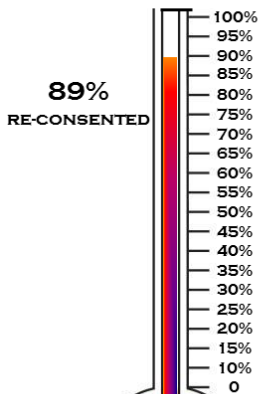




CHRONIC RENAL INSUFFICIENCY COHORT STUDY  
**CRIC RECRUITMENT**



## To Our CRIC Participants

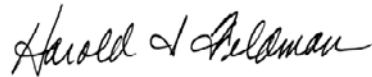
I am happy to announce that recruitment for CRIC Phase III ended in August 2015. We exceeded our goal and enrolled 1560 new study participants. CRIC is now in its 3<sup>rd</sup> year of follow-up for new Phase III participants. As displayed in the figure to the left, 89% of participants from CRIC Phase II have re-enrolled in CRIC Phase III. Some of these participants have been in the study for more than 10 years!

In this issue, we highlight the importance of medication inventories to ensure that patient health is not put at risk. Medication inventories involve a detailed review of all medications (prescription and over-the-counter pills) that individuals take. We have also included an article about how to consume less sodium as well as a recipe to “spice” up your food.

From 2003 until now, more than 100 scientific papers about CRIC have been published. This is possible only because of the information we have collected from CRIC study participants. In this issue we include a summary of a recent publication highlighting some of the CRIC findings that are fundamentally changing our understanding of chronic kidney disease.

Once again, many thanks for your partnership in this critical study and your commitment to helping us to fight kidney disease. The information that we collect from CRIC participants is helping the medical community to develop new strategies to understand and, eventually, find new treatments for chronic kidney disease. If you have any questions or comments about CRIC or about this newsletter, please contact the investigators and staff at the CRIC Center where you are followed.

Warm regards,



Harold I. Feldman, M.D., M.S.C.E.  
Chair, CRIC Steering Committee

*CRIC Newsletter Manager:*

*Sally Thompson, CRIC Project Manager*

*CRIC Newsletter Team:*

*Wanda Fink, Amanjot Kaur, Alina Naqvi*

## In This Issue:

- ▶ Send us your questions!
- ▶ Medication Inventory
- ▶ Spice it Up!
- ▶ Recipe: Spice Blend
- ▶ Publication Summary

## On the Web...

<http://www.cristudy.org>

<http://www.kidney.org>

## We'd Love to Hear from You!

Do you have a question about the CRIC study or about kidney or heart disease? If so, please contact your local CRIC staff by writing or calling:

## Medication Inventory and Patient Safety

Mr. Smith did not want to bring his medications to his CRIC study visit. Instead, he preferred to bring the medication list from his Veteran's Affairs (VA) pharmacist. He assured us that the VA knew everything he was taking.

At his study visit, his pulse was very irregular. The study ECG revealed atrial fibrillation, an irregular heart rhythm that can cause blood clots and death, if untreated. When we told him our findings, he said, "Oh, I've had that for a couple of years." Then he told us he took Warfarin, a "blood thinner" to prevent blood clots from forming. Mr. Smith was receiving care from a non-VA cardiologist and this information was not noted in his VA medical record and medication list.

We also noted that a VA doctor had prescribed aspirin for Mr. Smith after he had a mini-stroke last year. The doctor would not have done so had he known that Mr. Smith was on warfarin since using both of these drugs at the same time greatly increases the risk of bleeding. We immediately contacted the VA to make sure that Mr. Smith's VA medical records and doctor were updated with this information.

Another patient continued to have low blood pressure even though his doctor stopped all blood pressure medications. Only after an hour-long phone interview with the patient that included a complete review of the medications on his kitchen counter, did we discover that he was taking a blood pressure medication not listed in his medical records. It was an expired prescription, but strong enough to lower his blood pressure to levels not healthy for his kidneys.

