease

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S15c. Cohort-specific and pooled estimates for the mean difference in hemoglobin according to etiology of CKD using the extended multivariable model for patients without diabetes mellitus in ESA-unexposed subgroup.

Cohort	Country	HTN			PKD			GN			Other		
		Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p
CORE-CKD	THAILAND	8.4	1.7	<0.001	11.5	3.6	0.002	11.4	3.0	<0.001	11.7	1.7	<0.001
C-STRIDE	CHINA	-	-	-	-	-	-	10.5	1.3	<0.001	10.8	1.3	<0.001
ICKD	INDIA	9.6	1.2	<0.001	8.2	1.8	<0.001	6.7	1.0	<0.001	7.5	0.8	<0.001
KNOW-CKD	KOREA	11.9	1.2	<0.001	7.3	1.7	<0.001	11.1	1.2	<0.001	8.7	2.2	<0.001
CKD-JAC	JAPAN	7.5	1.0	<0.001	-	-	-	7.5	0.9	<0.001	8.6	1.1	<0.001
CKD.QLD	AUSTRALIA	6.2	1.4	<0.001	4.1	2.7	0.13	2.6	1.7	0.13	5.3	1.2	<0.001
CanPREDDICT	CANADA	4.3	1.0	<0.001	6.5	1.6	<0.001	6.0	1.2	<0.001	5.6	0.9	<0.001
CRIC	US	11.7	0.8	<0.001	-	-	-	-	-	-	11.1	0.7	<0.001
CKDopps US	US	5.7	1.2	<0.001	9.1	3.2	0.01	3.2	1.9	0.10	5.6	1.3	<0.001
CKDopps BR	BRAZIL	3.7	1.8	0.03	7.2	3.5	0.04	3.8	2.6	0.15	3.4	1.9	0.06
NRHP	URUGUAY	5.4	0.4	<0.001	7.0	1.1	<0.001	2.2	0.8	0.01	3.8	0.5	<0.001
H3AKDN Enugu	NIGERIA	-	-	-	-	-	-	-	-	-	-	-	-
CKD-REIN	FRANCE	5.2	0.9	<0.001	6.8	1.4	<0.001	3.2	1.0	0.002	5.6	0.9	<0.001
RIISC	UK	-	-	-	-	-	-	-	-	-	-	-	-
CKDBIS	GERMANY	-	-	-	-	-	-	-	-	-	-	-	-
EQUAL	EUROPE VARIOUS	3.5	1.3	0.01	6.0	2.7	0.02	2.6	1.8	0.14	3.1	1.3	0.01
GCKD	GERMANY	5.5	0.8	<0.001	6.3	1.5	<0.001	2.8	1.0	0.005	4.2	0.8	<0.001
CKDopps GER	GERMANY	1.6	0.9	0.07	3.8	2.0	0.05	-1.2	1.3	0.39	0.9	1.0	0.35
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-	-	-	-	-	-	-
RRID	ENGLAND	-	-	-	-	-	-	-	-	-	-	-	-
PROVALID	EUROPE VARIOUS	-	-	-	-	-	-	-	-	-	-	-	-
Meta-Analysis	Pooled Stats [95%CI]	6.5 [4.7; 8.2]		< 0.001	6.7 [5.7; 7.7]		< 0.001	5.1 [2.9; 7.3]		< 0.001	6.3 [4.6; 8.1]		< 0.001
	I²[95% CI]	8.2 [3.7; 22.9]			1.4 [0.0; 4.2]			12.1 [5.2; 34.9]			9.0 [4.2; 24.4]		
	H²[95% CI]	2.9 [1.9; 4.8]			1.2 [0.0; 2.0]			3.5 [2.3; 5.9]			3.0 [2.0; 4.9]		
	I²[95% CI]	89.9% [84.8%; 93.3%]			0.0% [0.0%; 58.3%]			88.1% [81.7%; 92.2%]			91.3% [87.3%; 94.0%]		
	Q test	128.2	13	< 0.001	6.5	11	0.84	108.8	13	< 0.001	160.0	14	< 0.001

Reference = Diabetic kidney disease

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S16. Cohort-specific and pooled estimates for the independent association between covariates and hemoglobin from the extended multivariable model in ESA-unexposed subgroup.

