Methods: We collected fish directly from the source by random selection. Lake Victoria tilapia were procured from fishing boats as they came to shore in Dunga. Farmed tilapia from Nyahera were procured soon after being fished out by farmers. Standard ethical practice was followed in the procurement of deceased fish meant for consumption. Fish were transported to the lab at GLUK. We sampled the skin, gills, and the inner tissue. We then extracted DNA and ran multiplex PCR assays testing for zoonotic enteric pathogens. DNA was then transferred to filter paper and brought to UF for ongoing specific identification testing. GLUK and UF faculty and students from various professions worked side by side on this collaborative project.

Results: Analysis of all 94 samples showed 18% were positive for at least one enteric pathogen. There were 12 samples positive for suspected Yersinia Enterocolitica or Cholera, all of these all were from the Nyahera fish farm. There were 5 samples which are likely Salmonella or Shigella, all of which were from Lake Victoria at Dunga. Furthermore, 94% of positive samples were either from skin or gill and only one tissue sample was positive.

Interpretation: The identification of zoonotic enteric pathogens in Tilapia has far-reaching implications. We show that currently farmed fish in the region have another set of pathogens. Additionally, we show that the skin and gills are the more likely sources of contamination. These comparisons provides hints about the origin of specific enteric outbreaks and will be helpful in mitigation efforts. Additionally, this highlights the need for public health education on this source of pathogenesis. Further larger scale studies and public health interventions are needed in order to prevent outbreaks of enteric pathogens.

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Abstract #: *2.005_PLA*

Identifying perceptions of chronic kidney disease in a hemodialysis population in Guatemala

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Background: CKD of non-traditional causes (CKD-nt) is a growing entity and leading cause of death in Nicaragua and El Salvador, known to mostly affect young men often working in agriculture. Some evidence suggests CKD-nt epidemic may be present to a lesser extent in Guatemala as well. While epidemiologic research is underway to identify the presence of CKD-nt in Guatemala, there have been no investigations focusing on local perceptions of the illness. Exploring the cultural understanding of the illness and the help-seeking behaviors can help identify barriers that inhibit implementation of awareness programs and adherence to clinical recommendations.

Methods: We conducted a semi-structured interview to determine perceptions of chronic kidney disease and help-seeking behaviors in 19 adult patients receiving hemodialysis at Roosevelt Hospital in Guatemala City. Patients were recruited by convenience sampling and responses were analyzed by mixed-methods approach across demographic groups.

Findings: We found that most patients reported swelling, nausea and vomiting as initial symptoms, and believed the kidneys to be the affected organs. There was a strong reliance on family support while seeking treatment, and most patients had seen at least one health-care provider prior to admission. Fifteen patients cited previous treatment with pills (for widely varying indications). Perceived causes also varied greatly and less than half the patients with diabetes acknowledged it as a possible cause. The concern of death or lack of cure prevailed, but very few expressed concerns about financial burden of disease or risk of catheter-related infections. Most cited the function of hemodialysis was to "clean the blood," but were unable to expand beyond that. Across the demographic groups the one recurring theme was lack of understanding about the causative factors and feelings of uncertainty and helplessness towards of the illness in general.

Interpretation: Our findings suggest that implementing inpatient education for hemodialysis-initiating patients may improve the overall confusion and uncertainty associated with the illness. Better patient understanding towards the disease, it's prognosis and treatment options can pave the way for behavior-changing initiatives and can be expanded to community awareness programs in the future.
Abstract #: *2.006_PLA*

Contribution of space heating to ambient air pollution in a Peri-urban village in northern China

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Background: Cooking and heating with biomass and coal is associated with a significant global health burden. Household air pollution (HAP) and ambient air pollution (AAP) due to emissions resulting from cooking with biomass and coal are estimated to cause about one million premature deaths yearly in China. The contribution of space heating to HAP and AAP is not well studied, however, even though heating with biomass and coal is common.

Methods: We randomly recruited 33 households out of a 200-household village in peri-urban Beijing, China. We conducted surveys on fuel use and monitored solid fuel heating and cooking devices using the Stove Use Monitors System (SUMS) in recruited households. Ambient $PM_{2.5}$ concentrations were measured on two rooftops using gravimetrically calibrated DustTrak II air monitors, and a meteorological station was installed at the village center. We estimated $PM_{2.5}$ emissions and developed time-series and box models to explore the relationship between emissions and AAP and to assess the contribution of household emissions to AAP during the 2013heating season. Committee for Protection of Human Subjects of UC Berkeley approved this study.

