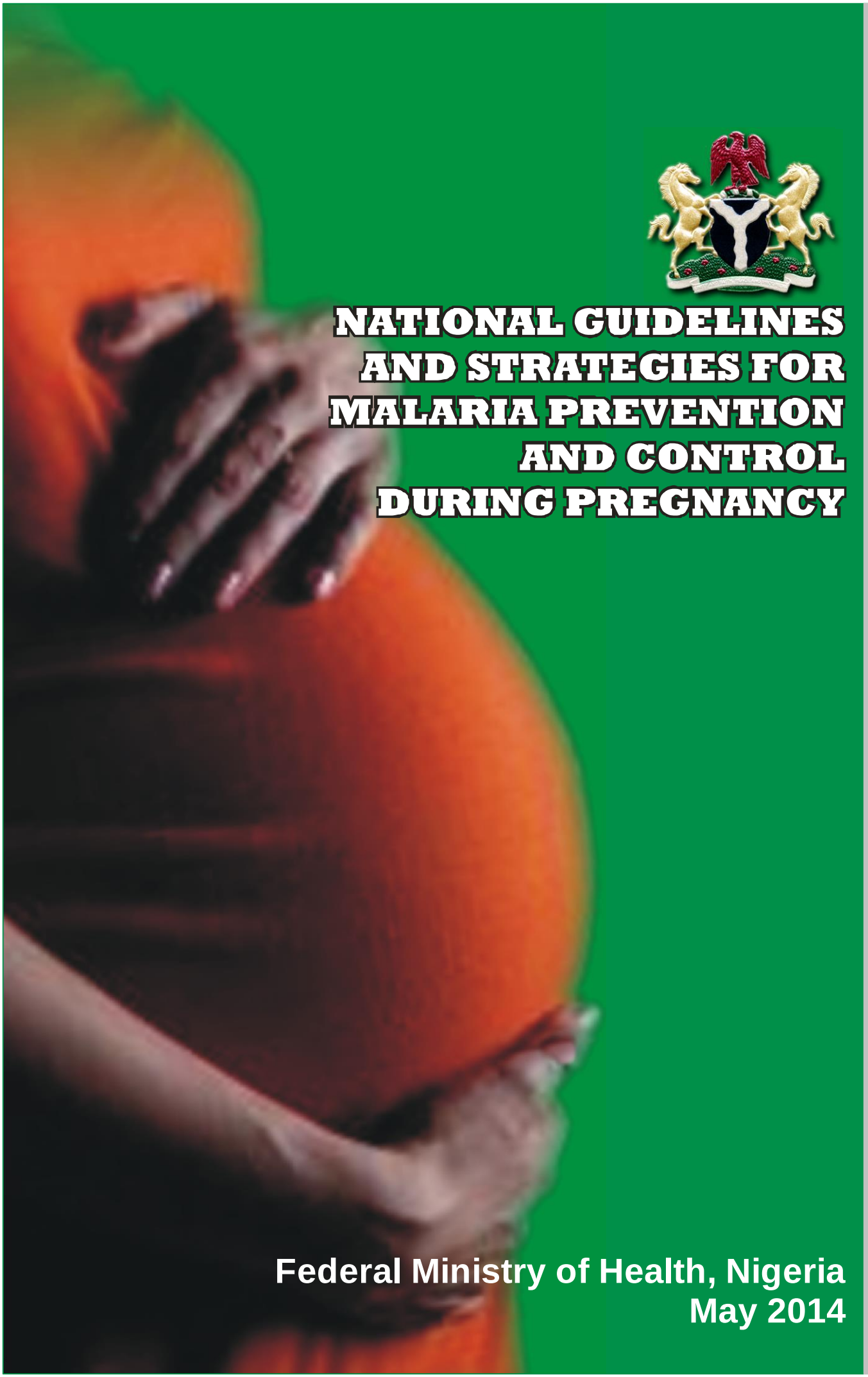


NATIONAL GUIDELINES AND STRATEGIES FOR MALARIA PREVENTION AND CONTROL DURING PREGNANCY

Federal Ministry of Health, Nigeria
May 2014

Foreword

Malaria contributes to the high burden of disease in the sub-Saharan Africa. Its victims are mostly pregnant women with their unborn babies and children below the age of five years.

The Government of Nigeria have adopted strategies for the prevention and control of malaria in pregnancy to reduce the morbidity and mortality from malaria for mothers and their children in accordance with the Abuja Declaration.

Malaria preventive strategies, delivered alongside other components of Focused Antenatal Care (FANC) Packages have great potentials to accelerate the achievement of Millennium Development Goals 5 which focuses on improving maternal health in addition to reducing the disease burden.

Intermittent Preventive Treatment (IPT) of malaria in pregnancy is a tested intervention with proven effectiveness. The IPT is based on the administration of full course of preventive treatment to pregnant women after quickening to clear the presumed burden of parasites. It also provides significant protection against maternal anaemia and mortality as well as low birth weight and abortion.

This edition of the guidelines has been reviewed to include best practices and new scientific evidences which are in line with Nigeria's aspiration of scaling up all interventions to achieve malaria elimination by the year 2020.

I, therefore call on all major stakeholders to buy into this new thinking and be involved in this scaling up process until every pregnant woman in Nigeria avails herself of the opportunity offered by the use of intermittent preventive treatment of malaria in pregnancy.

I wish to thank all partners and stakeholders in Nigeria for their continual support. It is my hope and desire that this document would serve as a good guide to all stakeholders in ensuring that our pregnant women go through the period of gestation and end up as healthy mothers.

Prof. Onyebuchi C.O. Chukwu
Honourable Minister of Health

Acknowledgement

The development of the National Strategies and Guidelines for the implementation of Intermittent Preventive Treatment of Malaria in Pregnancy is a major leap towards the introduction and eventual scaling up of this novel intervention in the country

This document is a complete package that provides key guides in management of malaria during pregnancy. I am delighted that the document had been written with WHO standards and also recommended the use of RDTs for diagnosis before treatment especially in the first trimester.

Currently, there are no approved alternatives to Sulphadoxine-pyrimethamine (SP) for IPTp. It must therefore be emphasised that the pregnant women who cannot take SP need to consistently sleep inside long lasting nets (LLINs).

I hope that this document would serve as a practical and useful guide to all stakeholders working to ensure that all women at risk of malaria during pregnancy in Nigeria would be protected.

Let me seize this opportunity to acknowledge the contributions of various partners, line Ministry, Reproductive Health, Research groups, the academia and representatives of Non Governmental Organisations and other professional bodies who participated in the update of the second edition of this document.