Cohort	Country	Age (per 10-year increase)			DM			CVD			CHF		
		Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p
CORE-CKD	THAILAND	-0.6	0.7	0.37	-4.0	1.7	0.02	0.5	1.7	0.75	-8.0	7.0	0.25
C-STRIDE	CHINA	-1.1	0.3	<0.001	-0.8	1.3	0.55	1.9	1.3	0.15	3.0	3.7	0.42
ICKD	INDIA	-1.4	0.3	<0.001	-4.7	0.9	<0.001	-2.3	1.0	0.02	-1.7	1.3	0.18
KNOW-CKD	KOREA	-0.2	0.4	0.63	-1.9	1.5	0.22	0.1	1.2	0.95	-1.5	3.0	0.61
CKD-JAC	JAPAN	-1.4	0.3	<0.001	-0.3	0.9	0.73	-0.4	0.8	0.56	-0.1	1.5	0.97
CKD.QLD	AUSTRALIA	-1.5	0.3	<0.001	-3.4	1.1	0.001	-1.5	1.2	0.20	-1.7	1.7	0.32
CanPREDDICT	CANADA	-0.4	0.3	0.12	-3.3	0.9	<0.001	1.2	0.9	0.17	-1.8	1.0	0.07
CRIC	US	0.1	0.3	0.83	-6.6	0.6	<0.001	-1.0	0.5	0.08	-0.4	0.8	0.62
CKDopps US	US	0.0	0.3	0.91	-2.8	0.9	0.002	-2.3	0.9	0.01	-3.8	1.1	<0.001
CKDopps BR	BRAZIL	0.4	0.5	0.48	0.4	1.9	0.85	0.1	1.7	0.93	-2.7	2.0	0.19
NRHP	URUGUAY	-0.8	0.1	<0.001	-1.5	0.3	<0.001	-0.5	0.3	0.10	-1.4	0.4	<0.001
H3AKDN Enugu	NIGERIA	-	-	-	-	-	-	-	-	-	-	-	-
CKD-REIN	FRANCE	-0.3	0.2	0.30	-2.3	0.7	0.001	-1.2	0.6	0.06	-0.9	0.9	0.32
RIISC	UK	-	-	-	-	-	-	-	-	-	-	-	-
CKDBIS	GERMANY	-	-	-	-	-	-	-	-	-	-	-	-
EQUAL	EUROPE VARIOUS	-2.1	0.6	<0.001	-1.5	1.1	0.17	1.9	1.0	0.06	-0.6	1.1	0.58
GCKD	GERMANY	0.4	0.3	0.17	-2.5	0.6	<0.001	-0.3	0.6	0.62	-0.7	0.7	0.33
CKDopps GER	GERMANY	-0.9	0.3	0.003	-0.5	0.9	0.63	-0.4	0.8	0.55	1.0	1.0	0.33
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-	-	-	-	-	-	-
RRID	ENGLAND	-	-	-	-	-	-	-	-	-	-	-	-
PROVALID	EUROPE VARIOUS	-	-	-	-	-	-	-	-	-	-	-	-
	Pooled Stats [95%CI]	-0.6 [-1.0; -0.2] 0.003			-2.5 [-3.5; -1.5] < 0.001			-0.4 [-1.1; 0.3] 0.21			-1.1 [-1.9; -0.4] 0.007		
Meta-Analysis	r² [95% CI]	0.4 [0.1; 1.2]			2.6 [0.9; 7.4]			1.0 [0.0; 3.1]			1.6 [0.0; 3.2]		
	τ [95% CI]	0.6 [0.4; 1.1]			1.6 [0.9; 2.7]			1.0 [0.0; 1.8]			1.3 [0.0; 1.8]		
	I² [95% CI]	77.6% [63.4%; 86.3%]			83.0% [73.2%; 89.2%]			40.4% [0.0%; 67.7%]			15.7% [0.0%; 53.3%]		
	Q test	62.5	14	< 0.001	82.3	14	< 0.001	23.5	14	0.05	16.6	14	0.28

