An Evaluation of Intermittent Preventive Treatment of Malaria During Pregnancy In Four Health Centres in Lusaka District

By

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Dissertation Submitted in Partial Fulfilment of the Requirements for the Degree of Master of Public Health

The University of Zambia
October 2014

Declaration

I hereby declare that this thesis is my own work and effort and that it has not been submitted at this University or any other University for an award.

Signature……..……..

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Dated this 10th day of October 2014

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Dr. Selestine Nzala

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Dated this day of October 2014

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Approval of Admission of Dissertation

This dissertation by Andrew Chinyemba in partial fulfilment of the requirements for the award of the Master of Public Health by the University of Zambia

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Dedication

I dedicate my dissertation work to my wife, Mrs Grace P. Chinyemba.

Acknowledgements

I would like to express the deepest appreciation to my supervisor Dr. Selestine Nzala, who has the attitude and the substance of a father. Without his guidance and persistent help this dissertation would not have been possible.

I would like to thank members of staff of the School of Medicine of the University of Zambia for their unwavering support.

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Acronyms

ANC: Antenatal Care

DOT: Direct Observed Therapy

FANC: Focused Antenatal Care

FGD: Focus Group Discussion

HIV: Human Immunodeficiency Virus

IDI: In-depth Interviews

IPTp: Intermittent Preventive Treatment for Pregnant Women

ITN: Insecticide Treated Nets

KII: Key Informant Interview

MIP: Malaria in Pregnancy

MOH: Ministry of Health

PMI: President's Malaria Initiative

SP: Sulphadoxine Pyrimethamine

WHO: World Health Organisation

Abstract

Background: Malaria is an important health problem, and pregnant women and the foetus are not immune from its effects. There are numerous complications of malaria in pregnancy. However, steps to mitigate its effects like use of sulfadoxine–pyrimethamine in pregnancy have been implemented and maternal access is yet to be assessed especially in the City of Lusaka.

Aim: The aim of this study was to evaluate the implementation of IPTp Malaria Prevention during Pregnancy within the selected health centres in Lusaka District.

Methodology: A mixed methods study design utilising a survey questionnaire focus group discussions (FGD) and in-depth interviews (IDI) was done. Data were collected using qualitative survey questionnaire, key informant interviews (KII) and focus group discussions (FGD).Four officer in-charges of health centres and 522 mothers (from George compound, Kalingalinga, Kanyama and Chilenje) were purposefully and randomly selected respectively. Qualitative data was analysed using modified grounded theory technique by linking it with Husserlian descriptive and Gadamerian hermeneutic phenomenology. As for the quantitative data, the data were initially entered into Epi Info version 6.0 (CDC, Atlanta, GA, USA), cleaned and transferred to SPSS version 18 for analysis. Descriptive analyses were performed to determine antimalarial access.

Results: The level of administration of antimalarial regimen in the four health centres was very low across and within the trimesters. Drug availability was extremely low. There were facilitators and challenges linked to the IPTp program in the four health centres. There were seven challenges that were identified and these included: Fear of complications taking drugs, large population, expenditure or cost, lack of regular drug availability, staff shortage, low stocks, and huge workloads. As for facilitators, five were identified and these were: mothers had no problems taking drugs, there were cues to drug usage, and mothers recognised perceived threats, benefits and seriousness of the illness vis-a-vis drugs.

Conclusion: Prevention of malaria in pregnancy through use of IPTp was uncommonly reported in this study population. Overall, nearly every woman did not receive IPTp. These findings call for considering the use of community-based approaches to distribute IPT; and resource persons need to be trained, facilitated and linked to the health units to get IPTp basic supplies.

Key Words: Malaria, IPTp, Prevention, Pregnancy, Lusaka District

CHAPTER ONE – INTRODUCTION

1.0 Introduction

Malaria is an important health problem, and pregnant women recognise its serious consequences (Kengeya et al., 1994; Ndyomugyenyi et al., 1999; Agyepong et al., 2002). Effective malaria prevention and treatment interventions exist that have beneficial effects on malaria in pregnancy (Stekete et al., 2001). However, use of these interventions largely depends on local beliefs on malaria, access, costs, attitudes towards health care providers and the level of acceptability of the delivery system (Rogerson et al., 2000; Stekete et al., 2001 Heggenhougen et al., 2003). Access and use of malaria prevention services is affected by many constraints inherent in most health systems in sub-Saharan Africa (Shulman, 1999). A recent study conducted in Malawi found low compliance to IPT among pregnant women, especially multigravidae, despite widespread awareness on its benefits and recommended improved delivery mechanisms of IPT (Hortz et al., 2002). Two studies in Kenya also noted low compliance to IPT and cited late antenatal care (ANC) attendance, inadequate commodity supplies and high costs as the greatest impediments to accessing services by pregnant women (Eijk et al., 2007). In Uganda, low utilisation of health services has likewise been attributed to deficiencies in the health system, high cost of services and long distances to health units (Muula et al., 2007; Longo et al., 2007). Nevertheless, women in Uganda and elsewhere recognise malaria in pregnancy as a serious problem (Menendez, 2006; Wongsrichanalai et al., 2002; Menendez, 2006; Alkadi, 2007). In Uganda, it has been shown that when pregnant women get malaria, care- seeking includes self-medication with anti-malarial drugs from drug-shops, or use of herbs whilst visiting a health unit may be a last resort if the illness does not improve (Alkadi, 2007' Longo et al., 2007). It has been shown that when health units have inadequate drugs or the general quality of health services is poor, people make preference to self-treatment

instead of using health services (Stekete et al., 2001 Heggenhougen et al., 2003). This influences care seeking with regard to malaria prevention at health units and reveals issues related to affordability and acceptance of these services (Agyepong et al., 2002 Greenwood et al., 2007).

Plasmodium falciparum causes the most severe disease and is responsible for most malaria related deaths. From its influence on human genetic variation, and the toll it exacts in morbidity and mortality, malaria is considered to be the most important parasitic disease of man (Gkrania-Klotsas and Lever, 2007) and is one of the most severe public health problems worldwide and poses a severe social and economic burden on communities living in endemic areas. It is one of leading causes of death and disease in many developing countries including Zambia, where young children and pregnant women are the groups most affected (WHO, 2004). In 2007, 4.3 million cases of malaria (confirmed and unconfirmed) were reported countrywide with 6,149 deaths (MOH, 2008). In 2008, 3.2 million cases (clinically or laboratory diagnosed) were reported, causing 3,871 deaths (MOH, 2009) and deaths among pregnant women are not yet known but it was estimated globally that malaria was responsible for up to approximately 47% of the overall disease burden for pregnant women (Steketee and Campbell, 2008).

Apart from maternal death, another major adverse effect of malaria in pregnancy on the mother is anaemia. In malarious areas, malaria and anaemia are likely to act together to reduce birth weight (Nosten et al., 1991; Brabin, 1996). The sequestration of malaria parasites in the placenta do lead to impeded trans-placental nutrient transport and combined with malaria-induced anaemia, there are compromises on foetal growth resulting in low birth weight and a subsequent increase in infant and childhood mortality (Bloland et al. 1996; Slutsker et al. 1996; Steketee et al. 1996; 2001; Brabin and Piper, 1997).

One way to mitigate the effects of malaria in pregnancy has been the use of sulfadoxine–pyrimethamine in pregnancy. Trials in some African settings have shown that at least two doses of sulfadoxine–pyrimethamine in pregnancy decreases placental

malaria and the associated adverse effects (Shulman et al., 1999, Njagi et al., 2003, Kayentao et al., 2005, Falade et al., 2007, Parise et al., 1998, Schultz et al., 1994, Clerk et al., 2008, Tukur et al., 2007 and Challis et al., 2004). In order to reduce the negative consequences of malaria in pregnancy, the World Health Organisation (WHO) recommends the use of intermittent preventive treatment (IPT) for all areas with stable transmission of falciparum malaria (WHO, 2005). Two or more doses of SP have been shown to reduce low birth weight (LBW) in infants compared to one dose.

