CHAPTER ONE 1.0 INTRODUCTION

1.1 BACKGROUND

Approximately 40% of the world population is at risk of malaria whilst about 500 million people become severely ill with malaria (Korenromp et al., 2005). Globally, a child dies of malaria every 30 seconds and more than one million people die of malaria annually and these are mostly infants, young children and pregnant women in Africa (Korenromp et al., 2005, Rugemalila et al, 2006). About 90% of these deaths occur in sub Saharan Africa and nearly 25% of all childhood mortality in Africa (WHO, 2000; Byrne N, 2007).

In countries with heavy malaria burden, the disease accounts for as high as 40% of out-patient expenditure, 30-50% in-patient admissions, and about 60% out-patient visits. The lifelong effects of malaria include increased poverty, impaired learning and reduced attendance in schools and work places (WHO Media Centre, 2007).

The economic effects of malaria infection can be tremendous. These include direct costs for treatment and prevention, as well as indirect costs such as lost productivity from morbidity and mortality; time spent seeking treatment, and diversion of household resources. Malaria is responsible for an estimated average loss of 1.3% of economic growth annually in countries where transmission is high due to decrease in productivity (Sachs J.D, 2001). This leads to substantial difference in GDP between countries with and those without malaria. Globally, the Disability Adjusted Life Years [DALYs] due to malaria mortality is almost 3% with 10% in Africa (Breman et al, 2004).

In Ghana, the incidence of clinical malaria is about three (3) attacks per child per year. About 44% of out-patient cases is due to malaria and is the leading cause of cases admitted to hospital. Malaria accounts for about 25% of all deaths in children under- five years. In pregnancy, it can cause anaemia and placental parasitaemia which puts the mother and foetus at a substantial risk (GHS/NMCP, 2004). Malaria is the highest cause of death in health institutions with a mortality rate of 17.1%. (GHS Annual Report, 2004).

The WHO, in November 1998 declared the Roll Back Malaria (RBM) initiative to reduce to half the number of deaths due to malaria by the year 2010.The Head of States of many African countries endorsed this initiative in Abuja, Nigeria in April, 2000. The mission of the RBM is to enable

sustained delivery and use of the most effective prevention and treatment interventions for those especially in malaria- endemic areas. These interventions include vector control, indoor residual spraying, use of insecticide treated nets, presumptive treatment of pregnant women and prompt effective treatment of malaria cases. . (Njuguna and Quadar, 2007)

The elements of the RBM strategy include; Disease management which involves early diagnosis, appropriate and rapid treatment; Prevention through Insecticides Treated Nets (ITNs) especially among children and pregnant women and Intermittent Preventive Treatment (IPT) during pregnancy; Prevention and control of epidemics in epidemic-prone areas and situations; Intersectoral Collaboration, and focused research.

The world malaria situation is worsening, with the geographic spread of resistance widening to previously unaffected areas and an increase both in the prevalence and degree of drug resistance **(**Shunmay et al., 2004**).** Antimalarial drug resistance is now generally acknowledged to be one of the greatest threats to our ability to "Roll Back Malaria" (White N, 1999; Shunmay et al., 2004). Resistance to affordable drugs in Africa, which carries an estimated 90% of the burden of malaria, has reached critical levels. The continent was faced with the crucial issue of which drug regimen to switch to and when to make a switch (Shunmay et al, 2004**).** The combination of two or more drugs rather than a single antimalarial drug, preferably with an artemisinin derivative as one of the partner drugs is widely recommended (White et al., 1999; Sutherland et al., 2003; Drakeley et al., 2004). This has led to calls for the widespread introduction of effective combination therapy for falciparum malaria as a matter of urgency (WHO, 2001).

As a result of this, most countries in Sub-Saharan Africa have adopted Artemisinin Combination Therapy (ACT) as a first line treatment for uncomplicated malaria. Artemether Lumefantrine (AL) and Artesunate Amodiaquine (AS-AQ) are the main drugs of choice. . (Njuguna and Quadar, 2007).

In providing guidance on appropriate therapy, a major tool which can help is a national malariatherapy policy. This describes antimalarial drugs available for use in a given country, their relative efficacy, and how best they can be used in different settings, from the community to the referral hospital.

The objective of a malaria-treatment policy is to minimise treatment failure, which is the result of a complex interaction of efficacy, treatment seeking behaviour, compliance, real and perceived side-effects, and cost. (Bloland, and Ettling, 1999).

It should also seek to provide access to safe, good quality, effective, affordable, and acceptable antimalarial drugs; ensure rapid and long lasting cure, and delay development of resistance to antimalarial drugs. . (Njuguna and Quadar, 2007)

After the introduction of an antimalarial drug policy, there are key implementation issues, which may have a bearing on the scaling up of the new treatment. These include facility-based and community provision of care, patient or caregiver compliance, and treatment-seeking behaviour for malaria. (Bloland and Ettling, 1999; Njuguna and Quadar, 2007)

1.2 PROBLEM STATEMENT

Malaria in Ghana is recognized as the leading public health problem. It is responsible for about 44% of out-patient cases and the leading cause of cases admitted to hospital. This has a serious effect on economic activities. Malaria also accounts for about 25% of all deaths in children under-five years. In January, 2005 the anti-malaria drug policy (AMDP) was introduced in Ghana with Artesunate-Amodiaquine (AS-AQ) as the first line drug treatment for uncomplicated malaria. Since then, it is expected that all health facilities in the country would use drugs stated in the policy for the treatment of malaria. However, as factors such as traditional beliefs, illiteracy, drug availability, prescription habit of prescribers, patient and prescriber knowledge, that affect effective use of the policy are prevalent in Ghana, implementation and use of the policy may not be optimal.

Since the inception of the new policy, there has not been any assessment of its implementation so far to find out whether the treatment policy has been accepted by the health staff and the patients in the Kwabre district. Also, no assessment has been done pertaining to the challenges and successes of the policy. These are necessary to address the high malaria morbidity in the district.

1.3 RATIONALE FOR STUDY

The adoption of the new anti-malaria drug policy in Ghana is an important step in reducing malaria morbidity and mortality.

It is envisaged that this study would help identify facilitating factors and operational challenges associated with implementation of the policy in the district. It will therefore provide information on the actual situation in the district and serve as a background for subsequent studies.

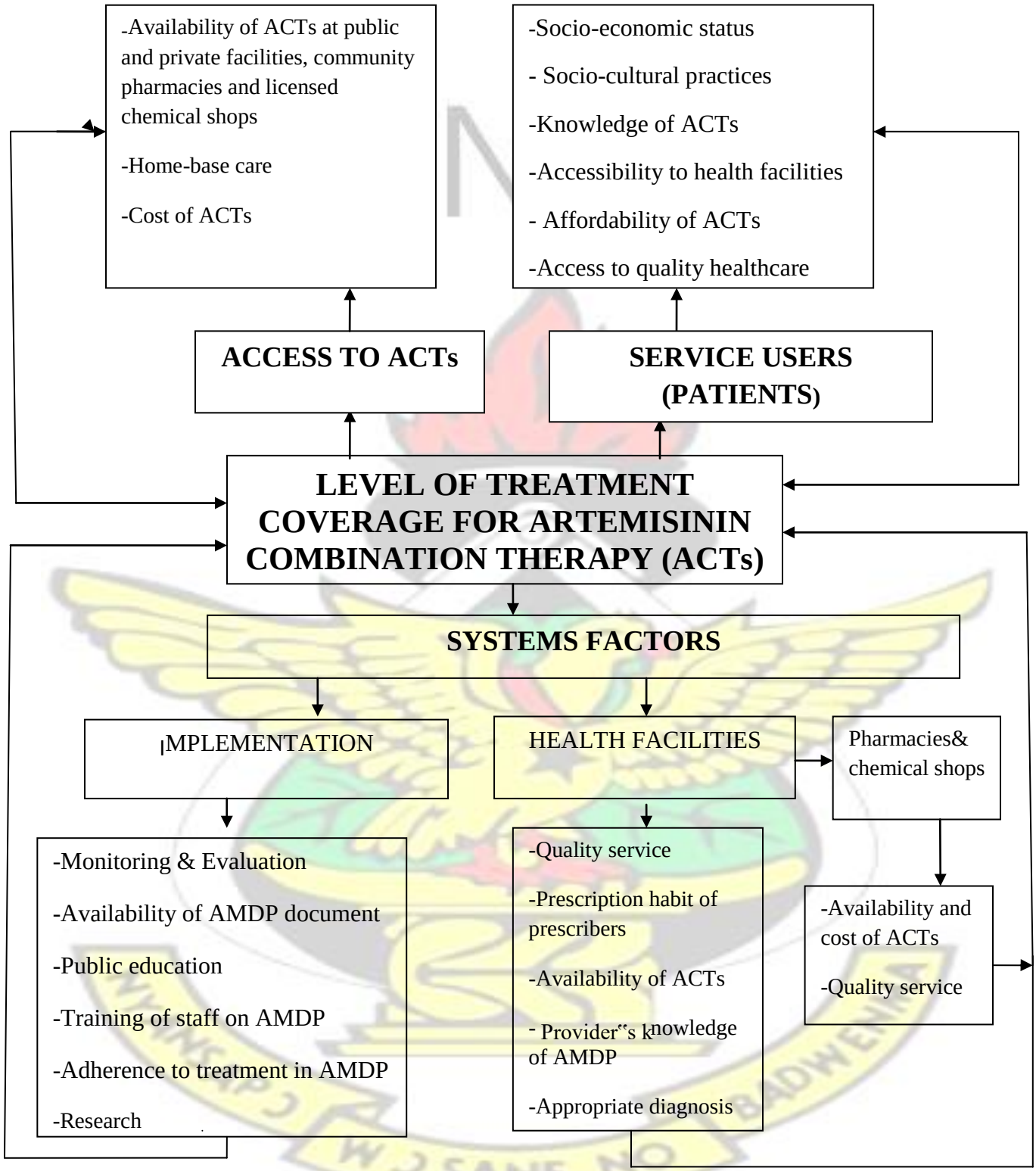
The findings of this study will also provide scientific data to make appropriate recommendations to the District Health Management Team (DHMT), The National Malaria Control Programme (NMCP), Ghana Health Service (GHS), Ministry of Health (MOH), and all other stakeholders involved in the fight against malaria to effect the needed changes for policy direction and eventually reducing the burden of malaria.

The study will also create awareness and increase knowledge of the new treatment policy in the district.

