Performance of predictive equations and biochemical measures quantifying net endogenous acid production and the potential renal acid load

BH Parmenter *et al.*

Supplementary material

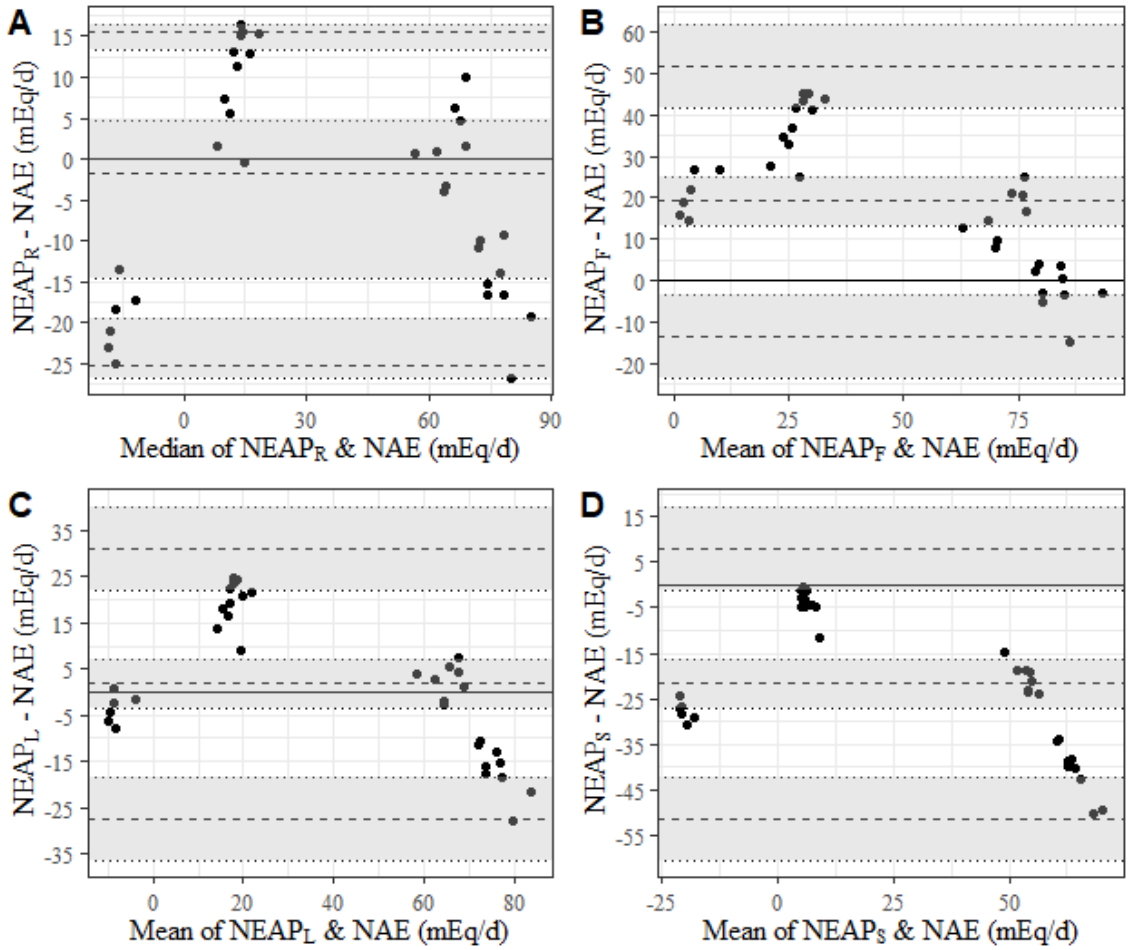

Figure S1. Bland-Altman plots comparing diet-derived estimates of NEAP against 24-hour urinary NAE for (A) $NEAP_R$ (B) $NEAP_F$ (C) $NEAP_L$ and (D) $NEAP_S$. Accuracy and precision were assessed using Bland–Altman analysis for repeated measures data where the true value varies. All participants were used in all analyses and no data points were removed. NAE, net acid excretion; NEAP, net endogenous acid production estimated by dietary records where $NEAP_R$ pertains to the equation by Remer and Manz,[1] $NEAP_F$ to the equation by Frassetto *et al.*,[2] $NEAP_L$ to a model attributed to Lemann,[3,4,5] and $NEAP_S$ to the equation by Sebastian *et al.*[6]