Noting the effects that malaria has on the population and the most vulnerable groups in our communities, the Government of the Republic of Zambia has identified the eradication of malaria as one of the priorities to attain the Millennium Development Goals number five and six. The country is also implementing specific short- and medium-term programs under the National Malaria Control Action Plan (NMCAP) aimed at scaling up malaria control and prevention strategies. These measures include a target to reduce malaria incidence by 75 percent by 2010 (MOH, 2006; DHS, 2007).

The Ministry of health has put in place strategies to strengthen the malaria component of focused antenatal care (FANC) and it is supporting the national roll-out of FANC with the efforts targeted at reducing the burden of malaria during pregnancy. These efforts focus on improving access to IPT with SP at least three times during the second and third trimester (MOH, 2006).

1.1 Statement of the Problem

The Ministry of Health surveys and reports (MOH, 2008) have shown that about 90% of pregnant mothers in Zambia have at least one antenatal visit during their pregnancy. The Ministry of Health states that IPTp was introduced in 2003 and the use rate is about 70% (WHO, 2006) and the national average hides substantially lower rates in rural areas and among poorer women (MOP, 2011: 6,7,23). Non empirical evidence seems to suggest that women often leave health facilities without receiving IPTp; arrive too late in their pregnancies to complete the full course of IPTp; or have concerns about the safety of medications during pregnancy and would rather not take drugs. For example, urban women were slightly more likely to take an antimalarial drug during their last

pregnancy than rural women (86% vs. 85% respectively). However, urban women were much more likely to receive IPT during an ANC visit than rural women (75% vs. 66%). Regional variations were also seen. Women in Luapula Province were less likely to take an antimalarial drug than women in North-Western (80% vs. 93% respectively). North Western Province mothers were also more likely to complete 2 doses (70% of these mothers took the complete course versus a national average of 59%). Women in Lusaka Province were more likely to receive IPT at an ANC visit than those in Central Province (77% and 51% respectively), but equally likely to take two or more doses of IPT (both 61%) (MOH, 2006).

Given these figures, there are indeed key facilitators and challenges in the utilisation and operationalisation of IPTp. Therefore, establishing factors behind the variations in the use rate amidst facilitators and challenges is likely to provide situational specific evidence that could guide in developing long-lasting interventions.

1.2 Research Questions

1) What is the level of IPTp implementation in the four health centres in Lusaka District?
2) What are the key facilitators and challenges in the utilisation and operationalisation of IPTp?

1.3 Research Aim and Objectives

The aim of this study was to evaluate the implementation and use rate of IPTp Malaria Prevention during Pregnancy, and to highlight key facilitators and challenges in its utilisation or operationalisation within the selected health centres in Lusaka District.

The specific objectives were:

1) To explore the level of implementation of the IPTp programme in Lusaka District.

2) To describe the key facilitators and challenges in the utilisation and operationalisation of IPTp.

1.5 Study Scope

This was a study within public health and takes an on spot as well as retrospective view of the IPTp programme.

1.6 Theoretical or Conceptual Framework

A critical examination of the key research questions in this study are “what questions” and not “why” questions. According Norman Blaikie (2000) what questions are exploratory in nature and why questions are explanatory in nature and call for a theory to ground the cause and effect relationships. They call for elucidating the hypotheses *a priori.* In this study, therefore there is no need for a theoretical or conceptual framework. Epistemologically, this study is grounded in Baconian modified induction where the researcher is guided by regular concepts from the literature review or a strategic plan which show what ought to be done and by what percentage. In case the researcher was interested in explaining or modelling the program failure and hypothesising the failure, he could have used the implementation theory which is presented below.

Researchers have argued that implementation problem is the problem of designing a mechanism (game form) such that the equilibrium outcomes satisfy some criterion of social optimality. The early literature assumed that each agent would simply report his own personal characteristics (preferences, endowments, productive capacity) to a social planner, who would use this information to compute the socially optimal outcome. It was discovered that the agents can gain from misrepresenting their preferences if the cost of providing a public good is shared according to the Lindahl rule, or if private goods are allocated according to the Walrasian rule. In quasi-linear economic environments, the Vickrey-Clarke-Groves mechanism is in fact strategy-proof, i.e., all agents reporting their own preferences truthfully . But a mechanism with truthful equilibria may also have

undesirable untruthful equilibria which can only be eliminated by allowing more abstract messages to be sent. In addition, if an agent knows something about other agents characteristics, then this can be exploited by expanding the set of possible messages. Maskin (1985) for instance initiated the study of mechanisms with general message spaces. This line of research, known as implementation theory, provides an analytical framework for the design of institutions. It has been criticized for allowing mechanisms to be arbitrarily complicated, but much of the complexity is due to the fact that the theorems cover large classes of social choice rules in very general environments. In many applications the optimal mechanisms have turned out to be quite simple (Maskin, 1985; Moore, 1992; Palfrey, 1992, Córchron and Ortunõ-Ortin, 1995; Córchron, 1996).

Given the earlier epistemological position, and the shortcomings of the theory, this study is not concerned with looking at large classes of social choice rules and as such is not appropriate for this study.

CHAPTER TWO- LITERATURE REVIEW

2.0 The Magnitude of the Problem

According to Stratton et al., (2008) Malaria is a parasitic infection, caused by the *Plasmodium* parasite and mainly transmitted by female Anopheles mosquitoes, prevalent throughout Africa, Latin America, and Asia. The disease is particularly severe in Africa with over 900,000 deaths annually, mostly in children. In holoendemic areas, where transmission is stable and perennial, malaria accounts for approximately 25% of deaths in children under five years. Malaria epidemics often affect vulnerable sub-populations with existing compromised health status and limited access to health care services. Worldwide, malaria affects 300 million people annually, and approximately 2 billion more people are susceptible to malaria today than before the major global malaria eradication campaigns of the mid- 20th century.

Malaria cases may be increasing due to changes in population, demographics, and land-use, as well as malaria reemergence in areas where control efforts were once effective. Rising mortality is linked to the growing incidence of chloroquine-resistant *Plasmodium falciparum* infections (Hay et al., 2002, 2004; Kublin et al., 2003), the most lethal malaria strain.

The burden of malaria in pregnancy has been exacerbated by the advent of HIV, which increases susceptibility to malaria in pregnancy, reduces the efficacy of antimalarial interventions, and complicates the use of antimalarials because of potential drug interactions. Successful control of malaria in pregnancy thus might save lives of mothers and babies, and is a high public health priority in all endemic countries, although the optimum methods for achieving this may vary according to local conditions (Menéndez et al., 2007).

On the home front, Malaria poses a particularly high threat to the pregnant woman and her unborn baby, contributing to elevated levels of maternal and neonatal death and

morbidity. In Zambia, the maternal mortality ratio currently stands at 591 per 100,000 live births—evidence that there is much work to be done (CSO, 2009).

Malaria is one of the leading causes of morbidity and mortality in Zambia. In 2008, 3.2 million cases (clinically or laboratory diagnosed) were reported, causing 3,871 deaths (MOH 2009). It is believed that malaria is responsible for up to approximately 47% of the overall disease burden for pregnant women (Steketee 2008). The effects of MIP are many. For the mother, the most common effect is maternal anemia, which reduces her ability to cope with bleeding, leading to hemorrhage during childbirth. As the malaria parasite is sequestered in the placenta, there are additional risks for premature birth, intrauterine growth retardation, low birth weight, spontaneous abortion, stillbirth, and congenital malaria in the newborn.