1.4 CONCEPTUAL FRAMEWORK

Not all health facilities in the country prescribe or use drugs stated in the policy for the management of uncomplicated malaria. The service users (patients), access to ACTs, and systems factors (the services provided at the various health facilities and the implementation plan put in place by policy makers) would influence the level of success of the new anti-malaria drug policy which will reflect in treatment coverage.

Figure 1: Conceptual frame work



Source: Author, 2008

1.5 RESEARCH QUESTIONS:

1. Are the drugs stated in the policy available on the market (i.e. private and public health facilities, community pharmacies, licensed chemical shops)?
2. Do service providers have knowledge of the AMDP?
3. Are the prescribers prescribing the drugs in accordance to the policy?
4. Do patients have adequate knowledge of the AMDP?
5. Can patients afford the drugs in the policy?
6. Do policy makers ensure the effective implementation of AMDP?

1.6 GENERAL OBJECTIVE

The main aim of the study is to determine the factors that influence treatment coverage of ACTs in uncomplicated malaria as stated in the AMDP of Ghana at the district level.

1.6.1 SPECIFIC OBJECTIVES

1. To determine the treatment coverage of ACTs.
2. To determine the availability of artemesinin-based combination medicines (ACTs) stated in the AMDP at the public and private health facilities, including community pharmacies and licensed chemical shops and their current costs.
3. To determine the prescription habit of prescribers at the health facilities.
4. To assess the patients‟ knowledge of ACTs in uncomplicated malaria as stated in the AMDP.
5. To determine the implementation plans put in place by policy makers to ensure effective implementation of the AMDP.

CHAPTER TWO 2.0 LITERATURE REVIEW

2.1 MALARIA

Malaria is a disease caused by parasites of the plasmodium species through the bite of infected mosquitoes. The most important vector in Africa, the anopheles gambiae is among the most efficient for transmission of the disease (Snow et al, 2003). There are 120 Plasmodium species, out of which, four are of consequences to humans. These are: P. *falciparum*, P. *vivax*, P. *malariae* and P. *ovale*. These share a common basic life cycle, though there are differences in their pathogenicity and epidemiology. The P. *falciparum* causes nearly all the mortality cases of malaria infection and is normally the one which develops resistance to certain anti-malarials. (WHO media centre, 2007; Snow et al, 2003; WHO, UNICEF, 2003).

Malaria is transmitted from one person to the other and this depends on factors such as rainfall patterns, proximity to mosquito breeding sites and mosquito species. Endemic areas have constant malaria cases throughout the year but most often, increases in the rainy season. The breeding places for mosquitoes are stagnant fresh waters. The common symptoms include fever, chills, head ache and vomiting and these normally manifest within 10-15 days of infection. (WHO media centre, 2007)

2.1.1 Malaria Control

The basic elements of malaria control are prevention and treatment. Malaria prevention includes vector control such as Indoor Residual Spraying of long acting Insecticides (IRS) and sleeping under insecticide treated nets (ITNs). There is also the Intermittent Preventive Treatment (IPT) used in pregnant women. This denotes the administration of a curative dose of an antimalarial, commonly sulphadoxine-pyrimethamine (SP), during routine antenatal care, irrespective of parasitaemia being present or not. (WHO media centre, 2007).

The treatment of uncomplicated malaria by the use of Artemisinine Combination Therapy (ACT) is becoming increasingly acceptable as it is effective in combating the spread of and intensity of *P. falciparum* resistance to Chloroquine (CHQ), SP and other anti-malarials. Early diagnosis and effective treatment of malaria will shorten its duration and prevent complications which may result in death (Breman et al, 2004)

2.1.2 Key Malaria Control Initiatives

Over the years, a number of global and national efforts aimed at reducing the burden of malaria have been initiated. These include:

1. **The Roll Back Malaria (RBM) Partnership**

The World Health Organisation (WHO), the United Nations Children‟s Fund (UNICEF), the United Nations Development Programme (UNDP), and the World Bank joined forces to create the Roll Back Malaria Partnership (RBM) in 1998. The aim of this initiative is to reduce malaria mortality by 50% by the year 2010 and achieve Millennium Development Goal Six (MDG 6), which is malaria-related, by 2015. This partnership has increased as a result of the addition of a wide range of partners. The mission of the RBM is to enable sustained delivery and use of the most effective prevention and treatment interventions for those especially in malaria- endemic areas. These interventions include vector control, indoor residual spraying, use of insecticide treated nets, presumptive treatment of pregnant women and prompt effective treatment of malaria cases. . (Njuguna and Quadar, 2007).

2. **African Summit on RBM, Abuja, April 2000 (Abuja Declaration)**

After the declaration of the RBM Initiative by WHO in November 1998, the Head of States of many African countries held a summit in Abuja, Nigeria, in April 2000, where they endorsed this initiative. Their target was that, by 2005;

i. At least 60% of those suffering from malaria should be able to access and use correct, affordable and appropriate treatment within 24 hours of the onset of symptoms.

ii. At least 60% of those at risk of malaria, particularly pregnant women and children under 5 years of age should benefit from suitable personal and community protective measures such as Insecticide Treated Nets (ITNs).

iii. At least 60% of all pregnant women, especially those in their first pregnancies should receive Intermittent Preventive Treatment (IPT). (WHO, 2000)

However, these targets could not be achieved and this shows that effort have to be stepped up if malaria is to be eradicated in the near future.

3. Millennium Development Goals (MDGs)

The MDG-6 states "Combat HIV/AIDS, Malaria and other diseases" and the target is "to have halted and begun to reverse the incidence of malaria and other major diseases by 2015."

The growing awareness of malaria‟s heavy toll is being matched with a greater commitment to curtail it. The financial support from the Global Fund to fight AIDS, Tuberculosis and Malaria, the World Bank‟s Global Strategy and Booster programme, the United States President‟s Malaria Initiative, and the Bill and Melinda Gates Foundation, among others will spur key malaria control interventions with emphasis on insecticide- treated net use and access to effective antimalarial drugs.(UN, 2006)

2.2 ANTI-MALARIA DRUG POLICY

The World Health Organization, (WHO, 1994) has defined a national antimalarial drug policy as „the set of recommendations and regulations concerning antimalarial drugs and their utilization in a country.‟ National policies on antimalarial drugs often dictate which antimalarials are available through government-run health facilities.

National policies provide guidance on malaria therapy and simplify treatment decisions by specifying which drugs are to be used as first-line treatment of uncomplicated malaria, which are to be used for second-line treatment of patients who fail to respond to first-line treatment, and which drugs are to be used for treatment of severe or complicated malaria. These policies often determine which drugs are available for use at the various levels of the health-care system.

Antimalarial treatment policies must be developed with a dual purpose such that in the short term, effective chemotherapy is made accessible while in the long term, attempts are made to minimise the adverse effects of improper utilization of chemotherapy. (Bloland, and Ettling, 1999).

The objectives of any national malaria treatment policy is to provide access to safe, good quality, effective, affordable, and acceptable antimalarial drugs; ensure rapid and long lasting cure, and delay development of resistance to antimalarial drugs. (Njuguna and Quadar, 2007)

2.2.1 Anti-Malaria Drug Policy for Ghana

Malaria has for a long time been treated using cheap and effective drugs like Chloroquine, Sulphadioxine pyrimethamine, and Amodiaquine in Sub-Saharan Africa. However, the malaria parasite has gradually developed resistance to these drugs, decreasing their efficacy. (Dillen et al, 1999). Ghana was not left out of this situation.

2.2.2Efficacy Studies on Chloroquine

For about two decades now, there have been several studies and anecdotal reports in Ghana expressing doubts about the efficacy of CHQ in the treatment of malaria. As a result, a task force of experts was established by the malaria control board to review evidence of the efficacy of CHQ. These included public health physicians, pharmacists, clinicians, epidemiologist, social scientists, policy makers and drug regulatory bodies.

The task force, reviewed evidence on malaria treatment and chemoprophylaxis in pregnancy from October 2002 to January 2004. Under the task force, technical working groups were established to review specific evidence on: Malaria morbidity and mortality; Quality of antimalarials on the market; Socio-economic aspects of malaria; Cost effectiveness of new antimalaria drugs; and Malaria in pregnancy.

Until January 1st 2005, CHQ was the first line drug for case management of uncomplicated malaria. In 1998, the National Malaria Control Programme (NMCP) in collaboration with Noguchi Institute for Medical Research did a study on the responses of P. f*alcipanum* to CHQ in treating uncomplicated malaria in 6 district hospitals in Ghana (Kasena Nankana, Yendi, Sunyani, Hohoe, Tarkwa and La). The results showed a high resistance to CHQ. The treatment failure rate was between 8.6% - 26.6%. The high rate of resistance was not attributed to quality of CHQ because the samples were confirmed to be of high quality (GHS/NMCP, 2004).

Looking at the WHO global response to Anti-malaria drug resistance which gave the action period of treatment failure of 16% - 24% and a change period of treatment failure of more than 25% (WHO,1999), it was obvious that Ghana had passed the alert period and in the change period. Thus there was the need for a change in policy to replace CHQ as first line drug for malaria treatment for an alternative drug which has no resistance to the parasite.

2.2.3 Policy Change

WHO recommends the use of ACTs for countries who were experiencing resistance to monotherapy treatment of falciparum malaria. The specific drugs included AS-mefloquine, AS-AQ, AS-SP and Artemether-Lumefantrine (AL). However after considering factors such as efficacy, cost effectiveness, and impact on local industries, Ghana chose AS-AQ as the first line drug for the treatment of uncomplicated malaria.

A survey conducted showed that only 11.6% of pregnant women complied with CHQ prophylaxis. Also, in-country and international evidence showed that the IPT using SP was high and has a greater protection against low birth weights and anaemia than CHQ. The birth weights generally improved with compliance to SP. Due to the above, the guidelines for malaria prophylaxis in pregnancy were changed to IPT using SP.

As a result of the evidence given, Ghana Health Service adopted a new anti-malaria drug policy in November 2004 and recommended AS-AQ as the combination drug of choice for the treatment of uncomplicated malaria, Quinine for the treatment of severe and complicated malaria and SP for IPT in pregnant women, given under direct observation (GHS/NMCP, 2004).

