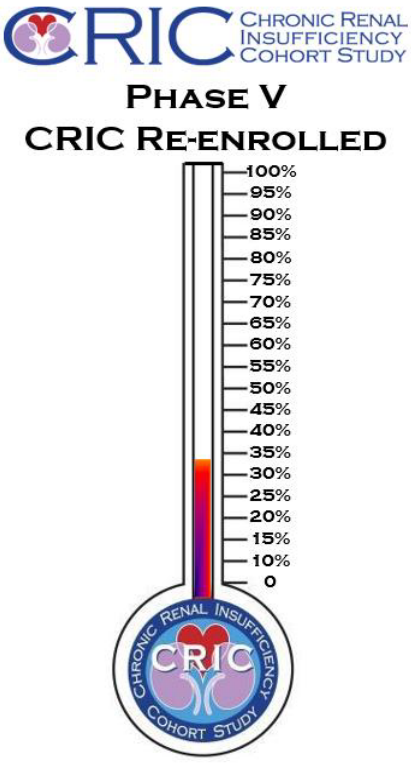
Newsletter of The Chronic Renal Insufficiency Cohort Study

Summer 2024 Volume 29

What's Inside



Dear CRIC Participants,

I am pleased to share with you our Summer 2024 newsletter! As you may already know, the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) at the National Institutes of Health (NIH), extended funding for the CRIC Study for another 3 years beyond the end of the fourth phase! Starting in July 2023, we began the fifth and final phase of the study.

We are very grateful for your continued participation in the CRIC study. These last 20 + years of the study have provided so much insight and knowledge about kidney disease. The extension of the CRIC study gives us the opportunity to continue collecting important health information from our dedicated study participants. During the final phase of CRIC which will continue through June 2026, we are asking you to complete two study visits. The investigators and coordinators at the CRIC Study Center where you are followed will be able to provide you with details about your participation in this phase.

Study participants often ask us "What have you learned?". This issue of the newsletter will mark the beginning of the "What Have We Learned Through CRIC" section. In this issue and future issues, we will share some of the key findings from the CRIC study. In this issue we also provide a summary of a recent CRIC publication, key findings from the heart sub study performed in Phase 4, information about acute kidney injury, guidance on how to measure your blood pressure at home, a testimonial from a CRIC team member and suggestions for a fun summer activity, and a delicious recipe for you to enjoy with family and friends.

Once again, many, many thanks for your partnership in this important study and for your commitment to helping fight kidney disease. As always, we appreciate your ongoing contributions.

Warm regards,

Laura M. Dember

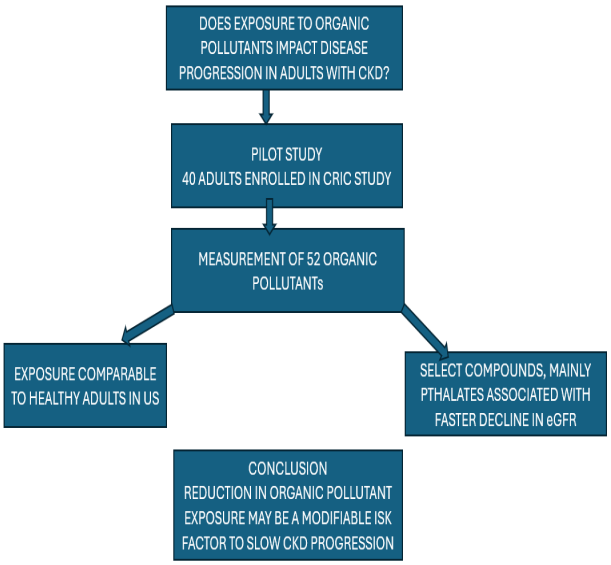
Laura Dember, MD

CHRONIC RENAL INSUFFICIENCY COHORT STUDY

Organic Pollutant Exposure and CKD: A Chronic Renal Insufficiency Cohort Pilot Study

Charytan DM, Wu W, Liu M, Li ZM, Kannan K, Trasande L, Pal VK, Lee S, Trachtman H; CRIC Study Investigators, on behalf of the CRIC Study Investigators. Kidney Med. 2023 Dec 13;6(3):100778.doi: 10.1016/j.xkme.2023.100778. PMID: 38435069; PMCID: PMC10907218.

