

**Supplemental Material**

**Chronic Arsenic Exposure and Blood Glutathione and Glutathione  
Disulfide Concentrations in Bangladeshi Adults**

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**Supplemental Material, Table S1.** Associations of continuous covariates with As exposure and outcome variables

	<b>Age</b>	<b>BMI</b>	<b>Plasma Folate</b>
Water As	-0.02 (0.73) <sup>a</sup>	-0.12 (0.02)	-0.07 (0.15)
Urinary As	-0.04 (0.46)	-0.11 (0.03)	0.0007 (0.99)
Blood As	0.0005 (0.99)	-0.16 (0.002)	-0.10 (0.06)
Blood GSH	-0.06 (0.25)	0.01 (0.86)	-0.07 (0.17)
Blood GSSG	-0.06 (0.24)	0.05 (0.36)	0.16 (0.002)
Blood GSH Eh	0.009 (0.86)	0.03 (0.55)	0.15 (0.003)
Plasma Cys	-0.13 (0.01)	-0.0005 (0.99)	0.003 (0.95)
Plasma CySS	0.17 (0.001)	0.17 (0.0007)	0.11 (0.03)
Plasma Cys Eh	0.17 (0.001)	0.02 (0.66)	0.02 (0.71)

a – Spearman’s correlation coefficients (p-value)

**Supplemental Material, Table S2.** Associations of categorical covariates with As exposure and outcome variables

	Sex			Ever smoke			TV Ownership		
	Male <sup>a</sup>	Female <sup>a</sup>	p-value <sup>b</sup>	Yes <sup>a</sup>	No <sup>a</sup>	p-value <sup>b</sup>	Yes <sup>a</sup>	No <sup>a</sup>	p-value <sup>b</sup>
Water As	114.1	113.1	0.75	119.4	107.4	0.38	101.2	138.5	0.03
Urinary As/g Cr	307.5	360.0	0.49	340.5	328.5	0.44	306.5	370.5	0.01
Blood As	12.3	10.3	0.009	12.4	10.3	0.008	10.4	11.1	0.17
Blood GSH	529.7	436.6	<0.0001	516.9	457.1	0.004	511.3	462.0	0.08
Blood GSSG	33.9	34.5	0.26	34.1	34.3	0.70	37.4	29.6	<0.0001
Blood GSH Eh	-203.2	-197.4	<0.0001	-202.9	-198.6	0.006	-200.1	-199.5	0.75
Plasma Cys	2.9	3.5	0.04	3.1	3.3	0.45	3.2	3.1	0.97
Plasma CySS	56.2	53.6	0.51	55.6	55.1	0.99	57.5	52.7	0.005
Plasma Cys Eh	-46.1	-49.4	0.03	-46.1	-48.6	0.43	-47.2	-49.0	0.56

a - median values of exposure or outcome variable for covariate category, b – p-value from Wilcoxon rank-sum test

**Supplemental Material, Table S3.** Covariate adjusted effect size estimates for associations between measures of As exposure and GSH, GSSG, Cys, and CySS by folate status

	Water As ( $\mu\text{g/L}$ ) <sup>a</sup>		Urinary As ( $\mu\text{g/L}$ ) <sup>b</sup>		Blood As ( $\mu\text{g/L}$ ) <sup>a</sup>	
	Folate Sufficient <sup>c</sup>	Folate Deficient <sup>d</sup>	Folate Sufficient <sup>c</sup>	Folate Deficient <sup>d</sup>	Folate Sufficient <sup>c</sup>	Folate Deficient <sup>d</sup>
<b>Blood GSH (<math>\mu\text{mol/L}</math>)</b>						
Mean change (95% CI) <sup>e</sup>	-44.6 (-69.7,-19.4)	-10.2 (-41.9,21.5)	-79.4 (-125.1,-38.7)	-39.4 (-97.2,18.5)	-37.3 (-75.2,0.54)	-23.5 (-67.8,20.7)
p-value	0.0006	0.52	0.0007	0.18	0.05	0.29
<b>Blood GSSG (<math>\mu\text{mol/L}</math>)</b>						
Mean ratio (95% CI) <sup>f</sup>	1.03 (0.97,1.09)	0.93 (0.84,1.00)	1.01 (0.92,1.12)	0.87 (0.74,1.02)	1.01 (0.93,1.10)	0.90 (0.79,1.01)
p-value	0.34	0.06	0.78	0.08	0.83	0.08
<b>Blood GSH Eh (mV)<sup>g</sup></b>						
Mean change (95% CI) <sup>e</sup>	2.64 (0.85,4.42)	-0.44 (-2.50,1.65)	4.24 (1.01,7.47)	0.44 (-3.35,4.21)	2.75 (0.11,5.40)	0.03 (-2.87,2.92)
p-value	0.004	0.68	0.01	0.82	0.04	0.99
<b>Plasma Cys (<math>\mu\text{mol/L}</math>)</b>						
Mean ratio (95% CI) <sup>f</sup>	1.07 (0.99,1.16)	1.03 (0.88,1.20)	1.13 (0.98,1.30)	1.18 (0.89,1.58)	1.04 (0.92,1.16)	1.06 (0.85,1.33)
p-value	0.09	0.71	0.10	0.25	0.54	0.61
<b>Plasma CySS (<math>\mu\text{mol/L}</math>)</b>						
Mean change (95% CI) <sup>e</sup>	-4.08 (-6.11,-2.07)	-1.92 (-4.86,1.04)	-4.72 (-8.28,-1.16)	-2.46 (-8.10,3.18)	-3.93 (-6.80,-1.07)	-1.30 (-5.62,3.02)
p-value	<0.0001	0.20	0.01	0.39	0.007	0.55
<b>Plasma Cys Eh (mV)<sup>h</sup></b>						
Mean change (95% CI) <sup>e</sup>	-2.62 (-4.78,-0.46)	-0.95 (-4.93,3.03)	-3.88 (-7.69,-0.07)	-4.75 (-12.03,2.52)	-2.11 (-5.14,0.93)	-2.04 (-7.82,3.73)
p-value	0.02	0.64	0.046	0.20	0.17	0.48

a – adjusted for log transformed age, sex, television ownership(yes/no), smoking (ever/never), log transformed body mass index, and GSH/Cys laboratory batch, b – additionally adjusted for log urinary creatinine, c –n=265 folate sufficient, d - n=111 folate deficient, e - represents the mean change in the outcome for a change in the exposure from the 25<sup>th</sup> to the 75<sup>th</sup> percentile, f – represents the ratio of the geometric mean in the outcome for a change in the exposure from the 25<sup>th</sup> to the 75<sup>th</sup> percentile, g - reduction potential of the GSH/GSSG redox pair, h – reduction potential of the Cys/CySS redox pair