2.3 EFFICACY OF ARTEMISININE COMBINATION THERAPY (ACTS)

Antimalarial combination therapy is the simultaneous use of two or more blood schizontocidal drugs with independent modes of action and thus unrelated biochemical targets. Combination therapy is known to delay emergence of resistance and increases efficacy. Artemisinin and its derivatives (Artesunate, Artemether, Artemotil, and Dihydro-Artemisinin) produce rapid resolution of symptoms and rapid clearance of parasitaemia. The parasite numbers are reduced by

a factor of 10-100 times when compared to other antimalarials. Artemisinin compounds are active against all the four species of Plasmodium that infect humans. (WHO, 2006).

A public health advantage of ACT is that they reduce transmissibility of malaria by reducing gametocyte carriage (Snow et al, 2003).

Four ACTs are currently recommended by WHO. These are Artemether-Lumefantrine, Artesunate-Amodiaquine, Artesunate-mefloquine, and Artesunate-Sulfadoxine-pyrimethamine. The choice of ACT depends on the level of resistance of the partner drug in the combination and transmission intensity (WHO, 2006).

Many studies done in Asia and Africa confirmed the efficacy and safety of ACTs.

It was observed in South-East Asia that, combination therapy with artemisinin derivatives and mefloquine slowed down the development of resistance to both components of the drug. This suggests the possibility of a solution to the problem of drug resistance in Africa. In two refugee camps in Thailand, the use of an artemisinin-containing combination treatment (ACT) with artesunate (AS) and mefloquine has been linked to halting the progression of antimalarial drug resistance and reducing malaria transmission.(Kachur et al, 2004)

Studies have also shown that AS-AQ is highly efficacious but costly and the status of its safety very high as documented in early implementing countries such as Burundi and Zanzibar but some minor side effects have been reported in Gabon, Saotome and Principe, and Ghana (WHO Bulleting African Region, 2006).

Furthermore, in Tanzania, it was documented that in an area of high resistance, AL and AS-AQ are the most effective drugs though they are more expensive but reduce the need for further treatment. (Wiseman V. et al, 2006).

To add to that, a research conducted in DR Congo also showed that AS-AQ is highly efficacious in the treatment of uncomplicated malaria hence its adoption as first line treatment regimen. (Swarthout et al, 2006).

During the first five years of routine use of AS-AQ in Senegal, parasites remained susceptible to both drugs when monitoring was done from 2000-2004 on in vitro sensitivity of P. *falcipanum* isolates to AS-AQ. (Argnamey et al, 2006).

An open label study to assess the efficacy and safety of ACT in infants and children with acute, uncomplicated falciparum malaria in Kenya, Tanzania, and Nigeria showed that treatment was safe and well tolerated with an overall 28-day cure rate of 86.5% and 93.9% when corrected by Polymerase Chain Reaction for re-infection (Falade et al, 2005).

By the end of 2005, 35 countries in the African Region adopted ACTs for the treatment of malaria out of which 15 chose AS-AQ, one country is implementing AS + SP and the reminder have selected Artemether – Lumefantrine. The therapeutic profile of Artemisinine based combination therapy has therefore proved to be good under well conducted clinical trials (WHO Bulletin African Region, 2006).

2.4 TREATMENT COVERAGE OF ACTs

Treatment coverage refers to the proportion of people who use or receive treatment with ACTs when treated for uncomplicated malaria at health facilities and this can be affected if there are challenges with implementation of the AMDP.

Disappointing coverage may result from low access to health care in the population affected and inadequate diagnosis, prescription and use of the new treatment in health centres.

A study in Burundi showed that only 29.4% of children under five, actually received AS-AQ for the treatment of uncomplicated malaria. This is very low and may not help in rolling back malaria. However, there are bound to be reasons for this and could be investigated. (Gerstl et al, 2007).
Low utilization of health centres accounted for low coverage in implementation of the AMDP, in that, less than half of all febrile children go to health centres (Gambia and Zimbabwe) and only one out of 10 malaria cases are reported to receive AS-AQ treatment in public health centres which is still far below the goal of the RBM initiative. In Burkina Faso, as low as 17% of people utilize health facilities. This might be due to their socio-cultural practices which enable them to assess other forms of treatment or other factors which can be investigated. (Gerstl et al, 2007).

In Ghana, the treatment coverage of ACTs for 2007(January to June) is 65.3% and for this to be better, the implementation challenges must be identified and steps taken to address them. (National Roll Back Malaria Coordinating Committee, 2007)

Health seeking behavior, compliance on the part of prescribers and patients, perceived side effects and cost of ACTs may influence the effective implementation of the AMDP. . (Bloland, and Ettling, 1999).

The provision of ACTs through trained community health workers, training shopkeepers and wholesalers, and dispensing pre-packed unit doses with improved labeling have all been shown to enhance the proportion of patients who receive and complete the recommended dose. (Kachur et al, 2004)

2.4.1 Patient Knowledge of ACTS

The socio-economic status, knowledge about the AMDP, the socio-cultural practices in the area, and their capacity to afford the drugs in the policy can affect the effective implementation of the AMDP. This will affect patient compliance and consequently, the treatment coverage.

Improvement in the knowledge of the type of drug used for treatment of malaria by mothers and caretakers of children under five years was documented to improve management of malaria in the Kasena- Nankana District in northern Ghana between 2000 and 2003 (Seth Owusu Adjei, et al, 2007). Thus, adequate knowledge of the patient on ACTs will positively affect coverage.

Adequate patient knowledge of drugs prescribed is an essential prerequisite for patient compliance. This was shown in a survey conducted in Botswana where the mean knowledge of patients was 62.5%. The reason for prescription of the drug(s), dosage, duration of treatment, and name of the drug(s) was recalled by 92%, 83%, 44%, and 31% of patients, respectively. (Boonstra et al, 2003) The extent of knowledge of the patient is mainly due to the instructions and counseling given by the prescribers and dispensers at the facility. However public education on the use of antimalarials and the new AMDP also plays a vital role in improving the knowledge acquired by patients. To assess the diffusion of the change of first line antimalarial drug from chloroquine (CQ) to sulphadoxine/pyrimethamine (SP) at household level in a rural district of Tanzania, less than a year

after the policy implementation, about 51% of the population knew that SP was the first line antimalarial. (Eriksen et al, 2005)

Lack of or insufficient training of health staff will also result in inadequate knowledge of drugs by patients. (Boonstra et al, 2003)

2.4.2 Availability and Cost of ACTs

The availability of the drugs in the AMDP at the various health facilities is very crucial in the smooth implementation of the new AMDP. These include the private and public health facilities, the community pharmacies and the licensed chemical shops (LCS).

It is very important for ACTs to be readily available on the market as an over- the- counter drug for everyone to have access to them. It has been documented that AS-AQ was not available at the private pharmacies and markets but only at public and private health centres in Burundi (Gerstl et al, 2007). This could be a drawback to the achievement of maximum use of the drugs because those who do not have access to public health facilities may seek other alternatives of healthcare which may not be adequate.

The importance of private sector sources of antimalarial drug is substantial in many African communities. In some studies, as much as 60% of patients (or more) seeking help for febrile illness receive medicines from the private sector. The popularity of the private sector is, because private sector outlets tend to be more numerous, closer to home, offer rotating credit schemes, have drugs in stock, and involve less time to obtain the desired treatments. (Bloland et al, 2003) Also upon visiting 29 pharmacies in Dares Salam Tanzania, it was realized that mono-therapy drugs were identified in addition to at least two ACTs in each of the pharmacies (Kachur SP, 2006). The availability of mono-therapy drugs can influence prescribers to prescribe these instead of ACTs and thus doing very little in complying with the use of ACTs.

Cost has been cited as a major impediment in the scaling up of ACT (Mutabingwa TK, 2005; Chanda et al, 2007) with ACTs costing close to ten times more than other antimalarials .The newer malaria medicines, including artemisinin containing combination therapies (ACTs), are substantially more expensive than the single-drug treatments in common current usage (e.g.

US$0.15–0.20 for an adult dose of chloroquine or SP compared with US$1.20–2.40 for ACTs). (Bloland et al, 2003). If the costs of ACTs are high, it will result in patients not being able to afford and this can hinder the achievement of the MDG-6 irrespective of the adoption of a more efficacious drug for treatment of malaria.

The socio economic status of the patient can also affect affordability of drugs. It has been documented that the cost of ACTs (precisely AS-AQ) given to patients in the Macamba province in Burundi was ten times more than the subsidized price and this affected implementation of the policy negatively and resulted in poor coverage. Also the cost of AS-AQ in public health centers was $0.5 and $1.3 in private ones which is about 2.5 times more than in public centres.
Thus the cost of treatment can also be a possible challenge in implementation of the new AMDP. (Gerstl et al, 2007).

The ability of most African economies to sustain these increased malaria treatment costs is limited. Global Fund for AIDS, Tuberculosis and Malaria (GFATM*)* has provided substantial funds to a number of countries in sub-Saharan Africa to support malaria control activities. The World Bank has indicated that its loans could be used to buy malaria medicines and nongovernmental organizations (NGOs) have also offered to supply governments with ACTs.

While these mechanisms offer some hope for governments not otherwise able to afford the ACTs, there are lingering concerns over financial sustainability. Concerns over the longevity of the Global Fund have already been raised (Kapp, 2002). While donations *via* NGOs can be helpful in the short-term for specific situations, the long-term sustainability of those donations is doubtful. A solution may be to manufacture ACTs locally which will be cheaper and eventually, cut down cost.

2.4.3 Prescription Habit of Prescribers

The inability of health workers to prescribe drugs stated in a drug policy may be due to factors such as: insufficient supply of drug; high cost of drug; training messages that contradicted with recommended guidelines; lack of follow-up supervision; and availability of non-recommended drugs causing prescription confusion. (Wassuma et al, 2008).

Inappropriate prescribing is also cited as a factor in prescription pattern and the recommended drugs were mainly prescribed at the public centers more than in private health centers (Ndayiragije et al, 2004). This may be as a result of the fact that clinical staff sometimes do not understand or follow treatment guidelines.

Changing clinicians‟ prescribing patterns after transition to a new drug is also a challenge. A study done to evaluate treatment practices for uncomplicated malaria after the policy change from SP to AL in 4 districts in Zambia showed that among children weighing 10 kilograms or more, Sulphadoxine pyrimethamine (SP) prescribed was 68% whereas the recommended AL was prescribed for only 11% of children. Among children weighing more than 10 kilograms seen at facilities where AL was available, AL was prescribed for 22% of children and SP for 54%. (Njuguna, and Qader, 2007 **).**This shows that on introduction of a new drug policy, the transition period is very crucial and must be done effectively to get positive results as soon as possible. This calls for extensive education to sensitize prescibers and the general public.