The National Malaria Elimination Programme (NMEP) remain grateful to the Presidential Malaria Initiative for supporting the process

Dr. Nnenna Ezeigwe
Coordinator, National Malaria Elimination Programme

Publications of the Federal Ministry of Health, Nigeria
Available at <nmcp.gov.ng>
The responsibility for the interpretation and use of the material in this guideline lies with the reader, however, all issues arising from this document should be appropriately directed to:
G. Ntadom
Case Management and Drug Policy Branch
National Malaria Control Programme
Abia House, Central Business District, Abuja, Nigeria
E-mail: ntadomg@yahoo.com

TABLE OF CONTENTS

ACRONYMS

1	ACT	-	Artemisinin-based Combination Therapy
2	ANC	-	Antenatal Care
3	BCC	-	Behaviour Change Communication
4	CHEWs	-	Community Health Education Workers
5	CQ	-	Chloroquine
6	DOT	-	Directly Observed Treatment
7	FANC	-	Focused Antenatal Care
8	FMOH	-	Federal Ministry of Health
9	HIV	-	Human Immunodeficiency Virus
10	IEC	-	Information Education Communication
11	IMCI	-	Integrated management of Child hood illness
12	IPT	-	Intermittent Preventive Treatment
13	IPTp	-	Intermittent Preventive Treatment in Pregnancy
14	LLIN	-	Long Lasting Insecticidal Nets
15	LBW	-	Low Birth Weight
16	LGA	-	Local Government Area
17	MIP	-	Malaria in pregnancy
18	NAFDAC	-	National Agency for Food and Drug Administration Control
19	NMEP	-	National Malaria Elimination Programme
20	NPHCDA	-	National Primary Health Care Development Agency
21	PMVs	-	Patent Medicine Vendors
22	RBM	-	Roll Back Malaria
23	RH	-	Reproductive Health
24	SP	-	Sulphadoxine - Pyrimethamine
25	TBAs	-	Traditional Birth Attendants
26	WHO	-	World Health Organisation

1.0. INTRODUCTION

1.1. Burden of Malaria in Pregnancy

Malaria is highly endemic in Nigeria and poses a major health challenge with attendant risk of morbidity and mortality contributing to loss of productivity and economic development (FMoH, 2009). The most vulnerable groups are children below 5 years of age and pregnant women, particularly women in their first and second pregnancy.

In 2004, the Federal Government of Nigeria adopted prevention of Malaria in Pregnancy intervention as a component of Focused Antenatal Care with a view to drastically reduce the burden of malaria in the country. Though the provision of malaria preventive services have been free in all public facilities, across the country, the utilization has remained low due to the consistently low antenatal attendance, especially in some states in northern Nigeria where ANC attendance is still less than 30% (NDHS, 2013). The 2008 NDHS showed an average of 43.7% and 76.9% ANC attendance by rural and urban dwellers respectively. This improved slightly to 46.5% and 86.0% in 2013. This makes the administration of the intervention difficult in higher prevalence rural areas as it is primarily facility based at present and requires supervision by skilled health care providers. However, new strategies are being developed to involve the communities in the intervention.

1.2. Consequences of Malaria in Pregnancy

Malaria infection during pregnancy poses substantial risk to the mother, her foetus, and the neonate. The prevalence of parasitaemia appears greatest in the second trimester, and susceptibility to clinical malaria may persist into the early postpartum period. Due to the endemicity and high transmission rate of malaria in Nigeria, pregnant women have acquired partial immunity being resident in stable malaria area and are susceptible to sub-clinical infections, which may result in adverse effects to both mother and child (see Figure 1). It significantly contributes to anaemia in pregnancy, increases the occurrence of low birth weights and is associated with pre-term deliveries, still births and perinatal mortality.

Preventing severe anaemia caused by malaria will lead to fewer pregnant women requiring blood transfusion thereby reducing the risk of transfusion-related infections especially HIV and Hepatitis B. The adequate control of malaria in pregnancy should lead to a better outcome

of pregnancy, improve survival of mothers and reduce perinatal mortality.

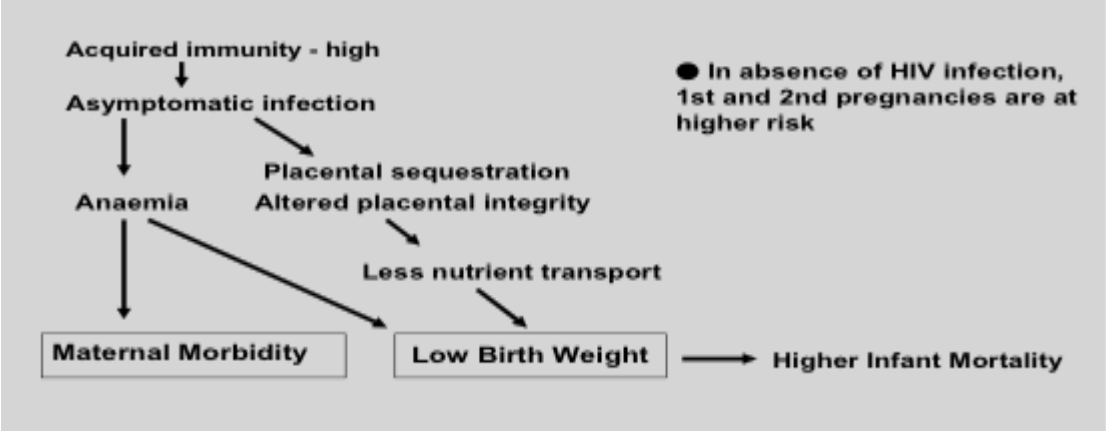


Figure 1: Adverse consequences of malaria during pregnancy in areas of stable transmission (WHO, 2004)

1.3. Current Practices in Prevention and Control of Malaria in Pregnancy in Nigeria

Nigeria is currently implementing prevention of Malaria in Pregnancy intervention as a component of focused antenatal care services (FANC). Focused Antenatal Care provides the most practical platform for the delivery of these interventions. The key interventions that can be provided at the ANC for the prevention of malaria in pregnancy include administration of Sulphadoxine-pyrimethamine (SP) for intermittent preventive treatment (IPT) under direct supervision of skilled service providers, distribution of long lasting insecticidal nets (LLINs), and appropriate case management through prompt diagnosis and effective treatment with recommended medicines. These interventions are illustrated in Diagram 2.

This current guideline considers new evidence and updates based on the 2013 WHO recommendations (WHO, 2013) on interventions for the effective control of malaria during pregnancy.

1.4. Objectives of the Guidelines

The objectives of this guideline include provision of guidance on the:

- implementation of prevention of malaria in pregnancy as a component of focused antenatal care
- diagnosis and treatment of malaria in pregnancy

1.5. Deployment of Malaria in Pregnancy Intervention

The deployment of MIP intervention shall be in line with the implementation of focused antenatal care at the tertiary, secondary, primary and community levels.

2.0. FOCUSED ANTENATAL CARE SERVICES

Focused antenatal care (FANC) promotes evidence-based, goal-directed actions in addressing most prevalent health issues affecting women and newborns, adjusted for specific populations/regions, appropriate to gestational age and based on firm rationale. It is a family-centered care which deals with specific needs and concerns of the pregnant woman. It emphasizes ***Quality*** rather than quantity of ANC visits.

The implementation of FANC in Nigeria recommends that pregnant women should make at least, four visits as follows;

- **First visit**: Within **16 weeks** or when the woman first thinks she is pregnant
- **Second visit**: At **20-24** weeks or at least once in second trimester
- **Third visit**: At **28-32** weeks
- **Fourth visit**: At **36** weeks or later

Focused antenatal care encourages pregnant women to make unscheduled visits whenever they experienced danger/warning signs in the course of pregnancy.

2.1 Definition of Intermittent Preventive Treatment

Intermittent preventive treatment (IPT) is the use of antimalarial medicines given in treatment doses at predefined intervals starting as early as possible in second trimester of pregnancy to clear a presumed burden of malarial parasitaemia in asymptomatic pregnant women.

IPT is a curative dose of SP which clears the placenta of parasites. New evidence provides support for administering IPT at every scheduled ANC visit, beginning as early as possible after quickening and given not more frequently than monthly up until the end of pregnancy. This new recommendation reduces incidence of low birth weight by 20% compared to the earlier recommended two doses during pregnancy.

