FULL MEETING REPORT

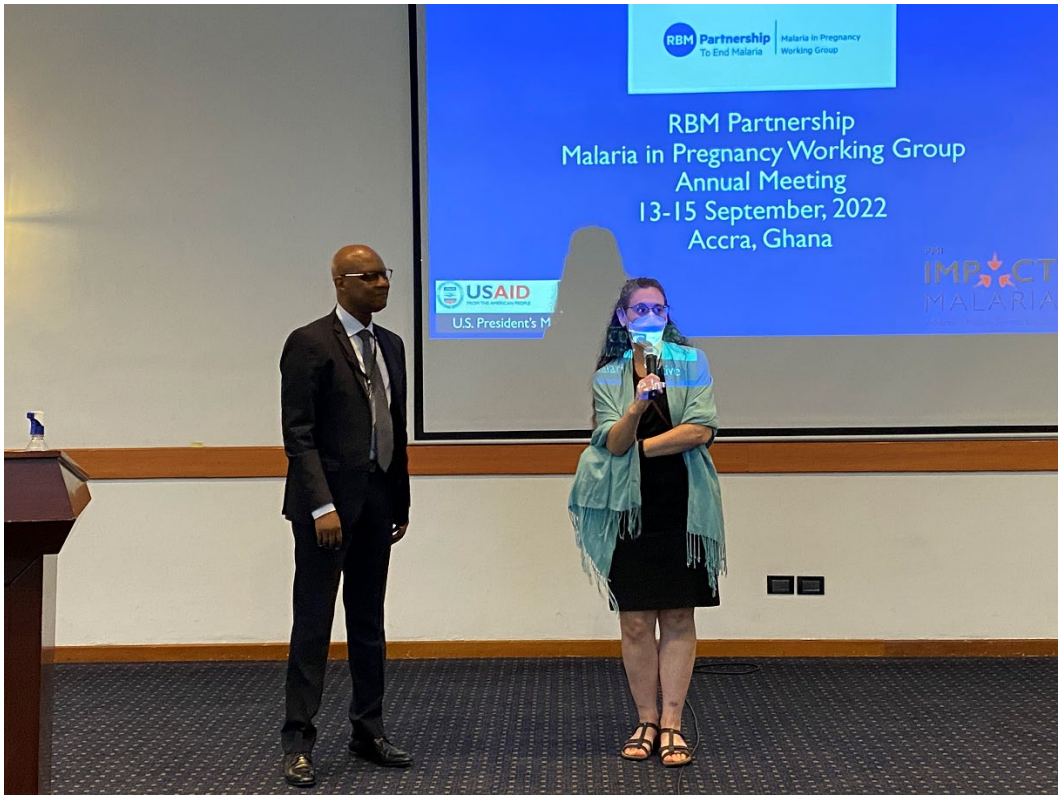
Meeting Theme: Refresh, Renew and Refocus on Malaria in Pregnancy

Meeting Objectives:

- Share, disseminate and discuss updates, products and new research and implications for MiP programming
- Share, disseminate and discuss country best practices to improve coverage of MiP interventions
- Share, disseminate and discuss innovative approaches that are or have the potential to contribute to improving MiP coverage
- Determine WG priorities for 2022

This meeting is possible through funding from the IMPACT Malaria project by the U.S. President's Malaria Initiative

Group Photo at the Greater Regional Accra Hospital -- Photo Credit: Doreen Akiyo Yomoah



Welcoming remarks from the MiP WG co-Chairs -- Photo Credit: Doreen Akiyo Yomoah

DAY 1

Key takeaways:

- **Ghana is moving from malaria control to malaria elimination!** Ghana promotes universal health coverage with free care for pregnant women and malaria, with mandatory universal health insurance that covers ANC and malaria services. There is a clear roadmap for achieving 8 ANC visits, and this is being achieved, along with high coverage of IPTp3 through CHPS services provided at the community, with task shifting as a key strategy.
- **SP remains "the drug to beat" when it comes to IPTp.** The effect of SP on LBW remains remarkably resilient to mutations, and there is no evidence that giving SP in areas with high resistance causes harm; in fact, an impact on BW remains. Some of the effect appears to be mediated through non-malaria effects.
- **ACTs appear to be safe and well tolerated, even in 1st trimester of pregnancy.**
- **Drug development needs to consider newer models to ensure that teratogenicity is considered early in drug development**.
- **The number of pregnant women affected by MiP remains/increased over the past 20 years,** despite gains in malaria control, as a result of increased birth rate, despite gains in malaria control.
- **Malaria supportive supervision data can be used to better understand drivers of quality;** attention to quality is a critical component even as we push for improved access.

"The theme of this year's annual meeting: Refresh, renew and refocus on malaria in pregnancy is apt. As most countries move towards different phases of their elimination agenda it is important to share lessons and practices from other countries. I therefore encourage all participants represented here to take opportunity of all the rich resources, connections and data available for the next three days and even beyond. There is power in networking and I think we take advantage of it here. The meeting will end with a more connected world where countries share ideas and best practices that will lead to the reduction of malaria in pregnancy. It is only through the concerted effort of us all that we will win the fight against malaria and thus protect pregnant women and their own children. I challenge all present – staff from the Ministry of Health, implementers, researchers, private sector, donors to explore all of the innovative ways needed to improve malaria in pregnancy services and increase coverage of ITN and IPTp."

--Patrick Kuma-Aboagye, Director General, Ghana Health Service

Photo Credit: Doreen Akiyo Yomoah

Improving MiP Services through Universal Health Coverage in Ghana, Mildred Komey, NMCP Ghana

> *'Universal health coverage (UHC) is for everyone. For Ghana, this means that all people have timely access to high-quality health services, irrespective of the ability to pay at the point of use. When we target UHC, maternal and neonatal health, and malaria, that will help us achieve Goal 3 [Ensure healthy lives and promote well-being for all at all ages]'.*
>
> — Mildred Komey, NMCP Ghana

Impact:

- Ghana has moved from malaria control to malaria elimination!
- IPTp3 has increased from 28% to 61%

Conclusions:

- Ghana's commitment to the SDGs is on course and achieving universal health coverage is crucial
- Universal Health Coverage is essential to improving maternal health, including MiP services
- Breaking geographical and financial barriers for pregnant women is key
- Gaps still exist in ensuring quality health care services such as sustained funding for quality of care
- Commitment from all partners and stakeholders is needed

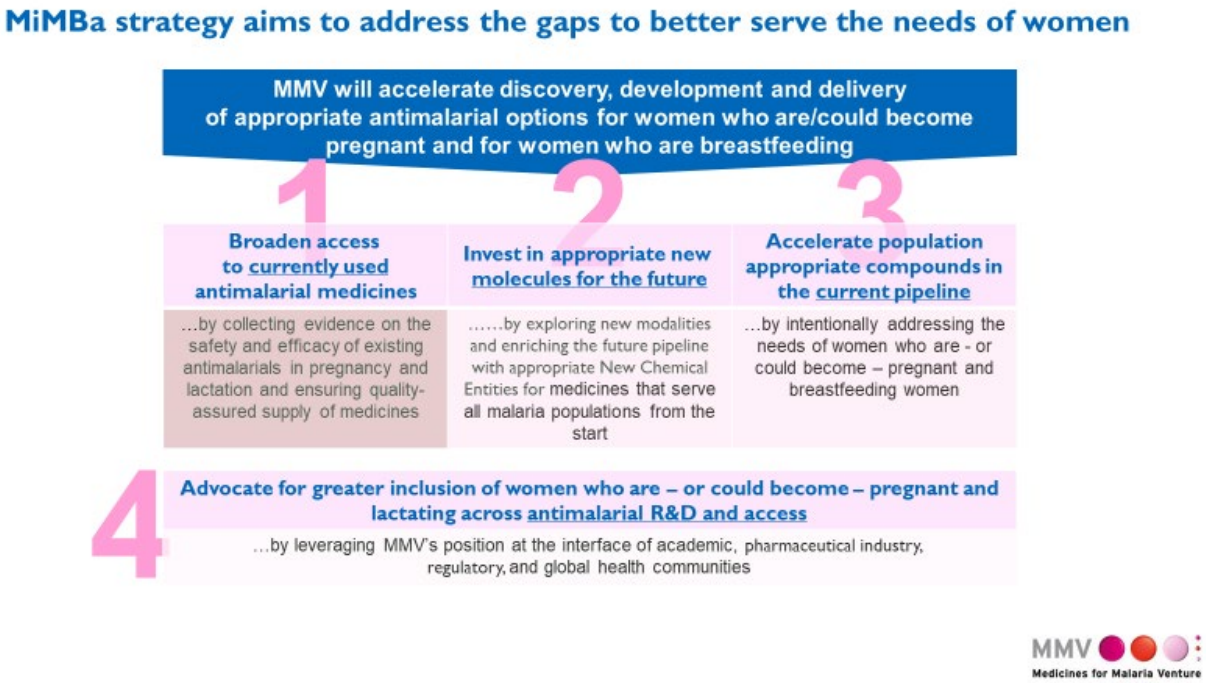
Key Takeaways:

