



# NEWSLETTER OF THE CHRONIC RENAL INSUFFICIENCY COHORT STUDY

Summer 2018

Volume 21

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Dear CRIC Participants,

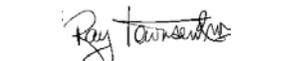
We are very pleased to let you know that the CRIC Study will continue at least through 2023. The study was recently extended by the National Institutes of Health for another 5-years because of the many insights it has brought about the causes and consequences of chronic kidney disease. We are deeply indebted to you for your participation in the study without which these discoveries would not have been possible. During the next phase of the CRIC Study we are excited to offer you the chance to experience new, innovative technologies to evaluate your kidney and heart health. You will learn more about these new study activities from your local CRIC Study team. We are so grateful for your ongoing support and commitment to CRIC. The study's success is a direct reflection of your participation.

On behalf of all of our colleagues, we wish you a relaxing summer and look forward to seeing you at your next visit!

Warmest Regards,

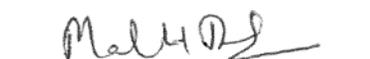
  
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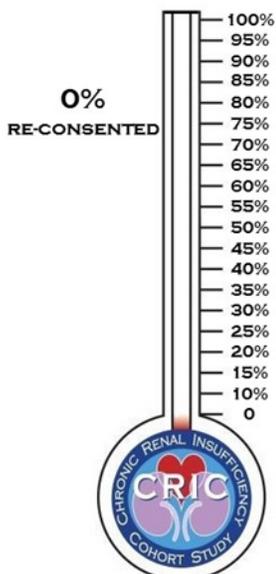
  
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 CHRONIC RENAL  
INSUFFICIENCY  
COHORT STUDY  
**CRIC RECRUITMENT**



## The Association of Sleep Duration and Quality with CKD Progression

**Summary by Ana C. Ricardo, MD**  
**Department of Medicine,**  
**University of Illinois at Chicago**

In this prospective cohort study of adults with predialysis chronic kidney disease (CKD), we report that short sleep duration and poor quality are associated with worsening of kidney function over time. These findings suggest that impaired sleep is an unrecognized and clinically significant risk factor for progression of chronic kidney disease. Future work is needed to evaluate interventions to improve sleep habits in patients with CKD and assess whether the observed relationship with CKD progression is causal.



### **Why do we believe this research is especially important?**

To the best of our knowledge, this is the first study to show a significant association between objective measures of disordered sleep and loss of kidney function among patients with chronic kidney disease.

### **What were we hoping to accomplish through our research? Was this possible? What did we actually discover?**

We were hoping to evaluate the association between habitual sleep (using a wrist-worn accelerometer for 5-7 days to measure sleep duration and quality) and clinical outcomes including progression (worsening) of chronic kidney disease over time, and death from any cause.

We were able to measure habitual sleep in more than 430 adults with mild-to-moderate chronic kidney disease (not yet on dialysis) participating in the NIH/NIDDK-sponsored Chronic Renal Insufficiency Cohort (CRIC) Study and follow them yearly for an average period of 5 years.

We found that high sleep fragmentation was associated with a higher risk for incident end-stage renal disease (ESRD). In addition, higher sleep fragmentation and shorter sleep duration were each associated with steeper decline in kidney function (i.e. decrease in estimated glomerular filtration rate and increase in urine protein excretion) over time. Furthermore, we found that subjectively measured daytime sleepiness (using the Epworth Sleepiness Scale) was associated with heightened risk of death from any cause.

### **What are the main limitations of the study?**

First, the study included a volunteer cohort rather than a representative population-based sample, which may affect generalizability. Second, we did not have an objective estimate of obstructive sleep apnea, a common sleep disorder that may be associated with worse kidney function. Third, our analyses only included night-time sleep; therefore, we were not able to include an evaluation of daytime naps in our study.

## What's new in CRIC?

Eligible participants will be invited to participate!

The NovaMax Fingerstick device, measures creatinine concentration, which reflects kidney function. You will take monthly measurements of creatinine for 12 months with additional weekly tests during the first and seventh month.



The ZIO XT Patch is worn continuously for 14 days on the upper left part of the chest. The ZIO XT Patch provides constant ECG monitoring to enhance detection of heart rhythm problems.



The Zephyr BioPatch is worn for two back-to-back 24-hour periods using disposable chest patches. The simultaneous heart rate, breathing rate, constant EKG monitoring, and physical activity measurements will allow for identification of patterns that are associated with high risk heart failure.

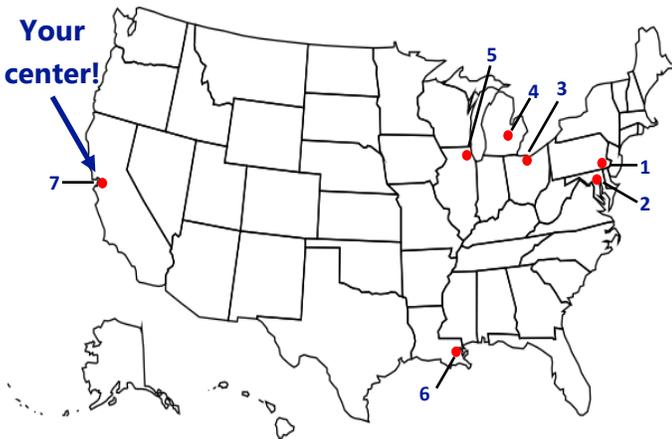


CRIC

The CRIC at-home app and home urine testing device measures urine protein levels. You will take home protein measurements every month for 12 months and weekly tests during the first and seventh month.



## CRIC Steering Committee



### Clinical Research Centers

- 01-01 University of Pennsylvania Medical Center
- 02-01 Johns Hopkins Medical Institutions
- 02-02 University of Maryland
- 03-02 University Hospitals of Cleveland
- 03-03 MetroHealth Medical Center
- 03-04 Cleveland Clinic Foundation
- 04-01 University of Michigan at Ann Arbor
- 04-02 St. John Health System/RRRI
- 04-03 Wayne State University/Detroit Medical Center
- 05-01 University of Illinois at Chicago
- 06-01 Tulane University Health Science Center
- 07-01 Kaiser Permanente of Northern California
- 07-02 University of California, San Francisco

**S U D O K U**

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*We'd Love to Hear from You!*  
 If you have any questions about the study,  
 please feel free to call us.  
 Looking forward to seeing you again soon!