ONLINE SUPPLEMENT

Dietary phosphorus, blood pressure and incidence of hypertension in the Atherosclerosis Risk in Communities (ARIC) Study and the Multi-Ethnic Study of Atherosclerosis (MESA)

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SUPPLEMENTAL METHODS

Assessment of other covariates

In both ARIC and MESA, trained technicians measured height, weight, and waist circumference following a standardized protocol. Diabetes was defined as current use of glucose-lowering medications, fasting glucose ≥126 mg/dL, nonfasting glucose ≥200 mg/dL, or, only in ARIC, self-reported history of diabetes. Estimated glomerular filtration rate (eGFR) was calculated using the abbreviated Modification of Diet in Renal Disease Study equation.[1] Current smoking, ethanol intake, income, education, and previous history of cardiovascular disease were ascertained from standardized questionnaires. Physical activity was assessed at baseline using a modification of the Baecke Physical Activity questionnaire in ARIC[2] and an activity questionnaire adapted from the Cross-Cultural Activity Participation Study in MESA.[3]

Statistical analysis

Because concerns exist about the use of Cox regression when the event is measured at discrete points, we repeated the analysis using Poisson (log-link) regression to model the incidence rate ratio of hypertension as a function of predictor covariates with robust variance estimation and an offset for follow-up time.

Statistical models were stratified by race, sex, and eGFR to explore potential interactions. Formal interaction tests were conducted including multiplicative terms in the models, and comparing models with and without interactions with a likelihood ratio test.

Additionally, three supplementary analyses were carried out to evaluate the robustness of our results to different assumptions. First, we repeated the longitudinal analysis defining incident hypertension only based on BP levels, ignoring use of antihypertensive medication, to avoid differences in hypertension diagnosis based on healthcare access or utilization. Second, we performed a longitudinal analysis excluding those with systolic BP ≥130 or diastolic BP ≥80 at baseline to reduce the possibility of including individuals who already had hypertension but were not identified in the baseline exam. Finally, we applied regression calibration to correct for measurement error in dietary intake assessment in both ARIC and MESA using the SAS macro %RELIB.[4] This SAS

macro adjusts point and confidence intervals of coefficients obtained from linear and Cox proportional hazards models for measurement error due to random within-person variation, using information from repeated dietary measures in a smaller sample of individuals. Repeatability was determined in 1004 ARIC participants who completed FFQs at baseline and three years later. In this analysis, we estimated the association of an increment of 500 mg of phosphorus intake with systolic BP and the risk of incident hypertension. The analysis corrected measurement error in the intake of the following nutrients: phosphorus, alcohol, calcium, magnesium, potassium, sodium, and total energy intake. The correlation coefficients between the repeated measures were 0.56 (phosphorus), 0.62 (alcohol), 0.55 (calcium), 0.54 (magnesium), 0.55 (potassium), 0.50 (sodium) and 0.58 (total energy intake). No repeatability information was available for MESA.

References

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2. Baecke JAH, Burema J, Fritjers JER. A short questionnaire for the measurement of habitual physical activity in epidemiological studies. *Am J Clin Nutr.* 1982;36:936-942.

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4. Spiegelman D, McDermott A, Rosner B. Regression calibration method for correcting measurement-error bias in nutritional epidemiology. *Am J Clin Nutr.* 1997;65:1179S-1186S.

SUPPLEMENTAL TABLES

Supplemental table 1. Difference in systolic blood pressure by quintiles of phosphorus intake at baseline, by sex, ARIC, 1987-89, and MESA, 2000-2002

Supplemental table 2. Hazard ratios of hypertension by quintiles of phosphorus intake, by sex, ARIC, 1987-1998, and MESA, 2000-2007

Supplemental table 3. Difference in systolic blood pressure by quintiles of phosphorus intake at baseline, by race/ethnicity, ARIC, 1987-89, and MESA, 2000-2002

Supplemental table 4. Hazard ratios of hypertension by quintiles of phosphorus intake, by race/ethnicity, ARIC, 1987-1998, and MESA, 2000-2007

Supplemental table 5. Difference in systolic blood pressure (SBP) associated with 500 mg/day higher phosphorus intake, before and after correction of measurement error using regression calibration, ARIC and MESA

