

Presentation Title	Place in Schedule
TWH Approach to Chronic Kidney Disease of Unknown Origin in Guatemalan Agriworkers	Concurrent Session 1.1 <i>Day 2 – Wednesday</i> <i>May 9th, 2018</i> <i>1:00 – 2:15pm</i>
Description of Presentation	Presenter Name(s) And Credentials
<p>Recent research has confirmed that workers employed by sugar cane plantations and other agribusinesses are in an international epidemic of chronic kidney disease of unknown origin (CKDu), also referred to as Mesoamerican Nephropathy. CKDu largely affects working age men who do not have traditional causes of chronic kidney failure and who work under conditions of high heat and physical exertion in Latin America and parts of Asia. Many theories have been proffered to explain the epidemic including heat exposure, high exertion, plus other factors such as agrochemical exposures, medications, smoking, altitude, and nutrition/beverage consumption. Beginning in 2016, the Center for Health, Work & Environment, a NIOSH Total Worker Health® Center of Excellence, has been collaborating with a major agribusiness based in Guatemala to apply TWH principles to address the epidemic's causes and to test interventions.</p> <p>Methods: The first objective was to characterize kidney function of sugar cane workers over the course of the six-month harvest and to identify risk factors associated with changes in kidney function in the workforce. Demographic and biological data were collected for 332 sugar cane cutters at the beginning and end of the 2015-2016 harvest. Multivariate regression analyses were used to assess work- and non-work-related risk factors related to declines in kidney function. The second objective was to repeat this study in a larger cohort (n =517) that was introduced to a health promotion intervention to optimize education and incentivize</p>	<p>Lee Newman, MD, MA <i>Center for Health, Work & Environment, Colorado School of Public Health</i></p> <p>Liliana Tenney, MPH <i>Center for Health, Work & Environment, Colorado School of Public Health</i></p> <p>Claudia Asensio, DrPH <i>Pantaleon</i></p>

adherence to hydration, rest, and shade recommendations, including more extensive biomonitoring for muscle injury, assessment of meteorologic risk factors, more detailed assessment of both work- and non-work-related risk factors, and measures of productivity.

Results: A decline in kidney function was observed in 36% of participants in the first season of our study.

Interestingly, we observed that nearly two thirds of workers showed stability or improvement in kidney function during the season. Risk factors associated with kidney injury included assignment to particular plantation worksites, being a local (versus Highlands, seasonal migrant) worker, and current smoking habit. In a subsequent study during the 2016-2017 harvest season, with introduction of a set of TWH interventions, we observed a drop in the prevalence and six-month incidence of abnormal kidney function. Incentives to maximize hydration helped, but did not fully eliminate, the risk of acute and chronic kidney injury. Additional risk factors in the second season included use of non-steroidal anti-inflammatory medications (NSAIDs), tobacco use, and the amount of sugar cane cut per day. Those who cut the most cane early in the season were at significantly increased risk of a >20% decline in kidney function across season and of leaving the workforce early.

Conclusions: Both work- and non-work related factors appear to be contributing to the risk of both acute and chronic kidney disease (CKDu). This session will discuss how these results led the agribusiness to make modifications in work practices, worker and supervisor education, monitoring, nutrition, hydration, and incentive programs to mitigate risks to worker health, safety and well-being. We will discuss the role of corporate social responsibility and sustainability goals in a Total Worker Health context.

Please note: We have also submitted this abstract as part of a proposed session on "Global Partnerships" Total Worker Health (Newman – organizer). This separate abstract submission is as a stand-alone session in the event that the organizers would prefer to have us do it alone instead of in combination with the work in Chile and India (see other proposal).