2.2 Benefits of Intermittent Preventive Treatment

IPT reduces the number of malaria parasites in pregnant women during the critical periods of greatest foetal weight gain. It also provides significant protection against maternal anaemia and low birth weight (LBW). IPT also reduce risk of abortion, stillbirth, pre-term deliveries and maternal mortality. (Eisele *et al*, 2012)

2.3. Medicine of choice for IPT

Currently, Sulphadoxine-pyrimethamine (SP) is the single-dose antimalarial medicine with the best overall effectiveness for prevention of malaria in pregnancy in areas of Africa with stable transmission of *Plasmodium falciparum* malaria. It has good safety profile in pregnancy and a high level of acceptance by pregnant women with good programme feasibility

2.4. Safety of Sulphadoxine-Pyrimethamine

Both Sulphonamides and Pyrimethamine are generally considered safe in the second and third trimesters of pregnancy. Although there have been concerns that sulpha drugs may be associated with jaundice when given to pre-term neonates, this problem has not been observed in studies of IPT where SP has been administered to the mother. Studies examining the risk to the foetus *in utero* exposed to SP combinations have generally not found any increased risk in spontaneous abortions or congenital defects (Hernandez *et al* 2000, Newman *et al* 2001). One retrospective study of antifolate drugs given before and during pregnancy did find that there was an increased risk of birth defects when such drugs were taken during the first trimester, but it is safe if taken during the second or third trimester (Hernandez *et al* 2000, Newman *et al* 2001).

SP when given weekly as prophylaxis has been associated with rare severe cutaneous reactions such as toxic epidermal necrolysis (Stevens-Johnson syndrome). However, there is no evidence that the risk of severe cutaneous reactions is any greater in pregnant women or when SP has been used for treatment. Although sulphonamides are excreted in breast milk, the risk to healthy full-term neonates is believed to be minimal. Pyrimethamine is considered to be compatible with breast-feeding. (Briggs et al, 2002)

2.5. Use of SP for Intermittent Preventive Treatment

All pregnant women shall receive three or more doses of SP after quickening (onset of foetal movement) with each dose repeated at least one month apart. The IPT using SP should be provided as part of a comprehensive antenatal package with other components such as haematinics and antihelminthics to control maternal anaemia that is highly prevalent during pregnancy in the country.

2.5.1. Determining Gestational Age for SP Administration

In facilities where there are infrastructures and skilled manpower to appropriately estimate the gestational age, IPT can be administered from the thirteen week of pregnancy.

The following steps should be followed to determine the gestational age of the pregnant woman before SP is administered:

- History of the last menstrual period
- Palpate or use tape measure for fundal height to estimate gestational age
- Onset of foetal movement (quickening)
- Ultrasonography where the facility exists

Contraindications to the use of IPT include;

- Pregnant women with known history of hypersensitivity to sulphonamides
- HIV pregnant women on Cotrimoxazole chemoprophylaxis

2.5.2. Target population for IPT

All pregnant women, irrespective of parity who report for antenatal care either at the health facility or during the Maternal Newborn and Child Health (MNCH) week should receive IPT under the direct supervision of skilled health care providers.

2.5.3. Dosage

SP shall be given as single adult dose: 3 tablets of (500 mg Sulphadoxine and 25 mg Pyrimethamine each) at scheduled antenatal care visits. Three (3) or more doses, each month apart, are currently recommended as stated below:

First Dose: After quickening or after 13 weeks of pregnancy in facilities with infrastructures to determine gestational age.

Subsequent doses: At least one month apart and could be administered until delivery without any safety concerns

2.5.4. Administration

SP shall be given at ANC clinic or at outreach clinic where there is supervision by skilled health care provider. The pregnant woman should be made to swallow the SP under supervision as directly observed treatment (DOT). SP can be given on empty stomach if the woman can tolerate it.

To enhance compliance to DOT in the focused-antenatal care platform, facilities should be provided with safe drinking water.

Step 1

- When a pregnant woman first comes to the antenatal clinic (ANC) in the first trimester or before experiencing quickening, she should be counselled to come back for her next regular scheduled ANC visit.
- She should be counselled her on the benefits of IPT in addition to LLIN use.
- She should be screened for history of allergy to sulpha drugs and record in ANC Card and health facility register.
- If she is in the second trimester or has observed quickening, she should be interrogated if she has received treatment with SP in the past one month.
    - If she had received, schedule her to return during her next ANC visit.
    - If she has not had a dose of SP in the past one month, proceed to step 2.

Step 2

- Give pregnant woman 1st dose of SP as soon as she is in the second trimester or has observed quickening.
- Record the intake of SP in the ANC card and health facility register.

Step 3

- Subsequent doses of SP shall be provided during her scheduled ANC visit, but not more frequently than one month apart.
- Record the intake of SP in the ANC card and health facility register

2.6. Counselling/Education on Use of SP

All pregnant women should be educated and counselled on IPT using SP preferably on an individual basis prior to drug administration. The skilled health care provider shall inform pregnant women to report all cases of adverse reactions to SP and other medications immediately to the health facility. Also form for pharmacovigilance should be completed immediately and submitted to the National Agency for Food and drug Administration Control (NAFDAC) office in the locality. A reporting code has been established by NAFDAC in which all cases of adverse events are reported. The Pharmacovigilance Rapid Alert System for Consumer Reporting (PRASCOR) is an SMS Short Code system put in place to alert the NPC of adverse drug reactions experienced with the use of any medicine in Nigeria. The Short code is **20543**. A Consumer sends information with the name of the medicine and the suspected adverse drug reaction (ADR) by SMS to 20543 for free. An auto-response is sent to the consumer (sender). The information including the sender's number is forwarded to NAFDAC by email. Staff of the NPC, NAFDAC receive the information and contact the sender for follow up on report of adverse drug reaction (ADR).

2.6.1. Possible Side effects of SP

Sulpha medicines such as SP, Cotrimoxazole, etc, are generally well tolerated when used at recommended doses. However, the following side effects have been documented; nausea, vomiting, urticaria, rashes, headaches, insomnia etc. Stevens Johnson Syndrome is a very rare adverse effect that could occur in persons that react to Sulpha drugs.

2.6.2. What to do in case of side effects

When giving any medication it is important to explain to the user that if unusual conditions occur, such persons should come back for further consultation. Most side effects will merely require assurance by the skilled health care provider. In the occurrence of adverse effects, referral shall be made to a higher level of care. Further use of SP should be discontinued.

2.6.3. Important notes on use of SP

Pregnant women with the following conditions should be exempted from using SP:

- First trimester of pregnancy.
- Women who have received recent treatment with SP (less than 1 month ago) because of its long half-life, hence possible cumulative effect.
- History of hypersensitivity or allergy to sulpha drugs.

- Women known to have Glucose-6-Phosphate Dehydrogenase enzyme deficiency, either full or partial defect
- Women known to have had severe liver disease or unexplained recurrent jaundice
- HIV positive women on Cotrimoxazole chemoprophylaxis.

Also, all pregnant women must be educated to report early to the facility when they have symptoms suggestive of malaria. Pregnant women suffering from uncomplicated malaria infection shall be treated according to the National Policy and the severe cases referred to next level of care.

2.6.4. Alternatives to Sulphadoxine-Pyrimethamine

Currently, there are no approved alternatives to SP for IPTp. It must therefore, be emphasised that for women who cannot take SP they need to consistently sleep inside long lasting insecticidal nets (LLINs) and utilise other protective measures to avoid having clinical malaria.