Reference: No DM

Reference: No CVD

Reference: No CHF

Cohort	Country	ACR=A3			ACR=A2			BMI<18			BMI=25-29.9			BMI≥30					
		Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p			
CORE-CKD	THAILAND	-1.5	1.7	0.37	0.7	1.8	0.69	-11.8	4.3	0.01	5.8	1.4	<0.001	6.4	1.8	<0.001			
C-STRIDE	CHINA	0.9	1.3	0.51	2.5	1.3	0.07	-6.9	2.7	0.01	5.0	1.0	<0.001	10.2	1.8	<0.001			
ICKD	INDIA	-1.1	0.8	0.16	0.7	0.7	0.33	-7.5	1.2	<0.001	3.2	0.7	<0.001	6.7	1.0	<0.001			
KNOW-CKD	KOREA	-2.6	1.6	0.10	0.0	1.6	0.99	-1.7	2.8	0.55	5.4	0.9	<0.001	9.2	1.7	<0.001			
CKD-JAC	JAPAN	0.7	1.1	0.55	1.5	1.2	0.20	-3.4	1.3	0.01	5.2	0.8	<0.001	10.2	1.4	<0.001			
CKD.QLD	AUSTRALIA	-0.8	1.2	0.49	0.3	1.8	0.88	4.2	4.4	0.34	2.1	1.3	0.10	3.2	1.2	0.01			
CanPREDDICT	CANADA	-1.1	0.9	0.23	-0.4	0.9	0.68	8.8	5.1	0.08	3.9	1.8	0.03	4.5	1.8	0.01			
CRIC	US	-1.2	0.7	0.11	-0.1	0.7	0.92	-6.4	3.5	0.07	2.8	0.8	<0.001	3.2	0.8	<0.001			
CKDopps US	US	-1.2	1.3	0.37	-2.0	1.5	0.18	-3.6	3.9	0.36	1.8	1.3	0.18	3.9	1.2	0.001			
CKDopps BR	BRAZIL	-1.8	2.4	0.44	-0.5	2.4	0.82	-5.1	8.3	0.54	4.6	2.0	0.02	6.0	2.1	0.005			
NRHP	URUGUAY	1.2	0.8	0.13	-	-	-	-4.3	1.6	0.01	3.1	0.4	<0.001	4.9	0.4	<0.001			
H3AKDN Enugu	NIGERIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CKD-REIN	FRANCE	-0.3	0.8	0.72	0.0	0.8	0.99	1.4	2.5	0.58	3.3	0.7	<0.001	3.9	0.8	<0.001			
RIISC	UK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
CKDBIS	GERMANY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
EQUAL	EUROPE VARIOUS	0.0	1.3	0.99	-	-	-	1.4	4.2	0.74	2.1	1.1	0.06	3.4	1.2	0.004			
GCKD	GERMANY	0.2	0.7	0.76	0.7	0.6	0.27	-6.7	3.7	0.07	3.9	0.7	<0.001	4.5	0.7	<0.001			
CKDopps GER	GERMANY	-0.1	1.1	0.94	0.3	1.1	0.78	-3.0	3.6	0.40	2.3	0.9	0.01	3.3	0.9	<0.001			
PSI BIND-NL	NETHERLANDS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
RRID	ENGLAND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
PROVALID	EUROPE VARIOUS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Meta-Analysis	Pooled Stats [95%CI]	-0.4 [-0.9; 0.1]			0.13	0.3 [-0.2; 0.9]			0.20	-3.4 [-5.9; -0.8]			0.01	3.6 [2.9; 4.3]		< 0.001	5.3 [4.0; 6.7]		< 0.001
	τ² [95% CI]	0.5 [0.0; 1.3]				0.4 [0.0; 1.2]				15.8 [0.9; 48.6]				0.9 [0.0; 3.0]			4.6 [1.4; 13.5]		
	τ [95% CI]	0.7 [0.0; 1.1]				0.6 [0.0; 1.1]				3.9 [0.9; 6.9]				0.9 [0.0; 1.7]			2.2 [1.2; 3.7]		
	I² [95% CI]	0.0% [0.0%; 53.6%]				0.0% [0.0%; 56.6%]				53.9% [17.2%; 74.3%]				39.5% [0.0%; 67.2%]			70.8% [50.7%; 82.7%]		
	Q test	12.7	14	0.55	7.9	12	0.79	30.3	14	0.01	23.1	14	0.06	47.9	14	< 0.001			

Reference: ACR A1 category

Reference: BMI 18.5-24.9

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S17a. Complete case analysis of the independent association between covariates and hemoglobin from the extended multivariable model (includes 10 cohorts who provided individual-level data).