2.1 The President's Malaria Initiative (PMI)

Zambia is one of the 15 original countries benefiting from PMI, which was launched in 2005 and is led by the U.S. Agency for International Development and implemented together with the Centers for Disease Control and Prevention. As a key component of President Obama's Global Health Initiative and with the Lantos-Hyde Act of 2008, PMI's funding has been extended through fiscal year (FY) 2014, and a new six-year malaria strategy has been developed. Under the new strategy, the goal of PMI is to work with partners to halve the burden of malaria in 70 percent of the at-risk populations in sub-Saharan Africa (approximately 450 million residents), thereby removing malaria as a major public health problem and promoting development throughout the African region.

PMI works with national malaria control programs and coordinates its activities with national and international partners, including the Roll Back Malaria Partnership; The Global Fund to Fight AIDS, Tuberculosis and Malaria; the World Health Organization; the World Bank; Malaria No More; the Bill and Melinda Gates Foundation; Non-governmental organizations, including faith-based and community groups; and the private sector. In line with Zambia's national malaria control strategy, PMI supports four

key interventions to prevent and treat malaria and one of them is Intermittent Preventive Treatment for pregnant women (IPTp). IPTp is a highly effective means of reducing the serious consequences of malaria in both the pregnant woman and her unborn child, which include maternal anaemia, and low birth weight babies (Nosten et al., 1991; Brabin, 1996). IPTp consists of the administration of at least two doses of the antimalarial drug sulfadoxine-pyrimethamine (SP) given not less than one month apart during the second and third trimesters of pregnancy (WHO, 2004). So far, hundreds of health workers have been trained in IPTp. A cumulative count of individual health workers trained is not provided since some health workers have been trained on more than one occasion (Country Profile (2010).

2.2 Intermittent Preventive Treatment in Pregnancy (IPTp)

IPTp was explored and developed to avoid the limitations of daily or weekly chemoprophylaxis (Schultz et al., 1994; Parise et al., 1998; Verhoeff et al., 1998; Shulman et al., 1998). It consists of an antimalarial treatment given at regular intervals during pregnancy, regardless of malaria infection or disease. IPTp safety and efficacy data are available only for Amodiaquine in combination with sulfadoxine-pyrimethamine or artesunate, chloroquine and sulfadoxine-pyrimethamine, the latter being the only drug currently used because of widespread chloroquine resistance. Sulfadoxine-pyrimethamine is cheap, safe in the second and third trimester, and could be given as a single dose. In areas with stable *P falciparum* malaria transmission, WHO recommends that at least two doses are given from the second trimester onwards at least 1 month apart (WHO, 2004).

Almost all countries with an IPTp policy have implemented a two-dose IPTp strategy (WHO, 2004). Pharmacodynamic modeling suggests that increasing the frequency of IPTp to at least three doses for all women (HIV-infected women already require three doses- Parise, 1998; Filler et al., 2006) may partly restore IPTp with sulfadoxine-pyrimethamine efficacy in areas where high-grade antifolate resistance has not yet been established.

In Zambia, antenatal clinic attendance is high: 68% of women attend at least once, most of them (95%) attend twice, and more than half of women attend four times. The most recent WHO-recommended schedule for antenatal care includes a total of four antenatal clinic visits, including three after quickening.

Thus, at least three instead of two doses would have the practical advantage that sulfadoxine-pyrimethamine (fansidar) could be given during each scheduled antenatal clinic visit after quickening, regardless of the HIV status of the pregnant woman. Although increasing the frequency of the dosing to three or more might provide temporary respite in areas with increasing resistance, it needs to be weighed against the major efforts that are required for successful and timely change of existing guidelines. Another concern is the lack of adequate safety information with the more frequent dosing regimens of sulfadoxine-pyrimethamine. The available evidence does not suggest that monthly dosing increases the risk of severe cutaneous reactions but the number of women exposed to three or more doses in controlled trials is still limited (850, of whom 346 were known to be HIV infected) (Parise et al., 1998; Kuile et al., 2005; Filer et al., 2006) and more data are needed.

2.2.1 Evidence with Sulphadoxine–Pyrimethamine

Among possible drugs that could be used in pregnancy, sulfadoxine and pyrimethamine intermittent preventive treatment has been the most studied (Garner and Gulmezoglu, 2001; Newman, 2004; Greenwood, 2004). Studies conducted in countries such as Kenya and Malawi have shown that IPTp with sulphadoxine–pyrimethamine (SP) given twice during pregnancy can reduce malaria episodes and severe anaemia, and improve birth weight (Nosten et al., 1991; Rogerson et al., 2000; Schultz et al., 2005; Brabin, 1996). A study in Kenya demonstrated that IPTp with SP given several times in pregnancy when women attend antenatal care (ANC) could reduce severe anaemia among primigravidae by 39%. However, the study raised questions about the optimal ways to deliver this intervention to different groups of women as part of an integrated programme for malaria control (Shulman et al., 1999).

2.3 Strategy to Prevent Malaria

The Government of Zambia made its first major commitment to reducing the incidence of malaria at the Abuja Summit in 2000. While attending this global meeting, Zambia committed to ensuring 60% access to ITPp for all pregnant women who are at risk of malaria, especially those in their first pregnancies (WHO/CDS/RBM 2000; MOH 2006). This third target aimed at increasing IPTp coverage to 60% was later increased to 80% by 2008, in line with WHO guidelines.

In 2005, Zambia developed its first national malaria strategic plan (NMSP), "A Road Map for Impact on Malaria in Zambia 2006–2011," which outlines a package of interventions aimed at achieving a "malaria free Zambia." A central and core intervention outlined in the strategy is that at least 80% of pregnant women have access to the package of MIP interventions by December 2008. The MOH aimed to achieve this goal by focusing its efforts specifically on:

a) Improving access to IPTp with sulphadoxine-pyrimethamine (SP) at least three times during the second and third trimesters;
b) Improving access to and use of ITNs by pregnant women.
c) Reducing [maternal] anemia through the above two methods, as well as with micronutrients and improved nutrition;
d) Improving diagnosis and treatment for pregnant women with clinical malaria (MOH, 2006).

2.4 Policy Development

Prior to 2002, policy stipulated that pregnant women should be routinely given malaria prophylaxis with chloroquine, though this policy was not well implemented at the service delivery level, as many health care providers were unaware of the policy and stocks of chloroquine were inadequate, among other contributing factors (JHPIEGO, 2004).

Implementation of IPTp thus began in earnest from 2000–2003 when there was regional rallying around MIP after the Abuja Summit, and Zambia revised its IPTp drug policy. This policy mandated that all pregnant women receive three doses of sulphadoxine-pyrimethemine (SP) as directly observed therapy (DOT), beginning at 16 weeks of pregnancy and repeated one month apart, and also receive education/promotion on ITNs within the context of at least four focused antenatal care (ANC) visits (MOH, 2002). Focused ANC is a package of services designed to provide high-quality, focused care for pregnant women in a minimum of four visits for women without pregnancy-related complications. The previous policy stipulated that women should attend as many as 10 or more visits throughout their pregnancies, which placed a high burden on clients and providers alike. Zambia's decision to set a goal of three doses of SP, rather than two or less was in part because of the high burden of HIV in the country. When a pregnant woman is HIV-positive, she requires more doses of SP to treat a malarial infection than an HIV-negative woman (Filler et al., 2006).

2.5 Prevention Guidelines

The table below illustrates how the MIP policy should be implemented in Zambia through focused ANC according to the national MIP in-service training package for ANC providers (MOH, 2002).

Visit	Counselling	Provide IPT
Second	Access and repeat/ review	Give 3 tablets of SP as DOT during ANC
Third	Access and repeat/ review	Give 3 tablets of SP as DOT during ANC
Fourth	Access and repeat/ review	Give 3rd dose if still due

CHAPTER THREE - RESEARCH DESIGN AND METHODOLOGY

3.0 Design

This was a mixed methods study design that looked at the immediate past (from onset of pregnancy) up to the last trimester of pregnancy. In order to conduct the anticipated formative assessment utilising quantitative tools and qualitative data collection techniques like focus group discussions (FGD) and in-depth interviews (IDI), Baconian induction (for quantitative) and Husserlian and Gadamerian hermeneutic phenomenology (for qualitative) underpinned the inquiry.