These two examples of incomplete medication lists can lead to real safety threats to patients and may be far more common than realized. Like many patients with chronic illness, CRIC participants typically take well over 5-10 prescription medications plus over-the-counter (OTC) medications, supplements and herbal preparations. More than half of all prescription medications are cleared by the kidneys. Many OTC drugs and preparations either directly injure the kidneys or disrupt the body's sensitive electrolyte balance. Because of this, there are many opportunities for events that compromise patient safety.

CRIC participants often see multiple doctors. This increases the challenge in tracking medications, dose changes, and drug-drug interactions. This is even more reason why patients with decreased kidney function must have frequent, careful inventory of all their medications to assess the need for dose changes or stoppages to prevent toxicity or worsening kidney function.

Patients play a very important role in accurate medication inventories. It begins with a thorough, in-person patient/doctor review of all prescription and OTC medications **at every medical encounter, including your CRIC visits.**

This means that you, as the patient, must:

- Bring the pills in their original container with the labels. Do not just bring a pill.
- Insist that your doctor review pill bottle labels.
- Confirm that the dose on the label is the dose you are taking.
- Bring all OTC medications and herbal preparations you commonly take.
- Ask questions about each pill such as:
  - What is its purpose?
  - Could it hurt my kidneys?
  - Does the dose need to change if my kidney function goes up or down?
  - Is there a substitute drug that is less harmful or puts less burden on my kidneys?
  - What can I do to come off this medication?
- Remind the doctor to give you the updated medication list to carry with you in case of an emergency. **This list does not replace the medication inventory** needed at each medical encounter.
- We recognize that bringing your medications to annual CRIC visits may feel inconvenient. To make it easier, we recommend keeping all medicines in one container that you can "grab and go" such as a small organizer bin with handle, small fishing tackle box, or small sewing box.

Bringing your medications to your annual visits helps us better understand more about the medications you are taking and if combinations of drugs may cause worsening or possibly improved kidney function!

For more information about medications and safety, please visit the National Kidney Disease Education Program (NKDEP) at <http://www.niddk.nih.gov/health-information/health-communication-programs/nkdep/a-z/ckd-medicines/Pages/CKD-Medicines.aspx>. The information there is provided as a service of the **National Institute of Diabetes and Digestive and Kidney Diseases** (NIDDK), part of the National Institutes of Health. Also, the American Journal of Kidney Diseases has a great article about medications and patient safety. The article can be viewed at [http://www.ajkd.org/article/S0272-6386\(12\)01069-4/fulltext](http://www.ajkd.org/article/S0272-6386(12)01069-4/fulltext)



Did you know that most Americans have more sodium in their diet than their bodies actually need? According to the National Kidney Foundation, a healthy diet should consist of no more than 1500-2000 mg of sodium per day. If you have chronic kidney disease, your recommended dietary sodium intake may be even less. Following these

guidelines, while still eating tasty meals, is not as difficult as it may sound. Add spices to your food to make your dishes more flavorful without additional sodium. Enhancing the flavor of your food is as easy as a sprinkle here and a shake there. Here are some simple tips and tricks to tempt your taste buds:

### **I'll have a side of that!**

- ✂ When eating out, ask for meat or fish without salt. Gravies and sauces are usually high in salt. Ask for these on the side and use them sparingly.

### **Always judge a product by its label!**

- ✂ When grocery shopping, if salt is listed in the first 5 ingredients, the item is probably too high in sodium to use.
- ✂ Avoid foods with a sodium level of 500 mg or more per serving.
- ✂ Compare labels of similar products and select the lowest sodium level for the serving size. Think about how it all adds to your total daily allowance.

### **Herbs, spice, and everything nice!**

- ✂ There are many herbs and spices that can be used to flavor your food instead of salt. Some ideas are basil on meats and vegetables or cardamom with fruit and baked goods.
- ✂ Use no more than ¼ teaspoon of dried spice (¾ tsp. of fresh) per pound of meat.
- ✂ Add ground spices to food 15 minutes before the end of the cooking period.
- ✂ Add whole spices to food at least one hour before the end of the cooking period.
- ✂ Combine herbs with oil or unsalted butter and set for 30 minutes to bring out the flavor.