Cohort	Country	Age (per 10-year increase)			DM			CVD			CHF		
		Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p
ICKD	INDIA	-1.23	0.29	<.0001	-4.96	0.92	<.0001	-2.56	1.00	0.01	-2.16	1.29	0.10
CKD-JAC	JAPAN	-1.50	0.31	<.0001	-0.42	0.89	0.64	-0.90	0.80	0.26	-0.57	1.50	0.70
CKD.QLD	AUSTRALIA	-1.21	0.36	0.001	-2.64	1.15	0.02	-1.95	1.23	0.11	-0.73	1.80	0.69
CanPREDDICT	CANADA	-0.73	0.56	0.19	-4.05	1.73	0.02	2.89	1.75	0.10	-4.79	1.93	0.01
CRIC	US	0.03	0.28	0.92	-7.12	0.70	<.0001	-1.23	0.61	0.04	0.79	0.92	0.39
CKDopps US	US	-0.05	0.49	0.91	-2.45	1.45	0.09	-3.90	1.43	0.01	-1.95	1.74	0.26
CKDopps BR	BRAZIL	-0.09	0.88	0.92	-0.80	3.17	0.80	1.00	2.74	0.72	-1.32	2.89	0.65
NRHP	URUGUAY	-0.58	0.13	<.0001	-1.52	0.33	<.0001	-0.15	0.32	0.63	-1.10	0.48	0.02
EQUAL	EUROPE VARIOUS	-2.48	0.90	0.01	0.22	1.47	0.88	-0.09	1.39	0.95	0.15	1.47	0.92
CKDopps GER	GERMANY	-0.88	0.42	0.04	-0.44	1.30	0.74	-1.16	1.03	0.26	0.14	1.35	0.92
	Pooled Stats [95%CI]	-0.8 [-1.3; -0.4]		0.004	-2.6 [-4.3; -0.8]		0.009	-1.0 [-2.2; 0.2]		0.08	-0.9 [-1.9; 0.1]		0.07
	τ^2 [95% CI]	0.3 [0.04; 1.5]			4.4 [1.6; 16.0]			2.0 [0.0; 9.2]			1.2 [0.0; 5.6]		
Meta-Analysis	τ [95% CI]	0.6 [0.2; 1.2]			2.1 [1.3; 4.1]			1.4 [0.0; 3.0]			1.1 [0.0; 2.4]		
	I^2 [95% CI]	65.2% [31.8%; 82.3%]			87.4% [78.9%; 92.5%]			50.5% [0.0%; 76.0%]			11.0% [0.0%; 51.6%]		
	Q test	25.89	9	0.002	71.57	9	<.0001	18.18	9	0.03	10.11	9	0.34

Reference: No DM

Reference: No CVD

Reference: No CHF

Table S17a (continued). Complete case analysis of the independent association between covariates and hemoglobin from the extended multivariable model (includes 10 cohorts who provided individual-level data).

Cohort	Country	ACR = A3			ACR = A2			BMI = <18.5			BMI = 25 - 29.9			BMI = ≥30		
		Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p
ICKD	INDIA	-0.87	0.77	0.26	1.12	0.75	0.14	-7.64	1.22	<.0001	3.31	0.69	<.0001	6.65	0.98	<.0001
CKD-JAC	JAPAN	1.10	1.20	0.36	1.61	1.24	0.19	-5.06	1.27	0.0001	4.82	0.77	<.0001	9.45	1.44	<.0001
CKD.QLD	AUSTRALIA	-0.71	1.22	0.56	0.36	1.87	0.85	4.95	4.27	0.25	1.71	1.35	0.21	3.06	1.28	0.02
CanPREDDICT	CANADA	-1.03	1.82	0.57	-1.13	1.80	0.53	8.45	4.55	0.06	3.75	1.70	0.03	2.29	1.64	0.16
CRIC	US	-1.09	0.74	0.14	0.12	0.70	0.86	-6.14	3.30	0.06	2.72	0.87	0.002	2.94	0.81	0.0003
CKDopps US	US	-1.81	1.48	0.22	-1.84	1.66	0.27	-8.38	7.13	0.24	2.77	1.94	0.15	4.87	1.76	0.01
CKDopps BR	BRAZIL	-1.31	3.35	0.70	0.16	2.94	0.96	11.44	12.30	0.35	2.12	2.61	0.42	3.78	2.83	0.18
NRHP	URUGUAY	1.91	0.84	0.02	-	-	-	-3.52	1.57	0.02	3.18	0.37	<.0001	5.05	0.38	<.0001
EQUAL	EUROPE VARIOUS	-0.46	1.17	0.69	-	-	-	-6.65	4.74	0.16	3.44	1.41	0.01	2.24	1.52	0.14
CKDopps GER	GERMANY	-0.89	1.16	0.44	-0.05	1.10	0.96	-4.34	4.61	0.35	2.41	1.20	0.04	4.05	1.24	0.001
	Pooled Stats [95%CI]	-0.3 [-1.2; 0.5]		0.40	0.3 [-0.5; 1.1]		0.42	-3.0 [-7.2; 1.1]		0.13	3.2 [2.6; 3.8]		<.0001	4.5 [2.9; 6.1]		0.0001
	τ² [95% CI]	0.6 [0.0; 3.0]			0.4 [0.0; 3.0]			26.9 [1.0; 119.8]			0.3 [0.0; 1.3]			3.5 [0.6; 14.6]		
	τ [95% CI]	0.8 [0.0; 1.7]			0.7 [0.0; 1.7]			5.2 [1.0; 10.9]			0.5 [0.0; 1.1]			1.8 [0.8; 3.8]		
	I² [95% CI]	22.3% [0.0%; 62.1%]			0.0% [0.0%; 67.6%]			59.1% [17.7%; 79.6%]			0.0% [0.0%; 62.4%]			66.8% [35.3%; 83.0%]		
	Q test	11.58	9	0.24	4.74	7	0.69	21.98	9	0.009	6.69	9	0.67	27.1	9	0.0013