The aim of employing Husserlian and Gadamerian hermeneutic phenomenology was to study how phenomena of pregnancy and drug prophylaxis are experienced in consciousness, in cognitive and perceptual acts, as well as how these phenomena may be valued or appreciated. Phenomenology seeks to understand how persons construct meaning and a key concept is intersubjectivity. Our experience of the world, upon which our thoughts about the world are based, is intersubjective because we experience the world with and through others (Heidegger, 1962). Whatever meaning the study participants were expected to create about pregnancy and drug prophylaxis had its roots in human actions, and the totality of social artefacts and cultural objects was grounded in human activity.

The aim of employing Baconian induction was to enable the researcher build patterns of empirical data that are regular and irregular in order to make inferences.

The focus of using these two approaches was meant to help in finding a way to represent the actual reality on the ground and the lived experiences according to Alfred Schültz (1962) of the social actors (antenatal health care providers and adult women aged 18-45 years who were expecting).

3.1 Population Sampling and Data Collection Tools

In order to obtain an ideal sample for this study and determine which tools could have been appropriate for data collection and the methods of analysis, a matrix of methods was first developed (see table 3.1).

Table 3.1 Matrix of Methods that were employed in answering the research questions

Question posed	Population and sampling method appropriate to render answers	Tool and Analytic methods
What is the level of implementation of IPTp in the four health centres in Lusaka District?	Sisters-in-charge and pharmacists enlisted by purposive sampling	In-depth interviews with Sisters-in-charge and pharmacists
What are the key facilitators and challenges in the utilisation and operationalisation of IPTp?	Sisters-In-charge and pharmacists enlisted by purposive sampling and mothers enlisted by random as well as purposive sampling	In-depth interviews with Sisters-in-charge and pharmacists and survey questionnaires and focus group discussions for expectant mothers

3.1.1 Population and Sampling

The sample population for this study was drawn from officer's in-charge of antenatal clinics and pharmacists or a person in charge of the pharmacy at the health centre as well as expectant mothers who were attending antenatal clinics. Sisters in charges were selected in this study because they were repository to activities in the clinics. As for pharmacists, they were repositories of drugs. The justification to select mothers in this study is obvious as they were consumers of the service.

Four Sisters in-charge of antenatal clinics and four pharmacists or persons in charge of the pharmacy were purposively enlisted using expert sampling because there were no any other members of the health care team who could be in a position to account for the activities related to the study.

Only women attending any clinic session and who met the inclusion criteria were enlisted and this included: A woman aged 18-45 years and appeared on the register of expectant mothers in the health centre under study.

The study was done in four health centres which were drawn randomly. The populations of expectant mothers based on health centre attendances in a month according to records were distributed as follows:

- 250 for Kanyama ,
- 200 for George compound,
- 175 for Chilenje and
- 125 for Kalingalinga.

Sampling with probability proportionate to size was done to have a greater number of sampling elements being selected. Although the sampling unit was the individual subject, sampling was conducted using the appointment register and if the respondent did not turn up on the appointment day. In order to determine the ideal sample for each cluster, Yamane's formula below was used in the event that the population is known and the researcher is interested in determining an adequate sample size (Yamane, 1967).

$$n = \frac{N}{1 + N\,(e)^2}$$

Where: ***n*** is the desired sample size

N is the known population size and

e is the precision set at .05

The level of precision ***e*** or reasonable certainty, sometimes called sampling error, is the range in which the true value of the population is estimated to be. This range is often expressed in percentage points, (e.g., ± 5 percent). In other words, this means that, if a

95% confidence level is selected, 95 out of 100 samples will have the true population value within the range of precision specified earlier. There is always a chance that the sample you obtain does not represent the true population value.

Given the populations, the sample sizes were as follows:

- Kanyama was 160
- George compound was 134
- Chilenje was 130
- Kalingalinga was 98

The total study sample will be 522

3.1.2 Identification and Measurement of Key Variables

In this study, the key variables that were studied included:

a) Level of IPTp implementation in the four health centres in Lusaka District and this was operationalised as the rate of reception of the type of antimalarial drug that the health centre or district recommended. Level was expressed as a numerical value.

b) Key facilitators and challenges in the utilisation and operationalisation of IPTp were operationalised as determinants of programme implementation.

3.1.3 Data Collection

Since the study was done in the four heath centres, 8 in-depth interviews (IDIs) with health care staff that are in charges of antenatal clinics and pharmacists were conducted.

In order to capture as many views of women on the subject, 2 focus group discussions (FDG) based on homogeneity of mothers in terms of time of antenatal attendance was conducted in each health centre to capture experiences in the first second and third semester of pregnancy.

The women selected in the sample population were interviewed further through questionnaires.

3.1.3 Ethical Issues

Before collecting the data, the study was approved by the University of Zambia Biomedical Research Ethics Committee (UNZABREC) and permission to conduct the study in Lusaka District was approved by The Ministry of Health (MOH). Entry into the setting was facilitated by the officers in-charge. Patients were enrolled into the study with the help of antenatal staff. An introductory letter was given to the patients by health workers that included a consent form and an information sheet.

3.1.4 Data Collection and Analysis

Data were collected using a survey questionnaire, key Informant interviews (in-depth interviews) and focus group discussions (FGD). Study participants from the four different target population groups were selected taking into consideration their age, education, socioeconomic and marital status. This approach enabled data collection from a range of people in order to get the broad picture necessary for a review of the policy for malaria prevention in pregnancy. Administration of the survey questionnaire and FGDs were held daily after ANC activities and as long as mothers were available after consenting. Key informant interviews (KII) were conducted at lunch time in order not to interfere with work. All participants spoke either Nyanja or Chibemba fluently while others spoke English. Five hundred and twenty two survey questionnaires were administered over a period of four months and a total of 8 FGDs were conducted, with a total of 90 participants: 15 adolescents aged 18–19 years, 36 young women aged 20–

29 years and 39 women over 30 years. In addition to the FGDs, 4 KIIs were conducted targeting in charges (Please see the Appendices).

Qualitative data Analysis

The researcher had three types of qualitative data which were in various forms. The researcher had in depth interview data, focus group discussion data and field notes or the researcher's journal. The data were either recorded or in textual form.

In order to analyse FGDs and IDIs, the researcher employed modified grounded theory technique by linking it with Husserlian descriptive and Gadamerian hermeneutic phenomenology. Through this integration, a systematic method of thematic data analysis was adopted. This approach allowed for systematic identification of the health workers' interpretations and constructs related to providing or not providing any anti-malarial. The approach of this analysis is to "transform lived experience into a textual expression of its essence – in such a way that the effect of the text is at once a reflexive re-living and a reflective appropriation of something meaningful" (van Manen, 1997) in the antenatal setting.

All FGDs and KIIs were initially audio recorded in the language the participants were able to communicate when participants agreed and written on the spot where participants disagreed.

Three types of field notes were recorded during the research process. The researcher employed the process described by Minichiello et al., (1999) and it included the transcript file, personal file, and analytical file or researcher's reflections. The transcript file contained raw data from the KIIs and FGDs which the researcher wrote. The personal file contained a detailed chronological account of the participants and their settings, and the analytical file contained reflective notes on the research experience and methodological issues. The information contained in the personal file enabled reconstruction of conversations in context rather than simply relying on a-contextual

verbal recording. The analytical file contained a detailed (critical) examination of the ideas that emerged in relation to the research questions as the research progressed. It also contained reflections and insights related to the research that influenced its direction.

Interviewees in the FGDs spoke in Nyanja or Chibemba whereas in the IDIs participants communicated in English. Audio tapes were transcribed first verbatim in the language of the interview by the researcher in the company of two research assistants who were fluent in the two languages. Next, the transcripts were standardised following a translation of sentences from Nyanja and Bemba into English using back to back translation.

