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**Background:** Even with improvement in current chemotherapy regimens, acute leukemia remains an alarming problem and the second leading cause of death in children. Flow cytometry plays a vital role in the diagnosis and detection of this disease. At Texas Children's Cancer and Hematology Centers (TXCH), a multiparametric flow cytometry approach using six color panel and 33 basic antibodies is used for the diagnosis and follow-up of pediatric leukemias.

**Objective:** We investigated if the six-color 33 antibody panel may be reduced to a four color 18 antibody panel without compromising diagnostic potential of pediatric leukemias. Such a reduced panel may be cost effective and better for leukemia/lymphoma diagnosis in developing countries.

**Design:** Retrospective analysis of thirty cases was independently performed by three clinicians. The immunophenotypic expression of the 18 antibodies selected for the reduced panel was employed for diagnosis. The cases used for this study consisted of 11 patients previously diagnosed with pediatric B cell-acute lymphocytic leukemia (B-ALL), nine with T cell-ALL, and ten with acute myeloid leukemias (AML) using the 33 antibody panel.

**Results:** The diagnosis of both B- and T-ALL cases by using the 18 antibody panel matched with the previous diagnosis. While 50% of the myeloid cases were diagnosed as AML using the 18 antibody panel by all three clinicians, the remaining 50% cases were grouped mostly as T-ALL.

**Conclusion:** This study shows that pediatric B- and T-ALL can be diagnosed with the limited 18 antibody panel. However, immunophenotypic aberrancies of pediatric AML pose a challenge with the limited panel. Inclusion of intracytoplasmic staining should improve AML diagnosis.

**Abstract #:** 1.010\_PLA

### Public Health and malaria in Benin's lake areas: why does intermittent preventive treatment (IPTp) stagger?

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**Background:** Malaria is the leading cause for medical consultations (43% among the general population; 48% among children under five years), hospitalization (27% among general population; 48% among children under five years) in Benin (INSAE 2013: 170). Benin is a malaria endemic region. A lakeside area in Southern Benin where houses are built on water is a high malaria transmission area, where pregnant women are at particular risk. Malaria is associated with maternal anemia and low birth weight, high risk factors for perinatal death, morbidity and mortality. According to the World Bank, 37% of Benin's population lives below the poverty line with a per capita

annual income of only \$750; households spend approximately one quarter of their annual income on the prevention and treatment of malaria (World Bank 2014). The WHO preventive strategy comprises monthly administration of IPTp during antenatal consultations from the second trimester of pregnancy up to delivery (WHO 2014). While Benin's Demographic and Health Survey indicates antenatal clinic attendance is 87%, only 27% of pregnant women had at least one dose of IPTp (INSAE, 2013: 125). Although the Benin government makes IPTp free, women incur a user fee for antenatal consultation which is the only means to access IPTp. Decision-makers in Benin assume user fees promote efficiency and do not affect women's antenatal consultation attendance, believing populations understand the risk associated with pregnancy and make antenatal consultation a priority. The objective of our research was to determine the accuracy of these assumptions and their effect on public health care.

**Methods:** A unique set of key informant interviews with government decision-makers, pregnant women and in-depth direct observations in hospitals in Benin's lake region were conducted from June to August 2015.

**Findings:** The assumptions concerning user fees are misplaced and shed light on the distortions between public health policies and their representations of pregnancy and malaria in pregnancy. The findings also clarify the unintended effects of user fee policies on the uptake of IPTp in Benin's lake areas.

**Interpretation:** Interviews were transcribed and analyzed through content analysis.

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### Clean cookstoves and pneumonia prevention: A mathematical model to investigate the relationship between coverage and efficacy

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**Background:** Pneumonias remain one of most significant causes of mortality and morbidity in young children worldwide. In recent years, the prospects for preventing pneumonias have markedly improved, partly owing to a renewed focus from the global health community to encourage cleaner burning stoves and fuels. Several lines of evidence, considered in concert, suggests that the efficacy of these interventions may well be determined not only by household-level use but also community-level coverage. Thus far, relatively few efforts have sought to characterize such an association. This project develops a mathematical model to analyze the theorized relationship between coverage and efficacy for liquid petroleum gas (LPG) as a cooking fuel and the prevention of pneumonias in young children.

**Methods:** The mathematical model employs a modified mass balance approach to simulate concentrations of airborne fine particulate matter (PM<sub>2.5</sub>). Indoor and outdoor concentrations are a function of a household's use of either biomass or LPG, as well as the mix of both stove types in the community. LPG coverage is modelled from 0% (the counterfactual) to 100%. Computer