Supplemental table 6. Hazard ratios of hypertension associated with 500 mg/day higher phosphorus intake, before and after correction of measurement error using regression calibration

Table S1. Difference in systolic blood pressure by quintiles of phosphorus intake at baseline by sex, ARIC, 1987-89, and MESA, 2000-2002

ARIC	Q1	Q2	Q3	Q4	Q5	P for trend
*Men**	868	868	868	868	869	
Model 1	Ref	-0.5 (-2.0, 1.0)	-0.7 (-2.2, 0.8)	-1.4 (-2.9, 0.1)	-2.2 (-3.7, -0.7)	0.002
Model 2	Ref	-0.4 (-1.9, 1.1)	-0.3 (-1.9, 1.2)	-1.2 (-2.7, 0.4)	-1.9 (-3.5, -0.4)	0.008
Model 3	Ref	0.1 (-1.5, 1.8)	0.3 (-1.6, 2.2)	-0.2 (-2.4, 1.9)	-1.3 (-4.0, 1.3)	0.31
*Women**	1088	1089	1089	1089	1089	
Model 1	Ref.	-0.8 (-2.1, 0.6)	-1.8 (-3.2, -0.5)	-2.1 (-3.4, -0.7)	-2.9 (-4.3, -1.5)	<0.0001
Model 2	Ref.	-0.5 (-1.8, 0.9)	-1.4 (-2.7, -0.1)	-1.7 (-3.1, -0.4)	-2.5 (-3.9, -1.2)	<0.0001
Model 3	Ref.	-0.3 (-1.8, 1.1)	-1.2 (-2.9, 0.5)	-1.8 (-3.7, 0.1)	-3.0 (-5.4, -0.6)	0.01
MESA	Q1	Q2	Q3	Q4	Q5	P for trend
*Men**	356	356	356	356	356	
Model 1	Ref	-0.7 (-3.3, 1.8)	-1.3 (-3.8, 1.2)	-0.7 (-3.2, 1.8)	-1.5 (-4.0, 1.1)	0.31
Model 2	Ref	-0.7 (-3.3, 1.8)	-0.9 (-3.4, 1.7)	0.0 (-2.5, 2.6)	-0.3 (-2.8, 2.2)	0.97
Model 3	Ref	-0.2 (-3.0, 2.6)	-0.1 (-3.2, 3.0)	0.6 (-2.8, 4.1)	-0.4 (-4.7, 3.9)	0.89
*Women**	375	376	376	376	376	
Model 1	Ref.	-4.2 (-6.9, -1.5)	-3.4 (-6.0, -0.7)	-4.6 (-7.3, -1.9)	-5.8 (-8.5, -3.1)	0.0001
Model 2	Ref.	-3.1 (-5.8, -0.4)	-2.0 (-4.7, 0.7)	-2.5 (-5.2, 0.2)	-4.0 (-6.6, -1.3)	0.01
Model 3	Ref.	-2.2 (-5.3, 1.0)	-1.0 (-4.6, 2.7)	-1.2 (-5.4, 3.0)	-2.1 (-7.4, 3.2)	0.53
Pooled	Q1	Q2	Q3	Q4	Q5	P for trend
Men						
Model 1	Ref	-0.6 (-1.8, 0.7)	-0.9 (-2.1, 0.4)	-1.2 (-2.5, 0.1)	-2.0 (-3.3, -0.7)	0.002
Model 2	Ref	-0.5 (-1.8, 0.8)	-0.5 (-1.8, 0.8)	-0.9 (-2.2, 0.5)	-1.5 (-2.8, 0.1)	0.02
Model 3	Ref	0.1 (-1.4, 1.5)	0.2 (-1.4, 1.8)	0.0 (-1.8, 1.8)	-1.1 (-3.3, 1.2)	0.34
Women						
Model 1	Ref.	-1.5 (-2.7, -0.3)	-2.1 (-3.4, -0.9)	-2.6 (-3.8, -1.4)	-3.5 (-4.7, -2.3)	<0.0001
Model 2	Ref.	-1.0 (-2.2, 0.2)	-1.5 (-2.7, -0.3)	-1.9 (-3.1, -0.7)	-2.8 (-4.1, -1.6)	<0.0001
Model 3	Ref.	-0.7 (-2.0, 0.7)	-1.2 (-2.7, 0.4)	-1.7 (-3.4, 0.1)	-2.9 (-5.1, -0.7)	0.009