The researcher then employed procedures to ensure a rigorous and high quality of FGDs and KIIs. For this exercise, a round robin form of qualitative data analysis was employed during the transcription and translation phase to guarantee trustworthiness of the data analysis (Lincoln and Guba; 1985). The researcher with the help of the two research assistants as a team, read and re-read, listened and re-listened, coded and re-coded going around each person's notes of the initial transcriptions until everyone had an opportunity to comment on the transcription and codes. An opportunity for member checking was arranged once the data had been analysed to guarantee trustworthiness of the report (Lincoln and Guba; 1985; Krefting, 1991). To avoid loss of data, during analysis frequent comparisons were made between the transcripts in Chinyanja or Chibemba and the English version, and relevant sections of tapes listened to in order to get appropriate quotes. Data were initially coded from the English versions of the transcripts and thematic areas obtained. Manual analysis of the data was done using word perfect. Similarities and differences among the different data sets were identified and noted.

Quantitative Data Analysis

As for the quantitative data, the data were initially entered into Epi Info version 6.0 (CDC, Atlanta, GA, USA), cleaned and transferred to SPSS version 18 for analysis.

CHAPTER FOUR – RESEARCH FINDINGS

4.0 Introduction

The research findings are organised under the themes drawn from the research questions. This framework was selected based on the arguments by de Vaus (2001). He advises researchers doing cross sectional research to organise the responses thematically. Therefore, there are three themes and these relate to:

a) The level of implementation of IPTp in the health centres.
b) Key facilitators and challenges in the utilisation and operationalisation of IPTp.

It is expected in any research that baseline data in form of demographic characteristics are presented first.

4.1 Baseline Data

This study enlisted 522 expectant mothers and four in charges of antenatal clinics. The youngest expectant mother was 18 and the oldest was 45. This shows a wide age range difference of 27 years. However, the sample mean age was 25.2 (SD ± 5.6). This sample was relatively homogenous in important socio-demographic characteristics, such as education, religion and level of education as shown below.

Most expectant mothers were literate in the sense that n = 508 (97.3%) had attended primary, secondary or university. In this community, it was common for women to be professing Christianity (Table 4.1.1).

Table 4.1.1 Demographic profile

Demographic Variable	n	%
Occupation		
student	12	2.3
administrator	10	1.9
In sales or doing clerical job	14	2.7
A professional	65	12.5
Businessman/woman	86	16.5
farmer	3	.6
Home maker	342	63.6
Total	**522**	**100.0**
Educational Status		
never	14	2.7
primary	138	26.4
lower secondary	155	29.7
upper secondary	181	34.7
college/university	34	6.5
Total	**522**	**100.0**
Religion		
None	4	.8
Christian but a catholic	112	21.5
Christian but Pentecostal	180	34.5
Christian but other	226	43.3
Total	**522**	**100.0**

4.2 Clinical data

Recognising that expectant mothers are expected to be given antimalarial drugs as scheduled based on gestation and visitation, the researcher opted to first present a profile on parity and gravidity. Gravidity was considered to be the number of times that a woman has been pregnant and parity was taken to be the number of times that an expectant mother had given birth to a foetus with a gestational age of 24 weeks or more, regardless of whether the child was born alive or was stillborn. In this study, the parity range was 7 (minimum 0 and maximum 7). The parity mode was nulliparous (nullip) n = 172 (33%). The mean parity was 1.4 (SD ± 1.4) (table 4.2.1). However, mothers who had a parity of 1 were second n = 136 (26.1%) (Table 4.2.2). Gravidity range was 8 (minimum 0 and maximum 8). The gravidity mode was primiparas (1 G1) n

= 164 (31.4%). The mean gravidity was 2.5 (SD ± 1.5) (Table 4.2.1). However, mothers who had a parity of 1 were second n = 121 (23.2%) (Table 4.2.2

Table 4.2.1 Statistics

Measure of statistic	*Parity*	*Gravidity*
Mean	1	2.53
Median	1	2.00
Mode	0	1.00
Std. Deviation	1	1.54
Range	7.00	8.00
Minimum	0.00	0.00
Maximum	7.00	8.00

Table 4.2.2 Clinical profile

Obstetric Variable	n	%
Parity		
Zero	172	33.0
One	136	26.1
Two	91	17.4
Three	62	11.9
Four	38	7.3
Five	16	3.1
Six	6	1.1
Seven	1	.2
Total	522	100.0
Gravidity		
Zero	6	1.1
One	164	31.4
Two	121	23.2
Three	107	20.5
Four	65	12.5
Five	32	6.1
Six	15	2.9
Seven	11	2.1
Eight	1	.2
Total	522	100.0

As expected, parity and gravidity increased with age and there were in total more multigravida or those who were pregnant more than once n = 352 (67.3%) There was a considerable number of grand multiparas n = 27; that is, women who had already delivered five or more infants who have achieved a gestational age of 24 weeks or

more, and such women are traditionally considered to be at higher risk than the average in subsequent pregnancies. The mean antenatal visits in the sample was low in the first trimester 0.3 (SD ± 0.5) and high in the third trimester 0.9 (SD ± 0.6). The expectant mothers had treated themselves for malaria up to four times and the mean number of times was 1 (SD ±0.8).

4.3 The level of administration of IPTp in the health centres.

In order to assess the levels of administration of IPTp, the researcher examined the rates of reception of any one of the three drugs to see how the three groups were comparable. The researcher calculated the number of women who exclusively accessed IPTp at each delivery point out of the potential population that could have received the doses of any drug.

One hundred and thirty mothers (24.9%) out of 522 who had an experience with the second visit received an antimalarial (fansidar) (Table 4.3.1).

Table 4.3.1 Second visit reception of antimalarial

Schedule	Fansidar		
	N/A	Yes	No
Have been given (or where you) given anti-malarial at the health centre to prevent malaria in this pregnancy?(second visit)	0	130	392

Six mothers (5 %) out of 116 who had an experience with the third visit received antimalarial (fansidar) according to the guidelines (Table 4.3.2).

Table 4.3.2 Third visit reception of antimalarial

Schedule	Fansidar		
	N/A	Yes	No
Have been given (or where you) given anti-malarial at the health centre to prevent malaria in this pregnancy?(third visit)	406	6	110

Three mothers (3 %) out of 100 who had an experience with the fourth visit received antimalarial (fansidar) (Table 4.3.3).

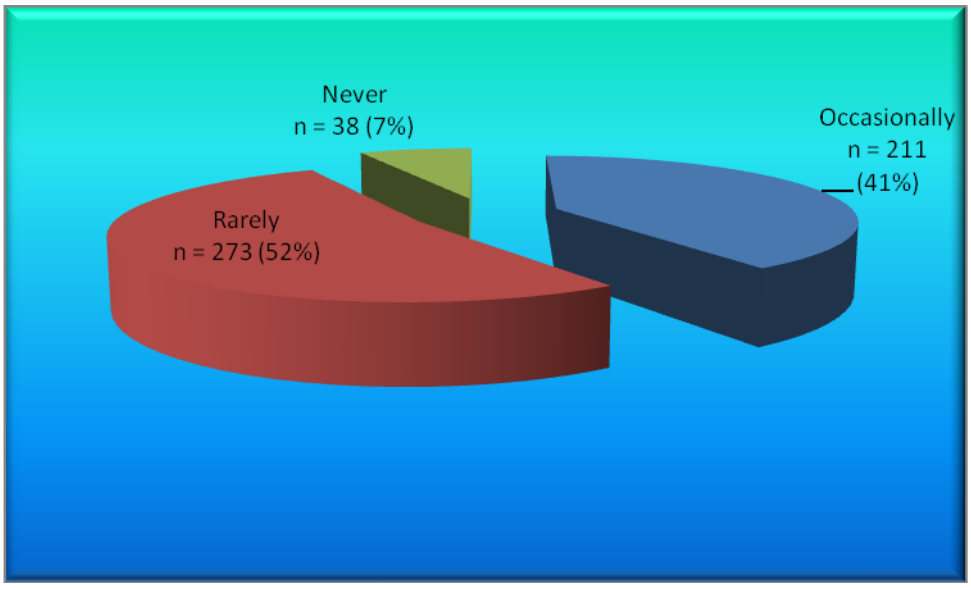
Table 4.3.3 Fourth visit reception of antimalarial

Schedule	Fansidar		
	N/A	Yes	No
Have been given (or where you) given anti-malarial at the health centre to prevent malaria in this pregnancy?(fourth visit)	422	3	97

The tables above show that only fansidar was administered to mothers during the visits and even if this drug was administered, the proportions of those who receive are extremely low. Looking at the numbers of mothers who received the dispensed drugs, there was in essence poor adherence by health workers to policy prescriptions.

