**Supplemental Material**

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## I. Work setting and practices

This prospective cohort study was conducted at a sugarcane plantation privately owned by an agribusiness, Pantaleon, in southwest Guatemala in the Department of Escuintla. Work setting, worker population, and work practice details are described in a previous article (Butler-Dawson et al., 2018). Prior to the start of the annual sugarcane harvest for 2016-2017, Pantaleon recruited and screened 4,568 field workers to harvest cane from November to April. Workers were recruited from local communities in the coastal low land area surrounding the sugarcane fields as well as from the highland regions at higher altitudes. All field workers participated in a pre-employment screening prior to the start of work. The screening included a medical exam to determine if they are fit for work and to recommend a job placement. One of the hiring criteria was that workers have an estimated glomerular filtration rate, eGFR, $\geq$ 60 ml/min/1.73m$^2$ at the time of screening. Creatinine is measured from a

venipuncture blood draw and used to calculate eGFR using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation for all participants (Levey & Stevens, 2010).

The company employs two types of field workers: cane cutters and production workers. In 2016-2017, 3,621 cane cutters were hired for the harvest season. Approximately half of the cane cutters come from the local communities surrounding the plantation and half come from the highlands region. Local workers return home after the daily work shift and highland workers stay at on-site dormitories for the entire harvest and then return home to the highland region after the season is done. Cane cutters cut and pile burned sugarcane in six-day blocks and then have one rest day. They typically start their work shift around 7 am and spend ten hours in the field that includes cutting for eight hours, three 20-minute breaks, and one 60-minute lunch break. Workers receive a base wage independent of the amount of cane that is cut. Pantaleon also hired 847 field production workers for the season who perform tasks such as cutting and planting. Production workers are hired only from the local area, commute to work, spending seven hours per day in the fields, in 5-day blocks before receiving two rest days. They are compensated based on their time spent working. All workers are assigned to work groups consisting of 40 to 70 workers, each led by a team supervisor.

## II. Hydration and wellness promotion program

Through its wellness program, Pantaleon encourages cane cutters to drink 16 liters of water and 2.5 liters of electrolyte solution (composition per liter: 4.6 g NaCl, 34 g carbohydrates (26 g sucrose) and 2 g KCl) per work shift and to take three 20-minute breaks and one 60-minute lunch break during the work shift. They also encourage the workers to rest in the shade that is provided. The start and finish of each break period is announced and participation monitored by field health aides and work group supervisors assigned to every work unit. The field health aides educate the workers on health topics including hydration, rest, and safety. Water and electrolyte solution are provided daily for free in the fields. Cane cutters are issued a 5-liter container that can be filled with water in tanks that are stationed in the fields. Health aides and field physicians address health issues that arise during the day. All workers have access to medical clinics staffed by company physicians and healthcare workers.

## III. Pocket urine color chart for self-evaluation

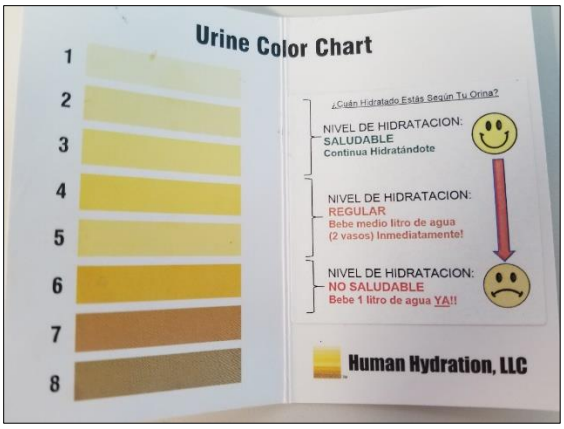


***Fig. S1*** *Urine color chart (Human Hydration, LLC, Hampton, VA) adapted for low literacy, Spanish speaking populations.*

IV. Clothing correction factor for post-shift body weight

To adjust for the additional weight of the clothes at the end of the day due to sweat and dirt, we weighed the clothes and shoes of 20 workers (14 cane cutters and 6 production workers) pre- and post-shift using a scale (Ranger 3000 digital scale, Ohaus, Parsippany, NJ). A correction factor was calculated by averaging the difference of the pre- and post-shift weights, separately for cane cutters and production workers (cane cutter correction factor: 244.57 grams, range -52 to 906 grams; production correction factor: 36.17, range -104 to 178 grams).