* Numbers correspond to individuals included in the analysis

Model 1: Linear regression model adjusted for age and race; Model 2: Adjusted additionally for body mass index, waist circumference, eGFR, education, income, exercise, cigarette smoking, study site, alcohol intake, and energy intake; Model 3: As model 2, adjusted additionally for calcium, vitamin D (only in ARIC), sodium, potassium, magnesium, fruits and vegetables, and whole grains intake. No interactions were significant at $p<0.05$; MESA Model 1 interaction term had p-value=0.07, all other p-values were >0.10.

Table S2. Hazard ratios of hypertension by quintiles of phosphorus intake, by sex, ARIC, 1987-1998, and MESA, 2000-2007

ARIC	Q1	Q2	Q3	Q4	Q5	P for trend
*Men**	200/664	218/694	218/719	212/747	175/741	
Model 1	1 (ref.)	1.04 (0.86, 1.26)	0.97 (0.80, 1.18)	0.92 (0.76, 1.12)	0.77 (0.62, 0.94)	0.004
Model 2	1 (ref.)	1.09 (0.89, 1.32)	1.03 (0.84, 1.25)	0.99 (0.80, 1.22)	0.82 (0.66, 1.02)	0.03
Model 3	1 (ref.)	1.08 (0.86, 1.35)	1.01 (0.79, 1.31)	0.98 (0.73, 1.31)	0.82 (0.57, 1.19)	0.26
*Women**	266/864	309/924	272/948	272/954	258/953	
Model 1	1 (ref.)	1.15 (0.97, 1.35)	0.99 (0.83, 1.17)	0.98 (0.82, 1.16)	0.93 (0.78, 1.10)	0.12
Model 2	1 (ref.)	1.15 (0.98, 1.36)	1.02 (0.85, 1.21)	0.99 (0.83, 1.19)	0.96 (0.80, 1.15)	0.27
Model 3	1 (ref.)	1.19 (0.99, 1.44)	1.07 (0.86, 1.34)	1.08 (0.84, 1.39)	1.12 (0.82, 1.54)	0.65
MESA	Q1	Q2	Q3	Q4	Q5	P for trend
*Men**	94/275	98/284	89/282	97/284	97/283	
Model 1	1 (ref.)	0.85 (0.64, 1.13)	0.81 (0.60, 1.09)	0.86 (0.64, 1.15)	0.83 (0.62, 1.17)	0.32
Model 2	1 (ref.)	0.92 (0.68, 1.24)	0.88 (0.65, 1.19)	0.96 (0.71, 1.31)	0.94 (0.80, 1.27)	0.88
Model 3	1 (ref.)	0.97 (0.70, 1.35)	0.96 (0.66, 1.39)	1.13 (0.75, 1.71)	1.55 (0.94, 2.54)	0.07
*Women**	100/280	94/307	99/303	82/304	95/299	
Model 1	1 (ref.)	0.79 (0.59, 1.05)	0.88 (0.67, 1.17)	0.68 (0.50, 0.91)	0.82 (0.62, 1.10)	0.19
Model 2	1 (ref.)	0.85 (0.64, 1.15)	0.97 (0.72, 1.31)	0.74 (0.54, 1.01)	0.87 (0.65, 1.17)	0.32
Model 3	1 (ref.)	0.84 (0.59, 1.20)	0.92 (0.61, 1.38)	0.65 (0.40, 1.05)	0.71 (0.38, 1.31)	0.28
Pooled	Q1	Q2	Q3	Q4	Q5	P for trend
Men						
Model 1	1 (ref.)	0.97 (0.83, 1.14)	0.92 (0.78, 1.08)	0.90 (0.76, 1.06)	0.79 (0.66, 0.93)	0.003
Model 2	1 (ref.)	1.03 (0.87, 1.22)	0.98 (0.83, 1.16)	0.98 (0.83, 1.16)	0.86 (0.72, 1.03)	0.07
Model 3	1 (ref.)	1.04 (0.87, 1.26)	1.00 (0.81, 1.23)	1.03 (0.81, 1.30)	1.03 (0.77, 1.38)	0.92
Women						
Model 1	1 (ref.)	1.04 (0.90, 1.20)	0.96 (0.83, 1.11)	0.89 (0.77, 1.03)	0.90 (0.77, 1.04)	0.05
Model 2	1 (ref.)	1.07 (0.93, 1.24)	1.00 (0.86, 1.17)	0.92 (0.79, 1.08)	0.93 (0.80, 1.09)	0.15
Model 3	1 (ref.)	1.11 (0.94, 1.31)	1.03 (0.85, 1.26)	0.97 (0.77, 1.21)	1.02 (0.77, 1.35)	0.96