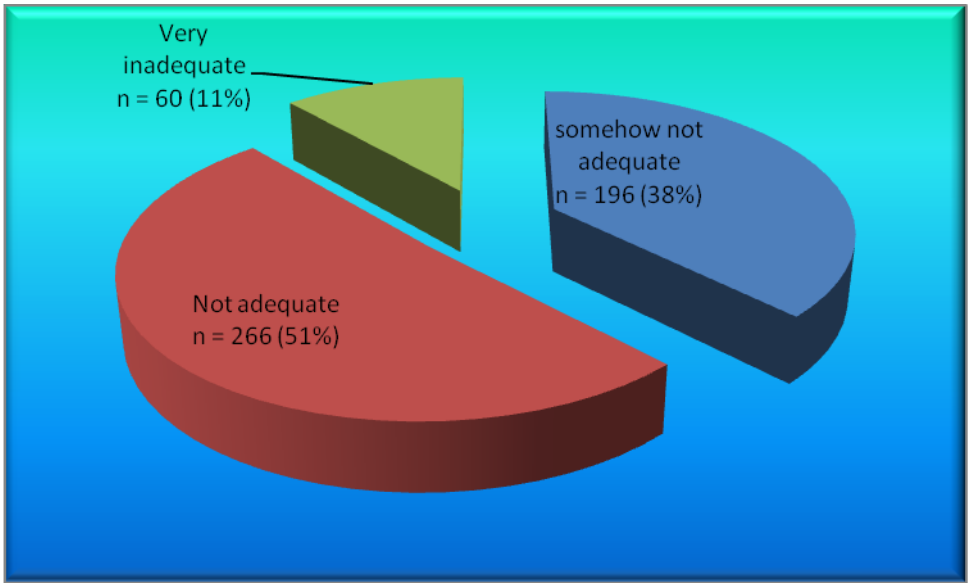
When the mothers were asked to state whether drugs where available, it was evident that availability was very low since n = 273 (52%) said drugs were rarely available, n = 211 (41%) were occasionally available and n = 38 (7%) said they were never available (figure 4.3.1).

Figure 4.3.1 Availability of Antimalarial Drugs at the Ante Natal Clinic



When mothers were asked to state whether drugs where adequate, for such that each mother received a course at each Ante Natal visit, the evidence is that drugs generally were not adequate since n = 266 (51%) said drugs were not adequate for every mother to receive a course, n = 196 (38%) stated that drugs were somehow inadequate for every mother to receive a course and n = 60 (11%) claimed that drugs were very inadequate for every mother to receive a course (figure 4.3.2).

Figure 4.3.2 Adequacy that every mother receives a course at every visit at the Ante Natal Clinic



4.4 Key facilitators and challenges in the operationalisation of IPTp.

In all the FGDs and the KIIs conducted, participants knew that antimalarials were a useful preventive measure against malaria, and that pregnant women were supposed to take the drugs at least once every four weeks since they were some of the most vulnerable groups. However, the perception of the expectant mothers was that availability and use of SP was very low.

When health worker in-charges of antenatal clinics and mothers were asked in the in-depth interviews as well as in the focus group discussions what the state of antimalarial therapy was and what challenges or facilitators were present, the respondents showed a contradictory picture especially on availability of drugs. In-charges claimed that antimalarials generally were administered and were available, especially SP, for expectant mothers. While sister-in-charges made these claims, a visit to the pharmacy showed limited or no stocks of antimalarials and most of the mothers expressed concern at the chronic shortages and lack of availability of antimalarials, especially fansidar, which they could have been taking for preventive purposes. The narratives below show what was happening on the ground. The first set looks at challenges and the second set addresses facilitators.

Theme I Challenges

Cost and availability

> *Mothers are given fansidar at least three doses before they deliver. We make sure that fansidar is available in the clinic during antenatal sessions....I do not remember giving amodiaquine. We hardly have it. As for artensunate, it is expensive and as such, we reserve it for treatment of acute attacks.*
>
> *Sister in charge 1*

> *We do not stock sufficient amounts of fansidar.....Yes as you have put it, we can use artensunate but this drug is too expensive for prevention. Artensunate is reserved for treatment of acute attacks.*
>
> *Sister in charge 4*

Reserving drugs for treating acute malaria

> *In this clinic, we stock amodiaquine, artensunate and fansidar. For prevention, we use fansidar on our mothers. However, we are trying as much as possible to use fansidar even for treatment because we have no stocks for other antimalarials for treatment. This explains the possible shortages of fansidar for prevention.*
>
> *Sister in charge 3*

Furthermore, the following statement illustrates the perceptions on challenges in the communities that were studied:

Huge Workloads

> *The work load is heavy and there are so many activities in the month. The challenges are that we don't reach the intended goal or targets.*
>
> Sister in charge 4

> *Our Clinic has ANC every day. The work load at this clinic is overwhelming especially during Mondays, Tuesdays and also Fridays but we do manage.*
>
> *Sister in charge 2*

> *The workload is heavy in that at times you have to see 30 pregnant women. Many times these women may not receive adequate attention because we have to see a lot of women within a short space of time .....But what I can say is that the staff is available, unless there is a problem or when someone goes on leave. Otherwise they are always available.*
>
> *Sister in charge 1*

The challenges or factors associated with low use and access of fansidar were explored. Participants and key informants (sister in charges) were asked what constraints existed in the prevention of malaria. In all the FGDs and the KIIs conducted, it was emphasized that low stocks, lack of regular drug availability and huge workloads were challenges in implementing the policy.

Lack of regular drug availability

> *I do not find drugs here each time I come for my check-up. Otherwise I buy my own drugs I just have to take something to prevent malaria or else I may die*.
>
> *Mother aged 31 para 5 Gravida 7*

Low stocks

> *We* prescribe drugs that will make them better *and* stop the symptoms. *This is a routine practice but it is not a frequent occurrence because we run out of drugs. There are now more mothers who are expecting than before the programme was rolled out. But we can say that drugs are available somehow although a week may pass until drugs are delivered but we don't have much of a problem with fansidar though sometimes we do have shortages.*
>
> *Sister in charge 3*

Theme II Facilitators

Mothers appeared to be well aware that proper scheduling and taking fansidar in pregnancy was critical to their baby and their wellbeing. This was expressed by statements such as, '*I do not have any problems with fansidar*, *by coming to the clinic not missing antenatal care, taking fansidar, I will be healthy, I just have to take something to prevent malaria or else I may die".* Several mothers noted that although the *"persistence of symptoms like fever"* was one of the pointers of malaria, they said, "*It was better to come to the ANC clinic so that the nurse or Clinical Officer will tell me what to do*" and "*prescribe drugs that will make them better*," and "*stop the symptoms."*

Figure 3.4.1 Pregnant woman receiving her tablets of sulfadoxinepyrimethamine (SP) at the first visit at Kalingalinga Clininc to reduce her risk of the complications of malaria.

