

participants being referred for enrolment, blood draw, and subsequent follow-up. However, only 79% of the total facilities identified are currently referring participants due to challenges including inconsistent operation of OTCs, unrealistic incentive expectations and proxy drug purchases.

Conclusion FPT using health agents and community sensitization increased referral for participation in the TyVEGHA study. The study highlights the potential advantages of including these as referral points for health programs.

PA-264 AGE AND LOCALITY ARE AMONG THE RISK FACTORS CONTRIBUTING TO HIGH PREVALENCE OF ANEMIA IN THE BATA DISTRICT OF EQUATORIAL GUINEA

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Background Anemia is a serious global health problem particularly in malaria and Soil-transmitted helminths (STH) co-endemic areas, where those parasitic infections can influence the anemia severity. The present analysis aimed to assess the prevalence and associated risk factors of anemia in malaria and STH co-endemic areas.

Methods We conducted a cross-sectional survey between October 2020 and January 2021 in the Bata district. Venous blood was collected for hemoglobin levels assessment using the HemoCue Hb201. Anemia was defined based on the WHO threshold. Plasmodium infection was diagnosed using the microscopy technique and the Kato-Katz technique was used for STH egg identification in stool samples. Multiple logistic regression analysis was performed to assess factors associated with anemia.

Results A total of 339 participants were included in this analysis, with a mean age of 24.4 (SD=23.7) and 64 (19%) aged less than 5 years. A total of 187 (55%) participants were female, while 119 (35.1%) and 79 (23.3%) of them lived in peri-urban and rural areas, respectively. The prevalence of anemia was 77% (95%CI: 72 – 82). Among the anemic population, severe anemia represents 6% (17/262), while moderate and mild anemia represents 60% (157/262) and 34% (88/262), respectively. Anemia was associated with age ($p<0.001$) and locality ($p=0.03$). Compared to participants aged 1–5 years, those aged 6–14 years (aOR=0.39; 95%CI: 0.14 – 0.95, p -value=0.048) and those aged more than 14 years (aOR=0.18; 95%CI: 0.06 – 0.41, p -value<0.001) had a lower odd of anemia. Compared to urban areas, peri-urban areas had a high odd of anemia (aOR:1.15; 95%CI:1.24 – 4.87, p -value=0.01).

Conclusion Anemia prevalence is high in the Bata district calling for more research on the determinants of the disease in the country. Our results indicate old age and peri-urban areas as the main factors associated with anemia in the Bata district.

PA-265 FACTORS AFFECTING THE ACCESS, DELIVERY AND ADHERENCE TO RTS,S VACCINATION SCHEDULES OF THE EXPANDED PROGRAMME ON IMMUNIZATION AMONG CAREGIVERS IN GHANA

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Background WHO recommended the RTS,S/AS01 malaria vaccine for widespread use for children in regions with moderate to high plasmodium falciparum malaria transmission after data from a pilot study revealed the vaccine was safe, significantly reduces severe life-threatening malaria, and can be administered effectively in real-life childhood vaccination settings. This study is consistent with the work of the SAVING Consortium, which builds on the Access and Delivery Partnership value chain framework and emphasizes the importance of high-quality implementation and delivery research as a crucial tenet for the efficient distribution of new medications. Factors that influence primary caregivers' (PCGs) adherence to the RTS,S vaccination schedules as well as health professionals' access to and administration of the RTS,S vaccine were explored.

Methods The larger study "Dynamics of Healthcare Utilization in the Context of RTS,S/AS01 Vaccine Implementation in Ghana" provided the secondary data for this study. Completed transcripts of 45 PCGs and 24 health professionals were imported into NVivo 12 for theme categorization and analysis.

Results Facilitators of adherence were benefits of RTS,S vaccine and trust in the health system and health workers. Barriers to adherence were social activities and other engagements. PCGs preferred fewer vaccination visits with more vaccines because frequent visits disrupt their daily activities. Health workers perceived that the phased introduction of the pilot and delay in its start affected the initial implementation and fuelled rumours. These rumours, though widespread, did not have much effect on uptake after reinforced education.

Conclusion Education and sensitization increased trust and promoted adherence to the RTS,S vaccination schedules. PCGs preference for less vaccination visits should be considered. Future introduction of new vaccines such as the R21/Matrix-M vaccine as well as subsequent roll-out of RTS,S vaccine should leverage on these enablers for implementation success.

PA-267 ALTERED MYCOBACTERIUM TUBERCULOSIS (MTB)-SPECIFIC T-CELL RESPONSES IN COMORBID TUBERCULOSIS AND TYPE 2 DIABETES MELLITUS

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Background Tuberculosis (TB) is one of the leading causes of death from a single infectious agent with approximately 1.4 million deaths annually. Efforts to eradicate TB are threatened by diabetes mellitus (DM), which confers a greater than a 3-fold TB disease risk. Both TB and DM are accompanied by marked immunologic changes, however, changes in Mtb-specific T-cell functional responses remain poorly characterised. We compared Mtb-specific CD4+ and CD8+ T-cell functional

responses among patients with LTBI-DM (21), DM (16), ATB (19) and ATB-DM (04).

Methods Peripheral blood mononuclear cells were stimulated with ESTA-6/CFP-10 peptide pools or PHA, and characterised Mtb-specific CD4+ and CD8+ T cell functional memory (CD45RA/CCR7), activation (HLA-DR), exhaustion (PD-1) and apoptosis (Bcl-2) profiles by flow cytometry. Data were analysed using FlowJo v.10.8.2 and Prism v.8.4.