* Numbers correspond to cases of incident hypertension / participants free of hypertension at baseline

Model 1: Cox proportional hazards model adjusted for age and race. Model 2: Model adjusted additionally for body mass index, waist circumference, eGFR, education, income, exercise, cigarette smoking, study site, alcohol intake, and energy intake. Model 3: Same as model 2, adjusted additionally for calcium, vitamin D (only in ARIC), sodium, potassium, magnesium, fruits and vegetables, and whole grains intake.

All interactions in MESA and ARIC $p>0.10$

Table S3. Difference in systolic blood pressure by quintiles of phosphorus intake at baseline by race/ethnicity, ARIC, 1987-89, and MESA, 2000-2002

ARIC	Q1	Q2	Q3	Q4	Q5	P for trend
*Whites**	1308	1477	1629	1696	1777	
Model 1	Ref	-0.6 (-1.7, 0.5)	-1.1 (-2.2, 0.0)	-0.9 (-2.0, 0.1)	-2.1 (-3.2, -1.0)	0.0001
Model 2	Ref	-0.4 (-1.5, 0.7)	-1.0 (-2.1, 0.1)	-1.1 (-2.2, 0.0)	-2.3 (-3.4, -1.2)	<0.0001
Model 3	Ref	-0.5 (-1.7, 0.8)	-1.1 (-2.4, 0.3)	-1.3 (-2.8, 0.2)	-2.9 (-4.7, -1.1)	0.002
*African-Americans**	648	480	328	261	181	
Model 1	Ref.	-0.5 (-2.7, 1.8)	-1.5 (-4.1, 1.0)	-5.7 (-8.5, -2.9)	-4.3 (-7.5, -1.1)	<0.0001
Model 2	Ref.	0.0 (-2.3, 2.3)	-0.5 (-3.0, 2.1)	-4.3 (-7.1, -1.5)	-2.3 (-5.5, 0.8)	0.01
Model 3	Ref.	0.9 (-1.7, 3.5)	0.8 (-2.6, 4.2)	-2.8 (-6.9, 1.3)	-0.8 (-6.5, 4.9)	0.63
MESA	Q1	Q2	Q3	Q4	Q5	P for trend
*Whites**	267	306	310	361	424	
Model 1	Ref.	-0.3 (-3.2, 2.6)	-3.0 (-5.9, -0.1)	-2.8 (-5.6, 0.0)	-2.9 (-5.6, -0.2)	0.02
Model 2	Ref.	0.3 (-2.5, 3.1)	-1.8 (-4.7, 1.0)	-0.2 (-3.0, 2.6)	-1.0 (-3.6, 1.6)	0.45