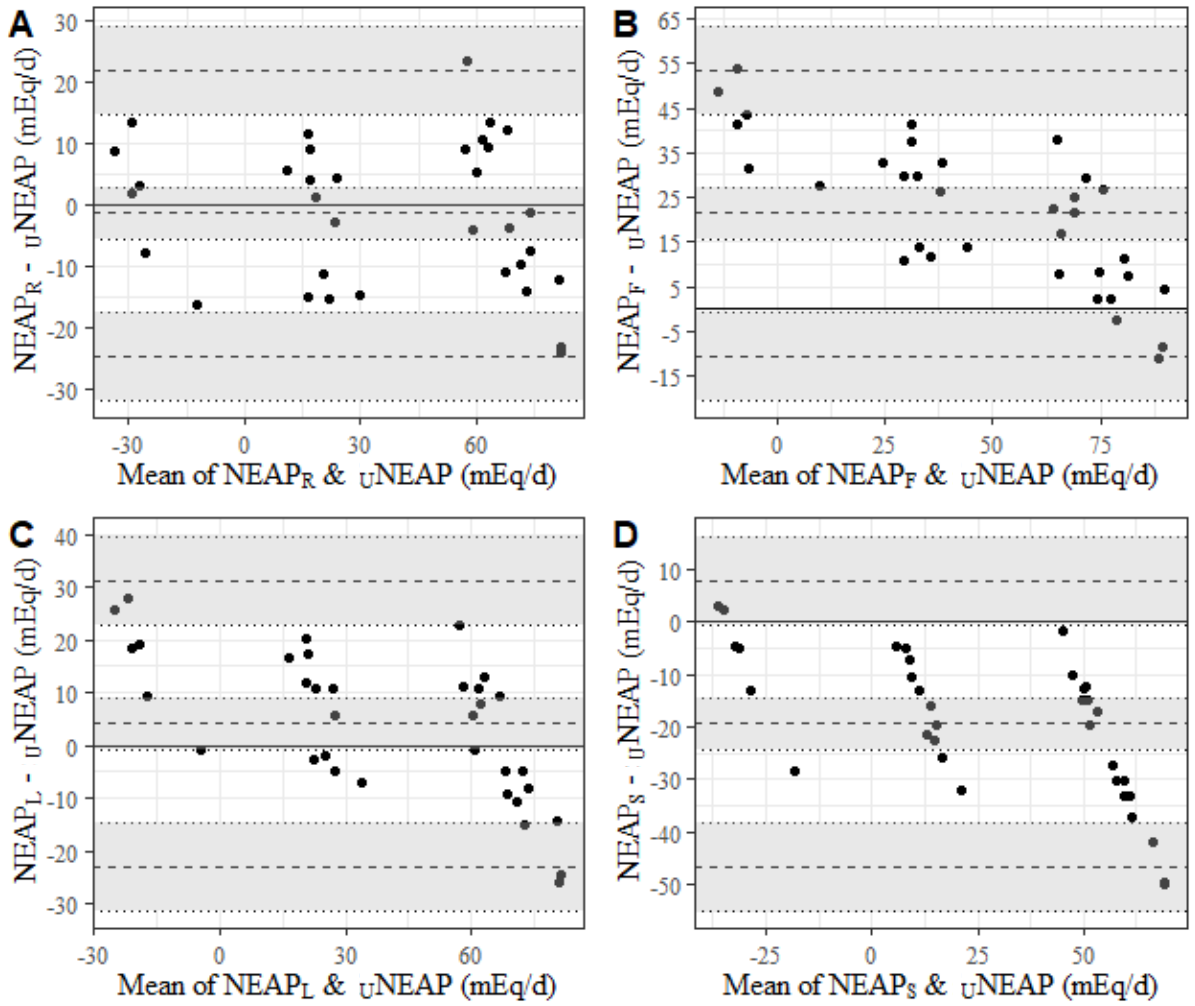

Figure S2. Bland-Altman plots comparing diet-derived estimates of NEAP against 24-hour $_U$NEAP for (A) NEAP$_R$ (B) NEAP$_F$ (C) NEAP$_L$ and (D) NEAP$_S$. Accuracy and precision were assessed using Bland–Altman analysis for repeated measures data where the true value varies. All participants were used in all analyses and no data points were removed. $_U$NEAP, urinary net endogenous acid production; NEAP, net endogenous acid production estimated by dietary records where NEAP$_R$ pertains to the equation by Remer and Manz,[1] NEAP$_F$ to the equation by Frassetto *et al.*,[2] NEAP$_L$ to a model attributed to Lemann,[3,4,5] and NEAP$_S$ to the equation by Sebastian *et al.*[6]