- Political commitment: bi-partisan buy-in very critical
- Sustainable funding to break the financial barrier (NHIS?)
    - Economic growth: to create conducive environment for tax revenue
    - Structure of the economy: large informal sector poses difficulties for assessing potential members for equitable premium and its collection
- Availability of health services to guarantee the benefit package for members
- Solidarity, community engagement and participation
- Innovation and Adaptation

<u>Updates on MiP drug research:</u>

> *'This was my first time attending the meeting. Meeting with researchers and policymakers from the rest of the continent was quite exciting for me' The danger with doing research is that you tend to silo yourself — you're in one place, thinking about your own problems with your own team'.*
>
> — Caroline Osoro

Accelerating the development of appropriate antimalarial options for pregnant and lactating women – Myriam El Gaaloul & Maud Majeres Lugand, MMV



Highlights:

- UCL Corporation, Ltd in Kenya received prequalification for SP in 2022
- SWIPHA and EMZOR in Nigeria have submitted for WHO PQ and are currently under review
- ***Re-orienting anti-malarial drug development to better serve pregnant women:***
- https://malariajournal.biomedcentral.com/articles/10.1186/s12936-022-04137-2

Discussion:

Q: Do we have an idea of when the two alternative drugs to SP will be available?

A: This is very difficult to know as there are many factors that impact the timeline and additional trials that may be done.

> *'When a new drug reaches the market, it's made available for children, women and men, but not pregnant and lactating women, because they are excluded from research. It takes up to 20 years to make new drugs available to pregnant women. There is clearly an important gap; an inequity in research. To tackle this, [MMV] proposes strategies and approaches to move toward more inclusive drug development. That starts with running activities much earlier to collect data before the registration of a new treatment, so that when we submit a new drug, there are data to inform on the safety and right doses to be used in pregnant and lactating women'.*
>
> — Myriam El-Gaaloul, MMV

Safety of artemisinin derivatives versus non-artemisinin antimalarials for treatment in the first trimester: Updated meta-analysis (presented to WHO GDG in 2022, recommendation pending) - Stephanie Dellicour, LSTM

Conclusions:

- No difference in risk of stillbirth, miscarriage or major congenital anomalies in confirmed artemisinin-based treatment (ABT) exposure vs non-artemisinin based treatment (non-ABT) antimalarials considered safe in the 1st trimester
    - excludes a 1.03-fold and 1.45-fold increase in adverse pregnancy outcomes with ABT vs non-ABT in the 1st trimester and embryo-sensitive period
- 1st trimester AL (Artemether-Lumefantrine) Rx associated with a 42% lower risk of adverse pregnancy outcomes compared to quinine (aHR: 0.58, 95%CI 0.36- 0.92)
- The benefit-risk favours the use of AL over quinine for confirmed malaria in the 1st trimester of pregnancy based on the evidence for safety, efficacy, tolerability, and adherence
- Targeted surveillance needed to be able to detect signals for specific congenital anomalies

Monthly intermittent preventive treatment with dihydroartemisinin-piperaquine with and without azithromycin versus monthly sulfadoxine-pyrimethamine to reduce adverse pregnancy outcomes in Africa: a randomised placebo-controlled superiority trial - Hellen Cherono Barsosio, KEMRI

Key Takeaways:

- Largest trial comparing IPTp DP vs SP to detect impact on pregnancy outcomes
- SP is still the drug to beat for prevention of MiP! It is superior to DP to improving adverse birth outcomes
- DHA-piperaquine is promising
- A single course of AZ did not improve adverse pregnancy outcomes relative to DP alone, and reduced tolerance and increased QTc prolongation
- The superior effect of SP on the composite adverse pregnancy outcome reflects improved fetal growth, not longer gestation
- SP may improve maternal nutritional status (MUAC) (p=0.004)
- IPTp with DP alone should not replace SP in high SP resistance areas
- Studies comparing IPTp with SP alone vs DP + SP should be considered

Photo Credit: Doreen Akiyo Yomoah

Effect of high-grade sulfadoxine-pyrimethamine resistance on the efficacy of intermittent preventive treatment for malaria in pregnancy: a systematic review and individual participant data (IPD) meta-analysis – Caroline Osoro

Discussion:

- Analysis is ongoing.
- SP has a positive effect on birthweight.
- There is no indication that the effect of SP on birthweight is markedly reduced among women infected with highly resistant parasites compared to less resistant parasites.
- SP may also have some non-malarial benefits *(Roh 2020 Lancet Glob Health).*

> *We're hoping the results we get at the end of the day will help us advise policymakers on whether they can change the drugs they're giving pregnant women to prevent malaria'.*
>
> — Caroline Osoro

MiP Research: Current burden and future options for burden reduction

Global estimates of pregnancies at risk of Plasmodium falciparum and Plasmodium vivax infection in 2020 and changes in risk patterns since 2000 – Georgia Gore-Langton, LSTHM

Pregnancies at risk of malaria 2000 – 2020:

- Since 2000, the number of pregnant women resident in malaria-endemic areas has increased. This is attributable to population growth.
- Since 2000, the level of malaria transmission intensity to which pregnant women are at risk has decreased. This is attributable to malaria control efforts including IPTp.
- In SSA, a redoubling of resources and efforts that target pregnant women reducing the burden of MIP is needed to outpace the increases in population growth (and pregnancies), which are forecast to increase past 2100.

Discussion:

- Q: Did you see a trend in the number of mixed infections? We are seeing these in Kisuma/Homa Bay.
    - A: Below is a table with the total global number of pregnancies in areas with both P.falciparum and P.vivax transmission (and therefore at risk of mixed infections)
        - While the global number of pregnancies at risk of Pf and Pv mixed infections decreased over 2000-2020, the number of pregnancies at risk of mixed infections in SSA increased over the same time period, from 5.5M in 2000 to 7.0M in 2020.

Total pregnancies in areas with transmission of both *P.falciparum* and *P.vivax*	
Year	**Global pregnancies (M)**
2000	105.2
2005	95.5
2010	82.7
2017	68.2
2020	64.6

- Q: Do you have data for HIV status?
    - A: We haven't looked at separating for HIV status, but it would be great to do.
- Q: Do you have data on SP resistance?
    - A: This was not included.