Model 3	Ref.	1.9 (-1.4, 5.1)	0.4 (-3.3, 4.0)	2.4 (-1.7, 6.4)	1.1 (-3.7, 6.0)	0.76
*African-Americans**	211	158	136	101	89	
Model 1	Ref.	-3.9 (-7.9, 0.0)	-0.9 (-5.1, 3.2)	-1.2 (-5.7, 3.4)	-3.4 (-8.2, 1.4)	0.32
Model 2	Ref.	-1.8 (-5.9, 2.2)	1.8 (-2.5, 6.1)	1.4 (-3.2, 6.0)	-1.4 (-6.2, 3.3)	0.95
Model 3	Ref.	-2.4 (-6.9, 2.1)	2.1 (-3.2, 7.5)	2.3 (-4.3, 8.8)	-2.2 (-10.7, 6.3)	0.84
*Hispanics**	176	150	158	158	163	
Model 1	Ref	-2.5 (-6.4, 1.4)	-4.1 (-7.9, -0.2)	-3.6 (-7.4, 0.2)	-4.5 (-8.3, -0.7)	0.03
Model 2	Ref	-2.1 (-6.0, 1.8)	-3.2 (-7.2, 0.7)	-3.1 (-7.0, 0.8)	-3.5 (-7.3, 0.3)	0.09
Model 3	Ref	-0.8 (-5.3, 3.8)	-1.0 (-6.2, 4.2)	-0.4 (-6.2, 5.4)	2.4 (-5.0, 9.8)	0.46
*Chinese-Americans**	77	118	128	112	56	
Model 1	Ref.	-8.3 (-13.3, -3.2)	-2.2 (-7.2, 2.8)	-3.8 (-8.9, 1.3)	-8.1 (-14.2, -2.0)	0.11
Model 2	Ref.	-8.0 (-13.0, -2.9)	-2.5 (-7.5, 2.5)	-4.2 (-9.3, 0.9)	-5.3 (-11.4, 0.9)	0.40
Model 3	Ref.	-8.5 (-14.6, -2.4)	-4.2 (-11.0, 2.6)	-5.7 (-13.3, 1.9)	-8.3 (-19.1, 2.4)	0.28
Pooled	Q1	Q2	Q3	Q4	Q5	P for trend
Whites						
Model 1	Ref	-0.5 (-1.6, 0.5)	-1.3 (-2.4, 0.3)	-1.2 (-2.2, -0.2)	-2.2 (-3.2, -1.2)	<0.0001
Model 2	Ref	-0.3 (-1.4, 0.7)	-1.1 (-2.2, -0.1)	-1.0 (-2.0, 0.0)	-2.1 (-3.1, -1.1)	<0.0001
Model 3	Ref	-0.2 (-1.3, 1.0)	-0.9 (-2.2, 0.4)	-0.9 (-2.3, 0.6)	-2.4 (-4.1, -0.7)	0.005
African-Americans						
Model 1	Ref.	-1.3 (-3.3, 0.6)	-1.4 (-3.5, 0.8)	-4.5 (-6.8, -2.1)	-4.0 (-6.7, -1.4)	<0.0001
Model 2	Ref.	-0.4 (-2.4, 1.5)	0.1 (-2.1, 2.3)	-2.8 (-5.2, -0.4)	-2.1 (-4.7, 0.6)	0.03
Model 3	Ref.	0.1 (-2.2, 2.3)	1.2 (-1.7, 4.0)	-1.4 (-4.8, 2.1)	-1.2 (-6.0, 3.5)	0.61