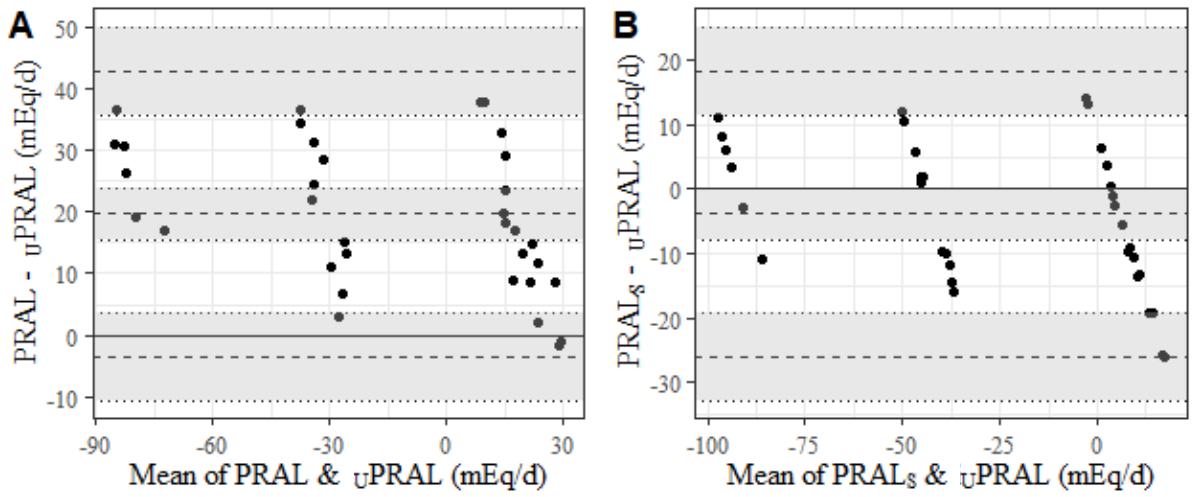

Figure S3. Bland-Altman plots comparing diet-derived estimates of PRAL against 24-hour $_{U}$PRAL for (A) PRAL and (B) PRAL$_S$. Accuracy and precision were assessed using Bland–Altman analysis for repeated measures data where the true value varies. All participants were used in all analyses and no data points were removed. $_{U}$PRAL, urinary potetnial renal acid load; PRAL, potential renal acid load estimated by dietary records where PRAL is the equation by Remer and Manz,[1] and PRAL$_S$ pertains to the equation by Sebastian *et al.*[6]