Advancing the Clinical Development of Placental Malaria Vaccines in the Context of Capacity Building and Use of Digital Health Technologies - Nicaise Ndam, IRD

ADVANCE-VAC4PM project:

1. Manufacture GMP clinical batches of PRIMVAC and PAMVAC-cVLP
2. Conduct phase Ia trial in Europe to assess safety and immunogenicity of PAMVAC-cVLP (with and without GLA-SE) and co-administration with PRIMVAC/GLA-SE

3. Phase I/II trial in Burkina Faso and Benin in nulliparous lifelong malaria-exposed adult and adolescent women with the best vaccination strategies identified in the phase Ia trial.
4. Creation of pregnancy registers and evaluation of pregnancy mobile application for monitoring pregnancy outcomes in preparation of future efficacy trials.
5. Modelling cost-effectiveness, feasibility and accessibility of PM vaccines
6. Capacity building activities in LMIC (infrastructure upgrade, training and workshops)

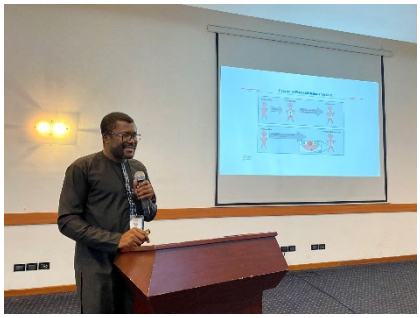


Photo Credit: Doreen Akiyo Yomoah

Quality of MiP Care

Improving quality of care for MIP through outreach training and supportive supervision (OTSS+) in Sierra Leone - Wani Lahai, Sierra Leone

Understanding MiP quality of care drivers through supportive supervision – Kate Wolf, Jhpiego

Improving quality of care through integrating malaria services and data quality improvement (MSDQI) at ANC for MiP, experience and best practices from Tanzania - Abdalah Lusasi, Tanzania

Discussion:

- Q: Did you do a cross country analysis?
    - A: Dropped the analysis because some important country results were being masked/hidden by the cross-country analysis. Training results are notable, but not comparable because they weren't measured the same.
- Q: How are integration/quality connected?
    - A: From the OTSS perspective, one of the main challenges around supportive supervision is if you have integrated supportive supervision checklist there are only a few questions on each technical area. It's a great use of resources, but doesn't allow for a deep dive. We should have more thoughtful discussions around most useful supervision techniques and still get the data we need.
        - With the malaria vaccine, we will need to be smarter about integration since that will be done in conjunction with EPI.

Photo Credit: Doreen Akiyo Yomoah

- Q: What do we want to achieve with OTSS?
    - A: This varies by stakeholder/countries. There are questions around the use of resources and if this is the best way to get information. Would like to collect solid data and use it to make the program stronger with a continual loop of data and adjusting programs accordingly. This would mean we have achieved OTSS.

Round Table Discussions:

Photo Credit: Doreen Akiyo Yomoah

Themes: WHO ANC Recommendations, MiP Commodities, Data Quality & Use

Table 1: WHO ANC Recommendations

Challenges:

- Early discovery of pregnancy
- Have to sensitize women and refer them to the health centers to continue with ANC, but insecurity and availability of funds are barriers
- Delay of consultation during first trimester of pregnancy
- 8 contacts are difficult because still challenging to achieve 4 contacts

Successes:

- Need to educate the women about ANC
- Peer communication – some women in the community are choosing to educate their peers about attending ANC early
- Pilot program educating about TPI starting with family (mothers in law, schools, etc.)
- Women are chosen to lead and educate program women
- mHealth-application to remind pregnant women to abide to ANC calendar

Support Needs:

Table 2: WHO ANC Recommendations

Kenya, Sierra Leonne, Nigeria, Liberia, Tanzania

Challenges:

- Piggy backing on programs that can support rollout
- Capturing data in NHIS, IPTp3 data
- Private sector participation/ engagement
- Liberia and Tanzania have not started rollout.
- Connecting with all departments (e.g.- HIS)
- Connecting women early to ANC/ combatting stigma

Successes:

- **Kenya, Sierra Leonne, Liberia and Tanzania have adopted the new recommendations.**
- Updated and revised guidelines, MCH booklet, training materials.
- Commitment from both RH and Malaria Control to support harmonized rollout

Support Needs:

- Technical assistance to help with rollout
- Resources for full dissemination and rollout of recommendations.
- Capacity building

Table 3: Data Quality & Use

Cameroon, WHO/AFRO, PMI

Challenges:

1. Collection: Midwife/Health is too busy, validation of different data collection tools, tools are not standard or available, data entered incorrectly, not enough staff, errors transfering data from one source to another (ex. paper to electronic), multiple platforms/systems

2. Transmission: internet connection not available, maintenance of IT materials/service, slow transmission in paper-based system, varied frequency

3. analysis and reporting-weak technical capacity for analysis, insufficient collaboration of partners, late annual reporting

4. weak use of data

5. private sector is not integrated into the national HIS

Successes:

DHIS2, capacity of health workers is improving, integration of statisticians/data managers within health sector

Support Needs:

- Roll out DHIS2 system to lower levels of the health system
- Train all health workers and provide essential equipment
- Develop performance frameworks
- Technical assistance to improve data quality
- Use data at all levels to make decisions-Results-based management

Table 4: Data Quality & Use *Nigeria, Ghana, Malawi*

Challenges:

- Fundamental lack of understanding of importance of data/ use of the data leading to poor quality

- Facilities may not feel that they own the data- it is collected for others

- Too many tools; data quality issues

- Poor data leads to poor decision making

- Are we collecting the right indicators?

- Can easily tally, but have more difficulty linking data back to the register

- Patients who go to the lab may not return to the register to get the result recorded

Successes:

- Data validation at facility and higher levels, with feedback from above to lower levels.

- On the job training to use the data prior to transmission; better understanding of the data

- Low dose, high frequency on the job training

- IMSV- integrated malaria supportive supervision

Support Needs:

- The more training, the better; additional funding for training
- Funding for printing the registers and forms

Table 5: MiP Commodities

Benin,Burundi,Impact Malaria,MMV

Challenges:

- Ruptures nationales et locales precrits, pas traitement observe, pas d'assurance de posologie correcte
- Estimation des besoins pas fait correctement (manque de competence, manque de suivi)
- Centres privees n'ont pas SP gratuit
- Peur d'utiliser le systeme "push" a cause des fuites
- Turnover frequent en personnel
- Delai de livraisons allonge pendant la periode de COVID-19

Successes:

- Inclusion du secteur prive /centres prives dans la gratuite ,disponibilite des antipaludiques

Support Needs:

- Digitalisation du systeme pour reduire les problemes de disponibilite

Table 6: MiP Commodities (Kenya, Nigeria, Ghana, Sierra Leone)

Challenges:

- Commodities at central stores, but facility-level stock-outs, especially SP and mRDT -> trying to build capacity to send RQs, etc. Very rare that commodity shortage is at central level.
- Sometimes facilities don't report the stock-out.
- If stock-outs, HFs might go to market to buy and then charge to client with a mark-up.
- Stopped importation of SP into country & waiting for WHO PQ manufacturer – some projects/donors don't have waiver to buy locally produced SP so causes stock-out.
- Data quality issues
- Supply chain system - regional hub to last mile. But truck drivers don't get to HFs and they ask HFs to come and collect.
- Delay in procurement of SP when ordered by govt (ie, challenges with quantification, forecasting, reporting)

Successes:

- Interface with different Commissions & approaching private sector to buy locally-produced SP (Nigeria)
- Data triangulation – service data with logistics data compared.
- When water is available is the HF this is good – woman can buy sachet of water to take or they come with their own.
- Laws at sub-national level that enable counties to use their local funds to buy SP for stock-out (Kenya).
- Switching to push system based on consumption data to alleviate some stock outs

Support Needs:

- Supporting Nigerian pre-qual process for SP
- Advocate to donors to prioritize local manufacturers of SP
- Donors to support purchase of SP

DAY 2

Key takeaways:

- **Site Visit:** Day 2 kicked off with a site visit to Greater Accra Regional Hospital, to observe their efforts at improving malaria in pregnancy services through facility-based training and mentorship, led by Amina Yakubu, Mildred Komey, Gladys Brew and Felicia Babanawo. The visit highlighted innovations at the facility to improve attendance and adherence to recommended interventions, including scheduling time slots for women, developing a flow chart including a picture of a pregnant woman, and demonstrating how to convert a single rectangular net to a conical net. In addition, we had a opportunity to observe data utilization and validation activities, and the structure of facility based mentorship and training. The staff at the site were engaged, and showed an unusually high level of ownership over the interventions and data. This has led to impressive uptake of IPTp and ANC attendance.
- **Country learning:** Presentations from countries showcased how Nigeria, Burundi, Burkina Faso and Uganda have worked to improve ANC and IPTp uptake so that we could all learn from. These presentations also highlighted national level challenges for MiP including: SP and ITN stock outs, availability of quality assured drugs manufactured in Africa, and missed opportunities for the delivery of IPTp during ANC as well as the need for improved integration between malaria and reproductive health /maternal health programs.
- **MUSKOKA:** This project with support from the French government and 4 agencies is supporting 9 countries to improve quality of and access to care, and ensure dissemination of program learning. This has led to substantial improvements in ANC and IPTp uptake.

Improving malaria in pregnancy services through facility-based training and mentorship in the Greater Accra Regional Hospital (Antenatal Unit) – Amina Yakubu, Principal Midwifery Officer, GARH

Approach to Implementing Change:

- Facility Management Engagement
  - Debriefing to management, Head of Department, units Heads and unit staff
- Setting up a task force
  - Four-member committee set up to monitor action plan implementation
  - Regular meetings and monitoring of implementation
  - Formation of data validation team at ANC
- Implementation of Action Plans
  - Training/orientation of unit staff on MiP guidelines, Standard Operating
  - Procedure (SoP) for ANC register, counseling skills, data entry and analysis
  - Demand generation for IPTp – Pregnancy School, Media Engagement, Health Education
  - Conducting exit interviews to ascertain customer satisfaction and improve services

    - Introduction of appointment cards to reduce waiting times
    - Monthly data validation to improve data quality
    - Monthly tracking of IPTp and ITN coverage
- Mobilization of Logistics
    - ANC registers, ANC tally books, bin cards for IPTp and LLINS
    - Monitoring and supervision of daily Maternal & Child Record booklets usage to ensure that all registrants are directed to the ANC Unit
    - Re-stocking of RDT at ANC unit
    - Monthly monitoring and plotting of IPTp coverage and use for planning
- Restructuring
    - Restructuring of SP administration within the hospital – Administration of IPTp in in-patient wards

Results:

- There is substantial improvement in IPTp coverage after the training and mentoring
    - IPTp 1 improved from 87% as at the time of intervention to 105% by end of June 2022
    - IPTp 3 increased from 64% to 123% by June 2022
        - Facility is a referral hospital hence pregnant women referred from other facilities continue IPTp from GARH-Ridge
- Significant improvement observed in IPTp 5 - from 32% to 79%

Lessons Learned and Promising Strategies:

- Antenatal Flow Chart developed and in use –Guiding patient flow from entry to exit
- Introduction of Appointment card to reduce waiting times
- Conversion of rectangular nets into conical nets to improve usage
- Client satisfaction surveys to improve customer service
- Periodic follow-up on defaulters via phone calls

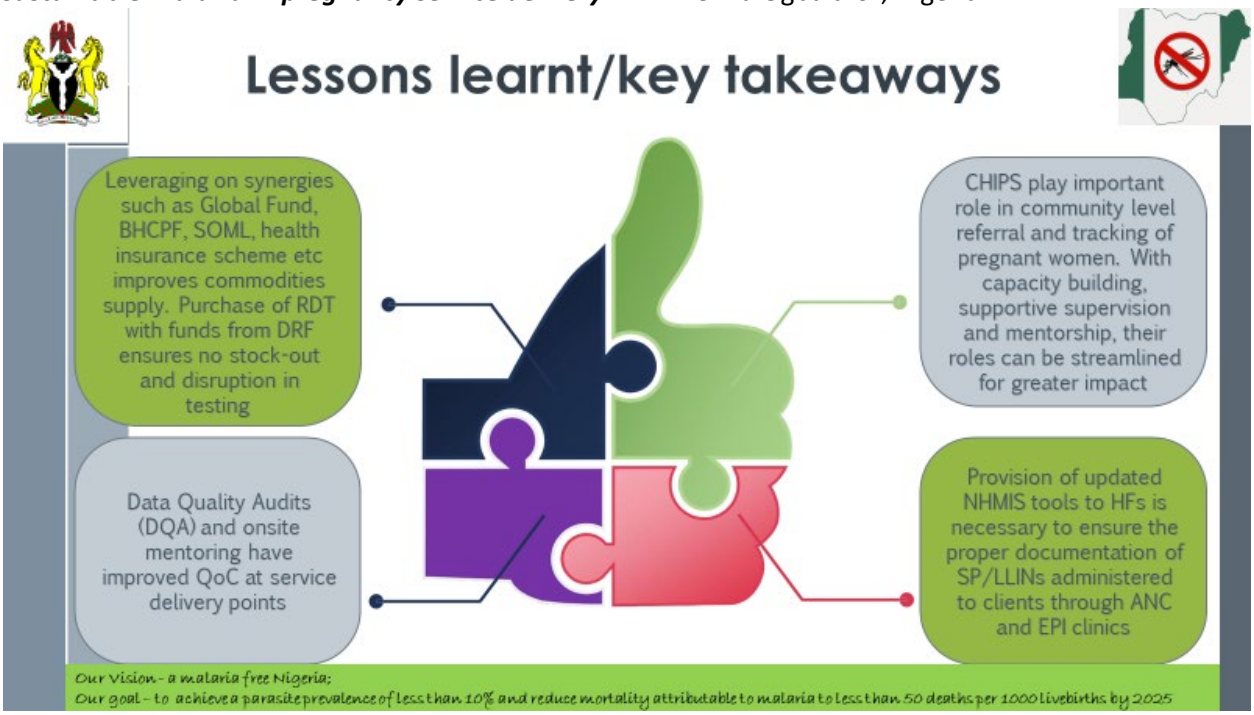
Site Visit to Greater Accra Regional Hospital: Photo Collage

Photo Credit: Doreen Akiyo Yomoah, center column

> *'I have been associated with MiPWG for 15 years, and I have seen it survive and persevere. It has held its mandate to bring NMCPs and the reproductive health communities together to solve the issues relating to malaria in pregnancy. I'm also delighted because we have now evolved into placing MiP as a central issue in any discussion on maternal mortality and in the malaria community. We have really addressed how to build bridges between the two communities.*
>
> — Koki Agarwal

Learning from countries

Reimagining and strengthening RMNCAH platform for government led-partnership to improve sustainable Malaria in pregnancy service delivery in – Nnenna Ogbulafor, Nigeria



Discussion:

- Q: How do you separate the malaria data when you want to stratify and how do you use that data to drive towards elimination, for example?
    - A: We look at the holistic data but you can also look at your area proper, ex: ANC coverage.

Evaluation of the IPTp strategy in Burundi – Landrine Mugisha, Burundi

Main recommendations and Innovative Solutions:

- Increase the number of antenatal visits or antenatal contacts during pregnancy
- Establish an individual file for each woman at the first CPN (f-CPN) and provide appointment follow-up files to track losses
- Review the IPTp Protocol
- Look for other services to combine with IPTp in addition to ANC, which could be of interest to pregnant women
- Organize capacity building sessions for ANC service providers
- Train CHWs on the offer of SP between the different ANC visits recommended by the WHO and communication in favor of early ANC
- Design a type of partnership with gynecology practices
- Regularly evaluate the strategy to redirect it if necessary

Discussion:

- Q: 25% of women interviewed said they have not taken SP. Is this due to a lack of commodity at the health facility, lack of water/cups, or lack of knowledge by the service provider?
    - A: It is a lack of knowledge. The last training for service providers was in 2016 so some do not know about IPTp. The in-charge has not been supervised. The main problem is lack of knowledge followed by procurement.
- Q: Can you clarify the supplementary services you want to add?