Results Central memory CD4+/CD8+ T cells were decreased in ATB [median (IQR): 30.80 (20.70–34.80)] compared to DM [41.35(36.63–57.13)] ($P<0.0001$)/($P=0.0388$) and LTBI-DM [45.60(38.75–50.40)] ($P<0.0001$)/($P=0.0028$) patients. Effector memory CD8+ T cells were decreased in DM [21.50 (15.18–30.28)] compared to LTBI-DM [32.00(23.45–43.80)] ($P=0.0193$) patients. TEMRA CD4+ phenotypes were decreased in ATB [1.17(0.88–2.83)] compared to LTBI-DM [0.70(0.30–1.26)] ($P=0.0040$) and DM [0.99(0.41–1.34)] ($P=0.0057$) patients. CD4+ T cell HLA-DR expression was upregulated in ATB [2.49(1.12–3.49)] compared to LTBI-DM [1.16(0.89–1.43)] ($P=0.0016$) and DM [1.63(0.99–2.33)] ($P=0.0235$) patients. CD4+/CD8+ T cell PD-1 expression was upregulated in LTBI-DM [1.77(1.49–2.94)] compared to DM [1.63(0.95–2.07)] ($P=0.0499$) and ATB-DM [0.62(0.33–0.94)] ($P=0.0381$) patients. Finally, CD4+ T cell Bcl-2 expression was increased in ATB [4.17(2.99–5.87)] compared to LTBI-DM [2.08(1.44–3.71)] ($P=0.0077$) patients.

Conclusion ATB decreases CD4+/CD8+ T-cell central memory while DM decreases CD8+ T-cell effector memory compromising immune surveillance and production of effector cytokines against TB. DM upregulates TEMRA, cells less protective against Mtb. CD4+/CD8+ T cells are exhausted possibly due to persistent inflammation and Mtb-exposure but remain anti-apoptotic. Loss of PD-1 mediated inhibition in DM could promote severe TB disease.

PA-274 LESSONS LEARNED FROM A PHASE 2 DIAGNOSTIC CLINICAL TRIAL IN SEVEN SUB-SAHARAN AFRICAN COUNTRIES

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Background The Covid-19 pandemic led to severe health systems collapse, as well as logistics and supply delivery shortages across sectors. For example, delivery of PCR related health-care supplies was massively delayed during the COVID crises. A rapid and accessible SARS-CoV-2 molecular detection method in low resource settings offers many advantages. The aim in this study was to validate a novel isothermal amplification method for rapid detection of SARS-CoV-2 across seven sub-Saharan African countries and build capacity onsite.

Methods In this multi-country phase 2 diagnostic study, 3,231 clinical samples at seven African sites were tested with two reverse transcription Recombinase-Aided Amplification (RT-

RAA) assays targeting the SARS-CoV-2 Nucleocapsid (N) and RNA-dependent RNA polymerase (RdRP) genes. Testing was performed in a mobile suitcase laboratory within 15 minutes. All results were compared to reference real-time RT-PCR.

Results All sites passed the initial quality control before screening the clinical samples in a single-blinded clinical trial. Four sites demonstrated good to excellent agreement between RT-RAA and PCR, while three sites showed fair to moderate results. The sensitivities for RdRP varied depending on Ct and study site (Ct values <30 ranged 60.5 – 100%; Ct values 30–35 ranged 23–90%; Ct values >35 ranged 3.6– 46.3%). Various factors regarding the setting and test operator were shown to have an effect on the test accuracy.

Conclusion Overall, the RdRP based RT-RAA test showed the best assay accuracy. Lessons learned from this study to assure test accuracy across various sites include the implementation of standardized operation procedure, in-person continuous training for staff, and enhanced quality control measures.

PA-276 DIFFERENCES IN RISK FACTORS BETWEEN A HIGH AND LOW VERTICAL HIV TRANSMISSION SETTING: IMPLICATIONS FOR ELIMINATION OF NEW PAEDIATRIC HIV INFECTIONS

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Background Roughly 1.3 million infants are exposed and 150,000 newly diagnosed with Human Immunodeficiency Virus (HIV) annually. Estimates of Vertical HIV transmission (VHT) rates vary by setting. In this study, we assessed the risk factors for VHT among infants born to women living with HIV in Tanzania and Mozambique.

Methods Between October 2019 and August 2021, data was collected from pregnant women living with HIV who participated in the LIFE study [RIA2016MC] at 28 obstetric health facilities in Tanzania and Mozambique. VHT was assessed up to month 3 of age in all infants. At baseline, demographics and clinical characteristics were collected to assess risk factors for VHT. Mixed effects models adjusted for health facility clustering were used to calculate risk ratios.

Results In total, 6,509 women living with HIV and their 6,605 exposed infants were included in the study. VHT up to month 3 of life was 2.69% (95% CI: 2.21, 3.24) in Mozambique, significantly higher than the 0.62% (95% CI: 0.35, 1.00) observed in Tanzania (RR: 4.45, 95% CI: 2.63, 7.99). On average, Tanzanian women were significantly older, attended antenatal care more frequently, and had been on antiretroviral treatment for a longer period. After adjusting for these factors, virologic non-suppression at delivery was the principal risk factor for transmission (RR: 35.7, 95% CI: 19.2, 73.1). In Mozambique, 31.0% of all