3.0. OTHER ANC COMPONENTS OF MIP PREVENTION

- SP shall be administered as part of the ANC package (see Annex 1), with components including antihelminthics (e.g. Mebendazole 500 mg) in 2nd or 3rd trimester, nutrition counselling, daily haematinics (Iron and Folic acid) and sleeping inside LLINs.
- SP is an anti-folat, thus Folic acid should be withheld for one week after SP administration.
- All these treatments shall be recorded on the ANC Card and antenatal register.
- Each pregnant woman shall be counselled on safe motherhood, the effects of anaemia and malaria in pregnancy, compliance to Iron and folate supplementation and deworming.

- At the community level, Community Health education Workers (CHEWs) shall offer counselling, sensitisation and referral of the target pregnant women to nearest health unit for treatment and follow-up to ensure compliance of mothers and detection of complications.

3.1. The use of Long Lasting Insecticidal Nets and other preventive strategies

Long lasting insecticidal nets reduce human-mosquitoes contact, by killing or repelling them if they come in contact with the net. There is ample evidence from several studies showing that the use of LLIN reduces malaria-related illness and death.

Sleeping inside LLIN benefits the pregnant woman and her family. The demonstrated impact of LLINs on lessening the risk for Low Birth Weight (LBW) and maternal anaemia is important. Furthermore, the infant who sleeps under the net with the mother will also have marked benefits: reduced malaria exposure, decreased incidence of anaemia, decreased risk for death, and enhanced development. LLINs should be provided to pregnant women as early in pregnancy as possible, and their use should be encouraged for women throughout pregnancy and during the postpartum period. LLINs can be provided either through the antenatal clinic or through other systems in the public and private sectors.

Pregnant women also stand to benefit from other malaria preventive interventions such as Indoor Residual Spraying, Larval Source Reduction and other environmental management strategies.

4.0. DIAGNOSIS AND TREATMENT

4.1. Rapid Diagnostic Tests and Microscopy

Parasitological confirmation is essential in all suspected cases of malaria. During pregnancy, parasitological diagnosis should be promoted to improve the differential diagnosis of fever and reduce the unnecessary consumption of antimalarial medicines. This is more important for pregnant women with HIV/AIDS who have fever; in view of the high incidence of febrile diseases other than those caused by malaria among this group.

The two methods in routine use for parasitological confirmation of malaria are ***Light Microscopy*** and ***Rapid Diagnostic Tests*** (RDTs).

4.2. Treatment

Pregnant women with symptomatic acute malaria are a high-risk group; hence effective treatment must not be delayed. The antimalarial medicine considered to be safe and recommended for use during the first, second and third trimesters is Quinine salt.

In the second and third trimesters, Artemisinin-based combination therapies (ACT) are safe and recommended for the treatment of uncomplicated malaria. ACTs can however be used in the first trimester, if quinine is not available or compliance to treatment with quinine cannot be assured.

4.3. Dosage Regimen

Artemether-lumefantrine is administered as four tablets twice daily for three days while Artesunate-Amodiaquine (100/270mg) is given as two tablets daily for three days.
Oral Quinine is given as two tablets, two to three times daily with meals for seven days.

Quinine in pregnancy:
Quinine is safe in pregnancy and does not cause abortion or premature delivery when given in normal therapeutic dose, rather severe malaria may lead to these complications.

4.4. Treatment of severe malaria

Pregnant women with severe malaria should be given parenteral medications. The recommended medicines are Injectable Artesunate and Quinine.

4.4.1 Injectable Artesunate

The first line treatment for severe malaria in all trimesters is parenteral Artesunate at 2.4mg/kg stat, then same at 12hrs and 24hrs. This should be given for a minimum of 24hrs even if she can tolerate orally. Then, change to a full course of ACTs.

The powder form of Artesunate should be dissolved in 5% sodium bicarbonate to form sodium artesunate and the solution diluted in approximately 5 ml of 5% dextrose before it is administered intravenously or intramuscularly.

4.4.2. Quinine

It is administered by either intravenous or intramuscular route, depending on the availability of infusion facilities.

Recommended dosage:

4.4.2.1. Intravenous quinine

Quinine dihydrochloride 20 mg/kg of **salt** to a maximum of 1.2gm (loading dose) diluted in 10 ml/kg isotonic fluid by intravenous infusion over 4 hours, then 8 hours after the start of the loading dose, give 10 mg/kg **salt** to a maximum of 600 mg over 4 hours every 8 hours if patient is able to take orally.

Then give a full dose of recommended ACT when the patient is conscious and can take orally.

NOTE:

- If intravenous quinine is required for over 48 hours, reduce the dose to 5-7mg/kg to avoid toxicity. A practical way of doing this is to reduce the dosing frequency to every 12 hours
- If there is a history of prior administration of quinine or mefloquine in appropriate doses in the last 24 hours DO NOT USE loading dose.

4.4.2.2. Intramuscular Quinine:

Where intravenous access is not possible give quinine dihydrochloride intramuscularly at a dosage of 20 mg/kg **salt** (loading dose), diluted to 60mg/ml, and continue with a maintenance dose of 10mg/kg 8hourly until patient is able to take orally.

Thereafter change to oral quinine at 10 mg/kg 8 hourly to complete a 7-day treatment OR give a full dose of recommended ACT.

Quinine comes in highly concentrated salt (2ml ampoule containing 600mg quinine dihydrochloride). It is recommended that quinine be diluted to 60 - 100mg/ml before administering intramuscularly.

To achieve 60mg/ml concentration, add 4mls of sterile water to **1ml of quinine salt** to make up to 5mls.

Management of Severe Malaria

- *Severe malaria is a medical emergency.*
- *Parenteral antimalarial treatment should be commenced without delay after rapid clinical assessment and confirmation of diagnosis.*
- *Artesunate 2.4mg/kg IV or IM given at time 0, 12 and 24 hours, then once daily until the patient can tolerate orally, then change to full course of ACT.*
- *Quinine is an acceptable alternative if parenteral artesunate is not available.*
- *All suspected and confirmed cases of severe malaria should be managed in facilities with relevant supportive care infrastructure*

4.5. Referral

All cases of suspected severe malaria should be referred to secondary/ tertiary health facilities immediately. However, pre-referral treatment should be administered

4.5.1 Pre-Referral Treatment

The risk of death due to severe malaria is greatest in the first 24 hours. To survive, a patient with severe illness must be taken quickly to a health facility where parenteral treatment and other supportive care can be given safely and as appropriate. It is recommended that the patients be treated with one of the following recommended pre-referral treatments:

Intramuscular pre- referral treatment

One of the following can be given

- Artesunate 2.4mg/kg stat
- Quinine dihydrochloride 10 mg/kg salt diluted to 60mg/ml intramuscularly.

Note: Community care givers should refer all pregnant women to the health facility

5.0. ADVOCACY, COMMUNICATION AND SOCIAL MOBILIZATION

Intermittent preventive treatment of malaria in pregnancy shall be implemented through existing health structures from the community to national level. This component of malaria in pregnancy intervention shall be integrated into the Reproductive Health (RH) programme as mentioned above.