Diagnosis also affects the prescription pattern such that the type of diagnosis informs the clinician of what drugs to give. Clinical diagnosis without any parasitological diagnosis has been the norm in many African countries. This is through the detection of signs and symptoms including fever, chills, headache and anorexia. Clinical diagnosis if not supplemented by parasitological diagnosis, tends to overestimate malaria cases. This is evident in a review which found that clinical diagnosis by health professionals overestimates malaria (number of cases with negative microscopy over the number of malaria clinical diagnosis) by an average of 61%, ranging from 28% to 96% (Amexo et al, 2004).

Staff in facilities with the capacity for microscopy often do not base antimalarial treatment on slide. Relatively few health facilities have or use laboratory-based diagnostic tests for identifying patients with malaria infections, therefore the majority of febrile patients receive malaria treatment, regardless of whether or not they are actually infected. (Bloland et al, 2003)

2.4.4 Implementation Plans by Policy Makers

The policy makers will also play a role by instituting an implementation plan which must include the following: monitoring and evaluation; passing of laws in favor of the AMDP such as

reclassification of AS-AQ as an over-the-counter (OTC) drug or declaring it as a programme drug, making AS-AQ available on the market and for home-base care, training of healthcare providers and public education campaign (AMDP for Ghana, 2004).

Drug regulation, in terms of supply, distribution, and quality assurance, has to be included in the implementation plan, not forgetting the role of the private sector in delivering treatments. There is also the need to establish effective public-private partnerships and improve upon healthcare infrastructure to ensure quality healthcare.

Monitoring and evaluation must also take care of efficacy of drugs; drug resistance; prompt and effective anti malaria treatment; and effective diagnosis of malaria.

Operational research is also needed to determine ways of improving prescribing practices, involving drug vendors and other informal sector providers, and achieving the successful replacement of one drug with another. (WHO, UNICEF, RBM, 2005).

The Pharmacovigilance Centre (PV) in Ghana has also played a role in reporting adverse events. An adverse reaction which was reported was hiked to co-formulated locally manufactured ASAQ with 200mg AS and 600mg AQ but this has since been removed from the market (WHO bulletin, Africa, 2006)

CHAPTER THREE 3.0 METHODOLOGY

3.1 STUDY METHODS AND DESIGN

A cross sectional descriptive study was carried out in the Kwabre District where both quantitative and qualitative data was collected.

Pharmacies, licensed chemical shops, and health facilities were visited to ascertain the availability of anti-malarials and their costs.

Patients who were diagnosed and treated with antimalarials at the health facilities were interviewed to assess their knowledge of ACTs in the AMDP.

A review of past records was done at health facilities and all malaria cases were extracted to determine the prescription habit of prescribers, six months prior to the survey (i.e. From March to August, 2008).

Health managers and prescribers were also interviewed to illicit information on the implementation plan adopted for the smooth implementation of the AMDP and the challenges being faced. Information on implementation plan such as home-base care, training of service providers, public education campaigns, monitoring and evaluation plans such as drug efficacy, effective diagnosis and management of malaria were inquired.

The heads of the Sub-District Health Management Teams (SDHMTs) and members of the District Health Management Team (DHMT) were also interviewed on the implementation plans and the challenges faced.

3.2 PROFILE OF STUDY AREA

Kwabre District is one of the districts in the Ashanti Region of Ghana. It is a peri-urban district which is very close to Kumasi, the Ashanti Regional capital and has a total land area of 1254.06 square kilometers. The district capital is Mamponteng which is 14.4 km from Kumasi. The district is divided into 6 sub-districts namely; Mampongteng, Afrancho, Aboaso, Kenyase, Aboabogya and Asonomaso. These divisions were done with respect to the accessibility to static health facilities. The district has 89 communities with a total population of about 215,166.

3.21 Demographic Data

The district is made up of eighty-nine (89) communities and has a total population of 215,166. The distribution according to the sub districts is shown in table 3.1

Table 3.1 Population distribution in the Kwabre district

SUBDISTRICT	POPULATION	WIFA 15 - 49 (23.2%)	EXP PREG/ DEL (4%)	CHDN 0 - 59 MTHS (16.5%)
MAMPONTENG	58,094	13,478	2,324	9,586

KENYASE	30,124	6,989	1,205	4,970
ABOASO	30,124	6,989	1,205	4,970
ASONOMASO	38,730	8,985	1,549	6,390
ABOABOGYA	15,062	3,494	602	2,485
AFRANCHO	43,033	9,984	1,721	7,100
TOTAL	**215,166**	**49,918**	**8,607**	**35,502**

Source: Annual performance Review Report, 2007, Kwabre District

Kwabre district has a very good trunk road running through it from Kumasi to Mampong but most of the feeder roads are rather bad with only very limited public transport plying on them. Apart from Mamponteng which has pipe borne water, majority of inhabitants obtain water mainly from streams with a few from hand dug wells.

There are 7 senior high schools (SHS), 75 Junior High Schools (JHS), 91 primary and 83 nursery schools. The district health system is based on a 3-tier Primary Health Care. These are the district, the sub-district, and the community. Kwabre district has 26 health facilities consisting of two (2) hospitals ten (10) health centres, four (4) clinics and ten (10) maternity homes. There are two (2) pharmacies and 63 licensed chemical shops.

The climate is tropical and the temperature variation is 20^{o}C - 36^{o}C with monthly rainfall varying from 2.0 mm in February to 400 mm in July. The inhabitants are mainly cash crop farmers cultivating mainly palm nuts. However, some of the women are engaged in petty trading whilst some men are woodcarvers, Kente weavers, sand and stone winners. In the district, Wednesdays and Fridays are set aside for communal labour.

3.2.2 Distribution of Health Services Personnel in the district

Health Services Personnel in the district is inadequate. The problem is compounded by the inequitable distribution of health facilities in the district.

Table 3.2 Table Showing the Distribution of Health Services Personnel in the district

Health Personnel	Number

Medical Officers	6
Medical Assistants	6
Nurses (General)	12
Dispensing Technicians	7
Disease Control Officers	8
Laboratory Technicians	2
Laboratory Assistants	4
Nutrition Officer	1
Leprosy Control Officer	1
Ward Assistants	7
Community Health Nurses	16
Public Health Nurses	2
Total	**72**

Source: Annual performance Review Report, 2007, Kwabre District

3.2.3 The Top Ten Causes of OPD Attendance, 2007

Malaria is the first of the ten topmost causes of out-patient (OPD) attendance in the district and is responsible for 43% of all OPD cases. It is the top cause of admissions and death among children under five years. This accounts for approximately 25% of the population and has a serious effect on economic activities

The table 3.3 below shows the top ten causes of OPD attendance.

Table 3.3 Table showing the top ten causes of OPD attendance, 2007

	DISEASE	Total
1	Malaria	53,694

2	Diarrhoea Diseases	4,305
3	Other ARI (Acute Respiratory Infections)	4,243
4	Skin Diseases & Ulcers	2,458
5	Hypertension	2,078
6	Home/Occupational	1,762
7	Rheumatism and Joint	1,711
8	Anaemia	775
9	Pneumonia	726
10	Chicken Pox	669
Total		90,873

Source: Annual performance Review Report, 2007, Kwabre District

3.3 DATA COLLECTION TECHNIQUES AND TOOLS

At the twelve (12) health facilities, community pharmacies and licensed chemical shops, a checklist was used to ascertain the availability of antimalarial drugs and their costs.

Semi-structured questionnaires were used to elicit information on ACTs from patients through interviews.

Information on an implementation plan, including training, monitoring and evaluation were inquired from the Health Management levels (i.e. SDHMTs and the DHMT) and prescribers by the use of questionnaires through interviews.

A check list was used to review past hospital records of prescriptions of the antimalarial drugs at private and public health facilities in the district.

3.4 STUDY POPULATION

The study population consisted of health managers and workers; and patients (above 16 years) treated with antimalarials at the health facilities.

3.5 STUDY VARIABLES

Table 3.4 Table showing the study variables

VARIABLE	OPERATIONAL DEFINITION i.e. INDICATOR	SCALE OF MEASUREMENT
Age	Age at last birthday	Continuous: in years
Sex	Male or female	Binary: 1. Male ; 2. female
Educational Background	Level of education	Ordinal: none, primary, secondary, tertiary
Religion	As reported by informant	Nominal : Christian, moslem, traditionalist, etc
Availability of drugs	Any antimalarial drug available at the time of visit	Nominal: AS-AQ, Quinine, SP, AL, CHQ, etc.
Cost of drugs	Prices of antimalarials in cedis (GH¢) i.e. full cost of treatment.	Ordinal : < GH¢1.00; between GH¢1.00 and GH¢5.00; & > GH¢5.00
Knowledge of ACTs	Name, use, dosage, and duration of therapy	Ordinal: none or one correct answer is poor; two correct answers are reasonable; and three correct answers are good.
Prescription habit of prescribers	Type of antimalarials prescribed at the facility	Nominal :ACTs, CHQ, AQ,AS,SP, Quinine, etc.

Implementation plan	Response to specific questions about the plans put in place to ensure effective implementation of the AMDP.- training, supervision, availability of policy document, public education, etc.	Ordinal : Poor, fair, good and very good.
Coverage of ACTs	Patients given ACTs for treatment of uncomplicated malaria	Ratio - Percentage of antimalarial prescriptions with ACTs

Source: Author, 2008.

3.6 SAMPLING TECHNIQUES

Patients (n=360) treated with antimalarials at the health facilities were selected where each had an equal chance of being selected.

At the district and sub-districts levels, the head of the SDHMT and the DHMT members who are healthcare professional were selected.

Eighteen prescribers present at the health facilities at the time of visit were interviewed.

Two hospitals (Asonomanso and Methodist Faith hospital), four clinics (Medoma, St. Joseph, Family Care and African Diasporan Clinic), and two pharmacies were purposefully selected. Six health centers (Afrancho, Kenyase, Aboaso, Mamponteng, Aboabogya, and Adwumakase-Kese), were selected from each of the six sub districts. Where there were more than one health centre, one was chosen with all having an equal chance of being selected. Twenty-four chemical shops were selected where 4 were chosen at random from each sub district.