Environmental exposures are ubiquitous and include air pollution, heavy metals in drinking water, and organic molecules found in a range of consumer products. The effect of exposure to organic pollutants has been studied in children with chronic kidney disease. These molecules were associated with mild tubular injury but had no significant adverse effect on kidney function. Parallel studies have not been done in adults. To fill this gap, we measured the exposure to 52 organic chemicals in a pilot study of 40 adult patients with chronic kidney disease enrolled in the CRIC study. Overall, the exposure was similar in the patients and in the healthy population living in the United States. Only select compounds demonstrated a trend with a more rapid decline in kidney function. Most prominent in this regard were phthalates which are found in plastic food and beverage containers, plastic wraps, and cosmetics. These findings provide a useful reference for future research in this area. The work is significant because exposure to organic pollutants is a modifiable risk factor for kidney disease progression through alterations in diet or lifestyle.



What We Have Learned Through CRIC

CRIC Scientific Discoveries: What have we learned from your participation in the CRIC Study?

The Chronic Renal Insufficiency Cohort (CRIC) Study is an observational study that explores risk factors for the development of chronic kidney disease (CKD) and cardiovascular disease (CVD) among CKD patients. This study has taken place over the course of 20 years, and your participation has helped us understand how we grow, how CKD can progress over time, and what can happen after trying different treatments for a long time. Your participation in this observational research study is important because watching people act in real life teaches us how to improve things for everyone. Over the years, we have learned that CKD is common in the US population, and we understand that it increases the risk of CVD. Let's take some time to see what else we have learned during your years of participation.

- This study showed that a new way of calculating a patient's kidney function, without using their race, has the same ability to predict who will or will not have kidney failure. This is important because it shows that race is not needed to calculate kidney function and provides evidence to improve fair access to kidney care, regardless of race.
- Diabetic kidney disease (DKD) is the top reason why people have kidney problems that last a long time or even fail worldwide. When someone's body is likely to have this problem, not managing their blood sugar well makes it worse.
- Having more belly fat and being less physically fit can increase the chances of heart problems for people with CKD.

We will highlight other findings in future newsletters, so read the next issue for more updates!

Acute Kidney Injury

National Kidney Foundation AKI https://www.kidney.org/atoz/content/acute-kidney-injury-aki and https://www.ncbi.nlm.nih.gov/books/NBK441896/

Have you ever heard the term "AKI"? It stands for acute kidney injury. It occurs when there is a sudden loss of the kidney(s)' ability to filter waste products from the blood. AKI can occur within hours or may take a few days to happen. Signs and symptoms can vary depending on its cause, severity, and a person's other health conditions. Signs and symptoms of AKI can include:

- A decrease in urine production or no urine
- Swelling in the legs, ankles, or feet
- Fatigue and tiredness
- Shortness of breath
- Confusion or mood swings
- High blood pressure
- Decrease in appetite
- Nausea
- Flank pain behind the ribs and hips
- Chest pain or pressure
- Seizures or coma (in severe cases)

At times, there are no symptoms and only found through testing done by a health care provider.

Causes of AKI can vary as well. AKI can be due to a related disease or condition that puts extra stress on the kidneys such as kidney stones, congestive heart failure, kidney infections, and certain cancers. AKI can also occur as part of the body's response to an emergent health condition such as major surgery or COVID-19 infection, sepsis, blood clots, hemorrhage, or severe dehydration. Medications that someone is taking at the same time as the circumstances listed above can increase ther risk of AKI. These medications can include:

- Certain antibiotics
- Non-steroidal anti-inflammatories (NSAIDS) such as ibuprofen and naproxen
- Certain blood pressure medications
- Iodine-based contrast dye
- Recreational drugs (heroin, cocaine)
- Some medicines used to treat cancer or HIV
- Toxic alcohols (methanol, anti-freeze, rubbing alcohol)

Diagnosing AKI involves a detailed physical exam, assessing such organ systems such as the skin, eyes, ears, and heart. Blood and urine tests, and in some cases kidney ultrasound and kidney biopsy are also helpful in determining the cause. Treatment for AKI depends on the cause. That is why it is so important to find the right cause for the injury. Some treatment approaches may include:

- Discontinuing medications that may be contributing to the acute kidney injury
- Administering intravenous and oral fluids with close monitoring of urine output
- Antibiotics if there is an infection
- Diuretics if there is fluid retention
- Short term dialysis to allow the kidney function to recover

Once someone has been diagnosed with AKI, there is a higher risk of getting it again in the future. Regular checkups with health care providers and a nephrologist are important after an episode of AKI. Recommendations from these providers might include monitoring] potassium, salt, and fluid intake, avoiding regular use of NSAIDs and taking blood pressure medications regularly to prevent further kidney injury.

Heart Sub Studies

During Phase 4 of CRIC, you might remember completing "Zephyr" or "Zio", two sub studies that used heart monitors to look at your cardiovascular function. The purpose of these studies is to collect data remotely on measures like heart rate, respiratory rate, activity level, and EKG rhythms in your usual setting, rather than a clinic.

As you may already know, chronic kidney disease (CKD) is heavily associated with heart issues. Patients with CKD have elevated cardiovascular risk. This means they are more likely to develop coronary artery disease, heart failure, arrhythmias, and other heart-related issues compared to the rest of the population. This is why we are looking at mobile and portable testing devices for detecting cardiovascular measures with participants in the CRIC study.

For the Zephyr sub study, about 600 CRIC participants wore a heart monitor for two days which generated measures of physical activity, heart rate, and respiratory rate. For the Zio sub study, about 1200 CRIC participants wore a heart monitor for two weeks, which provided continuous ECG monitoring and arrhythmia detection. Now that the data is in, analyses is in progress! We hope to understand more about the use of portable devices to detect cardiovascular measures in CKD patients through our data analysis.

CHRONIC RENAL INSUFFICIENCY COHORT STUDY

Guidelines for Checking your Blood Pressure at Home

The Equipment:

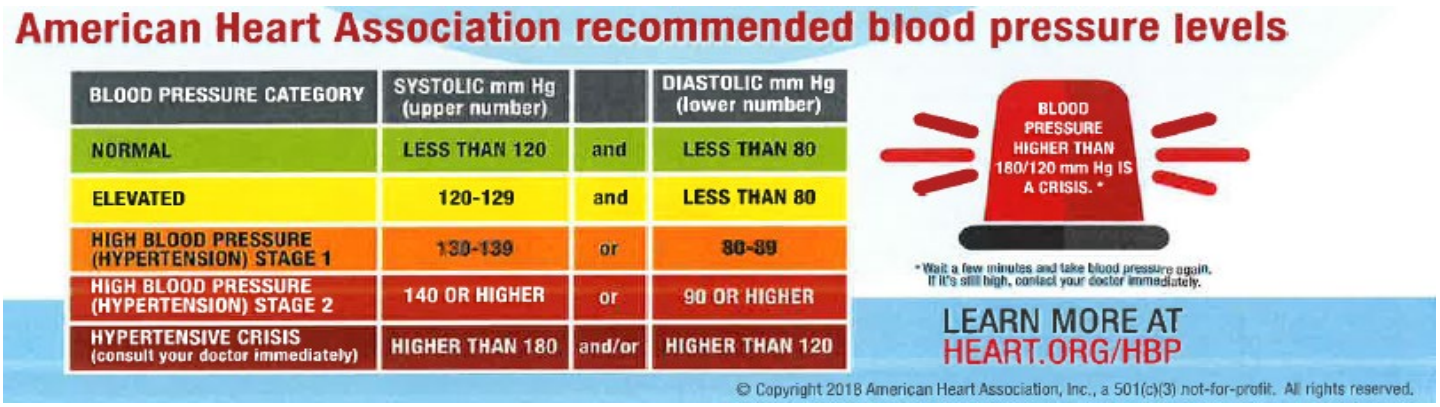
- Talk to your doctor to let them know you are checking your blood pressure at home. Ask them to measure your arm circumference so that you can use the right cuff size.
- Ask your doctor how often you should take your blood pressure and what levels of blood pressure are concerning enough to call them .
- Use a validated home monitors. validateBP.org has a list