5.1. Community Level (TBAs, Community-based Health Care Providers, Community Leaders, etc)

- Mobilize/sensitise the communities on the value of ANC, the risk of malaria in pregnancy, the concept and rationale for IPTp
- Promote girl-child education and women empowerment
- Promote other control measures especially use of LLINs, and environmental management.
- Ensure prompt referral of pregnant women to appropriate level of care
- Conduct home visits
- Put in place a system for implementation and sustainability
- Use Job-Aids / Malaria Messages during community outreaches

5.2. At health facility Level (including private health facilities)

- Provide integrated health education, including health promotion through FANC
- Promote the use of IPTp and LLINs
- Support facility to forecast commodity need.
- Ensure availability of medicines for IPTp at ANC and safe drinking water to encourage compliance with DOT
- Administer SP at the ANC as DOT
- Treat and promptly refer complicated cases to the next level of care
- Carry out regular follow up of clients
- Train staff on work ethics, interpersonal communication and value clarification to create a positive health care provider-client relationship
- Keep accurate records and ensure proper data management
- Establish appropriate data flow and participate in operational research on MIP
- Monitor and evaluate MIP services in the health facilities

5.3. Local Government Area Level

- Provide and distribute appropriate behavioural change communication (BCC) materials on IPTp
- Provide adequate human and material resources to the primary health facilities
- Promote IPTp and use of LLINs
- Procure and distribute medicines and supplies to facilities
- Put in place a system to encourage ANC attendance
- Retrain/orientate health care providers on IPTp
- Provide technical support to health facilities on IPT implementation
- Supervise activities at facility level
- Encourage and supervise documentation of service delivery at ANC
- Ensure appropriate management/utilisation of relevant data to inform policy decision making
- Establish appropriate feedback mechanism
- Monitor and evaluate programme

5.4. State Level

- Undertake advocacy for the adoption of malaria in pregnancy interventions
- Provide adequate human and material resources especially medicines
- Train trainers on IPTp and LLINs
- Train/give health care providers orientation on IPTp and LLINs
- Provide technical support for effective environmental management including sanctions for non-compliance
- Provide technical support to health facilities on IPTp and LLINs implementation
- Provide support for accurate documentation and management of relevant data
- Establish appropriate feedback mechanism
- Organize state level launching/ dissemination of guidelines on IPTp and LLIN to all relevant stakeholders
- Monitor, supervise and evaluate IPT implementation
- Reprint and disseminate copies of guidelines on MIP produced at the National level

5.5. National Level

- Review, print and disseminate guidelines on MIP
- Provide framework for successful implementation of the guidelines

- Establish appropriate coordination mechanism for IPTp and LLIN implementation
- Develop and disseminate appropriate advocacy package for MIP
- Develop appropriate BCC strategy and guidelines for IPTp and LLIN
- Provide technical and legal framework for environmental management for effective vector control
- Incorporate IPT and LLINs into Pre-service training of health care providers
- Ensure the availability of adequate human and material resources for IPTp at the health facilities
- Ensure availability of SP within the essential drug list and at affordable cost
- Improve the health system for quality service delivery
- Provide technical support to States and LGAs
- Set research agenda
- Monitor, supervise and evaluate IPTp implementation
- Organise launching of guidelines on IPTp implementation nationally involving all relevant stakeholders

5.5.1. Reproductive Health Programme

- Ensure the guideline for prevention and control of MIP is integrated in relevant documents and implemented during ANC
- Incorporate MIP training into the training guides/manuals for reproductive health care providers
- Disseminate guidelines and BCC materials centrally developed to the end-users at all levels of health care delivery
- Collaborate with National Malaria Programme and other relevant sectors for effective coordination, supervision and evaluation of the implementation of IPT
- Undertake advocacy for adoption and integration of IPT in the existing health care delivery system and financing
- Create awareness on guidelines on MIP of RH units at the State and LGA levels in conjunction with other relevant departments/parastatals (NMEP, NPHCDA etc)
- Collaborate with relevant stakeholders for quality assurance
- Collaborate with National Malaria Elimination Programme for effective coordination of MIP and LLIN implementation

- Provide technical support through training and supervision in conjunction with other relevant departments/parastatals (NMEP, NPHCDA etc)
- Organise operational research in collaboration with relevant agencies to guide the implementation

5.5.2. Integrated Management of Childhood illness (IMCI)

- Provide information to mothers on IPT and LLINs
- Mobilize communities in utilizing malaria control measures
- Support diagnosis and treatment of malaria at the community level

5.5.3. Health Education Division

- Support the National Malaria Programme in the design of comprehensive communication strategy based on sound formative research and in collaboration with communities, health facility staff and other relevant stakeholders
- Support the development and pre-testing of BCC materials

5.5.4. Supplies (Department of Procurement, FMOH)

- Procure adequate medicines, commodities and supplies in line with the National Policy

5.6. At all Levels

- Regulatory bodies such as Medical and Dental Council of Nigeria (MDCN), Nursing and Midwifery Council of Nigeria (NMCN), etc should ensure incorporation of control and prevention of malaria in pregnancy (with emphasis on IPT) into their pre-service and in-service training curricula (Continuing Professional Development (CPD)/Continuing Medical Education (CME)
- Support and enforce compliance to CPD/CME for all health care cadres
- Support operation/implementation research
- Implement and support periodic visits (including supportive supervision) to health centres and communities by technical experts and Ministry of Health/Local Government health officials
- All levels should be properly coordinated to ensure a hitch-free distribution of policy documents and guidelines to inform implementation and practice

5.7. Development Partners

- Provide financial and technical support for implementation of MIP and LLINs

- Provide supplies and commodities

5.8. Ministry of Education

- Review the curricula of training institutions of health to include malaria in pregnancy in collaboration with the MOH

5.9. Ministry of Local Government

- Ensure the availability of anti-malarial medicines and commodities at the Primary Health care levels
- Ensure equitable distribution of skilled health care providers

5.10. Media

- Sensitise and educate the target population and the general public on the importance of prevention and control of MIP
- Inform pregnant women on the importance of accessing ANC early in pregnancy

6.0. MONITORING, EVALUATION AND OPERATIONAL RESEARCH

Each of the interventions for malaria prevention and control during pregnancy (IPT, LLINs, and Case management) has a key implementation partner, and shared monitoring and evaluation procedures must be developed among these partners. Strong partnerships are needed to conduct monitoring, evaluation and operational research of malaria during pregnancy. The monitoring and evaluation framework should be a cooperative effort from the start, between malaria and reproductive health experts. Therefore, both National Malaria Elimination and Reproductive Health programme should:

1. Develop joint implementation strategy at all levels.
2. Develop unified indicators that can be used to track progress and evaluate implementation
3. Review and develop policy documents based on available best practices

The following process and impact indicators have been recommended:

6.1. Process Indicators

- The percentage of pregnant women who receive screening for anaemia and appropriate treatment
- The percentage of antenatal clinic staff trained in IPT for pregnant women
- The percentage of health facilities reporting stock out of the recommended medicines for IPT (SP) in the past month or in the determined period (according to National guidelines)
- The percentage of ANC staff trained: pre-service, in-service, or during supervisory visits in the control of malaria during pregnancy during the past 12 months (including IPT, counselling on use of LLINs, and case management for pregnant women)

6.2. Outcome Indicators

- The percentage of pregnant women who reported sleeping inside LLINs the previous night
- Percentage of pregnant women receiving IPT under direct observation (first dose, second dose and third dose according to the national guideline)

6.3. Impact Indicators

- The percentage of pregnant women with severe anaemia (haemoglobin ≤ 7 gm/dL) at 34 weeks of gestation or more
- The percentage of LBW newborns (<2500 grams) born to primigravidae and multigravidae

6.4. Research

Programmes focused on malaria prevention and control during pregnancy will be improved through research on both the biology and control of malaria during pregnancy. Programme managers and developing partners will need the results of this research to assist in programme planning and implementation efforts.