Reference: BMI 18.5-24.9

Reference: ACR A1 category

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S17b. Complete case analysis of the mean difference in hemoglobin per 10 mL/min per 1.73m² increase in eGFR in men and women (including 10 cohorts who provided individual-level data)

Cohort	Country	Extended MV Model			Extended MV Model			
		Men			Women			
		Estimate	S.E.	p	Estimate	S.E.	p	
ICKD	INDIA	3.26	0.43	<.001	2.04	0.56	<.001	
CKD-JAC	JAPAN	6.31	0.29	<.001	4.14	0.38	<.001	
CKD.QLD	AUSTRALIA	6.64	0.47	<.001	4.30	0.53	<.001	
CanPREDDICT	CANADA	3.09	0.98	0.002	3.80	1.35	0.005	
CRIC	US	4.23	0.35	<.001	3.27	0.38	<.001	
CKDopps US	US	6.55	0.76	<.001	4.37	0.85	<.001	
CKDopps BR	BRAZIL	9.50	1.27	<.001	4.58	1.49	0.002	
NRHP	URUGUAY	5.72	0.15	<.001	3.85	0.19	<.001	
EQUAL	EUROPE VARIOUS	4.26	1.24	<.001	2.93	2.06	0.15	
CKDopps GER	GERMANY	4.87	0.62	<.001	4.12	0.81	<.001	
	Pooled Stats [95%CI]		5.4 [4.1; 6.7]	<.001		3.7 [3.2; 4.2]	<.001	
	τ² [95% CI]		2.9 [0.9; 11.4]			0.3 [0.0; 1.4]		
	τ [95% CI]		1.7 [0.9; 3.4]			0.6 [0.0; 1.2]		
	I² [95% CI]		88.3% [80.5%; 92.9%]			38.6% [0.0%; 70.7%]		
	Q test		76.74	9	<.001	14.67	9	0.10

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S17c. Complete case analysis of the mean difference in hemoglobin in women compared to men at an eGFR value of 15, 30, 45 and 60 mL/min per 1.73m² (including 10 cohorts who provided individual-level data)

Cohort	Country	GFR=15			GFR=30			GFR=45			GFR=60		
		Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p
ICKD	INDIA	-10.27	1.79	<.001	-12.09	0.92	<.001	-13.92	0.80	<.001	-15.75	1.62	<.001
CKD-JAC	JAPAN	-6.26	1.10	<.001	-9.51	0.71	<.001	-12.77	0.89	<.001	-16.02	1.45	<.001
CKD.QLD	AUSTRALIA	-2.31	1.47	0.12	-5.84	0.93	<.001	-9.36	1.32	<.001	-12.88	2.19	<.001
CanPREDDICT	CANADA	-6.88	2.26	0.002	-5.81	1.49	<.001	-4.73	3.37	0.16	-3.66	5.70	0.52
CRIC	US	-8.20	1.34	<.001	-9.64	0.74	<.001	-11.08	0.62	<.001	-12.53	1.15	<.001
CKDopps US	US	-5.74	1.86	0.002	-9.01	1.23	<.001	-12.29	2.26	<.001	-15.56	3.77	<.001
CKDopps BR	BRAZIL	-3.69	3.19	0.25	-11.07	2.29	<.001	-18.45	4.16	<.001	-25.83	6.80	0.001
NRHP	URUGUAY	-5.00	0.59	<.001	-7.81	0.33	<.001	-10.62	0.36	<.001	-13.43	0.64	<.001
EQUAL	EUROPE VARIOUS	-1.24	1.44	0.39	-3.22	3.15	0.31	-5.21	6.56	0.43	-7.19	10.06	0.48
CKDopps GER	GERMANY	-5.40	1.42	0.0001	-6.52	1.03	<.001	-7.65	2.13	0.0003	-8.77	3.53	0.01
	Pooled Stats [95%CI]	-5.5 [-7.4; -3.6]		<.001	-8.3 [-10.0; -6.6]		<.001	-11.0 [-13.3; -8.7]		<.001	-13.5 [-16.6; -10.4]		<.001
	τ² [95% CI]	5.0 [0.8; 21.0]			4.9 [1.2; 20.6]			9.0 [0.7; 41.5]			16.9 [0.0; 81.0]		
Meta-Analysis	τ [95% CI]	2.2 [0.9; 4.6]			2.2 [1.1; 4.5]			3.0 [0.8; 6.4]			4.1 [0.0; 9.0]		
	I² [95% CI]	65.6% [32.7%; 82.5%]			78.9% [61.8%; 88.4%]			69.8% [41.9%; 84.2%]			37.6% [0.0%; 70.3%]		
	Q test	26.2	9	0.002	42.72	9	<.0001	29.75	9	0.0005	14.43	9	0.11
					Reference: No DM			Reference: No CVD			Reference: No CHF		

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Table S17d. Complete case analysis of the mean difference in hemoglobin according to etiology of CKD (including 10 cohorts who provided individual-level data).