* Numbers correspond to individuals included in the analyses
Model 1: Linear regression model adjusted for age and sex
Model 2: Adjusted additionally for body mass index, waist circumference, eGFR, education, income, exercise, cigarette smoking, study site, alcohol intake, and energy intake
Model 3: As model 2, adjusted additionally for calcium, vitamin D (only in ARIC), sodium, potassium, magnesium, fruits and vegetables, and whole grains intake.
Interaction ARIC Model 1, p-value=0.006. Other interaction p-values > 0.10

Table S4. Hazard ratios of hypertension by quintiles of phosphorus intake, by race/ethnicity, ARIC, 1987-1998, and MESA, 2000-2007

ARIC	Q1	Q2	Q3	Q4	Q5	P for trend
*Whites**	302/1111	378/1292	390/1432	403/1516	387/1562	
Model 1	1 (ref.)	1.05 (0.90, 1.22)	0.94 (0.81, 1.09)	0.91 (0.78, 1.06)	0.84 (0.72, 0.98)	0.003
Model 2	1 (ref.)	1.08 (0.92, 1.26)	0.99 (0.85, 1.15)	0.95 (0.82, 1.11)	0.88 (0.75, 1.03)	0.02
Model 3	1 (ref.)	1.11 (0.93, 1.32)	1.02 (0.84, 1.24)	0.99 (0.80, 1.23)	0.97 (0.74, 1.26)	0.57
*African-Americans**	164/417	149/326	100/235	81/185	46/132	
Model 1	1 (ref.)	1.19 (0.96, 1.49)	1.10 (0.86, 1.41)	1.09 (0.83, 1.42)	0.81 (0.58, 1.13)	0.39
Model 2	1 (ref.)	1.21 (0.96, 1.52)	1.08 (0.83, 1.40)	1.06 (0.80, 1.40)	0.83 (0.59, 1.17)	0.41
Model 3	1 (ref.)	1.26 (0.96, 1.65)	1.18 (0.83, 1.66)	1.18 (0.77, 1.81)	0.96 (0.53, 1.75)	0.77
MESA	Q1	Q2	Q3	Q4	Q5	P for trend
*Whites**	75/218	77/246	81/262	87/298	125/348	
Model 1	1 (ref.)	0.79 (0.58, 1.09)	0.75 (0.55, 1.03)	0.72 (0.53, 0.98)	0.90 (0.67, 1.20)	0.90
Model 2	1 (ref.)	0.79 (0.57, 1.10)	0.73 (0.52, 1.02)	0.72 (0.52, 1.01)	0.91 (0.67, 1.22)	0.96
Model 3	1 (ref.)	0.79 (0.54, 1.14)	0.81 (0.53, 1.24)	0.89 (0.56, 1.43)	1.52 (0.89, 2.60)	0.03
*African-Americans**	66/153	47/128	43/104	26/72	27/60	
Model 1	1 (ref.)	0.71 (0.49, 1.03)	0.95 (0.64, 1.39)	0.74 (0.47, 1.17)	1.00 (0.64, 1.56)	0.94
Model 2	1 (ref.)	0.86 (0.58, 1.29)	1.17 (0.77, 1.78)	0.86 (0.54, 1.39)	1.22 (0.76, 1.96)	0.46
Model 3	1 (ref.)	0.93 (0.58, 1.50)	1.59 (0.94, 2.71)	1.17 (0.58, 2.34)	1.41 (0.55, 3.64)	0.30
*Hispanics**	33/124	48/113	36/122	45/129	32/130	
Model 1	1 (ref.)	1.49 (0.95, 2.33)	1.01 (0.63, 1.63)	1.12 (0.71, 1.77)	0.77 (0.47, 1.25)	0.08
Model 2	1 (ref.)	1.35 (0.85, 2.15)	1.00 (0.61, 1.65)	1.01 (0.63, 1.62)	0.75 (0.45, 1.24)	0.07
Model 3	1 (ref.)	1.31 (0.74, 2.34)	0.77 (0.38, 1.55)	0.66 (0.31, 1.40)	0.48 (0.19, 1.24)	0.08
*Chinese-Americans**	20/60	20/104	28/97	21/89	8/44	
Model 1	1 (ref.)	0.49 (0.26, 0.91)	0.75 (0.42, 1.32)	0.51 (0.27, 0.94)	0.35 (0.15, 0.79)	0.02
Model 2	1 (ref.)	0.53 (0.27, 1.02)	0.89 (0.49, 1.61)	0.56 (0.29, 1.08)	0.32 (0.13, 0.78)	0.03
Model 3	1 (ref.)	0.47 (0.21, 1.07)	0.61 (0.11, 0.82)	0.30 (0.11, 0.82)	0.12 (0.02, 0.56)	0.01
Pooled	Q1	Q2	Q3	Q4	Q5	P for trend
Whites						
Model 1	1 (ref.)	1.00 (0.87, 1.14)	0.90 (0.79, 1.03)	0.87 (0.76, 1.00)	0.85 (0.75, 0.98)	0.006
Model 2	1 (ref.)	1.02 (0.88, 1.17)	0.94 (0.81, 1.08)	0.91 (0.79, 1.04)	0.88 (0.77, 1.02)	0.04
Model 3	1 (ref.)	1.04 (0.89, 1.22)	0.98 (0.82, 1.17)	0.97 (0.80, 1.19)	1.06 (0.83, 1.34)	0.69
African-Americans						
Model 1	1 (ref.)	1.04 (0.86, 1.26)	1.05 (0.85, 1.29)	0.98 (0.78, 1.24)	0.87 (0.67, 1.13)	0.43
Model 2	1 (ref.)	1.12 (0.91, 1.36)	1.10 (0.89, 1.37)	1.00 (0.79, 1.28)	0.95 (0.72, 1.25)	0.74
Model 3	1 (ref.)	1.17 (0.93, 1.48)	1.29 (0.96, 1.72)	1.18 (0.82, 1.70)	1.07 (0.65, 1.78)	0.44

* Numbers correspond to cases of incident hypertension / participants free of hypertension at baseline.