Some research questions that may need urgent answers include, but not limited to the following:

1. Level of efficacy of SP in the different regions of the country
2. Effectiveness of SP as medicine of choice for IPT
3. New medicines for IPT
4. Delivery mechanism to increase coverage for IPTp and LLINs for pregnant women

7.0. REFERENCES/FURTHER READINGS

AFRO Policy Framework, 2003: p 15 Briggs G. G. R K Freeman, and SJ Yaffe, Drugs in pregnancy and lactation: a reference guide to fetal and neonatal risk. 6th ed. C W Mitchell

2002 Baltimore: Williams & Wilkins Congenital Malaria Research Group, ARCH Technical Report 2004Country Strategic Plan for rolling back Malaria, 2001. p. 8Eisele TP, Larsen DA, Anglewicz PA, Keating J, Yukich J, Bennett A, Hutchinson P, Steketee RW. Malaria prevention in pregnancy, birth weight, and neonatal mortality; a meta-analysis of 32 national cross-sectional datasets in Africa. *The Lancet*. Published online Sept 18, 2012.

Ejezie et al. *Malaria an*d its treatment in rural villages of Aboh Mbaise, Imo State, Nigeria. Acta Tropica, 48 (1991) p 17-24

Federal Ministry of Health: RBM Baseline data for monitoring and evaluation 2001: p 30

Federal Ministry of Health: 2002 Health in Nigeria 1996 - 2000 Dept of Planning and research,

Goodman C. A., Coleman PG, Mills AJ: The cost effectiveness of antimalaria prevention in sub-Saharan Africa. Am J Trop Med Hyg, 2001. 64 (1-2 Suppl) : 45-56.

Hernandez-Diaz S et al: Folic acid antagonists during pregnancy and the risk of birth defects. New England Journal of Medicine 2000. 343 (22) p 1608-14

Kayentao K. et al. (2013). Intermittent Preventive Treatment of malaria during pregnancy using 2 versus 3 or more doses of sulfadoxine-pyrimethamine and risk of low birth weight in Africa: systematic review and meta-analysis. JAMA, 2013 Feb 13; 309 (6): 594-604. Doi: 10.1001/jama.2012.216231

Federal Ministry of Health: Malaria Situation Analysis Document, 2000 p. 14

Morley, D., M. Woodland, and W.F.J. Cuthbertson: *Controlled trial of pyrimethamine in pregnant women in an African village.* British Medical Journal, 1964. **1**: p. 667-668.

Newman R D: Folic acid antagonist during pregnancy and the risk of birth defects. (letter; comments) New England Journal of Medicine 2001. 344 (12): p 934

Newman R. D., et al, Safety efficacy and determinants of effectiveness of antimalaria drugs during pregnancy: implications for prevention programmes in Plasmodium Falciparum – endemic sub-Saharan Africa. Tropical Med Int Health 2003. 8 (6): p. 488-506

Paediatrics Association of Nigeria, 1994

Parise M. E., et al Efficacy of Sulphadoxine Pyrimethamine for prevention of placental malaria in an area of Kenya with a high prevalence of malaria and human immunodeficiency virus infection. American Journal of Tropical Medicine & Hygiene, 1998. 59(5): p. 813-22.

Schultz, L.J., et al., The efficacy of antimalarial regimens containing sulfadoxine-pyrimethamine and/or chloroquine in preventing peripheral and placental Plasmodium falciparum infection among pregnant women in Malawi. American Journal of Tropical Medicine & Hygiene, 1994. **51**(5): p. 515-22.

Shulman C E et al, Intermittent Pyrimethamine to prevent severe anaemia secondary to malaria in pregnancy: a randomized placebo controlled trial. Lancet, 1999. 353 (9153): p. 632-6.

Steketee R W, et al The burden of malaria in pregnancy in malaria endemic areas. American Journal of Tropical Medicine & Hygiene, 2001. 64 (1-2 suppl): p. 28-35

WHO Evidence Review Group: Intermittent Preventive Treatment of malaria in pregnancy (IPTp) with Sulfadoxine-Pyrimethamine (SP). Malaria Policy Advisory Committee Meeting, 11-13 September 2012, WHO HQ, Session 4, pg 1-17

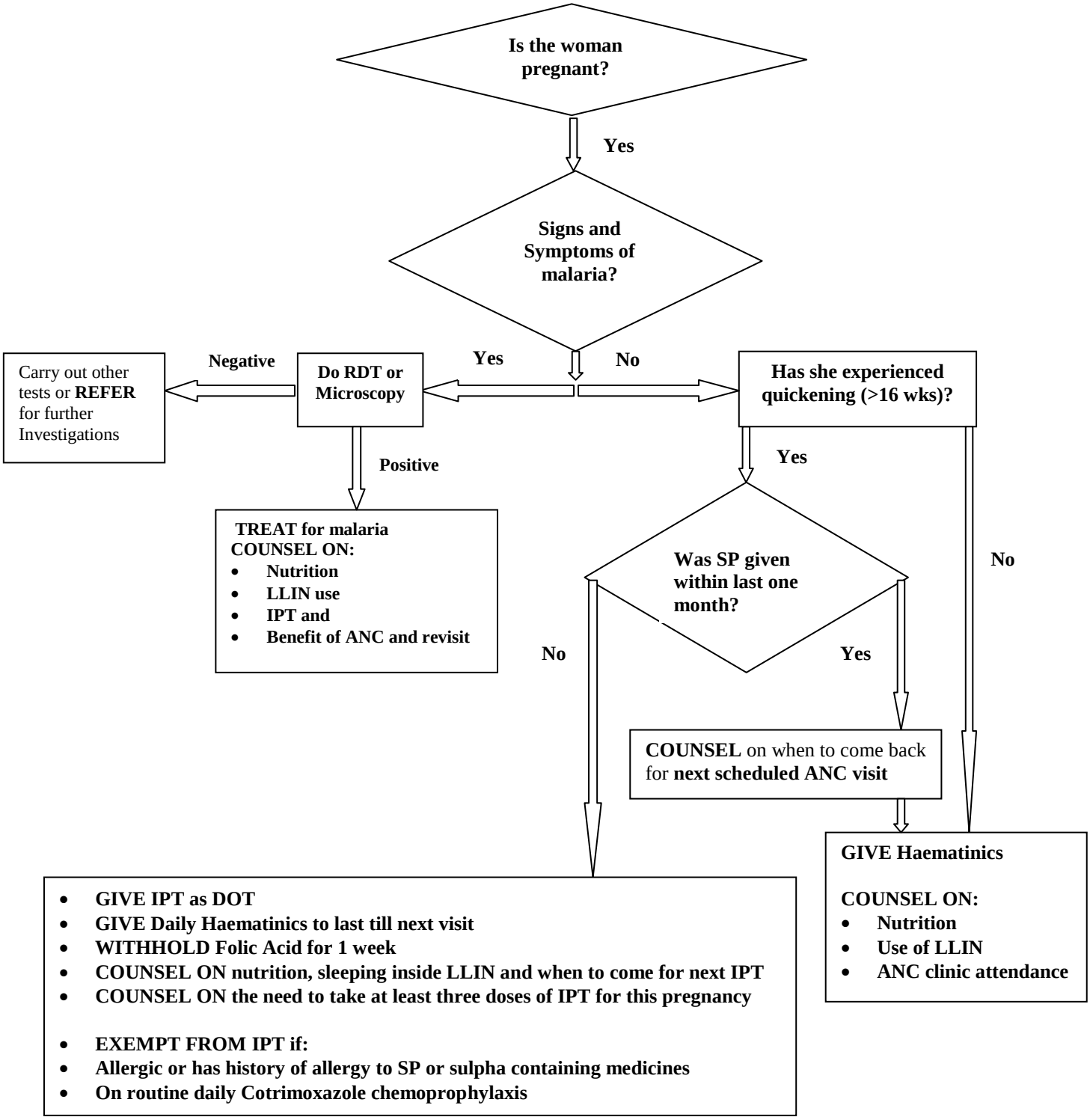
WHO Policy Brief for the Implementation of Intermittent Preventive Treatment of Malaria in Pregnancy using Sulfadoxine-Pyrimethamine (IPTp_SP), 11 April, 2013

8.0. ANNEXURE

8.1. ANNEX 1

NATIONAL MALARIA ELIMINATION PROGRAMME

Intermittent Preventive Treatment (IPT) of Malaria in Pregnancy Algorithm



8.2. ANNEX 2: BEST PRACTICES

POLICY SUMMARY
BEST PRACTICES FOR MALARIA CONTROL DURING PREGNANCY

All possible efforts should be made to increase access to IPT-SP in all areas with moderate to high malaria transmission in Africa, as part of antenatal care services. WHO recommends a schedule of at least four antenatal care visits during pregnancy.