Cohort	Country	HTN			PKD			GN			Other		
		Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p	Estimate	S.E.	p
ICKD	INDIA	4.59	1.40	<.001	3.35	1.95	0.09	2.30	1.27	0.07	3.35	1.02	<.001
CKD-JAC	JAPAN	6.34	1.17	<.001	-	-	-	6.88	1.10	<.001	7.36	1.31	<.001
CKD.QLD	AUSTRALIA	3.10	1.54	0.04	0.72	3.26	0.82	0.25	2.01	0.90	3.25	1.40	0.02
CanPREDDICT	CANADA	1.65	2.08	0.43	0.15	3.31	0.96	2.86	2.35	0.22	2.75	2.11	0.19
CRIC	US	5.30	0.98	<.001	-	-	-	-	-	-	4.04	0.76	<.001
CKDopps US	US	2.32	1.97	0.24	2.42	6.61	0.71	0.56	2.90	0.85	1.49	2.00	0.46
CKDopps BR	BRAZIL	4.69	3.63	0.20	3.31	5.57	0.55	4.93	5.11	0.34	0.08	3.79	0.98
NRHP	URUGUAY	4.55	0.52	<.001	6.69	1.26	<.001	1.95	0.87	0.03	3.27	0.55	<.001
EQUAL	EUROPE VARIOUS	2.62	1.89	0.16	12.05	3.38	<.001	4.17	2.58	0.11	2.04	1.99	0.31
CKDopps GER	GERMANY	2.18	1.44	0.13	7.18	3.05	0.02	-0.43	1.97	0.83	0.63	1.62	0.70
Meta-Analysis	Pooled Stats [95%CI]	4.1 [3.0; 5.2]		<.0001	4.9 [1.7; 8.1]		0.009	2.7 [0.8; 4.6]		0.0122	3.3 [1.9; 4.6]		<.001
	τ^2 [95% CI]	1.2 [0.0; 5.7]			8.6 [0.0; 52.9]			3.4 [0.2; 16.5]			2.3 [0.0; 10.3]		
	τ [95% CI]	1.1 [0.0; 2.4]			2.9 [0.0; 7.3]			1.8 [0.5; 4.1]			1.5 [0.0; 3.2]		
	I^2 [95% CI]	14.3% [0.0%; 55.6%]			38.0% [0.0%; 72.6%]			60.0% [16.8%; 80.8%]			40.2% [0.0%; 71.5%]		
	Q test	10.5	9	0.31	11.3	7	0.13	20	8	0.01	15.06	9	0.09

Reference group: diabetic kidney disease

The extended multivariable model included age (continuous), year of study entry, sex, eGFR (per 10 mL increase), sex*eGFR interaction term, etiology of CKD, diabetes mellitus, coronary artery disease, heart failure, urine ACR (categorical), body mass index (categorical)

Figure S1. Summary of data collection from participating iNET-CKD cohorts for pooled analysis.