A total of 600 hospital records on antimalarial prescriptions from March to August, 2007 were reviewed with 50 records per facility. A sample interval of **X/50** was used, where X is the number of records available at a given facility.

3.6. 1 SAMPLE SIZE

A total of about 360 eligible patients were sampled with desired confidence interval of 95%.

Based on the assumption of 62.5% of patients with adequate knowledge (Boonstra et al, 2003), the sample size was then calculated using the formula:

$$n = z^2 (p*q)/d^2$$

Where, n = sample size,

z = Statistical certainty chosen

p= Estimated patient knowledge.

q = 1-p, d = precision desired.

Therefore, using z=1.96, p=0.625, q=0.365, and d=5% (0.05); then, **n=350.55 (approx. 360)**

A total of 600 records on antimalarial prescriptions were reviewed where 50 records were selected from each of the 12 selected health facilities. The method of the International Network for Rational Use of Drugs (INRUD) was used in determining the sample size where a total of 600 patient records are required. (WHO, 1993).

3.7 PRE-TESTING

Pre – testing of data collection tools was done at the Ejisu-Juaben District in the Ashanti Region. Two (2) pharmacies, five (5) licensed chemical shops and two (2) health facilities were selected for trial questions. This aided in the identification of some minor problems which were sorted out by redesigning some of the tools before the actual field work.

3.8 DATA HANDLING

Data collected from the field were put in plastic files to avoid dirt and soiling during the rains. The answered questionnaires were kept under lock to ensure confidentiality. The data was later entered using EPI INFO Version 3.2.2. The data was analyzed using the statistical software, STATA Version 9.0

3.9 ETHICAL CONSIDERATIONS

Ethical approval was sought from GHS and the District Director of Health Services (DDHS) in the Kwabre District. Written informed consent was also sought from health facilities and verbal consent from individuals involved in the study. The objective of the study was explained to the respondents, and consent obtained from them before soliciting information. Informed consent was also sought from all prescribers before they were interviewed. Responses from respondents were kept confidential and used only for the research purposes.

3.10 LIMITATIONS OF STUDY

- Poor Record keeping at some of the facilities posed a problem. In some instances selected records could not be traced in the records pile and some of the past records of prescriptions had some of the vital information missing.

- Inadequate time: The survey would have been a better representation of the district if 20 facilities were used but due to the short period of 12 weeks, only 12 facilities could be covered.

- Lack of transportation to some of the remote parts of the district limited the survey to areas that are accessible.

3.11 ASSUMPTIONS

- All information gathered was assumed to be the true reflection of what they represent.
- All patients given antimalarial drugs were assumed to have malaria without any laboratory confirmation.

CHAPTER FOUR 4:0 RESULTS AND ANALYSIS

4.10 AVAILABILITY AND COST OF ACTs

Two community pharmacies, 24 licensed chemical shops (LCS), 4 private health facilities (3 clinics and a hospital) and 6 public health facilities (5 health centers and a hospital) were visited. All public facilities get their stock of drugs mainly from the regional medical stores. The private facilities buy their drugs mainly from the private drug companies. All the community pharmacies

and LCS get their drugs from the private companies. Most of the staff in the pharmacies and LCS had training on ACTs and on the AMDP. Of the staff interviewed (pharmacists; Dispensing technicians and technologists; licensed chemical sellers and the attendants), 97% had gone through this training.

The antimalarial most commonly dispensed over the counter at all the facilities, pharmacies and LCS was AS-AQ.

4.1.1 Availability of ACTs

The availability of drugs was defined as the drug in stock at the time of data collection. The results showed that ACTs were generally available at the facilities visited, safe 5 LCS and one private health facility. The most common ACT available was AS-AQ. The details are shown in table 4.1 below.

Table 4.1 The availability of ACTs at the various facilities.

FACILITIES	ACTs		Type of ACT		
	YES	NO	AS-AQ	AL	BOTH(AS-AQ and AL)
Community pharmacy(n=2)	2	0	2	2	2
LCS (n=24)	19	5	13	6	6
Private health facilities(n=4)	3	1	3	2	2
Public health facilities(n=6)	6	0	6	3	3

Source: Field work 2008

Amodiaquine(AQ), Artesunate(AS), Artemos (Artemether), Alaxin (Dihyohoartemisinin) which are monotherapy antimalarials, were also available at most of the facilities visited.

Quinine was available at the pharmacies, 10 LCS, 2 Private and 3 public facilities. S/P was available in the 2 community pharmacies, 20 LCS, 2 private and 5 public facilities. Chloroquine (CHQ) was also available in the 2 community pharmacies, 14 LCS, 2 private facilities, with none at the public health facilities.

4.1.2 Cost of ACTs

The cost was calculated for the total cost of therapy, which is the cost of the total dosage required.

The cost of ACTs ranged from GH¢1.00 to GH¢10.00 with AS-AQ ranging from GH¢ 1.00 to GH¢5.00 and AL between GH¢3.00 and GH¢10.00. The private and public health facilities had the same cost of GH¢3.00 to GH¢5.00. Table 4.2 illustrates this.

Table 4.2 The cost of ACTs at the various facilities visited.

FACILITIES	**ACTs**	**Type of ACT**	
		AS-AQ	AL
Community pharmacy(GH¢)	3.00-10.00	3.00-5.00	3.00-10.00
LCS (GH¢)	1.00-5.00	1.00-2.00	3.00-5.00
Private health facilities(GH¢)	3.00-5.00	3.00-5.00	3.00-5.00
Public health facilities(GH¢)	3.00-5.00	3.00-5.00	3.00-5.00

Source: Field work 2008

4.2 PRESCRIPTION HABIT OF PRESCRIBERS

4.2.1 Demographic Characteristics of Patient Records Reviewed

Out of the 600 records reviewed, there were 203(34%) males, 371 (62%) females and 26(4%) with no sex recorded.

The weight range of 1-83 kg was recorded for only 65(11%) of the records with the rest, 535(89%) missing.

The number of record according to age was: <5 years, 60(10.0%); 5–17 years, 163 (27.2%); and adults >17 years, 347 (57.8%). However, 30(5.0%) had the age missing.

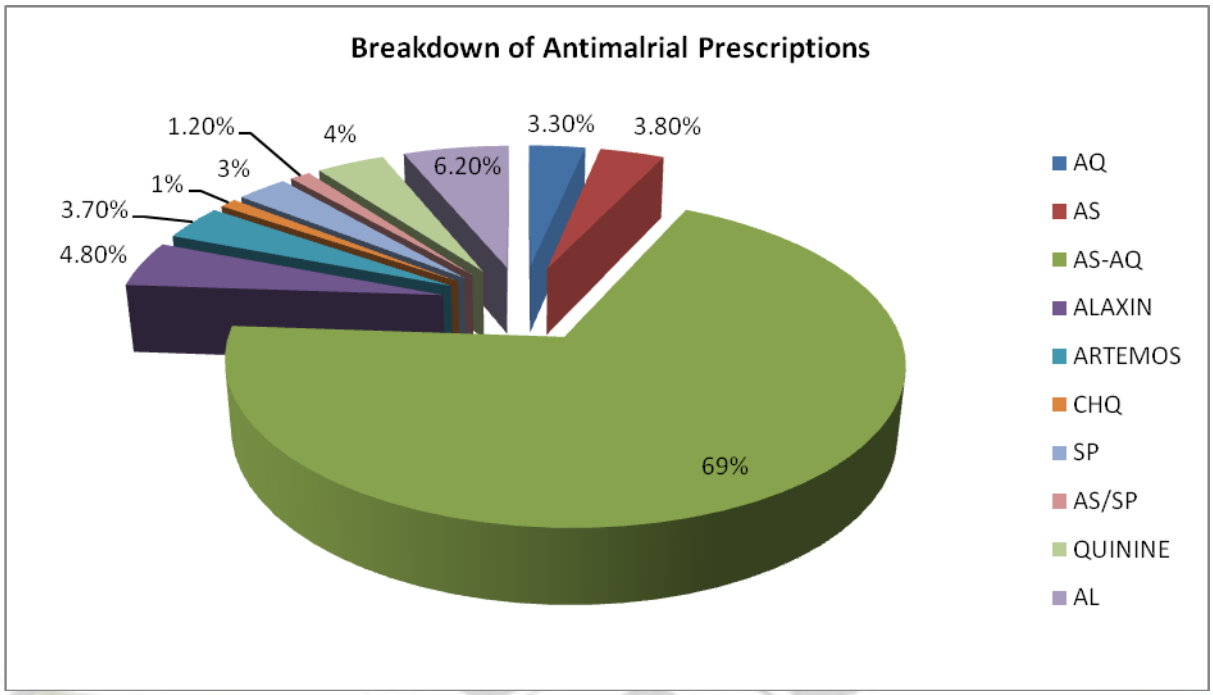
There were 125(20.8%) of the records for which the temperature were noted, while 475(79.2%) had no information on temperature of patients. The range was; <35.0^{0}C, 20(3.3%); 35.0^{0}C - 37.5^{0}C, 70(11.7%) and > 37.5^{0}C, 35(5.8%).

Diagnosis was made mainly on clinical symptoms**.** Records indicated that patients presented with a lot of symptoms mainly fever, headache, body pains and chills. Others include vomiting, and loss of appetite. Laboratory investigations of blood film for malaria parasites were hardly used and this was recorded for only 79 (13.2%) patients. Of the 600 patient records reviewed, 544 (90.7%) had diagnosis with 385(64.2%) uncomplicated malaria, 37(6.2%) severe malaria and 122(23.0%) mixed infection of malaria with other diseases indicated. There was no diagnosis on 56(9.3%) records.

4.2.2 Prescription Habit

The patients‟ record review showed that the most commonly prescribed ACT was AS-AQ which represented 69.0% of all antimalarials prescribed over the period. Other ACTs prescribed were AS-S/P (1.2%) and AL (6.2%). There were also prescriptions with quinine (4%) from the hospitals, and mono therapy prescriptions such as amodiaquine (3.3%), chloroquine (1%), S/P (3%), Alaxin(4.8%), and Artemos(3.7%). Analgesics (73%) and haematinics/multivitamins (62.1%) were also written for some patients. Figure 4.1 shows the breakdown of prescriptions of the patient records reviewed.