- Starting as early as possible in the second trimester, IPT-SP is recommended for all pregnant women at each scheduled antenatal care (ANC) visit until the time of delivery, provided that the doses are given at least one month apart. SP should not be given during the first trimester of pregnancy; however, the last dose of IPT-SP can be administered up to the time of delivery without safety concerns.
- IPT-SP should ideally be administered as directly observed therapy (DOT) of three tablets Sulphadoxine/Pyrimethamine (each tablet containing 500mg/25mg SP) giving the total required dosage of 1500mg/75mg SP.
- SP can be given either on an empty stomach or with food.
- SP should not be administered to women receiving Cotrimoxazole prophylaxis due to a higher risk of adverse effects.
- WHO recommends the administration of folic acid at a dose of 0.4mg daily; this dose may be safely used in conjunction with SP. Folic acid at a daily dose equal or above 5mg (which is the dose at which Folic acid is dispensed in Nigeria) should not be given together with SP as this counteracts its efficacy as an antimalarial.
- In some countries of sub-Saharan Africa, transmission of malaria has been reduced substantially due to the successful implementation of malaria control efforts. In the absence of data to help determine when to stop IPT-SP, WHO recommends that countries continue to provide IPT-SP until data to guide this decision making is available.
- There is currently insufficient evidence to support a general recommendation for the use of IPT-SP outside Africa.

Adapted from WHO policy Brief for the implementation of IPT_SP April, 2013

"Moderate transmission" areas are meso-endemic areas in which the prevalence rate of malaria is 11–50% during most time of the year among children from 2 to 9 years old. In these areas, the maximum prevalence of malaria infection occurs in childhood and adolescence, though it may not be unusual to acquire the first infection as an adult. In hyperendemic areas, malaria is over 50% during most time of the year among children from 2 to 9 years old. In these areas, practically all individuals have acquired their first infection by late infancy or early childhood"

Source: Parasitological confirmation of malaria diagnosis – Report of a WHO technical consultation, Geneva, 6-8 October 2009. Geneva, World Health Organization, 2010.
http://whqlibdoc.who.int/publications/2010/9789241599412_eng.pdf*Adapted*

Administration and scale up

- Every effort should be made to integrate IPT-SP with initiatives for promoting focused antenatal care (FANC) services. WHO recommends a schedule of at least four antenatal care visits. IPT-SP should be delivered at each scheduled ANC visit (except during first trimester and with doses given at least one month apart), and compliance with antenatal care should be encouraged as much as possible.
- WHO recommends that SP be given at each scheduled ANC visit except during the first trimester. SP can be given every month until the time of delivery, with doses given at least one month apart. This will ensure that a high proportion of women receive at least three doses of SP during pregnancy.
- SP should be made available at antenatal care clinics, so that pregnant women have immediate access to IPT-SP during routine care. SP should ideally be given as directly observed treatment (DOT), since this ensures that pregnant women take the full dose.
- If a woman visits an antenatal care clinic with symptoms of malaria, these symptoms should be investigated before the administration of IPT-SP. If the woman tests positive for malaria – by either microscopy or rapid diagnostic test (RDT) – she should be treated following the national case management guidelines. If she is negative, she should receive IPT-SP.

Management of side effects

- Despite the known side effects associated with sulfonamides, SP for intermittent preventive treatment in pregnancy is generally very well tolerated. Mild and transient side effects including nausea, vomiting, weakness and dizziness have been reported by some women, particularly with the first dose of SP. Studies have demonstrated that side effects tend to decrease with the administration of further doses. Side effects should be discussed openly and managed in the ANC.

Quality, efficacy and resistance

- Only SP of proven quality i.e., in line with international standards such as the International Pharmacopoeia should be used.
- In order to preserve SP efficacy for IPT-SP, all possible efforts should be made to avoid SP use as monotherapy for the treatment of clinical cases of malaria. Reserving available SP stocks for use as intermittent preventive treatment in pregnancy at antenatal care clinics limits the risk of stock outs due to non recommended use as monotherapy for clinical cases. Reserving SP for dispensing from the pharmacy and giving SP to take at home can both inhibit the use of IPT-SP by pregnant women.
- In several countries in Africa, some *P. falciparum* parasites carry quintuple mutations linked to SP resistance – which are associated with in vivo therapeutic failure to SP. However, recent evidence suggests that IPT-SP remains effective in preventing the adverse consequences of malaria on maternal and fetal outcomes in areas where a high proportion of *P. falciparum* parasites carry these quintuple mutations. Therefore, IPT-SP should still be administered to women in such areas.

Co-administration of other medication

- High doses of folic acid (i.e. daily dose equal to 5mg or above) have been shown to counteract the efficacy of SP as an antimalarial, and thus only the low dose (i.e. 0.4mg daily) should be co-administered with SP.
- SP should not be administered concurrently with Cotrimoxazole prophylaxis due to their redundant mechanisms of action and synergistic worsening of adverse drug reactions. Therefore, prophylaxis should not receive IPT-SP.

Insecticide-treated nets

- Long Lasting Insecticidal Nets should be provided to pregnant women as early in pregnancy as possible. Women should be encouraged to use ITNs throughout the entire pregnancy, as well as during the postpartum period when the risk of malaria is also increased. IPTp-SP is not a replacement for LLIN use; both interventions provide important benefits.

[2]Focused Antenatal Care (FANC) is defined as the minimum package of evidence-based services to all pregnant women during ANC to promote health, detect existing diseases, prevent and detect complications of pregnancy and encourage birth preparedness. Source: Antenatal Care Randomized Trial: Manual for the Implementation of the New Model. Geneva, World Health Organization, 2002. http://whqlibdoc.who.int/hq/2001/WHO_RHR_01.30.pdf, [3] http://www.who.int/medicines/publications/pharmacopoeia/overview/en/index.html

8.3. ANNEX 3: FREQUENTLY ASKED QUESTIONS ON IPT

1. What is the position of WHO on IPT using SP?

The World Health Organization currently recommends that all pregnant women in areas of stable transmission of *Plasmodium falciparum* receive at least 3 doses of IPT as early as possible in the second trimester, during routinely scheduled antenatal clinic visits. WHO recommends a schedule of 4 ANC visits, within the platform of FANC. The delivery of IPT with each scheduled visit will likely assure that a high proportion of women receive at least 3 doses if started early in second trimester.

IPT doses should not be given more frequently than monthly, and there is no evidence that receiving 3 or more doses of IPT with SP will result in an increased risk of adverse drug reactions. There are also no safety concerns in administering SP up to the time of delivery (WHO 2013).