    - A: We have agreed that any women who come for ANC should be given an ITN. We also want to give education services at ANC. This will attract a lot of women.
- Q: For the recommendations to give CHWs approval to provide SP, is this approved by WHO?
    - A: There is no recommendation which says that the CHWs should provide SP. For ANC in Burundi IPTp is done at ANC. If they do not come for the second visit we will follow up in the community. If a woman cannot travel to the health facility, then they can get services in the community.

Technological Innovation to Develop Beneficiary-Centered Health Care: "Connecting with Sara": Pilot approach in Nyabikere District (March-September 2021) - Chanelle Muhoza, Burundi

Good practices and lessons learned:

- Data managers can easily process and analyze data due to the automatic, real-time storage of data;
- Real-time monitoring of CHWs strengthens their performance;
- Need to limit interaction between CHWs and beneficiary to 3 minutes because collecting multiple information leads to system malfunction.

Discussion:

- Q: Sometimes messages are sent to the beneficiaries in French and those who can't read, can't receive the information.
    - A: The messages are sent in the local language. We want to encourage people to sleep under a mosquito net every day. We send messages to people to also clean their environment, etc. The messages are for the entire people: husbands, etc., not just pregnant women. It is the same message for everyone.
- Q: How have people benefitted from the approach?
    - A: The community agent goes to the household to educate them on the measures that have been put in place. We use the same community agents who have been trained in the approach so during their visit to pregnant women they can respond to questions properly. They can review the questions in their phones; for example, if a woman is eligible. Even if they are not eligible, they are trained on the use of a mosquito net and we take advantage of the contact to provide education.
- Q: What is the literacy level of the beneficiaries for the text messages sent to them?
    - A: At the national level we do not have a lot of educated people, but we try to send very short messages because many have finished at least class 6 level so we are able to target those who can read the messages. For others, we use other channels.

Current status of MiP in Burkina Faso – Frédéric Guigma, Burkina Faso

Conclusions:

- MiP management is effective in Public Health Facilities & Private sector
- C-IPTp improves acceptability and coverage of IPTp and also ANC
- Solving of constraints and better funding of perspectives could improve IPTp & ANC. This is why we are expecting PMI funding for extension of services
- These could contribute to push down the High Burden of malaria in BF

Discussion:

- Q: How do you ensure the quality of malaria microscopy results for pregnant women?
    - A: We have proper monitoring and supportive supervision at the facilities to support the quality of microscopy results.
- Comment: You mentioned the challenge of lack of cost-effective studies – the TIPTOP project on C-IPTp looked at cost effectiveness of C-IPTp and the results have been shared. We expect/hope they will be published in the next 3 months. A summary of these results is that in all TIPTOP

countries C-IPTp was cost effective and it is extremely cost effective in areas where IPTp coverage started at a low level.

Experiences on MiP in 9 MUSKOKA focus countries – Abdoulaye Konate, Senegal

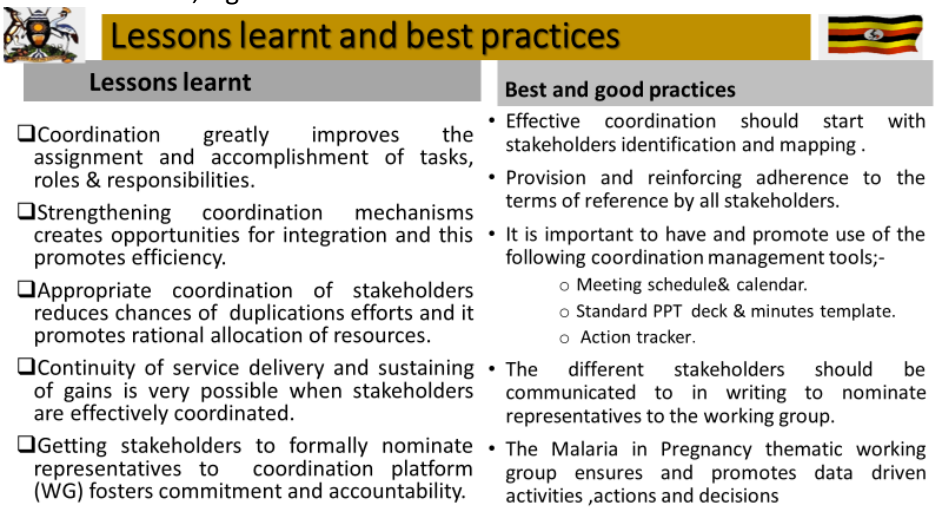
Key Messages:

1. Malaria remains a serious threat during pregnancy
2. IPTp3 coverage is increasing but still low
3. There are opportunities to increase IPTp3 coverage (ANC, partners)
4. Strong coordination, monitoring and evaluation are important to joint efforts and check the progress
5. "Le Fonds Français Muskoka" is highly contributing to increased ANC and IPTp3 coverage

Discussion:

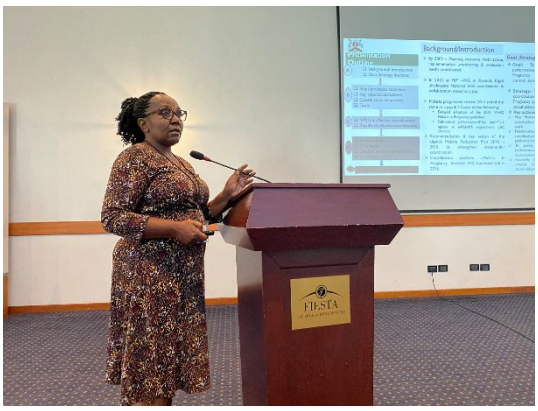
- Q: How were you interpreting missed opportunities when you have juxtaposed IPTp1 vs. ANC 4? To truly see that IPTp3 coverage is possible it should be juxtaposed with 4 ANC visits.
    - A: The graph also shows issues with the health system, for example issues in accessibility or demand. There is not one explanation. We need to analyze this country by country.
- Q: How did you calculate coverage rate?
    - A: This data was from the Global Health Survey set up by WHO to collect survey data from countries. The link is here: https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/maternal-and-reproductive-health.
    - We should insist on collaboration between MH and malaria control so that we can get good data. In each of the 9 countries we have a national team that includes an officer from the Ministry of Health who reviews the data with the four agencies that make up MUSKOKA. We also contact partners working in this area to harmonize our approach to addressing issues.
- Q: How does the MUSKOKA mechanism work?
    - It is founded by France and the four agencies work with the technical committee. The money is dispersed based on criteria. We do the monitoring and each year there is a report that examines the strengths/weaknesses and then we develop workplans to fill the gaps.