Figure 4.1 Pie chart showing of the breakdown of prescriptions of prescribers

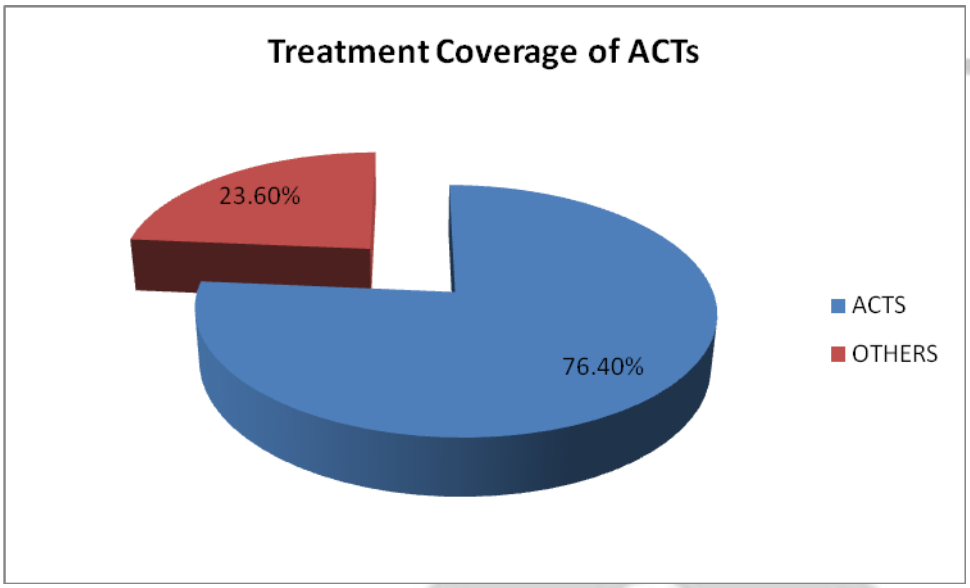


Source: Field work 2008

4.3 TREATMENT COVERAGE OF ACTS.

The definition for treatment coverage of ACTs in this research was the percentage of ACTs actually prescribed for the treatment of uncomplicated malaria. The number of AS-AQ, AS/SP and AL obtained from the patient records reviewed were 414(69%), 7(1.2%), and 37(6.2%) respectively. The total number of prescriptions was 458; therefore the treatment coverage of ACTs is 76.4%. Figure 4.2 below shows the treatment coverage of ACTs.

Figure 4.2 Pie chart of the treatment coverage of ACTs



Source: Field work 2008

4.4.0 PATIENT KNOWLEDGE OF ACTS

4.4.1 Demographic Characteristics of patients interviewed

A total of 360 patients interviewed at the health facilities included: 99 in hospital, 203 in health centers, and 58 in clinics. There were 121(34%) males and 239 (66%) females. The number of patients according to age was: 15–49 years, 299(83%); and >50 years, (15%).

The religious background of patients were 195(54%) Christians, 108(30%) moslems, 6(2%) traditionalists and 51(14%) others. 157(44%) had no education, 102 (28%) primary, 75(21%) secondary, and 26(7%) tertiary education respectively. The patients with low income status were 193(54%), 139(39%) middle income, and 28(7%) high income.

4.4.2 Knowledge of ACTs

In this context, the definition of patient Knowledge of ACTs was the ability of the patient to recall the name of the drug, the reason for the drug prescription (use of drug), the dosage, and the duration of treatment.

The number of patients with ACT prescriptions was 309 out of the 360 patients interviewed. The recall of name of the drug, the reason for the drug prescription (use of drug), and dosage of ACTs dispensed was very high with the exception of the duration of treatment which was low.
This has been illustrated in table 4.3.

Table 4.3 Patient knowledge of ACTs.

	Percentage (%)
Name of drug	**68.90**
Use of drug	**80.60**
Duration of Therapy	**26.40**
Dosage	**84.10**

Source: Field work 2008

4.5 IMPLEMENTATION PLANS BY POLICY MAKERS

4.5.1 Interview of prescribers /managers

The total number of Prescribers /Managers interviewed during data collection was 18. There were 4 from the hospital, 7 from health centers and 7 from private clinics. These consisted of 4 doctors, 6 medical assistants, 6 nurses and 2 midwives. Out of the 18 respondents there were 3 health mangers, 9 “in-charges” and 6 prescribers. Those who had received training specifically on the AMDP were 17 (94.4%) and 12 (66.7%) had copies of the document.

4.5.1.1 Prescription of ACTs

All the respondents prescribed ACTs with AS-AQ being prescribed by all; AL and AS-S/P were prescribed by 11(61.1%) and 5(27.8%) respectively. Some of the prescribers, still prescribed drugs for mono therapy and they: are AQ alone, 5 (27.8%); AS, 6 (33.3%); Alaxin, 11(61.0%); S/P, 5, (27.8%); Artemos, 11 (61.1%) and Quinine, 13(72.2%).

4.5.1.2 Reasons for mono therapy prescription

The main reasons given by prescribers for mono therapy were:

- fear of adverse effects • Personal experience
- Patient refusal / preference
- Patient‟s condition

There were 13 (72.2%) respondents who rated the AMDP as effective while 8 (44.4%) agreed but complained about the side effects of AS-AQ.

4.5.1.3 Training of staff and prescribers /managers:

All the respondents had undergone training in the AMDP.

Most of the staff were also trained in the effective diagnosis and management of malaria; and home-base management of malaria. Table 4.4 shows the details of the number and percentage of respondents whose staff went through training.

Table 4.4 Training of staff

	Frequency (N=18)	%
Diagnosis of Malaria	17	94.4
Management of malaria with AMDP	17	94.4
Home-Base care	13	72.2%

Source: Field work 2008

4.5.1.4 Supervision of health facilities with respect to prescribers /managers.

Of the 18 prescribers/managers interviewed, 10(55.6%) said they had external supervisors within six months prior to data collection; 10(27.8%) of respondents had external supervisors more than 6 months prior to visit; and 3 (16.7%) never had external supervisors and these were all private clinics showing that the private health facilities were not being monitored.

4.5.1.5 Implementation plan by prescribers /managers

Of the 18 respondents 50% and above were involved in public education campaign, monitoring adverse drug reactions, ensuring the availability of ACTs, generating monthly reports on ACT consumption, and training of staff. Only 7(38.9%) were supervised by DHMT.

Table 4.5 shows the number and the corresponding percentages of respondents who had implementation plans for effectiveness of the AMDP by managers/prescribers.

Table 4.5: Implementation plans for effectiveness of the AMDP by managers/prescribers.

	FREQUENCY (n=18)	PERCENTAGE (%)
Public Education Campaigns	12	66.7
Monitoring of adverse drug reactions	11	61.1
Supervision by DHMTs	7	38.9
Ensure Availability of ACTs	9	50
Monthly reports on ACT consumption	10	55.6
Training of staff	17	94.4
Others	3	16.7

Source: Field work 2008

4.5.1.6 Challenges faced in implementation by prescribers /managers

The main challenges faced were side effects of drugs, non-compliance by patients, high cost of ACTs and availability of ACTs.

4.5.2 Interview of DHMT members and heads of SDHMTS.

Eight (8) respondents were interviewed: 3 members of DHMT and 5 heads of DHMT.

All the respondents knew about the AMDP. They also knew that AS-AQ was the first line drug for the treatment of uncomplicated malaria and that there was a change from the mono therapy to combination therapy.

All of them had received specific training with introduction of the Policy and this training was done between 2005 and 2008.

The reasons given for the need to change from mono to combination therapy were:

i. ACT being more effective
ii. AS-AQ easy to take (3-day therapy)
iii. Mono therapy no longer effective

All the respondents had a copy of the policy document which was shown to the interviewer upon request. The policy was rated as effective by 6 (75%) respondents and 2 (25%) said it was effective

but for the unfavorable side effect. The modification of the policy to include other ACTs apart from AS-AQ was suggested by 4 (50%) respondents, but 4(50%) said it was okay to continue as it is.

All 8(100%) respondents had trained staff on the new combination treatment.

4.5.2.1 Implementation plan by DHMT/ SDHMT

The training of staff and health education campaign were the main plans being implemented. Other plans being carried out on a lower scale were: ensuring availability of drugs; monitoring and supervision of the staff by district and Sub district heads. Table 4.6 shows the answers given by respondents to the implementation plans taking place in the district.

Table 4.6 Implementation plans by DHMT/ SDHMT

	FREQUENCY (n=8)	PERCENTAGE (%)
Ensure Drug availability	2	25
Education campaigns on AMDP	6	75
Monitoring and supervision by DHMT and SDHMT	2	25
Training of staff	8	100

Source: Field work 2008

4.5.2.2 Monitoring and evaluation plans by DHMT/ SDHMT

With the exception of monitoring drug efficacy by assessing cure rate, less than 50% of respondents were involved in other activities such as: periodic monitoring of health facilities by the DHMT; monitoring patients for adverse drug reactions; generating monthly drug returns to monitor the trends of ACT use and organizing official staff meetings to assess programmes. This showed that most of the implementation plans were not being done effectively.

Table 4.7 shows the answers given by respondents to the monitoring and evaluation plans being effected in the district.

Table 4.7 Monitoring and Evaluation Plans by DHMT and SDHMT

	FREQUENCY (n=8)	PERCENTAGE (%)
Monitoring of drug efficacy by assessing cure rate	5	62.5
Monitoring patients for adverse drug effects	3	37.5
Periodic monitoring by DHMT	3	37.5
Official staff meeting to assess programmes	2	25
Monthly drug returns on ACT consumption	2	25
Others	2	25

Source: Field work 2008

4.5.2.3 Successes Achieved So Far by DHMT/ SDHMT

For the successes chalked since the new AMDP was implemented, 5(62.5%) reported high cure rate, 2(25%) said there has been increase in the consumption of ACTs and one (12.5%) talked about the reduction in complications due to malaria.

4.5.2.4 Challenges Faced by DHMT/ SDHMT

The challenges faced include adverse drug effects by 5(62.5%) respondents leading to non-compliance; non-availability of drugs by 2(25%); and 2 (25%) had no challenges to record.

CHAPTER FIVE

5.0 DISCUSSIONS

5.1 TREATMENT COVERAGE OF ACTS

The definition of treatment coverage of ACTs was the percentage of the total number of prescriptions with ACTs. The treatment coverage from the patient review record was found to be 76.4% which is quite high. This was a better result as compared with the study in Burundi on children under five years, with treatment coverage of 29.4% for AS-AQ for the treatment of uncomplicated malaria. In the patients‟ record review, the treatment coverage of AS-AQ alone is 69% which is still higher than 29.4%. (Gerstl et al, 2007)

In Ghana, the treatment coverage of ACTs is 65.3% (National Roll Back Malaria Coordinating Committee, 2007), and the current result of 76.4% is an improvement on this value. This is an indication that if more efforts are put into educating patients and the general public on the new AMDP, supervising health facilities and organizing refresher courses and training updates on the AMDP for health personnel, the treatment coverage will be on the ascendancy.