No problem taking drugs

> *When we come to the Clinic, we get drugs if they are available. So far I have taken two doses of fansidar. I am not finding any problems taking fansidar*.
>
> *Mother aged 25 para 4 Gravida 5*

Cues

> *“The first pregnancy for me was not a good one. I had been in and out of hospital because of malaria. I was scared of taking drugs fearing that my baby may develop complications. Now in this second pregnancy, by coming to the clinic not missing antenatal care and taking fansidar, has reduced the bouts of malaria.”*
>
> *Mother aged 19 para 1 Gravida 2*

> *“I have read and heard nurses talk about fansidar or Sulfadoline……is it the correct way to say it?...Ok and whenever I come, I ask to be given some antimalaria as I know I will be healthy”.*
>
> *Grand multipara aged 38*

> *“We give them health promotion information emphasising that it is important to come in for the medicines, as malaria can cause anaemia, stillbirth, and low infant birth weight”.*
>
> *Sister in charge 3*

Perceived Seriousness

"I have not had an opportunity to get fansidar. But you see, malaria in me comes out to attack me seriously. Once I was a case of cerebral malaria. My second pregnancy took me into ICU. I just wakeup from coma on a quinine drip. So realising how serious malaria is, I do not take chances by waiting that I will get the medicine at the clinic. You will come here like to day....you see only a few have received the drug.....it runs out quickly because of large numbers....one may wish that community health workers would be tasked to deliver the drug in the community".

Only a few patients are of the opinion that if they take drugs like fansidar and develop adverse reactions, it was due to some additional conditions or abnormalities in their bodies i.e. besides the malaria infection.

Perceived threats

> *"I have been given fansidar each time I come here. I am known for persistence of symptoms like fever. I had an abortion at four months some time back because of malaria."*
>
> *HIV Positive living mother aged 29 para 2 Gravida 4*

> *I had fever the whole of last week and it was better to come to the ANC clinic so that the nurse or Clinical Officer will tell me what to do. I am afraid of dying even losing the baby. I have learnt that when you ask for the drug, you will be given than when you are quite.*
>
> *Grand multi para aged 36*

From the narratives above, the researcher summarized the challenges and facilitators in a table using the themes that emerged. Using quantitative content analysis, he shows the frequency of each enhancer and challenge was mentioned.

Table 4.4.1 Themes - enablers and challenges

Challenges	Facilitators
a) Fear of complications taking drugs mentioned X 3	*a) No problem taking drugs mentioned X 19*
b) Large population mentioned X 28	*b) Cues mentioned X 26*
c) Expenditure or cost mentioned X 13	*c) perceived threat mentioned X 21*
d) Lack of regular drug availability mentioned X 34	*d) Perceived benefits mentioned X 13*
e) Staff shortage mentioned X 23	*e) Perceived Seriousness mentioned X 5*
f) Low stocks mentioned X 8	———
g) Huge Workloads mentioned X 12	———
h) Reserving drugs for treating acute malaria	———

CHAPTER FIVE DISCUSSION AND CONCLUSIONS

5.0 Introduction

The aim of this study was to evaluate the implementation of IPTp Malaria Prevention during Pregnancy in four selected health centres in Lusaka District. Two research questions were linked to this aim:

1) What is the level of implementation of antimalarial regimen in the four health centres?
2) What are the key facilitators and challenges in the utilisation and operationalisation of IPTp?

The study has shown that the level of administration of antimalarial regimen in the four zonal health centres was very low across and within the trimesters. Drug availability is extremely low and out of the three drugs(fansidar, amodiaquine and artensunate)the policy states ought to be administered and be available, only fansidar is available and can be accessed for prevention in pregnancy.. There are facilitators and challenges linked to the IPTp programme in the four health centres. These facilitators and challenges are facility and personally mediated. There were seven challenges that were identified and these included:

a) Fear of complications taking drugs
b) Large population
c) Expenditure or cost
d) Lack of regular drug availability
e) Staff shortage
f) Low stocks
g) Huge Workloads

As for facilitators, five were identified and these were:

1) No problem taking drugs
2) Cues
3) perceived threat
4) Perceived benefits
5) Perceived Seriousness

It is evident that both health system problems and individual characteristics were barriers to women accessing IPTp, implying that malaria control in pregnancy is not only a malaria programme problem but also a health system strengthening issue. The problem of incomplete coverage of IPTp is predominantly a problem of health systems, not the problem of pregnant women, and improving the health systems would improve IPTp coverage (Gies et al., 2008). For instance, observation of SP treatment is not always possible due to lack of cups and clean water with which to take the drug, and perceived workload of health workers in washing cups where water is available; therefore, sometimes the women are given tablets to take at home and adherence is poor (Mubyazi et al., 2005). However, individual characteristics of pregnant women, as documented, were found to be equally important, which should be addressed through sustained health education on the importance of ANC attendance and the need for pregnant women to access the recommended doses of IPTp.

What one can decipher from this evaluation is that the IPTp program in the four health centres is operating poorly. The Ministry of Health promulgation (MOH, 2008) of the set target (80%) is far from being met in the District. The interviews have affirmed the empirical claims that women often leave health facilities without receiving IPTp. The mothers in the four clinics that were surveyed were more unlikely to receive IPT at an ANC visit contrary to what the Zambia National Malaria Indicator Survey (2006) was predicting. Though this is not generalizable and should be mentioned.

The current mechanism of delivering malaria preventive interventions (IPT) to pregnant women through the health system has several challenges, which include insufficient ANC attendance, staff shortage, poor access to ANC and poor health-worker practices (Ndyomugyenyi et al., 1998; Mubyazi et al., 2005; Hill and Kazembe, 2006) For this reason, it has been suggested that alternative IPTp delivery approaches should be sought like community involvement. Therefore, community involvement in the delivery of health services, which is in line with the principles of primary health care, is important for improved delivery of health services to those who are perceived to be vulnerable (WHO/UNICEF, 1978).

Looking further at the results, one would be compelled to hypothesise that there are no benefits of IPTp use in improving maternity and birth outcomes including mainly the anticipated improved body weight of the newborn and prevention of anaemia in pregnancy, premature labour/births and possible maternal deaths and/or foetal deaths remain acknowledged (Verhoeff et al., 1999; Agyepong et al., 2004; Jones and Williams, 2004).

All the respondents in the present study appreciated the IPTp strategy. However, they were not happy with the low uptake and coverage of IPTp due to the systemic shortages of the supply of drugs. Truly, these constraints have to be minimized if IPTp services are to be effective and achieve high coverage rate.

The positive attitude of mothers suggesting that community health workers could be used for antimalarial distribution for preventive treatment of malaria among pregnant women should be implemented without delay. This is an important appreciation in the light of understaffed health services. Therefore the need for community human resource services (called in some settings as community-directed drug distributor) to bridge the gap between communities and the healthcare system ought to be considered.

It was interesting to see that mothers were aware of risks of not taking antimalarial and they were proactive and innovative in ensuring that they had treatment. This fits the assumptions of the Health Belief Model. The HBM states that, in the case of prevention,

individuals will take a health related action if they have a desire to avoid an illness and if they believe that a specific health action will prevent the illness. The model includes six elements: 1) Perceived susceptibility of the individual to the condition; 2) perceived severity of the condition as having serious medical and social consequences; 3) perceived benefits of taking the health action in reducing the disease threat as well as other additional benefits; 4) perceived barriers to taking the health action, which should not outweigh benefits.

These four perceptions are elements that determine the readiness to take the action. They are activated by Cues to action which trigger this readiness and self-efficacy, which is the conviction that one can successfully execute the health behaviour (Glanz et al., 1997).

4.1 Significances and Limitations of the Study

This study has notable limitations and significances.

The first limitation is that the researcher did not ask the mothers the reasons for skipping ANC. The second is that the researcher did not have an opportunity to survey pharmacies to ensure that the drugs truly were not available .However; the testimonies of some of the in charges are true and are affirmed by mothers.