Coordination of stakeholders as key measure to improving Malaria in Pregnancy service delivery – Jane Nabakooza, Uganda



Discussion:

Photo credit: Doreen Akiyo Yomoah



- Q: Do you think you left out pregnant women as a key stakeholder? Maybe a few representatives could join the group to get their opinion on what is happening.
    - A: It's important to have all stakeholders involved. Uganda also noted that pregnant women were absent. The TWG meets monthly but every two years we have a larger stakeholder meeting that includes decision makers, pregnant women, husbands, etc. to hear their views.
    - The next meeting will have all female members of parliament to show them the data from their areas so they can see what is happening with IPTp there.
- Q: How did academia help you with your issues?
    - A: They have a number of roles in Uganda and as we deliberate they pick some questions for their research agenda. They then share the results of these studies with the TWG. We also consult them for advice on some technical issues or for reviewing documents.
- Q: Do you include the Minister of Finance in your TWG? If they don't understand what we are doing, they can't provide the correct budget approvals. Is it time to get them involved?
    - A: There there is no direct representation for the Minister or Ministry of Finance. However, the Ministry of Finance gets indirectly involved by getting updates and providing feedback through interlinkages of the TWGs at different levels of the coordination structure.
        - The MiP thematic WG is linked to the MCH & NDC TWGs through the ANC subcommittee & Case Management TWG.
        - The MCH & NDC TWGs are linked to the Senior Management Committee where the Commissioner Finance & Accounting takes note of finance issues and presents them to the top management where the Permanent Secretary (PS) is a member.
        - The PS identifies the finance issues, shares them during the senior top management meetings and they are captured by the Minister who eventually shares with her counterpart of Ministry of Finance during the cabinet meetings.
        - It is basically through the linkage of the coordination structures that the Minister of Finance is able to receive updates and provide feedback on finance matters concerning the health sector including Malaria in Pregnancy control and prevention.
- Q: How do you handle the knowledge and experience conflicts to maintain harmony?
    - A: It is a challenge, but we normally focus discussions to key guiding documents and maintain focus on key objectives. The dialogue is based on evidence-based information.
- Q: Multiplicity of coordinating bodies is a challenge. How do you ensure that all committees are working towards the same goal? And how are their outcomes/recommendations consolidated and followed up? Do you have a chair for the coordinating mechanism at the national level?
    - A: Each section of the structure has a chair and a secretariat. The subcommittees feed into the senior management committee. The terms of reference developed help to avoid ambiguity and guide the group on aligning objectives. There is a chair that is nominated each year and this person can serve consecutive terms.

DAY 3

Key Takeaways:

- **Cost of ANC or particular ANC services is a barrier to access in multiple countries, and needs to be addressed**.
- Consistent SP supply issues remain. **UCL Corporation, Ltd in Kenya received prequalification for SP in 2022 and this is a big step to support sustained availability of quality assured SP.**
- **We can strengthen coordination within countries through functioning MiP TWGs**, and between countries through the country Advisory Board.
- **Best practices from the MiP TWGs** include continual communication between meetings about action planning and requesting supervisors nominate a representative to the MiP TWG to promote accountability of members.
- **The MiP WG has launched a country advisory panel to strengthen linkages between country teams and the RBMMiPWG**. Each member has a regional network with whom he or she is supposed to work to increase country engagement and ensure that the WG focuses attention on the greatest needs in country.
- **C-IPTp is a no missed opportunities approach that helps increase access to IPTp** among eligible pregnant women in the communities they live and at antenatal care. This no missed opportunities approach promotes ANC as a mainstay of care, with delivery of IPTp at community level complementary to ANC services.
- WHO promotes- '***ANC remains an important platform for delivering IPTp. Where inequities in ANC service and reach exist, other delivery methods (such as the use of community health workers) may be explored, ensuring that ANC attendance is maintained and underlying inequities in ANC delivery are addressed.'***
- The Transforming Intermittent Preventive Treatment for Optimal Pregnancy project developed **key resources for C-IPTp implementation which can be found here. WHO is developing a C-IPTp Operational Field Guide**. The composite of learning tools and resources will assist all countries at various stages including- considering, implementing and scaling C-IPTp.
- Overall, country results from C-IPTp experiences revealed good results. **Nigeria, Sierra Leonne and Senegal saw strong increases in IPTp after piloting or introducing C-IPTp with minimal negative impact on ANC utilization**. Malawi's experience did not reveal the same results, which may have been affected by low health provider to client ratio.
- **WHO recently recommended perennial malaria chemoprevention,** which is an update to earlier recommendations for Intermittent preventive treatment of infants (IPTi).
    - The original recommendation stated that three doses of the drug SP should be given only at 2, 3 and 9 months of age through the expanded programme on immunization (EPI), timed with the 2nd and 3rd doses of the DPT/Penta and measles vaccines. The new recommendation removes this tight specification for the number of doses, as well as the ages at which they should be given. It also extends the target age group to include children beyond the first year of life in places where the burden of severe disease is high.
    - In addition, the new recommendation has removed restrictions on the use of SP based on prevalence of *Pfdhps 540* mutations.
    - A number of studies are looking at how best to implement PMC, the effect of the addition of azithromycin, and acceptability and feasibility of these strategies.

Country Panel Discussion:

Building strong MiP TWGs and global linkages

MiP Technical Working Group Support Resources - Kate Wolf, Jhpiego

- Created to assist NMCPs and Reproductive/Maternal Health Programs to establish, organize, and maintain national-level MiP Technical Working Groups (TWGs)
- Aimed at improving coordination and collaboration, & to foster achieving high impact on MiP
- Can be used either as a package or in separate parts to support the establishment, re-establishment, or strengthening of national MiP TWGs
- The guide is made of:
    - Introduction
    - Illustrative terms of reference
    - Goal, purpose, functions, operations, membership
    - Illustrative meeting agenda with facilitator's notes
        - Promote data reviews
        - Advocate for action planning, follow up
    - Suggested discussion topics
    - Meeting presentation template
    - Meeting minutes template

Panel Discussion:

What do countries think about having peer to peer connections established with countries through the MiP WG Advisory Board?

- Advantages: Can support each other, can have peer support, way to have peer review of ideas/materials, cross-country sharing

- Challenges: Time zone differences, extra work/meetings, sharing of best practices is not always relevant to other contexts
- Suggestions:
    - Start small with a few countries
    - Don't make meetings too frequent
    - Have clear facilitation, action items, follow up so objectives are clear and meeting will be focused
    - Set agenda in advance: what is really captivating for this meeting? Are there new WHO updates or research findings? Include something that drives interest.
    - Have all countries agree on the agenda items to ensure relevance

Current Advisory Board Members	**Regional Network**
Nnenna Ogbulafor, Nigeria	Cameroon, Zambia
Sattu Issa, Sierra Leone	Malawi, Rwanda
Mildred Komey, Ghana	Liberia, Zimbabwe
Jane Nabakooza, Uganda	Kenya, Tanzania
Frederic Guigma, Burkina Faso	Niger, Mali, Senegal, Guinea
Chanelle Muhoza, Burundi	DRC, Madagascar, Benin

> *'I was very enthusiastic about the Advisory Board —meeting, discussing further and putting faces to the names I've met virtually. I've learned a lot, and I also think that I've made great relationships with colleagues, partners and funders'.*
>
> — Nnenna Ogbulafor

What's working/not working with your TWGs?

Successes:

- Integration: Coordination across departments (especially between malaria control and reproductive health)
    - Opportunity for dialogue
    - Combine supervision
    - Supports rapid uptake of new policies
    - Sharing of progress against indicators
- Sustainability: Ensure projects leave a sustainability plan so there is no vacuum when the project ends

Challenges:

- Private sector unwilling to deliver drugs
- Attendance: hard to motivate key stakeholders to participate

Best practices for TWG meetings:

- When designing agenda, be sure to include data
- Write to the supervisors to nominate members to be in the TWG: This helps promote strong attendance/accountability because they have to report back to the supervisors
- Invite people who are motivated
- Try to engage participants in advance of the meeting with topics that will be covered in the meeting so that they are motivated to attend
- Use an action tracker and continue sharing it with members to remind those tasked with action items to follow through

What's the Word on C-IPTp?: Global guidance, resources and country experiences

A quick word on C-IPTp - Elaine Roman, Jhpiego

WHO: C-IPTp Guidance - Peter Olumese, WHO

WHO Guidelines for Malaria (2021)

- These consolidated guidelines replace the two pre-existing WHO guidelines for the treatment of malaria (3rd edition), and for malaria vector control.
    - First published in February 2021 and updated on periodic basis: 4th (latest) update released on 3rd June 2022
- Available online at WHO website: https://www.who.int/publications/i/item/guidelines-for-malaria