Taking an Accurate reading:

- Ideally make sure to use the restroom beforehand. Do not exercise, have caffeine, smoke, or have a large meal within 30 minutes of a reading.
- Get yourself in a comfortable position with your legs uncrossed, your back supported, and your feet flat on the floor.
- Wear loose clothing on your upper arm and place the cuff on the bare arm with the bottom of the cuff about an inch directly above the bend of the elbow.
- Relax in the seated position for about 5 minutes before taking a measurement. Resist the urge to talk or look at your cell phone or the tv.
- Support your arm on a table or flat surface so that the cuff is at heart level. You may need a cushion to lift it high enough
- Take your reading by turning the monitor on and pressing start. After a minute take a second reading. Do not rest your arm on your lap.
- Write down your numbers as exactly as they are on your machine.
- Contact your doctor if the numbers or higher or lower then the limits they told you

The Technique:

- Ensure you are using the blood pressure machine correctly according to the manufacturer's instructions
- Take the blood pressure in your right arm unless there is a reason that arm cannot be used.
- Take multiple readings at different times throughout the day to get a better sense of the range of your blood pressure.
- Make sure the cuff fits properly and is positioned correctly on your upper arm.
- Try to relax and remain still during the measurement to minimize errors related to movements.
- Write down all your readings with the time and date.
- Note anything that might have affected your blood pressure, for example episode of illness or decreased fluid intake.
- You should have your doctor check your device about once a year to ensure its accuracy.



Recipe: Pepperita Pizza

Nutrition Facts ***per serving***

Calories	295
Carbohydrates	38 g
Protein	23 g
Dietary Fiber	4 g
Sodium	542 mg
Potassium	270 mg
Phosphorus	331 mg

INGREDIENTS

Sauce

½ cup roasted red peppers, drained

1 clove garlic

¼ tsp dried basil

Pizza

4 whole wheat pita (6 1/2 diameter)

½ cup roasted red pepper sauce

1 cup mozzarella part skim cheese, shredded

1 cup cooked chicken breast, diced into 1/2" cubes

4 teaspoons basil, thinly sliced

PREPARATION

1. Preheat oven to 400 degree.
2. To prepare the sauce, add peppers, garlic and basil to a food processor or blender and puree
3. Spread 2 tbsp of sauce on each pita. Sprinkle with ¼ cup mozzarella cheese and ¼ cup of diced chicken
4. Place the flour pita pizza on a baking sheet
5. Bake for 10-15 minutes or until crust is crispy
6. Garnish each pizza with 1 tsp of sliced basil

Activity Bingo Game

Above is an activity Bingo game. To get bingo, you need to get 3 in a row either up and down, across or diagonally. Please don't let it stop you from completing as many activities as you want though. Make sure to take pictures!

CRIC Team Member Testimonial ~Denise Cornish-Zirker, RN, BSN

Being a nurse takes a person with extraordinary skills, mindset, hope, and faith. I have had my share of opportunities that have added richly to my invaluable experiences as a nurse. My background experiences prepared me for the ever changing, variety and flexibility that I needed as I became a clinical research nurse shortly after nursing school completion. Leaders are often defined by training and preparation; so I had no idea I would end up leading our University of Michigan CRIC - Chronic Renal Insufficiency Cohort Study clinical research team.

Coming from another nationwide study, AASK (African American Study of Hypertension and Kidney Disease), I had an easy transition into CRIC. I had the pleasure of working with staff from other Universities that also participated in the AASK Study. Through this spectrum in kidney disease - it has been heartening to have cared for those who remained stable throughout our 20 years to those who progressed to end stage renal disease along with those whom were blessed with a kidney transplant and new take on life.

In reality, not only dealing with kidney disease, CRIC has sustained recruitment twice over, Hurricane Katrina and COVID -19, and we have experienced the selflessness of individuals as they have comforted and cared for participants that had sometimes lost hope. Through it all, I am thankful. I love seeing these studies completely through from the beginning to the end. The challenges, relationships, and uncountable experiences with both staff and participants has been fulfilling throughout. I couldn't have asked for a better place to spend the past 20 years of my career.