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**Contacts:** Tracy Hampton • (312) 339-9067 • [thampton@nasw.org](mailto:thampton@nasw.org)  
Bob Henkel • (202) 557-8360 • [bhenkel@asn-online.org](mailto:bhenkel@asn-online.org)

## **CLIMATE CHANGE MAY CONTRIBUTE TO RISING RATES OF CHRONIC KIDNEY DISEASE**

*As temperature rises worldwide, dehydration and heat stress may take a toll on the kidneys*

### **Highlights**

- Chronic kidney disease that is not associated with traditional risk factors appears to be increasing in rural hot communities as worldwide temperature progressively rises.
- The condition has likely increased due to global warming and an increase in extreme heat waves, and it is having a disproportionate impact on vulnerable populations.

*Climate change has been increasingly connected to detrimental human health.*

**Washington, DC (May 5, 2016)** — Climate change may be accelerating rates of chronic kidney disease caused by dehydration and heat stress, according to research appearing in an upcoming issue of the *Clinical Journal of the American Society of Nephrology* (CJASN). The findings suggest that a condition called heat stress nephropathy may represent a disease of neglected populations, but one that may emerge as a major cause of poor kidney health in the near future.

Over the next century, climate change and resulting water shortages are likely to affect a wide variety of health issues related to dehydration and heat stress—with risks increasing for cognitive dysfunction, malnutrition, water-borne infectious diseases, chronic kidney disease, and other conditions.

A team led by Richard Johnson, MD, Jay Lemery, MD (University of Colorado School of Medicine), and Jason Glaser (La Isla Foundation) sought to describe reports of heat stress nephropathy—or chronic kidney disease consistent with heat stress—that are already occurring throughout the world.

The investigators found that chronic kidney disease that is not associated with traditional risk factors appears to be increasing in rural hot communities as worldwide temperature progressively rises. They believe the risk for heat stress nephropathy has increased due to global warming and an increase in extreme heat waves, and it is having a

disproportionate impact on vulnerable populations, such as agricultural workers. Decreasing precipitation exacerbates this epidemic by reducing the water supply and water quality as temperatures climbs.

The researchers recommend that governments and scientists work together to conduct epidemiological and clinical studies to document the presence of these epidemics and their magnitude. Interventions are also needed to improve worksite conditions and ensure adequate hydration.

“We were able to connect increased rates of chronic kidney disease in different areas to an underlying mechanism—heat stress and dehydration—and to climate,” said Dr. Johnson. “A new type of kidney disease, occurring throughout the world in hot areas, is linked with temperature and climate and may be one of the first epidemics due to global warming.”

Study co-authors include Balaji Rajagopalan, Henry Diaz, Ramon Garcia-Trabanino, Gangadhar Taduri, Magdalena Madero, Mala Amarasinghe, Georgi Abraham, Sirirat Anutrakulchai, Vivekanand Jha, Peter Stenvinkel, Carlos Roncal-Jimenez, Miguel Lanaspa, Ricardo Correa-Rotter, David Sheikh-Hamad, Emmanuel Burdmann, Ana Andres-Hernando, Tamara Milagres, Ilana Weiss, Mehmet Kanbay, Catharina Wesseling, and L. Gabriela Sánchez-Lozada.

Disclosures: Dr. Johnson has several patents and patent applications related to lowering uric acid or blocking fructose metabolism in the treatment of metabolic diseases. Dr. Johnson and Dr. Lanaspa are also members of a startup company, Colorado Research Partners LLC, that is trying to develop inhibitors of fructose metabolism.

The article, entitled “Climate Change and the Emergent Epidemic of CKD from Heat Stress in Rural Communities: The Case for Heat Stress Nephropathy,” will appear online at <http://cjasn.asnjournals.org/> on May 5, 2016, doi: 10.2215/CJN.13841215.

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