New chemoprevention recommendations:

New chemoprevention recommendations

- The updated chemoprevention recommendations reflect the paradigm shift, outlined in the introduction, to provide greater flexibility to NMPs to adapt control strategies to suit their settings. Standard processes have been used to develop evidence-based recommendations which are not unduly restrictive. We no longer specify strict age groups, transmission intensity thresholds, numbers of doses or cycles, or specific drugs. The effectiveness of a chemoprevention programme will be influenced by a host of contextual and other factors (e.g. intensity of malaria transmission, extent of seasonal variation in transmission, the age group targeted by the chemoprevention programme, the preventive efficacy of the drugs used, the frequency of dosing, duration of protection of each treatment course, availability of drugs, coverage achieved, adherence to the recommended regimen) and by the mix of interventions being deployed in each setting. NMPs are therefore encouraged to consider local data to determine how best to tailor chemoprevention strategies to local needs and determine which age groups should be targeted where, for how long, how frequently, and with which drugs. Subnational tailoring is increasingly needed, for example to recognize the variation in duration of the transmission season even within a country, meaning that 3, 4, 5 or more cycles of SMC may be warranted in different subnational areas.

Global **Malaria** Programme

World Health Organization

Current guidance on IPTp:

Intermittent preventive treatment in pregnancy (IPTp)

Strong recommendation for , Moderate certainty evidence

Updated

Intermittent preventive treatment of malaria in pregnancy (2022)

In malaria-endemic areas, pregnant women of all gravidities should be given antimalarial medicine at predetermined intervals to reduce disease burden in pregnancy and adverse pregnancy and birth outcomes.

- *SP has been widely used for malaria chemoprevention during pregnancy and remains effective in improving key pregnancy outcomes.*
- *IPTp-SP should start as early as possible in the second trimester and not before week 13 of pregnancy.*
- *Doses should be given at least one month apart, with the objective of ensuring that at least three doses are received.*
- *ANC contacts remain an important platform for delivering IPTp. Where inequities in ANC service and reach exist, other delivery methods (such as the use of community health workers) may be explored, ensuring that ANC attendance is maintained and underlying inequities in ANC delivery are addressed.*
- *IPTp is generally highly cost-effective, widely accepted, feasible for delivery and justified by a large body of evidence generated over several decades.*

Global **Malaria** Programme

World Health Organization

2022 Updates:

Treatment of uncomplicated falciparum malaria

- Treat children and adults with uncomplicated *P. falciparum* malaria (excluding pregnant women in their first trimester*) with an ACT.
  - artemether plus lumefantrine; artesunate plus amodiaquine; artesunate plus mefloquine; dihydroartemisinin plus piperaquine; artesunate plus sulfadoxine-pyrimethamine; artesunate plus pyronaridine*

* Updates in progress

new recommendations Finalised; official release in October 2022

Primaquine for radical cure

- The G6PD status of patients should be used to guide administration of primaquine for preventing relapse.
- To prevent relapse, treat *P. vivax* or *P. ovale* malaria in children and adults with a 14-day course (0.25-0.5 mg/kg bw daily) of primaquine in all transmission settings, unless contraindicated*.

new recommendation finalised. Official release in October 2022

Discussion:

- Q: Recommendation on IPTp geographic location no longer specifies 'in Africa'. Does this mean it can be used out of Africa?
  - A: The recommendations are no longer specific regarding age groups, geographic locations. The recommendation says 'in malaria endemic areas'. There are malaria endemic areas not in Africa so IPTp can be applicable in those areas.
- Q: Has the policy for primaquine in pregnant women changed?
  - A: Primaquine recommendations have not changed: It is contraindicative in pregnant women.

C-IPTp Resources You Can Use **-** Emmanuel 'Dipo Otolorin, Independent Consultant

C-IPTp Resources:

- The resources used for the TIPTOP Project are available on the TIPTOP website: https://www.jhpiego.org/a-tiptop-legacy/ (see Scalability Section)
  - Operational Field Guide
  - Generic Learning Resource Package
  - Technical briefs
  - Tools
    - All can be customized to meet each country's needs and they can be translated to the preferred language of instruction.
- The **WHO C-IPTp Field Guide** is currently under development and will include tips and tools for the introduction or scale-up of C-IPTp programs in countries.

Discussion:

- Q: When will the WHO guide on C-IPTp be available?
  - A: It is still in draft at this time and it's difficult to predict when this will be available.

Learning from countries: Panel Discussion

- Bright Orji: Nigeria
- Wani Lahai: Sierra Leonne
- Zeinabou Gaye: Senegal
- Akuzike Banda: Malawi

> *'Community health workers can provide life-saving interventions — SP is still a life-saving drug for women who are pregnant. Breaking down barriers so women can have access to this drug is critical. Nigeria has included community IPTp in the national malaria strategic plan for 2021 – 2025. We want countries to know that it is doable.'*
>
> — Bright Orji, Jhpiego

What needs to happen for C-IPTp to go to scale and be sustained?

Country	Country Actions	Partner Actions	Donor Actions
Nigeria	Move C-IPTp forward to policy level and harmonize the scope of work for CHWs to include SP	Technical support to build competency for project management and C-IPTp programming	Allocate funds to support C-IPTp implementation - can GFATM unspent funds be reallocated to support CHWs/C-IPTp in Nigeria?
	Develop costed work-plan for c-IPTp implementation and identification of sources of funds	Generate evidence-based costed work-plan for C-IPTp	Support availability of quality assured SP in-country
Sierra Leone	CHW policy and guidelines were updated and all data collection and reporting tools fully integrated into mainstream	Support to District Health Management Teams (DHMT) in regular supportive supervision and mentorship of C-IPTp activities.	Provide motivational incentives to sustain CHWs to deliver C-IPTp.
	Availability of regular supply of quality-assured antimalarial medicines (SP) for community administration is in place.	Monitor and supervise C-IPTp activities.	Give additional support in making SP always available.
Senegal	Ensure consistent supply of commodities	Provide adequate finding	Ensure funding sustainability
	Provide regular long term supervision		
Malawi	Recruit more CHWs to meet the recommended ratio of 1 CHW per every 1000 people	Generate adequate evidence to show that C-IPTp improves IPTp3+ uptake	Provide adequate funding for a larger scale pilot
	Improve ANC record keeping		

Discussion:

- Q: ANC attendance: How was this impacted by delivering SP at the community?

    - A: TIPTOP was designed so that women in the community would see SP as an incentive to attend ANC and there was a strong referral system in place to encourage this. Then the women are followed up by their CHW to ensure they are attending ANC.
    - A: If you go back to what Peter said and where WHO promotes C-IPTp – it is where it is linked with ANC.
        - C-IPTp is not instead of delivery at ANC. It is complimentary to ANC. If we are seeing a decrease in ANC, then we are failing.
        - It is expected that over time the same women are going more and more to ANC and getting their SP doses there rather than in the community as the importance of ANC attendance is reinforced. This was seen in multiple TIPTOP implementation districts
    - A: In Senegal it was a global package, if there was no pregnant woman in the house, others in the house were educated on child illnesses, for example.
- Q: Please speak more about stocks and reporting
    - A: In Sierra Leone, the TBAs/CHWs are attached to a health facility. When the drugs get to the facility, the in-charge allocates 30% of the SP to the TBAs/CHWs. At the end of each month the TBA reports the quantity dispensed and this is documented at the facility. The facility workers also supervise the TBAs/CHWs on a regular basis (once or twice a month).
    - A: In Malawi, the CHWs have registers to list consumption of SP and are to report back to the facility if they have stockouts or are running low to request resupply from the pharmacy technicians at the facility.
    - A: In Nigeria, each CHW was given a smartphone to upload their data to the national dashboard. This is following validation of data by the health facility supervisor. Then there are 14 days to validate this data.
- Q: Who gives the first dose of IPTp?
    - A: In TIPTOP there were two models: In Nigeria and DRC the CHW could give all IPTp doses. In Madagascar and Mozambique the health worker has to give the first dose and then the CHW can give the following doses. In Nigeria and DRC it is expected the second dose will be given at the facility because they will be referred for ANC after receiving the first dose.
        - The CHWs were not trained to determine gestational age. They gave the first dose based on fetal movement/quickening.