Findings: From January to March 2013, the mean ambient $PM_{2.5}$ concentration in the sampling village was 126 ± 107 $\mu g/m^3$, and the

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mean $PM_{2.5}$ emissions from households was 68 ± 36 g/hour, most of which was from space heating devices. In the time series model, an emission of ~1 g/hour $PM_{2.5}$ from household was associated with an 0.034 ± 0.025 μg/m^3 increase in hourly ambient $PM_{2.5}$ concentrations, adjusted for autocorrelation and other covariates. The predicted ambient $PM_{2.5}$ level from household $PM_{2.5}$ emissions was significantly associated with the DustTrak-monitored level, with a coefficient of 0.3 ($p < 0.001$) and explains 23% of the total variance in a simple box model.

Interpretation: Household space heating using biomass and coal emits a large amount of $PM_{2.5}$. This implies a significant contribution to AAP and health burden associated with AAP and HAP in China and many other developing countries using solid fuel for household space heating.

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Abstract #: *2.007_PLA*

The role of enteropathy and mycotoxins in child stunting in low- and middle-income settings

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Background: The World Health Organization (WHO) estimated the prevalence of pediatric stunting at 171 million children, with 97.6% of the burden in developing countries [1]. Stunting is a form of chronic malnutrition leading to negative lifelong consequences such as cognitive impairment, poor educational performance and economic loss. Newly emerging research has shown links between stunting and environmental enteric dysfunction (EED) and mycotoxins [3]. EED is an autoimmune response malforming small intestinal villi and reducing absorption of nutrients. This condition is linked to environmental conditions with poor sanitation. Mycotoxins are chemicals released by fungal species that contaminate food sources [4]. While mycotoxins are known carcinogens, their gastrointestinal impact is being studied.

Methods: A systematic review was conducted to investigate primary research on EED and mycotoxins on stunting. A search strategy in PubMed and WHO Library databases resulted in 163 records narrowed down to 16 eligible articles. The inclusion criteria included: primary resarch, stunting topics, ability to translate to humans and topics related to EED and mycotoxins. Studies that were secondary research, solely laboratory studies or outside EED and mycotoxins were excluded. Among the final articles included, study designs varied from cross-sectional, genetic, cohort and randomized control trials.

Findings: In the selected primary research studies investigating environmental enteropathy (n = 6), study populations included childen in Bangladesh, Malawi, Kenya, and Tanzania. No significant findings were made with treatment interventions in micronutrients, fish oil and albendazole. Mesalazine, an immunosupressant used in other inflammatory bowel disases demonstrated safety and has potential for efficacy studies.

In the studies concentrating on mycotoxin roles in stunting (n=10), findings were also varied with populations in Benin, Cameroon, Gambia, Tanzania and Togo. Investigations confirmed an association between stunting and mycotoxin levels in the blood. One study trialed an oral medication used to reduce aflatoxin levels and found safe uptake.

Interpretation: As evidence strongly links EED and mycotoxins as contributors to stunting, efforts to understand pathways and treatment is needed. To combat the negative lifelong consequences of stunting among children in LMICs, efforts on improving environmental sanitation conditions and treatment of EED and mycotoxins also needs to be prioritized.

Funding: UCLA Graduate Summer Research Mentorship Program.
Abstract #: *2.008_PLA*

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Treatment outcome among newly diagnosed tuberculosis patients in Kenya

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Background: Globally Tuberculosis (TB) affects one third of the world's population (2 billion people) and 9 million people developed TB in 2013 up from 8.6million in 2012. Kenya is ranked number 15 out of the 22 high burden countries that contribute 80% of the global TB burden. The objective of this study was to establish the uptake of TB treatment among newly diagnosed TB patients.

Methods: A cohort study design was used where 70 patients were enrolled in the study from selected sites. The clients were recruited and followed up for a period of one year from the selected health facilities.

Findings: The findings indicated that majority (51.4%) of the respondents had a favourable treatment outcome smear positive cure rate and (38.6%) treatment completion among smear negative patients. The treatment outcome was associated with patient's economic activity, substance use, severe TB symptoms, self-efficacy