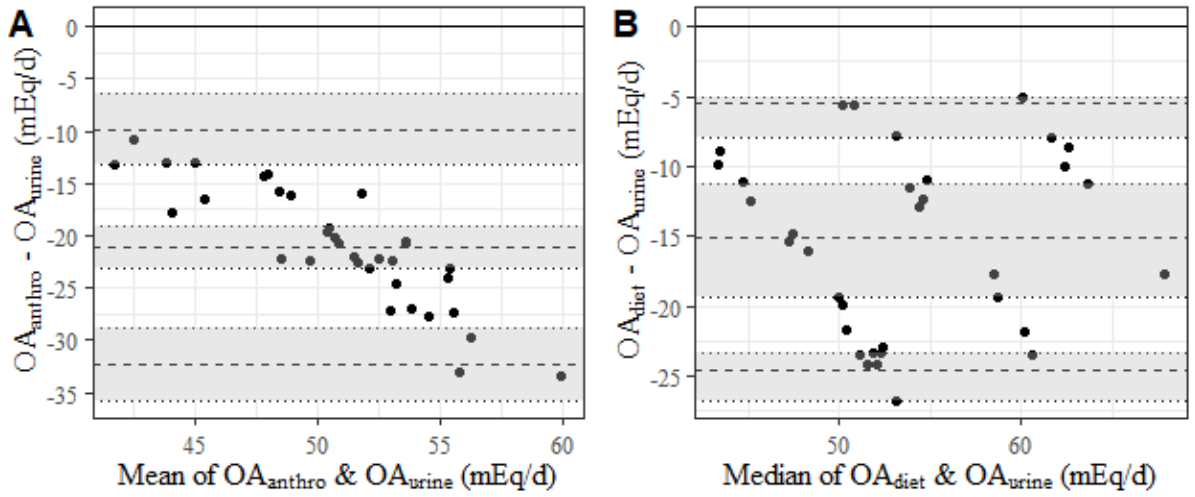

Figure S4. Bland-Altman plots comparing diet-derived estimates of OA against OA$_{urine}$ for (A) OA$_{anthro}$ and (B) OA$_{diet}$. Accuracy and precision were assessed using Bland–Altman analysis for repeated measures data where the true value varies. All participants were used in all analyses and no data points were removed. OA$_{urine}$, urinary organic acid; OA, organic acids where OA$_{anthro}$ pertains to the anthropometrical estimate by Manz *et al.*,[7] and OA$_{diet}$ to the estimative equation by Kleinman and Lemann.[5]

