

## **The renal net acid excretion capacity across various age-groups**

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**Background:** There are clear indications that systemic bicarbonate buffer decreases and free proton increases with age. It is believed this is caused by decrease in renal function. However, till date, it has never been shown that renal net acid excretion (NAE) capacity actually falls from young to old age.

**Objective:** To find out if NAE capacity (NAEC) is lower in elderly compared to young adults, adolescents and prepubescents.

**Design:** Anthropometric data and 24-h urinary pHs and NAEs were determined in healthy, subject groups: elderly (55-75y;  $n=85$ ), young adults (18-22y;  $n=109$ ), adolescents (13-14y;  $n=169$ ), and prepubescents (6-7y;  $n=254$ ), latter three samples selected from the DONALD-Study. NAEC was determined by the residues of net acid excretion (NAE) on urinary pH. Regression analyses were run using SAS with sex and age-groups as dummy variables.

**Results:** 24-h urinary pH and NAE (5.94, 60.03mEq/d) in the elderly were significantly lower ( $P<0.05$ ) and higher ( $P<0.05$ ), respectively, compared to the three other groups'. Multiple regression analyses with NAEC as outcome revealed a significant negative, though modest, association for the elderly age dummy ( $P<0.01$ ) and an almost significant positive association for the prepubescents age-group ( $P=0.06$ ).

**Conclusions:** We report for the first time using kidney excretion parameters that NAEC is lower in healthy elderly than in young healthy adults evenso this decrease contributes only modestly to the explained variation of NAEC across age-groups.