Potential innovations in pregnant women and young children chemoprevention service delivery

Increasing Intermittent Preventive Treatment uptake through enhanced antenatal clinic service delivery and community mobilization to improve maternal and child health - Kassoum Kayentao, Malaria Research and Training Center, University of Sciences, Techniques, and Technologies of Bamako, Mali

Conclusion of studies:

- Providing an integrated and sustainable strategy to improve IPTp coverage will be a major advance for malaria prevention in pregnant women
- At the same time, our strategies have the potential to boost ANC attendance and uptake of the latest WHO ANC recommendations of eight ANC contacts

Discussion:

- Q: Do you want to combine IPTp and IPTi? Are we not making the work very daunting for them? I think it will take a lot of monitoring.
    - A: We thought about this. We worked on this protocol together with experts in the area and we need basic training to allow the administration of the medicine. This agent can go door to door and identify pregnant women. Once the pregnant woman is identified

and we learn she has never done ANC, we send her to the health center. There is a sheet to track when the woman has taken SP and it keeps getting tracked until she has gone through all 4 visits.

- Q: When are we going to get the results of the operational research? Is it going to be sent to us?
    - A: The data will be available by next year for the first study. We are now ending the intervention survey.
- Q: Was the focus on ANC very successful? And if it wasn't, what is the new strategy to strengthen the 8 contacts.
    - A: We are still struggle with the ANC overall, but in areas where partners are present or women have activities that generate resources, it is much better. The reality is that to access ANC services including IPTp, there are fees to pay. Now, we are trying to negotiate with the government to remove the cost of ANC services. In the meantime, health workers sensitize pregnant women to come every month for IPTp-SP and ANC. Also, we are now working on community IPTp-SP through different ways according to the availability of partners (CHWs or community relais to recall pregnant women for their ANC appointment and IPTp-SP administration; provide IPTp-though SMC (now in trial); Monthly ANC outreach to reach grass root communities; Community based promotion campaign).
- Q: Will the study provide all the commodities? Will there be stockouts?
    - A: We did not have commodity stockouts because we were able to secure sufficient commodities for the study duration. This was possible through our continued collaboration with the PNLP.
- Q: Is there some possibility that the health facility does not have enough health workers to go around in the community?
    - A: In general, facilities in rural areas do not have enough workers to conduct outreach ANC at village level (communities located further than 5 km of the health structure). In addition to that crisis, is the mobility/availability of health workers as the key personnel (including ANC workers) are often attending meetings at district level leaving the health centre to less skilled health providers.

Perennial Malaria Chemoprevention (PMC): The Unitaid IPTi+ Project addressing the gap between WHO guidance and country implementation - Jacques Kouakou, PSI

Key Takeaways

- Perennial Malaria Chemoprevention (PMC) is a new WHO recommended strategy that builds upon IPTi
- New PMC guidance is broad and allows tailoring of chemoprevention to suit the country context extending the age, number of doses, delivery channels and drug choices for chemoprevention of malaria in children
- The IPTi+ Project is an example of how PMC strategies can be defined and operationalized by using a multi-stakeholder approach to malaria intervention design
- The experience of the four countries taking part in co-design has resulted in 4 different PMC strategies each selected for their particular setting.

Discussion:

- Q: For the C-IPTp the implementation guide that was set up by WHO when the program is over, are you going to look at all that has been learned since it's going to interest all of the countries involved?
    - A: One of the objectives of this project is to help the country adapt to the new prevention model and we should have a result that will help other countries to adapt these strategies to their local context and to be scaled.

- The PMC should take place in areas where malaria is constant as opposed to countries where malaria is seasonal. The two interventions are complimentary. For example, in Benin in the South malaria is very constant, but in the north it is seasonal so they can do SMC.

Introducing intermittent preventive treatment with sulphadoxine-pyrimethamine (IPTi-SP)/ perennial malaria chemoprevention (PMC): Ongoing efforts and lessons learnt from Sierra Leone, Mozambique and Togo – Augustin Fombah & Kwabena Owusu-Kyei, ISGlobal, Sierra Leone

MULTIPLY - ("MULTIple doses of IPTi Proposal: a Lifesaving high Yield intervention. https://multiplyipti.net)

Background:

- MULTIPLY is a 40-month pilot implementation research Project aimed at giving multiple doses of IPTi-SP and expanding it into the second year of life, delivered alongside routine immunizations. It is an EDCTP funded consortium and the study is conducted in Sierra Leone, Togo and Mozambique
- Currently conducting the study in 25 health facilities across three districts in the north and northwest regions of SL.
- Unlike the adult SP Tablet being used for both pregnant women and children since its implementation in SL, MULTIPLY is introducing a paediatric dispersible Tablet to the children.
    - Under the current policy, IPTi-SP is given to children at 10w, 14w and 9m alongside DPT2, DPT3 and Measles/YF vaccines respectively in line with the 2010 WHO recommendation.
    - MULTIPLY is introducing three additional doses at 6months, 12months and 15months alongside first dose Vitamin A, 2nd dose Vitamin A and Measles booster respectively
- MULTIPLY aligns with the recent WHO recommendation under a new nomenclature "Perenial Malaria Chemoprevention"
- The SP is given to children at health facilities and outreach mobile clinics by trained nurses after weighing the children.

Key positive observations for IPTi include:

- Strong collaboration is key!
- Weighing children before giving SP is important
- Stock management systems are working well
- Dispersable tablet has reduced preparation time

ICARIA - "Improving Care through Azithromycin Research for Infants in Africa". https://www.isglobal.org/en/-/icaria

Background:

- Objective: Evaluation of the impact on childhood mortality of azithromycin plus Intermittent Preventive Treatment administered through the expanded program on immunisation in Sierra Leone
- 6 doses of IPTi is also administered to all enrolled children in ICARIA using same contact points and ages
- It is conducted in 14 different health facilities but in the same districts as MULTIPLY
- All 20,560 children to be enrolled will be given 6 doses of SP over 4 years regardless of the arm to belong to.

Key questions to answer prior to scale up of intervention in high childhood mortality burden countries:

- Potential development of macrolide resistance
- Delivery channels and sustainability

- Interactions with routine vaccinations
- Safety

Discussion:

- Q: IPTi: You are giving 2 antibiotics routinely. What is the effect of giving children antibiotics at a young age regularly?
    - A: This project is answering some questions that have not yet been answered. We are concerned about antimicrobial resistance and have to look at the overall effects. We will look at a subset of children to look at microbial resistance and these will be monitored as part of the study so we can see overall impact on the community.
- Q: Do you think the participant rates will affect the outcome of the study?
    - A: We are making sure that we can track children who don't come and then do outreach services. This is challenging because of poor resources. We are looking at vaccination history and a more detailed analysis will need to look at prevalence vs. uptake among children.

Thank you all for a wonderful 22nd annual meeting of the RBM MiP Working Group! Thank you to our funders, the IMPACT Malaria Project and the U.S. President's Malaria Initiative, for their generous and consistent support of the MiP WG, as well as to MUSKOKA, the Global Fund and the UNDP for supporting participant travel. A very big thank you to all of the presenters and facilitators for sharing your learning and for the robust discussions. And finally, a very dear thank you to the Ghana Team – Mildred, Gladys, Felicia, Yamina and all of those from the Ghana Health Service and the Greater Accra Regional Hospital for your wonderful hospitality and for sharing your experiences, achievements and beautiful country with us.