#### *Savor the Flavor Seasoning Recipe:*

- 1 ¼ Tsp. celery seed
- 2 Tbsp. crushed marjoram
- 2 Tbsp. crushed savory
- 2 Tbsp. crushed thyme
- 1 Tbsp. crushed basil

National Kidney Foundation [www.kidney.org](http://www.kidney.org)  
 Sodium and your CKD Diet: How to spice up your cooking  
 Food and Nutrition [www.foodandnutrition.org](http://www.foodandnutrition.org)  
 Herbs and spice make everything nice

## CRIC: Overview and Summary of Selected Findings

*Denker M, Boyle S, Anderson AH, Appel LJ, Chen J, Fink JC, Flack J, Go AS, Horwitz E, Hsu CY, Kusek JW, Lash JP, Navaneethan S, Ojo AO, Rahman M, Steigerwalt SP, Townsend RR, Feldman HI; CRIC Study Investigators. Clin J Am Soc Nephrol. 2015 Aug 11*

A 2015 publication from the CRIC study investigators highlighted selected findings from the study in the areas of race and ethnicity, chronic kidney disease (CKD) progression, CKD and cognition (activities of thinking, understanding, learning, and remembering), and cardiovascular disease (CVD) outcomes.

CRIC investigators found that there were differences by race and ethnicity in the severity and management of CKD. Baseline data from the Hispanic subcohort of the CRIC Study showed that Hispanics, compared with whites and blacks, had lower socioeconomic status, more advanced CKD, and poorer blood pressure control. Also, CRIC Study participants from racial and ethnic minority groups, who often live in poor urban environments, consume more phosphate-rich processed foods compared with white study participants. In CKD, kidneys cannot remove phosphate very well and high phosphate levels can cause damage to the body.

A number of articles examined fibroblast growth factor 23 (FGF-23). FGF-23 is a chemical that stimulates the kidneys to remove phosphate from the blood. When a person develops CKD and the kidneys start to have difficulty removing phosphate, the body starts to produce more FGF-23 to get the kidneys to work harder. CRIC investigators found that a high level of FGF-23 in the blood is a good indicator of early-stage CKD (i.e., relatively well-functioning kidneys). Among participants with early-stage CKD, the level of FGF-23 in the blood also predicted the likelihood of developing end stage renal disease (ESRD).

Although cognitive impairment is common in ESRD, less is known about its association with earlier stages of CKD. A subcohort of CRIC participants older than 55 took a variety of tests, each focusing on a specific cognitive domain including executive functioning, naming, attention, praxis (exercise or

practice of a skill), and semantic memory (general world knowledge accumulated over our lives). Domains with the strongest association with renal impairment were attention and executive functioning.

CRIC research has also examined numerous risk factors for CVD among CKD patients. For example, CRIC research has shown FGF-23 to be a CVD risk factor among CKD patients. One analysis examined left ventricular hypertrophy (LVH), a common complication of CKD that contributes to CVD. The analysis showed that elevated FGF-23 levels were associated both with the number of people who had LVH at baseline, and with increased risk of later developing LVH, independently of other demographic, clinical, and laboratory factors. Higher baseline levels of FGF-23 were independently associated with greater risk of two other CVD outcomes – congestive heart failure and atherosclerotic events (for example, heart attack or stroke due to a build-up of plaque in the arteries).

Another example is CXCL12, a chemical produced by the body as part of the inflammatory response. A chronic state of inflammation is common in CKD, and increases the risk of CVD. CRIC was the first prospective study to look at the association of CXCL12 levels with later clinical outcomes. High baseline levels of CXCL12 were found to be independently associated with the number of people with CVD at baseline, and were an independent risk factor for the later occurrence of heart attacks.

Over time, CRIC has expanded into a national resource for the investigation of a broad array of CKD-related topics. The CRIC Study has had major effects on the medical community's understanding of renal disease progression and illness in CKD. None of this would have been possible without CRIC Study participants.