5.2 AVAILABILITY AND COST OF ACTS

5.2.1 Availability of ACTs

At the end of the survey, the two community pharmacies, 19 out of the 24 LCS, 3 out of the 4 private facilities and all the public health facilities had stock of ACTs. The non availability of the ACTs at some of the LCS and private facility ascertains the study in Burundi which documented that the drugs were more available in the public sector than the private sector (Gerstl et al, 2007). This may serve as a draw back and will impede the progress of effective implementation of the AMDP since the private outlets also play a vital role in the implementing the policy. AS-AQ, which was found to be the most commonly available ACT, may be due to it being the specified ACT in the AMDP.

The policy states that the drugs in the policy should become an OTC drug (GHS/NMCP, 2004) and since the LCS are in the communities and nearer to the people, the availability of the drugs in these shops will go a long way in achieving the goal of reducing the malaria burden. The community is friendlier to the private outlets and will prefer going to them and therefore the need to ensure drug availability (Bloland et al, 2003).

In the case of AL, just a few of the LCS had the drug in stock and this may be due to the fact that AL is not in the AMDP and most people have not heard about it and are not used to it.

It was also realized that the drugs used for mono therapy were still available in all the LCS, the private and public health facilities. This can also influence the choice of prescribers and affect the uptake of ACTs. According to the AMDP, mono therapy drugs will be phased out in order to ensure that prescribers stick to the combination drug (GHS/NMCP, 2004). This has to be done as soon as possible to enhance prescriber and patient compliance. This finding is similar to that found in Dares Salam when all the 29 pharmacies visited had mono therapy antimalarials in addition to ACTs available (Kachur SP, 2006).

It is encouraging to note that the fastest moving antimalarial bought over the counter is AS-AQ. This may be due to the presence of the trained attendants in the private outlets.

5.2.2 Cost of ACTs

The findings showed that the cost of ACTs in the private health facilities and the public ones were the same. This refutes the study by Gerstl et al in Burundi, that the cost at the private facilities is more than the public ones. (Gerstl et al, 2007). However, the cost at the LCS is even lower than the public facilities and since both the private facilities and the LCS procure their drugs from the private drug companies and in town, their source may be cheaper than the regional medical stores. Care must however be taken to ensure that the source is authentic to avoid the use of fake drugs. This then brings about the need to monitor the private outlets effectively.

Also the high cost of ACTs which was about ten times that of CHQ and S/P can be an impediment in the scaling up of ACTs and needs to be subsidized for the rural folks to be able to afford. The cost of CHQ and SP which is less than GH¢1.00 (CHQ: GH¢ 0.20, SP: GH¢0.40) makes the cost of AS-AQ close to ten times more. (Bloland et al, 2003; Mutabingwa TK, 2005; Chanda et al,

2007). Also the introduction of local manufacturing companies and subsidies on raw materials for manufacturing drugs locally can help reduce the cost of therapy.

5.3 PATIENT KNOWLEDGE OF ACTS

From the findings on knowledge of ACTs, the ability of the patient to recall name of drugs; Use of drug; duration of therapy and dosage were 68.9%, 80.6%, 26.4% and 84.1% respectively. These values with the exception of duration of therapy were very high and showed that the patients had adequate knowledge of ACTs. The recall of the name of drug which was 68.9% is approximately 70% and is a high score of testing the knowledge of individuals. This is far higher than the study in Bostswana where only 31% of the patients could recall the name of the drug. (Boonstra et al, 2003). The recall of dosage and use of drug which were 84.1% and 80.6% are also very high and depict that most of the patients had adequate knowledge of ACTs and can be compared with the general knowledge of drug in the same survey as mentioned above where the use of drug and dosage were 93% and 83% respectively though slightly lower.

The duration of therapy was very low (i.e. 26.4%) as compared with 44% in the study done by Boonstra et al. The value may be low due to the fact that the patient is interested in taking the drug as directed until it is finished hence, not paying attention to duration of therapy. Despite this low value, it can be said on the whole that the patients had adequate knowledge of the ACTs given to them and this will enhance compliance and scale up the use of ACTs, hence effective implementation of the AMDP. Attention must, however be focused on the duration of therapy to enable the patient take the full course of the therapy since some stop taking the drug as soon as they get better.

5.4 PRESCRIPTION HABIT OF PRESCRIBERS

From the results, 69% of the prescriptions from the record review were AS-AQ, 6.2% for AL and 1.2% for AS-S/P. This high value of AS-AQ may be due its availability at most of the health facilities and the prescribers adhering to it. The other combination therapies are not commonly

used since they are not in the AMDP. There is however, more room for improvement since it is expected that only ACTs must be used in the treatment of uncomplicated malaria. (GHS/NMCP, 2004).

The prescription of mono therapy drugs representing a substantial percentage also poses a problem to the success of implementation of the AMDP. The prescriptions consisted of AS (3.8%), Alaxin (4.8%), Artemos (3.7%), SP (3.0%) and CHQ (1%). This may be due to inappropriate prescribing. (Ndayiragije et al, 2004).

The prescription of the mono therapy drugs may also be due to higher cost of ACTs as compared to CHQ and SP, as documented in the survey and lack of follow up supervision especially in the private facilities (Wassuma et al, 2008).

The change in prescribing pattern from mono to combination therapy may be a challenge for prescribers if the mono therapy drugs are still available. Since it takes some time for people to change old habits, a constant reminder in the form of workshops will speed up the changes in prescribing pattern. This emphasizes the findings in a survey in Zambia where the treatment policy for change from SP to AL resulted in only 22% of the new drugs (AL) being prescribed as against 4% for SP among children weighing more than 10kg at facilities where AL was available, which shows that the prescribing pattern of clinicians will change gradually but have to be improved by more training and workshops. (Njuguna, and Qader, 2007**)**. The nonrecommended drugs should be phased out to avoid any confusion in prescribing.

To add to that, side effects such as body weakness experienced by some patients make it impossible for them to take the drug, hence the prescribers fall on other non-recommended drugs. The addition of other ACTs such as AL which is more tolerant will go a long way in reducing the malaria burden and delaying drug resistance to the ACTs.

5.5 IMPLEMENTATION PLANS BY POLICY MAKERS

From the results, it was realized that the training of prescribers and other staff and the Educational Campaigns were very impressive and showed that MOH, GHS, and the NMCP were doing a lot to

ensure the effective implementation of the policy. (GHS/NMCP, 2004.) This has to be on-going and more frequent so as to reduce the malaria burden.

Availability of ACTs as implementation plan from 50% of respondents was not that encouraging. This is very crucial in ensuring that mono therapy drugs are not prescribed. If the ACTs (especially AS-AQ) are available at all facilities, it becomes obligatory for prescribers to use, but in its absence, they resort to other drugs which are not recommended.

No mention was made of the drugs being made available to the private outlets such as the community pharmacies and the LCS. For the drug to become on OTC drug, a conscious effort must be made to get it to all the private outlets as this will help in smooth implementation of the policy and discourage mono therapy of malaria treatment (GHS/NMCP, 2004).

Supervision by the DHMT (25% of respondents) was not adequate as indicated by the results. For the effective and smooth implementation process, supervision should be stepped up urgently, and this will go a long way to ensure right diagnosis and prompt and effective treatment of malaria.

The monitoring of adverse drug effects in patients (37.5 %) was very low. This is very crucial in effective management of malaria since it helps in knowing the effectiveness of the drug. The report of adverse drug reaction will enable the center for pharmacovigilance to do more research and come out with findings that will improve the use of the drug. The values show that more work has to be done in monitoring adverse drug reactions.

The evaluation of cure rates was quite encouraging and is evident in an increase in cure rate as one of the successes chalked since the introduction of the new policy. This shows that the MOH, GHS, and the NMCP are doing their best in this area to ensure the effective implementation of the AMDP. There is still room for improvement to achieve the expected target of eradicating malaria. The monthly report on ACT consumption was not very good and needs to be stepped up since it serves as a good source of data for assessment of the policy.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1CONCLUSIONS

6.1.1 TREATMENT COVERAGE OF ACTs

The treatment coverage of ACTs in the Kwabre district was found to be 76.4%.

6.1.2 AVAILABILITY AND COST OF ACTs

AS-AQ and AL were the ACTs available at the various facilities. With the exception of 5 LCS and one private health facility, ACTs were generally available at the facilities visited. The most common ACT available was AS-AQ.

The cost of ACTs ranged from GH¢1.00 to GH¢10.00 with AS-AQ ranging from GH¢ 1.00 to GH¢5.00 and AL between GH¢3.00 and GH¢10.00. The private and public health facilities had the same cost of AS-AQ, which was between GH¢3.00 and GH¢5.00.

6.1.3 PATIENT KNOWLEDGE OF ACTs

The patient knowledge of ACTS after receiving treatment from the health facility showed that 68.9% could recall the name of the drug; 84.1%, the dosage; 80.6%, the use of the drug and 26.4%, the duration of therapy. It can thus be concluded that the patients had adequate knowledge of ACTs.

6.1.4 PRESCRIPTION HABIT OF PRESCRIBERS

The main ACT prescribed was AS-AQ (69%). Others were AL (6.2%) and AS –S/P (1.2%).

Many mono therapy drugs were still being prescribed and they are AS (3.8%), AQ (3.3%), Alaxin (4.8%) and Artemos (3.7%). Others are SP (3%), Quinine (4%) and CHQ (1%).

6.1.5 IMPLEMENTATION PLANS BY POLICY MAKERS

The policy makers had implementation plans to ensure the effective implementation of the AMDP. The training of prescribers and other staff, educational campaigns on AMDP and monitoring of drug efficacy to a assess cure rates were being done at a high rate and this is adequate for effective implementation. The monitoring and supervision by the District Health Management Team (DHMT) and the Sub District Health Management Team (SDHMT), monitoring of adverse drug effects, and organising official staff meeting to assess programmes, were inadequate for effective implementation. To add to that, the generation of monthly returns on ACT consumption and ensuring that drugs are available at all facilities were not encouraging.