2. What is the shortest safe interval between SP doses?

The World Health Organization recommends that IPT doses should not be given more frequently than monthly during the second and third trimesters. The half life of sulfadoxine is about one week, and it should not be given more frequently than monthly. Evidence from using SP as weekly prophylaxis suggests that more frequent dosing could result in adverse outcomes.

3. Are there a maximum number of SP therapy doses that can be administered safely during pregnancy? Why not give more than 3 doses?

The World Health Organization recommends that pregnant women receive at least 3 doses of IPT_SP starting as early as possible during the 2nd trimesters at regularly scheduled ANC visits.

4. Can SP be used safely during the first trimester? What are the teratogenic effects if taken in the first trimester?

It is recommended that SP be avoided during the first trimester of pregnancy. There is some evidence of teratogenic effects if pyrimethamine and/or trimethoprim are taken during the first trimester, including cardiovascular malformations and cleft defects. (Hernandez-Diaz 2000). Hernandez Diaz found an association with dihydrofolate reductase inhibitors, and it seems that trimethoprim is more important as pyrimethamine was not mentioned.

5. How can the beginning of second trimester be determined?

The second trimester begins at 13 weeks. In the absence of gestational dating by ultrasound, the beginning of the second trimester can be determined by measuring fundal height which may serve as a proxy for gestational age. The fundal height corresponds to the distance between the symphysis pubis and the top of the uterus, in centimetres. At the beginning of the second trimester around 13 weeks of gestational age, the fundal height is around 13 cm. However, there is some variation in the fetal growth, and it is not unusual that some women present a fundal height that is slightly smaller or larger than expected. In addition, quickening (i.e. the first detection by the woman of fetal movement) is used in many countries to determine if a woman is in her second trimester. However, it is not a marker of the beginning of the second trimester. While some pregnant women experience quickening as early as 16 weeks, others may not do so until 20 weeks of gestation.

5. Are there pregnant women who should not be given SP??

SP should not be given to women with allergies to other drugs. SP is not recommended for pregnant women in the first trimester. SP should not be administered to women on cotrimoxazole therapy or prophylaxis in view of synergistic side effects of the sulphonamide component.

6. Will SP cause abortions?

There is no evidence that SP causes abortions. (Morley, 1964; Shulman et al, 1999, Schultz et al, 1994; Parise et al 1998.

7. Is SP it not too strong for pregnant women to take 3 pills at a time?

SP is not too strong for pregnant women. Evidence demonstrates that SP does not result in adverse outcomes for the mother or for the infant. In clinical studies of IPT with SP, there have been no severe maternal reactions among the 2,536 women enrolled, including severe cutaneous reactions. The benefits of IPT with SP to pregnant women include: reduced severe anaemia; reduced anaemia and; higher mean haemoglobin. (Shulman 1999; Shultz 1994; Parise 1998).

9. Are there any negative effects on the baby from taking SP during pregnancy?

In clinical studies of IPT with SP, there is no evidence of adverse outcomes for the infant, even when taken in late pregnancy.

One concern about administering IPT with SP to pregnant women is kernicterus. Kernicterus results from the displacement of bilirubin by drugs during the heme breakdown process in the reticuloendothelial system. This free bilirubin can cross the blood-brain barrier, and cause lethargy, poor initial feeding, opisthononus, twitching, convulsions, and neurologic sequalae. The landmark study that led to the belief that sulphonamides are associated with kernicterus was published by Silverman & Colleagues in 1956. In this study, premature infants were randomized for the prevention of neonatal sepsis, according to the standard of care at the time. One group received penicillin/sulfasoxazole while the other group received oxytetracycline – both at fairly high doses. Both groups also received very high doses of Vitamin K (which has been shown to be hemolytic). A higher mortality rate was seen in the penicillin/sulfasoxazole group, which was attributed to a higher rate of kernicterus. No other etiological factors were identified, and there was no difference in the bilirubin levels of those who died with kernicterus and those who did not.

Since then, studies have not shown any cases of kernicterus or infant bilirubin when women received sulpha drugs during pregnancy (Shulman 1999; Shultz 1994; Parise 1998)

In addition, SP has proven to be safe in clinical trials of IPT. In 2,365 infants, there have been NO reported cases of kernicterus. Malaria preventive medication has been shown to decrease prematurity – which should also decrease the risk of kernicterus.

10. Can SP be administered as IPT close to term?

There was concern that sulpha drugs given near delivery would cause brain damage in the infant. (See discussion on kernicterus). Since there is no evidence of kernicterus or infant bilirubin in women who received sulpha drugs during pregnancy, it is safe to administer SP up to the time of delivery.

11. What do you do with women who did not have any IPT with SP in the 2nd trimester, but presented in the 3rd trimester?

The World Health Organization recommends that women receive at least 3 doses of IPT with SP during pregnancy at regularly scheduled ANC visits as early as possible in the second trimester. If a woman doesn't come into ANC until the 3rd trimester, the provider should give her the 1st dose of SP during her first ANC visit. The woman can be administered at least two doses of IPT with SP during the 3rd trimester, as long as the doses are at least one month apart.

12. How do you protect women during the first trimester and after delivery?

The pregnant woman should sleep inside LLIN at all times, especially during pregnancy and after delivery. However, she does not need to take any medications during the first trimester or after delivery to prevent malaria. . IPT is a curative dose of SP given at least three times during pregnancy. These curative doses clear the placenta of parasites at each dose. The majority of fetal growth occurs between 24 and 36 weeks of gestation.

13. Is Quinine safe in Pregnancy?

Quinine is safe throughout pregnancy and does not cause abortion when taken in therapeutic doses according to the guideline.

8.4. ANNEX 4 – NATIONAL STRATEGIES FOR PREVENTION OF MALARIA

National Strategies for prevention of malaria in pregnancy include:

- Inclusion of IPT in the National antimalarial policy/guidelines
- Integration of IPT and LLINs into RH services.
- Utilisation of strong advocacy/awareness creation to introduce IPT into the focused ANC
- Creation of an enabling environment and structures through which pregnant women can access IPT, prompt and appropriate malaria treatment, LLINs and micronutrients;
- Community mobilization with behaviour change communication to embrace/appreciate the value of ANC (IPT, LLINs etc)
- Capacity development and strengthening health care services.
- Monitoring, including effectiveness /side effects of the drug and the behaviour of the health care givers
- Periodic evaluation of the programme.

8.5 ANNEX 5 – ADMINISTRATION OF IPT

1. DIFFERENT SCENARIOS DURING THE SCHEDULED ANTENATAL VISITS

A. The woman comes for 1ST VISIT during the 1ST TRIMESTER / before Quickening:

- SP should NOT be given
- Counsel on when to come for IPT drugs

B. The woman attends ANC for the 2ND VISIT at 2ND TRIMESTER / after Quickening:

- Give the 1st dose if after quickening, and schedule the next visit for not earlier than four weeks for the 2nd dose

C. The woman comes for the 3RD and 4th VISITs:

- Give 2nd and 3rd doses at least one month apart

2. WOMAN VISITING ANC SERVICE AFTER THE FIRST TRIMESTER OUTSIDE THE SCHEDULED VISITS FOR VARIOUS REASONS;

A. Woman who has already received one dose (noticed in the card):

- Give subsequent doses of SP according to the guideline

B.Woman who has not yet received SP:

- Give the 1st dose and schedule the subsequent doses during the next ANC visits

3. WOMAN WHO VOMITS WITHIN 30 MINUTES OF TAKING SP DOSE

- Repeat SP dose