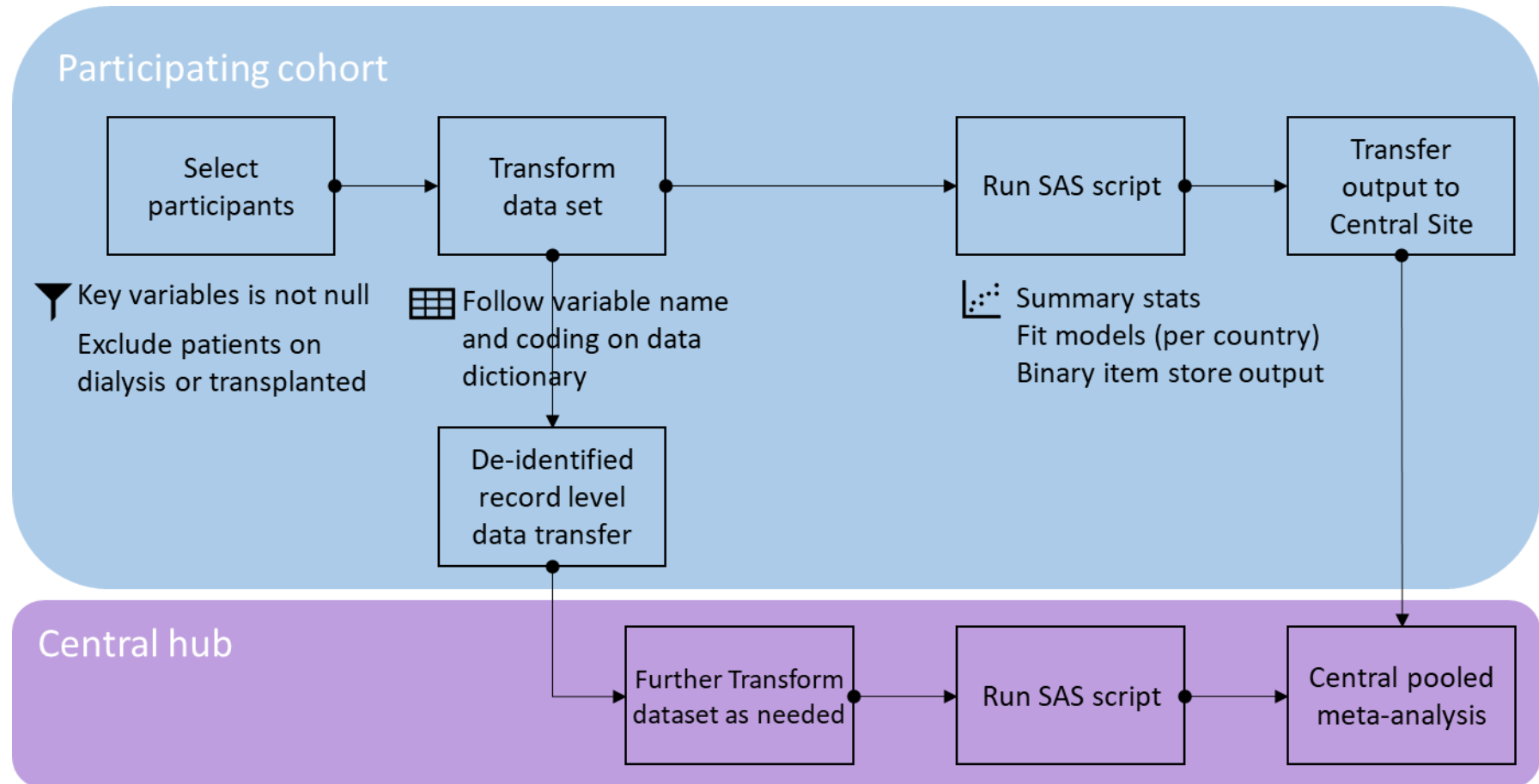
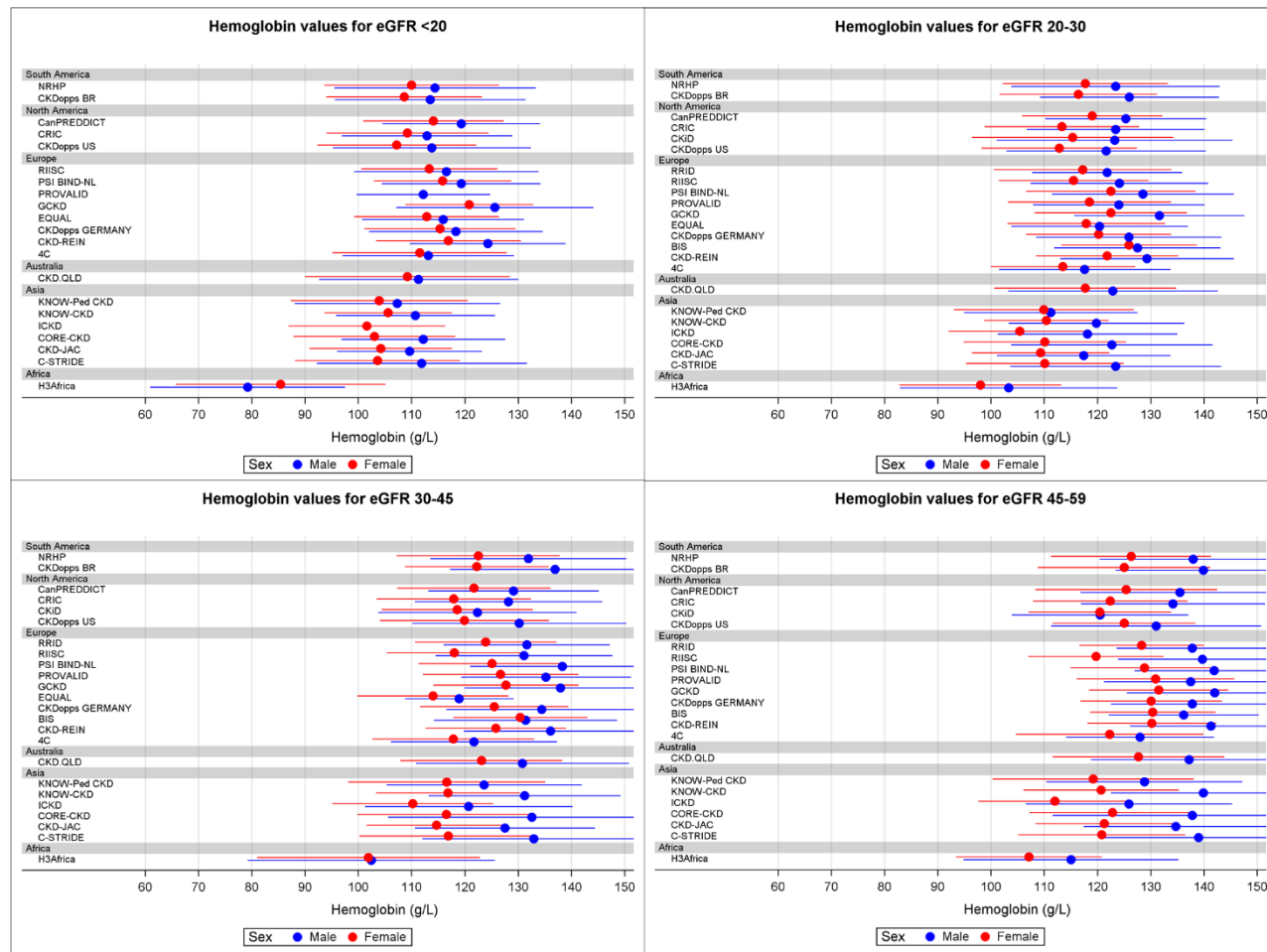