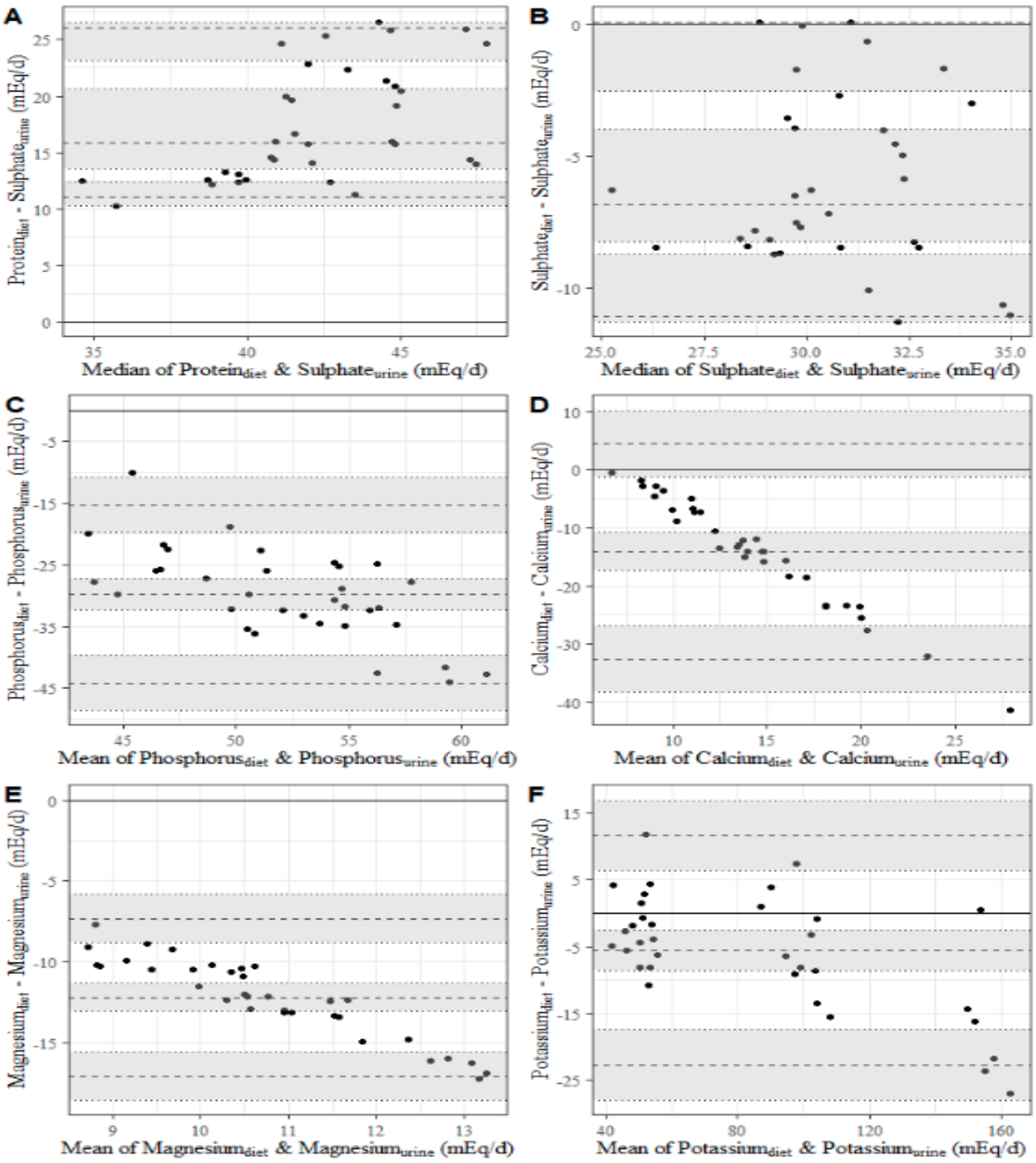

Figure S5. Bland-Altman plots comparing diet-derived estimates of NEAP determinants against their equivalent urinary biomarker (A) estimated dietary protein compared to urinary sulphate (B) estimated dietary sulphatecomapred to urinary sulphate (C) estimated dietary phosphate comapred to urinary phosphate and (D) estimated dietary calcium comapred to urinary calcium (E) estimated dietary magnesium comapred to urinary magnesium (F) estimated dieray potassim comapred to urinary potassium. All dietary estimates were adjusted for intestinal absorption using multipliers specified in PRAL except for sulphate which was determine using multipliers specified in $PRAL_S$. Accuracy and precision were assessed using Bland–Altman analysis for repeated measures data. All participants were used in all analyses and no data points were removed. PRAL, potential renal acid load estimated by dietary records where PRAL pertains to the equation by Remer and Manz,[1] and $PRAL_S$ to the equation by Sebastian *et al*.[6]

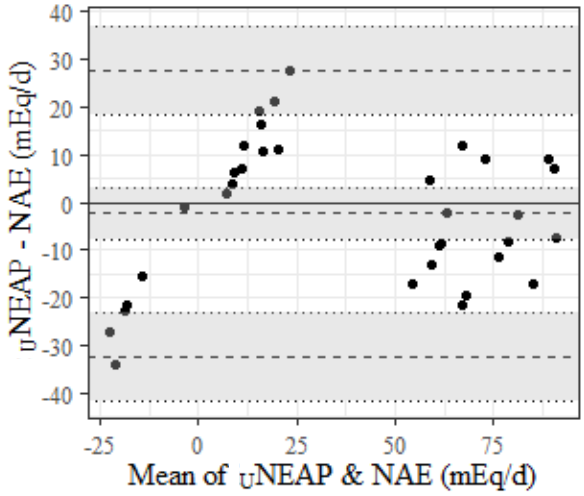

Figure S6. Bland-Altman plot comparing 24-hour $_{U}$NEAP against 24-hour urinary NAE. Accuracy and precision assessed using Bland–Altman analysis for repeated measures data where the true value varies. All participants were used in all analyses and no data points were removed. NAE, net acid excretion; $_{U}$NEAP, urinary net endogenous acid production.

Supplementary References

1 Remer T, Manz F. Estimation of the renal net acid excretion by adults consuming diets containing variable amounts of protein. *Am J Clin Nutr.*1994;59:1356-1361.

2 Frassetto LA, Todd KM, Morris RC, et al. Estimation of net endogenous noncarbonic acid production in humans from diet potassium and protein contents. *Am J Clin Nutr.* 1998;68:576-583.

3 Frassetto LA, Shi L, Schloetter M, et al. Established dietary estimates of net acid production do not predict measured net acid excretion in patients with Type 2 diabetes on Paleolithic-Hunter-Gatherer-type diets, *Eur J Clin Nutr.* 2013;67:899-903.

4 Lennon EJ, Lemann J Jr. Influence of diet composition on endogenous fixed acid production. *Am J Clin Nutr*. 1968;21:451-456.

5 *Kleinman JG, Lemann J, Jr. Acid production. In: Maxwell MH, Kleeman CR, Narins RG, editors. Clinical Disorders of Fluid and Electrolyte Metabolism. 4. New York: McGraw Hill; 1987. p. 159-73.*

6 Sebastian A, Frassetto LA, Sellmeyer DE, et al. Estimation of the net acid load of the diet of ancestral preagricultural Homo sapiens and their hominid ancestors. *Am J Clin Nutr.* 2002;76:1308-1316.

7 Manz F, Vecsei P, Wesch H. Renal acid excretion and renal molar load in healthy children and adults, *Monatsschrift Kinderheilkd. Organ der Dtsch. Gesellschaft fur Kinderheilkd.*1984;132:163-167.