V. Characteristics of non-participants compared to participants

*Table S1: Comparison of non-participants to participants by the reason for attrition, N=517.*

| Characteristics | Reason for Attrition | | |
|---|---|---|---|
| | Left workforce early vs. did not leave early | Absent on day(s) of study vs. not absent | Refused to participate vs. workers who did not refuse |
| Total Number | 32 (6%) | 54 (10%) | 10 (2%) |
| Age, years | **26 vs. 28, p=0.04** | 32 vs. 28, p=0.66 | 24 vs. 28, p=0.13 |
| Local home residence | **41% vs. 65%, p<0.01** | 57% vs. 64%, p=0.31 | **20% vs. 65%, p<0.01** |
| Cane cutter job type | 88% vs 80%, p=0.33 | **94% vs. 79%, p<0.01** | 90% vs. 81%, p=0.46 |
| Baseline hypertension | 4% vs. 3%, p=0.76 | 0% vs. 4%, p=0.32 | 14% vs. 3%, p=0.10 |
| Baseline eGFR | 120 vs. 116, p=0.15 | 116 vs. 116, p=0.85 | 122 vs. 116, p=0.25 |
| February eGFR | 134 vs. 129, p=0.05 | 127 vs. 130, p=0.40 | 134 vs. 130, p=0.41 |
| March eGFR | 138 vs. 132, p=0.12 | 133 vs. 132, p=0.40 | 140 vs. 132, p=0.38 |
| April eGFR | N/A | 128 vs. 132, p =0.37 | 133 vs. 132, p=0.95 |

eGFR: estimated glomerular filtration rate. Bolded values are significant at p <0.05.

VI. Post-shift survey, developed in Spanish


**Aspirina**

◯ Sí ◯ No ◯ No sabe ◯ N/A






Sí

¿Cuántas pastillas en las últimas 24 horas?

¿Por que está tomando **Aspirina**?

◯ Dolor ◯ Más energía
◯ Infección ◉ Otro
◯ Una lesión ◯ N/A

Si otro:


Diclofenaco Sódico


Pharmaton
Geriatric
Pharmaton


Otros

**Inyecciones:**


**Suplementos**

○ Sí ○ No ○ No sabe ○ N/A

Otros

4. ¿Cuántos cigarrillos fumo desde que se levantó esta mañana?

5. ¿Cuántas bolsas de suero tomo desde que se levantó esta mañana?

bolsas

7. ¿Cuántas bebidas azucaradas tomo hoy desde que se levantó esta mañana?

*Por ejemplo:*
*jugos, Coca-Cola, Fanta, polvos para bebidas*


8. ¿Cuántas bebidas alcoholes tomó ayer hasta que se levantó esta mañana?

*Por ejemplo:*
*cerveza, quetzalteca*

9. ¿Cuántos descansos, incluyendo el almuerzo tomo en el trabajo hoy?
*(los descansos son de 15 minutos o más)*

10. ¿Dónde tomo sus descansos hoy?

- Areas con sombra
- En el lugar donde me encontraba trabajando en el campo
- Ambos
- N/A

11. Hoy en el trabajo, ¿Sentiste alguno de los siguientes malestares? (selecciona todos los que apliquen)

| | | | | |
|---|---|---|---|---|
| a. Dolor de cabeza | Sí | No | No sabe | N/A |
| b. Calambres en las piernas o brazos | Sí | No | No sabe | N/A |
| c. Fiebre | Sí | No | No sabe | N/A |
| d. Diarrea | Sí | No | No sabe | N/A |
| e. Dolor al orinar | Sí | No | No sabe | N/A |
| f. Palpitación rapida del corazón | Sí | No | No sabe | N/A |

| | | | | |
|---|---|---|---|---|
| g. Mareos | ○ Sí | ○ No | ○ No sabe | ○ N/A |
| h. Vomitos | ○ Sí | ○ No | ○ No sabe | ○ N/A |
| i. Desmayos | ○ Sí | ○ No | ○ No sabe | ○ N/A |
| j. Boca seca | ○ Sí | ○ No | ○ No sabe | ○ N/A |
| k. Dolor de oídos | ○ Sí | ○ No | ○ No sabe | ○ N/A |
| l. Dolor de espalda (parte de arriba) | ○ Sí | ○ No | ○ No sabe | ○ N/A |
| m. Dolor de espalda (parte de abajo) | ○ Sí | ○ No | ○ No sabe | ○ N/A |
| n. Dificultad al respirar | ○ Sí | ○ No | ○ No sabe | ○ N/A |
| o. Hinchazón de manos y pies | ○ Sí | ○ No | ○ No sabe | ○ N/A |
| p. Otro? | ○ Sí | ○ No | ○ No sabe | ○ N/A |

## VII. References

Butler-Dawson, J., Krisher, L., Asensio, C., Cruz, A., Tenney, L., Weitzenkamp, D., et al. (2018). Risk Factors for Declines in Kidney Function in Sugarcane Workers in Guatemala. *Journal of Occupational and Environmental Medicine, 60*(6), 548-558.

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