Figure S2. Mean (standard deviation) hemoglobin values in women (red circles) and men (blue circles) within categories of eGFR for each cohort and grouped by continent



Appendix 1. Funding Acknowledgment for iNET-CKD cohorts

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Appendix 2. STROBE Statement—Checklist of items that should be included in reports of *cohort studies*

	Item No	Recommendation
Title and abstract	1	<p>(a) Indicate the study’s design with a commonly used term in the title or the abstract Title and abstract</p> <hr/> <p>(b) Provide in the abstract an informative and balanced summary of what was done and what was found See abstract for details</p>
Introduction		
Background/rationale	2	<p>Explain the scientific background and rationale for the investigation being reported Introduction paragraphs 1 and 2</p>
Objectives	3	<p>State specific objectives, including any prespecified hypotheses Introduction paragraph 3</p>
Methods		
Study design	4	<p>Present key elements of study design early in the paper See “Study Design”</p>
Setting	5	<p>Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection See “Study Design” and Supplementary Material</p>
Participants	6	<p>(a) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up See “Study Design”</p> <hr/> <p>(b) For matched studies, give matching criteria and number of exposed and unexposed</p>
Variables	7	<p>Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable See “Variable Definitions” and data dictionary in Supplementary Material</p>
Data sources/ measurement	8*	<p>For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group See “Variable Definitions” and data dictionary in Supplementary Material</p>
Bias	9	<p>Describe any efforts to address potential sources of bias See “Statistical Analysis”</p>
Study size	10	<p>Explain how the study size was arrived at See “Study Design” and Supplementary Material</p>
Quantitative variables	11	<p>Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why See “Variable Definitions” and data dictionary in Supplementary Material</p>
Statistical methods	12	<p>(a) Describe all statistical methods, including those used to control for confounding See “Statistical Analysis”</p> <hr/> <p>(b) Describe any methods used to examine subgroups and interactions See “Statistical Analysis”</p> <hr/> <p>(c) Explain how missing data were addressed</p>

See “Statistical Analysis”

(d) If applicable, explain how loss to follow-up was addressed

n/a

(e) Describe any sensitivity analyses

See “Statistical Analysis”

Results

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed See “Participant characteristics” and cohort details in the Supplementary Material
		(b) Give reasons for non-participation at each stage n/a
		(c) Consider use of a flow diagram
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders See “Participant characteristics”
		(b) Indicate number of participants with missing data for each variable of interest Table 1 and Table 2
		(c) Summarise follow-up time (eg, average and total amount) n/a
Outcome data	15*	Report numbers of outcome events or summary measures over time See “Hemoglobin distribution among cohorts”
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included Figures 2-4 and Supplementary Tables 6-13
		(b) Report category boundaries when continuous variables were categorized Tables 1 and 2
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses Sensitivity analysis and Supplementary Tables 5, 14-16
Discussion		
Key results	18	Summarise key results with reference to study objectives Paragraph 1 of Discussion
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias Paragraph 2 of Discussion
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence Paragraphs 3-6 of Discussion
Generalisability	21	Discuss the generalisability (external validity) of the study results Paragraph 3 of Discussion

Other information

Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based See “Role of the funding source”
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*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at <http://www.strobe-statement.org>.