Model 1: Cox proportional hazards model adjusted for age and sex. Model 2: Model adjusted additionally for body mass index, waist circumference, eGFR, education, income, exercise, cigarette smoking, study site, alcohol intake, and energy intake. Model 3: Same as model 2, adjusted additionally for calcium,

vitamin D (only in ARIC), sodium, potassium, magnesium, fruits and vegetables, and whole grains intake.
All interactions p>0.10

Table S5. Difference in systolic blood pressure associated with 500 mg/day higher phosphorus intake, before and after correction of measurement error using regression calibration, ARIC, 1987-89, and MESA, 2000-2002

Cohort	Uncorrected		Corrected	
	ΔSBP (95% CI)	p-value	ΔSBP (95% CI)	p-value
ARIC				
Model 1	-1.3 (-1.9, -0.7)	<0.0001	-2.0 (-2.9, -1.0)	<0.0001
Model 2	-1.1 (-1.8, -0.5)	0.0002	-2.1 (-3.0, -1.1)	<0.0001
Model 3	-1.3 (-2.5, 0.0)	0.05	-3.7 (-6.4, -0.9)	0.009
MESA				
Model 1	-1.9 (-2.9, -0.8)	0.0004	-2.9 (-4.5, -1.4)	0.0003
Model 2	-0.9 (-2.0, 0.1)	0.07	-1.5 (-3.0, 0.1)	0.06
Model 3	-0.5 (-2.8, 1.8)	0.68	NE	NE
Pooled				
Model 1	-1.4 (-1.9, -0.9)	<0.0001	-2.2 (-3.0, -1.4)	<0.0001
Model 2	-1.1 (-1.6, -0.6)	<0.0001	-1.9 (-2.7, -1.1)	<0.0001
Model 3	-1.1 (-2.2, 0.0)	0.06	NE	NE

CI: confidence interval; NE: not estimable due to computational problems; SBP: systolic blood pressure

Model 1: Linear regression model adjusted for age, sex, race and total energy intake.

Model 2: Linear regression model adjusted for age, sex, race, total energy intake, alcohol intake, study center, body mass index, waist-to-hip ratio, estimated glomerular filtration rate, education, physical activity and smoking.

Model 3: Linear regression model adjusted for same variables as in model 2 plus calcium, magnesium, sodium and potassium intake.

Table S6. Hazard ratios of hypertension associated with 500 mg/day higher phosphorus intake, before and after correction of measurement error using regression-calibration, ARIC, 1987-1998, and MESA, 2000-2007

Cohort	Uncorrected		Corrected	
	HR (95% CI)	p-value	HR (95% CI)	p-value
ARIC				
Model 1	0.90 (0.83, 0.97)	0.008	0.85 (0.75, 0.96)	0.008
Model 2	0.91 (0.84, 0.99)	0.03	0.85 (0.75, 0.98)	0.02
Model 3	0.98 (0.83, 1.16)	0.78	0.92 (0.64, 1.32)	0.65
MESA				
Model 1	0.93 (0.83, 1.05)	0.26	0.90 (0.75, 1.08)	0.24
Model 2	0.97 (0.86, 1.09)	0.61	0.95 (0.79, 1.14)	0.57
Model 3	1.10 (0.78, 1.55)	0.61	NE	NE
Pooled				
Model 1	0.91 (0.85, 0.97)	0.004	0.86 (0.78, 0.95)	0.004
Model 2	0.93 (0.87, 1.00)	0.04	0.88 (0.79, 0.99)	0.03
Model 3	1.00 (0.86, 1.16)	0.98	NE	NE

NE: not estimable due to computational problems
Model 1: Cox proportional hazards model adjusted for age, sex, race and total energy intake.
Model 2: Cox proportional hazards model adjusted for age, sex, race, total energy intake, alcohol intake, study center, body mass index, waist-to-hip ratio, estimated glomerular filtration rate, education, physical activity and smoking.
Model 3: Cox proportional hazards model adjusted for same variables as in model 2 plus calcium, magnesium, sodium and potassium intake.