In spite of the limitations, there are strengths in this study. This is the first evaluation based study in Zambia and as such, the study has added information to the existing body of knowledge on IPTp. Looking at the methodology that was used in this study, it was feasible within the usual budgetary and time constraints of intervention development research.

4.2 Recommendations

The findings in this study will form the foundations for creating culturally relevant and effective interventions within the district. The fact that this study was exploratory, there

is need for action research that could focus on programmatic elements of IPTp, using group discussions to develop targeted messages and identifying barriers to effective program delivery.. Staff shortages could be mitigated by using community health workers or volunteers if malaria policy allowed community-based approaches to distribute IPT. If this could be considered as a policy shift, then resource persons will have to be trained, facilitated and linked to the health units to get IPTp basic supplies. This strategy will require addressing the issue of understaffing at health units and the frequent stock-outs of essential drugs. Another possible programming option is to improve quality of care at health units, especially ensuring availability of essential supplies/drugs, while involving the resource persons in the community sensitization and promotion of IPT. This could possibly improve use of other healthcare services in addition to malaria treatment and prevention.

4.3 Conclusions

Prevention of malaria in pregnancy through use of IPTp was low in this study population. Overall, nearly every woman did not receive IPTp. These findings call for considering the use of community-based approaches to distribute IPT. It also calls training resource persons. There is also need to have the supplies constantly available.

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Appendix I-Survey Questionnaire for Pregnant women

You have been randomly selected with other women to help us know what may relate to you. Please read /listen to each item carefully and decide to what extent it is characteristic of you. Give each item a rating that applies to you by using a scale that is given for each question. Please remember to respond to all items. There is indeed no right or wrong answers. Your answers will be kept by me in the envelope that I have given you in the strictest confidence for only six months after which time I shall have examined all the responses. There after I shall destroy them. There will be no identification mark that relates to you on the questionnaire. I am sure that you will be open in responding to these statements.

1.Age .....
2 Religion.....

3.Marital Status

Married
Widowed
Single
Divorced
Cohabiting

4. Education of women

	Never	**Primary**	**Lower Secondary**	**Upper secondary**	**College /University**
Tick					

5 Occupation

	Tick only one
Student at College/University	
Student at Secondary School/Primary	
Administrator	
I am in a sales and clerical job	
I am a professional	
I am in business	
Farmer	
I am a home maker	
I am just a home maker (Just married)	

6. Parity.....
7. Gravidity……
8. Do you have surviving children?.....
9.Gestation in weeks…….

10. Term of pregnancy

First Trimester	second Trimester	Third Trimester

11.Number of times you have been treated or self-treated of malaria episodes.....

12.Which of the following drugs have you been given at the health centre to prevent malaria in this pregnancy?

First Trimester	Yes	No	second Trimester	Yes	No	Third Trimester	Yes	No
Fansidar			Fansidar			Fansidar		

13.How readily available are any of these drugs at each visit

	Always	**Frequently**	**Occasionally**	**rarely**	**Never**
Tick what applies					

Appendix II - Schema of In-depth Interview for Sisters-in-charge and Pharmacists

Theme I: Demographics

1. Please could you tell me about yourself?
2. What are your roles in IPTp in this clinic?

Theme II: Operations

I would like to know what you are doing or intend to do regarding IPTp. From this then specific experiences will be continuously probed for depth below surface responses. Probe for the following:

a) Workload
b) Availability of staff
c) Availability of drugs

Theme III: Attitudes of Mothers to IPTp

1. To what extent are mothers taking IPTP?
2. Please describe how prevention of malaria could be met (probe to account for the current arrangement).

Summary

Let's summarize some of the key points from our discussion. Is there anything else?

Do you have any questions?

Thank you for taking the time to talk to me!

Appendix III – Question Schema of FGDs for Pregnant Women

Ice breaking or energizers, and motivators for focus group discussions

Before the FGDs could engage in serious dialogue, the researcher will motivate them to ice breaking. When groups first meet, there is often some fear about what may happen. This is true even when many do not know each other or have not attended group events before. As interactive and often fun sessions in form of ice breaking will have to run before the main proceedings because they do not just help people get to know each other but also to buy into the purpose of the event.

1. The Check in

The FGD will begin by asking them the following questions:

1. Say where you live now and another place you have lived (may use a different question if all from the same place).
2. Share something about how this day or week has gone.

- The FGD will start by asking each person to team up with another person they know the least. If the group is uneven, I will put three in one group. Then present the cognitive topic. When they finish talking, I will ask some to share with the large group what they talked about.
- When this is done, I will ask them to find another partner they do not know well.
- This will then be followed by exploring the subject matter using the following thematic questions.

1. Given our condition now, what are you doing to prevent malaria?
2. What problems if any do you face regarding malaria prevention in pregnancy?
3. What are you doing to prevent malaria? (Probe for IPTp)
4. Are there any challenges you face in getting drugs for malaria prevention at this health centre?
3. How can we make malaria prevention in pregnancy work to your best?

APPENDIX IV- INFORMATION SHEET

Dear participant,

My name is Andrew Chinyemba.

I am a Master of Public Health student at the University of Zambia, School of Medicine. In partial fulfillment of the program study I am expected to undertake a research that will contribute to the provision of quality health care and contribute to the body of knowledge.

The aim of this study is to evaluate the implementation of Intermittent Preventive Treatment(IPTp) of Malaria during Pregnancy within the selected health centres in Lusaka District.

Information will be collected using a questionnaire that you will take to fill in. Additional information will be obtained through an interview and from me observing you go about your activities.

Information that will be obtained from this study shall be submitted to UNZA, Department of Public Health and will be made available to Ministry of Health and health policy makers. The findings will also be of great importance as it would help both mothers and health care providers on how best to prevent the occurrence of malaria in pregnancy and how best to manage IPTp program in Zambia . You will not be personally identified in the document that will be submitted.

Please note that:

Voluntary Participation: Your participation in this study is voluntary. You are free to withdraw from the study at any time if you wish to do so without any consequences on your rights as a pregnant mother.

Risk and discomforts: There are no obvious risks or discomforts involved in taking part in this study. However, if you feel uncomfortable answering some of the questions, you are free not to answer.

Benefits: There are no monetary benefits that will be given in exchange for information obtained. However, taking part in this study will generate information that will contribute to the provision of quality health services by health care professions and will be of benefit to pregnant mothers.

Confidentiality: The information that you will give shall be handled with utmost confidentiality. You are not required to write your name or initials on the questionnaire to give identity.

Questions or Clarifications

If you have questions or need any clarifications about this study now or in the future, you may contact the researcher or Chairperson, School of Medicine Biomedical Research Ethics committee at the University of Zambia:

Telephone: 260-1-256067

Ridgeway Campus

Telegrams: UNZA, LUSAKA

P.O. Box 50110 Lusaka, Zambia

Telex: UNZALU ZA 44370

Fax: + 260-1-250753

E-mail: unzarec@zamtel.zm

Appendix V- Consent Form

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

The aim and benefits of this study have been explained to me. I am aware that my participation is entirely voluntary and I can withdraw my participation at any time without losing my rights as a pregnant mother.

Signed or Thumb print……..Date……/…../……

(Participant)

Signed.....Date……/…../……

(Witness)

Signed…….……Date……/…../……

(Researcher)

Appendix VI- Time Frame- Gannt Chart

	Year												
	2012		2013										
Task	**N**	**D**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**
Approval of Research Proposal by school	■												
Ethical approval		■	■	■	■								
Data collection and analysis						■	■	■	■				
Report writing									■	■	■		
Dissemination												■	■

Appendix VII- Budget

Expenses	**Cost in Kwacha**
Travel cost(petrol)	K 2,000, 000
Recording Equipment	K 3,000,000
Phone and Internet charges	K 2,000,000
Refreshments	K 1,000,000
Stationary	K 1,000,000
Photocopying and binding	K 1,000,000
Miscellaneous	K 2,000,000
Total	**K 12,000,000**