

Your membership matters.

Continue to help lead the fight against kidney disease. Renew today.

www.asn-online.org/membership



CJASN

Clinical Journal of the
American Society of Nephrology

HOME | CURRENT ISSUE | ADVERTISE | SUBSCRIBE | ARCHIVES | FEEDBACK | ALERTS | HELP

User Name

User Name

Password

LOG-IN

Search

Go

Advanced Search

Prognostic Value of Residual Urine
Volume, GFR by 24-hour Urine Collection,
and eGFR in Patients Receiving Dialysis

Mi Jung Lee^{*}, Jung Tak Park[†], Kyoung Sook Park[†], Young Eun Kwon[‡],
Hyung Jung Oh[†], Tae-Hyun Yoo[†], Yong-Lim Kim^{§,||}, Yon Su Kim^{||,¶},
Chul Woo Yang^{||,**}, Nam-Ho Kim^{||,††}, Shin-Wook Kang^{†,||},
Seung Hyeok Han[†]

Author Affiliations

Correspondence:

Dr. Seung Hyeok Han, Department of Internal Medicine, College of Medicine,
Yonsei University, 50 Yonsei-ro, Seodaemun-Gu, Seoul, Korea 120-752. Email:
hansh@yuhs.ac

M.J.L. and J.T.P. contributed equally to this work.

Abstract

Background and objectives Residual kidney function can be assessed by simply measuring urine volume, calculating GFR using 24-hour urine collection, or estimating GFR using the proposed equation (eGFR). We aimed to investigate the relative prognostic value of these residual kidney function parameters in patients on dialysis.

Design, setting, participants, & measurements Using the database from a nationwide prospective cohort study, we compared differential implications of the residual kidney function indices in 1946 patients on dialysis at 36 dialysis centers in Korea between August 1, 2008 and December 31, 2014. Residual GFR calculated using 24-hour urine collection was determined by an average of renal urea and creatinine clearance on the basis of 24-hour urine collection. eGFR-urea, creatinine and eGFR β_2 -microglobulin were calculated from the equations using serum urea and creatinine and β_2 -microglobulin, respectively. The primary outcome was all-cause death.

Results During a mean follow-up of 42 months, 385 (19.8%) patients died. In multivariable Cox analyses, residual urine volume (hazard ratio, 0.96 per 0.1-L/d higher volume; 95% confidence interval, 0.94 to 0.98) and GFR calculated using 24-hour urine collection (hazard ratio, 0.98; 95% confidence interval, 0.95 to 0.99) were independently associated with all-cause mortality. In 1640 patients who had eGFR β_2 -microglobulin data, eGFR β_2 -microglobulin (hazard ratio, 0.98; 95% confidence interval, 0.96 to 0.99) was also significantly associated with all-cause mortality as well as residual urine volume (hazard ratio, 0.96 per 0.1-L/d higher volume; 95% confidence interval, 0.94 to 0.98) and GFR calculated using 24-hour urine collection (hazard ratio, 0.97; 95% confidence interval, 0.95 to 0.99). When each residual kidney function index was added to the base model, only urine volume improved the predictability for all-cause mortality (net reclassification index = 0.11, $P=0.01$; integrated discrimination improvement = 0.01, $P=0.01$).

Conclusions Higher residual urine volume was significantly associated with a lower risk of death and exhibited a stronger association with mortality than GFR calculated using 24-hour urine collection and eGFR-urea, creatinine. These results suggest that determining residual urine volume may be beneficial to predict patient survival in patients on dialysis.

dialysis end-stage renal disease glomerular filtration rate mortality
residual kidney function urine volume

Received May 25, 2016.

Accepted December 7, 2016.

« Previous | Next Article »
Table of Contents

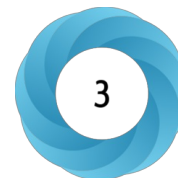
This Article

Published online before
print February 2017,
doi: 10.2215/
CJN.05520516
CJASN March 07, 2018
vol. 12 no. 3 426-434

» Abstract *Free*
Figures Only *Free*
Full Text *Free*
Full Text (PDF) *Free*
Supplemental Data

Article Usage Stats

Article Usage Statistics



Services

Email this article to a
colleague
Alert me when this article is
cited
Alert me if a correction is
posted
Similar articles in this journal
Similar articles in PubMed
Download to citation manager
[© Get Permissions](#)

Citing Articles

Google Scholar

PubMed

Related Content

Current Issue

March 07, 2018, 13 (3)



Alert me to new issues of
CJASN

ONLINE SUBMISSION

AUTHOR RESOURCES

ABOUT CJASN

EDITORIAL BOARD

REPRINTS/PERMISSIONS

IMPACT FACTOR

MOST READ

MOST CITED

CJASN ePress

Updated on:
March 9, 2018
By Date / By Subject



Advertising Disclaimer

Related articles

Editorials:

Raymond T. Krediet

Preservation of Residual Kidney Function and Urine Volume in Patients on Dialysis

CJASN March 07, 2017 12): (3) 377–379; published ahead of print February 22, 2017, doi:10.2215/CJN.00330117

»Full Text »Full Text (PDF)

We recommend

Association between GFR estimated by multiple methods at dialysis commencement and patient survival.

Muh Geot Wong et al., Clin J Am Soc Nephrol

Relative contribution of residual renal function and peritoneal clearance to adequacy of dialysis: a reanalysis of the CANUSA study.

J M Bargman et al., J Am Soc Nephrol

Clinical Decision Making in a Patient with Stage 5 CKD—Is eGFR Good Enough?

Jeffrey S Berns, Clin J Am Soc Nephrol

Tubular Secretion in CKD.

Astrid M Suchy-Dicey et al., J Am Soc Nephrol

Influence of age and measure of eGFR on the association between renal function and cardiovascular events.

Marije van der Velde et al., Clin J Am Soc Nephrol

How to use... serum creatinine, cystatin C and GFR

Swetha Pasala et al., Arch Dis Child Educ Pract Ed

Upper gastrointestinal bleeding as a risk factor for dialysis and all-cause mortality: a cohort study of chronic kidney disease patients in Taiwan

Chiu-Ching Huang et al., BMJ Open

Blood urea nitrogen-to-creatinine ratio in the general population and in patients with acute heart failure

Yuya Matsue et al., Heart

Nickel exposure and prevalent albuminuria and β 2-microglobulinuria: evidence from a population-based study

Xu Lin et al., J Epidemiol Community Health

Estimated glomerular filtration rate and urine biomarkers in patients with single-ventricle Fontan circulation

Alexander R Opatowsky et al., Heart

Powered by **Trend MD**

Articles citing this article

Preservation of Residual Kidney Function and Urine Volume in Patients on Dialysis

CJASN March 7, 2017 12): (3) 377–379

»Full Text »Full Text (PDF)

Be a part of something innovative, influential and dynamic.

Be a part of ASN.



ASN members enjoy discounts on ASN's educational programs, subscriptions to ASN's publications, and more.

Join or renew today at www.asn-online.org/membership

