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Permalink

<https://escholarship.org/uc/item/9879z552>

Journal

AMERICAN JOURNAL OF KIDNEY DISEASES, 57(4)

ISSN

0272-6386

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[et al.](#)

Publication Date

2011

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Peer reviewed

A90

Am J Kidney Dis. 2011;57(4):A1-A108

293**EVALUATING SERUM PHOSPHOROUS ACROSS DIFFERING LEVELS OF RENAL FUNCTION WITHIN A LARGE ETHNICALLY DIVERSE POPULATION**

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We sought to examine the relationship of serum phosphorous across declining levels of eGFR. Retrospective cohort study within KPSC of those with valid measurement of serum phosphorous 01/01/1998 - 05/31/2010. Comparisons of cohort characteristics among population based quartiles of phosphorous with ANOVA and chi-square tests. Generalized additive models with cubic smoothing splines were used to determine the relationship btwn phosphorous and eGFR. Subgroup analyses were performed stratified by age group, gender and race. Calcium, PTH, and vitamin D levels were also analyzed for their relationship with eGFR. A total 325,357 patients had a valid serum phosphorous measurement and 159,535 (49%) had concurrent eGFR. Average phosphorous began to increase at eGFR < 50 while it remained at 3.5 when eGFR > 50. This trend holds among different age groups, genders and races.

We observed similar trend for PTH in relation to eGFR. But the average vitamin D and calcium levels seem to be independent of the eGFR values. Males, older age, and black race had lower phosphorous levels. While hyperphosphatemia is a manifestation of advanced renal failure, our observational cohort demonstrates rising serum phosphorous levels earlier in CKD at an eGFR of 50 mL/min/1.73 m² which was consistent across different ages, gender, and races.