6.2 RECOMMENDATIONS

6.2.1 DHMT -: Monitoring and supervision

The head and members of the DHMT should step up their monitoring and supervisory activities. This is to ensure that the drugs in the AMDP are always available at the various facilities. They should also ensure that monitoring of adverse drug effects, the frequent organization of official staff meeting to assess programmes, and the generation of monthly returns on ACT consumption are stepped up.

6.2.2 MOH -Procurement of ACTs

The procurement unit of the ministry should always ensure that enough ACTs (i.e. AS-AQ) are available to prevent the prescribers from resorting to alternative therapies.

6.2.3. MOH /GHS/NMCP

- **Phasing out of Mono therapy Antimalarials**

All the Mono therapy antimalarials should be phased out to delay the emergence of drug resistance.

- **Availability of ACTs at private outlets.**

Efforts should be made to make AS-AQ available to the private outlets such as the LCS to help in the home management of malaria in the remote areas where access to healthcare is difficult. Consequently, the message of RBM will get to the remotest part of the country and help in reducing the malaria burden.

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APPENDICES

INFORMATION SHEET FOR PARTICIPANTS
THE CHALLENGES ASSOCIATED WITH THE IMPLEMENTATION OF THE ANTIMALARIA DRUG POLICY IN THE KWABRE DISTRICT OF ASHANTI REGION, GHANA

I am ……. , I am carrying out a study to find out the extent of usage and the challenges associated with the implementation of the new antimalarial drug combination treatment policy recently introduced into the country .I am with with my research assistants who will help me with this study.

Aim of the study:
The new antimalarial treatment policy was introduced in Ghana in January 2005.The main purpose of the study is to find out the knowledge and awareness in Kwabre district about this new treatment policy, the availability of the drugs in the various facilities, and whether the drugs are being used for the purpose for which it was intended. The study will involve healthcare providers and the

general public as a whole since malaria affects almost everybody. In connection with this, you have been selected to participate in the study. The process will involve answering some questions that will be posed to you. The whole exercise will take about 10-15 minutes.

Risks and discomforts:
There are no risks in answering these questions but should any question make you uncomfortable, you may decide not to answer, which we hope shall not happen.

Benefits:
You have no direct benefit, but your participation will help in assessing the implementation of the new treatment for malaria. You will be contributing to support the implementation of the policy and this will consequently reduce the burden of malaria in the country.

Incentive:
You will not be provided any incentive to take part in the study.

Confidentiality:
The information that we collect from this study will be kept confidential. All information about you will be stored in a file which will not have your name on it, hence cannot be traced to you. In the dissemination of the information, you are assured that nothing you said will be linked to you.

Thank you for your cooperation.

DATA COLLECTION TOOLS

HEALTH MANAGER / PRESCRIBER INTERVIEW QUESTIONNAIRE KWABRE DISTRICT, ASHANTI REGION, GHANA.

FACILITY IDENTIFICATION

Name of Region: **ASHANTI**

Name of District: **KWABRE**

Name of the facility_____

Type of Health Facility: (1= Hospital; 2 = Health Centre;; 3= CHPs 4=Clinic;5=Maternity home; 6= Other _____) ☐

Operating Authority:

1= Government; 2 = Quasi-government; 3 = Non-governmental organization
4=Mission/Religious; 5 = Private for profit; 6 = Other _____) ☐

Date: _____

DAY / MONTH / YEAR ☐☐ ☐☐ ☐☐☐☐

Name of the interviewer_____

Health manager/Prescriber Information

Provider category: (1=Doctor; 2=Medical Assistant; 3=Nurse; 4= Midwife; 5= Community Health Officer; 6=other (specify_____ ☐

Status: 1 = Health manager; 2 = person-in-charge; 3 = prescriber only ☐

Sex of Provider: (1=male; 2=female) ☐

Training and Experience

Do you personally provide care for clients with malaria?	YES.....1 NO .....2 ☐
In what year did you start working in this district?	YEAR ☐☐☐☐

Have you received any training specifically with the introduction of the new antimalarial drug policy?	YES……1 NO…….2
In what year did you receive the training?	2004……..1 2005……..2 2006……..3 2007……..4 Other (specify)……..

What did you learn about the new malaria policy? (Circle all that apply)	Parasite is resistance to CHQ … 1 Combination more effective.....2 Easier to take combination.....3 Other …… …..4 (Specify) ……..…….
Do you agree to the need for a change?	YES……1 NO…….…….2
Do you have a copy of the New Anti malaria Drug Policy? (ask to see a copy) ,	Yes, seen ……..1 Yes, reported to have…… ...2 No…… 3 Don"t know……..4
FOR PRESCRIBERS:	
Do you prescribe the ACTs to patients?	YES……1 NO…….…….2
Which of them do you prescribe?	Artesunate- Amodiaquine……..1 Artemether- lumefantrine……...2 Artesunate- SP……...3 Others……4 Specify……..
How often do you prescribe this combination?	Always……..1 Very often…….2 Sometimes…….....3 Seldom……...4 not at all…….5
What other anti malarial do you prescribe other than ACTs?	Amodiaquine only.....1 Artesunate only.....2 Alaxin (dihydroartemisinin)...3 Chloroquine.....4

	S/P.....5 Artemos(Artemether)…….6 Quinine……7 Other……...8 (Specify)…….....

Why will you sometimes prescribe the other antimalarials (i.e. monotherapy)? (CIRCLE ALL THAT APPLY)	Fear of adverse reaction……..1 Personal experience…….2 Lack of confidence……..…3 Experience of a colleague……....4 Patients refusal/preference……...5 Stock out at dispensary…….…. 6 Patient‟s condition…….……..7 NHIS status of patient……...….8 Treatment failure with combination…....9 High cost……10 Other……11 (specify)…….
What factors influence the choice of anti malaria you prescribe?	State of the patient……..1 Dispensary stock out ……....2 Age of patient…….…….3 Personal conviction…….4 Standard treatment guideline...5 Cost of drugs ……..6 NHIS requirement……7 Other……....8 (specify)…….. …….
What do you counsel your patient on?(Don‟t probe) a. the disease b. prevention c. how to correctly take drugs d. diets taken with medication e. other (specify)……..	YES / NO 1 / 2 1 / 2 1 / 2 1 / 2 1 / 2 /
When people are given the drug, do they come back still feeling sick or with complaints. (Adverse effects)?	Yes…….……..……1 No…….2

ALL CATEGORIES:	
How will you rate the effectiveness of the new policy?	very effective……1 effective…….....2 effective but for the side effects……....3
	not effective……...4
If given the chance to decide the fate of this new policy, what will that be?	Continue……..….1 Modify…….2 Take it out……3 Go back to mono therapy…….4 Other ……..…….5 Specify……
Is there a trained health provider present at the facility at all times (working hours)	Yes, …….....1 No,.....2
When was the last time a supervisor from **OUTSIDE** this facility came for a supervisory visit?	Within Prior 6 Months..... 1 More Than 6 Months Ago ..... 2 Never Supervised From Outside Facility..... 3
Within the past 6 months did a supervisor from outside the facility on a visit do any of the following activities? A) Discuss policy/administrative issues? B) Discuss technical protocols, practices, or service delivery technical issues? C) Hold an official staff meeting? D) Observe individual staff providing services? E) Do anything else SPECIFY……	YES …. 1 / NO …….2 A. B. C. D. E.
How many staff have been trained in the use of the new antimalarial combination treatment?	[ ][ ] now.....
Which of these was the staff trained in? a) Management of malaria	YES……1 / NO……2

b) Effective diagnosis of malaria c) Home- base care of malaria d) Others Specify		
What plans are in place to enhance the smooth implementation of the AMDP?(Don‟t probe) a)Public education campaigns b)Monitoring of drug adverse effects c)Supervision by DHMTs	MENTIONED…….1	NOT MENTIONED ……..2
d)Availability of ACTs e) Monthly reports on ACT consumption. f) Others Specify……..		
What are some of the challenges you face in implementing the new AMDP? Specify……..	ANSWERS	

INTERVIEWER‟S COMMENTS:

CHECKLIST FOR AVAILABILITY OF ANTIMALARIA DRUGS AT THE PRIVATE AND PUBLIC HEALTH FACILITIES, COMMUNITY PHARMACIES AND LICENSED CHEMICAL SHOPS IN THE KWABRE DISTRICT, ASHANTI REGION, GHANA

Name of the facility_____

Type of Health Facility: (1=Pharmacy; 2 =licensed chemical shop ☐

Date: _____

DAY / MONTH / YEAR ☐☐☐☐

Name of the interviewer_____

Category: 1 = pharmacist; 2 = Technician/Technologist; 3=Licensed chemical seller; 4=attendant/assistant ☐

DRUGS IN STOCK

Drugs in stock today (ask to see samples)	**In stock (1)**	**Not in stock (2)**	**Don't know**	**Cost per treatment**
Artesunate / Amodiaquine				
Artemether/ lumefantrine				
Artesunate/ S/P				
Amodiaquin				
Artesunate				
Quinine				
Artemether (Artemos)				
S/P				
Chloroquin				
Alaxin (dihydroartemisinin)				
other				
(Specify)……				

Drugs out of stock during the past 3 months	**Yes = (1)**	**No = (2)**	**Don't know = (3)**
Artesunate / Amodiaquine			
Artemether/ lumefantrine			
Artesunate / S/P			
Amodiaquin			

Artesunate			
Quinine			
S/P			
Chloroquin			
Alaxin (dihydroartemisinin)			
Artemos (Artemether)			
other			
(Specify)……..			

Source of drug supply?	Central Medical Stores……..1 Private purchases from companies……...….2	
	Private purchases from town……3 Other…….4 (specify …….	
Have you heard about the new AMDP?	Yes =1	No = 2
Has anyone in this pharmacy had specific training on ACTs for the national malaria policy? (Show evidence e.g. Certificate, etc)	Yes =1	No = 2
Antimalarials most commonly bought over-the-counter (OTC): (Position in order of frequency).	a. Artesunate / Amodiaquine……..1 b. Artesunate only……...…2 c. Amodiaquine only……...3 d. Quinine……....4 e. S/P……6 f. Chloroquin……....7 g. Alaxin..……...8 h. Artermos……...9 i. Artemether / Lumefantrine……..10 j. Other……. k. (specify)……..	

List the problems encountered when dispensing ACTs?	ANSWERS: a. b. c. d. e.

INTERVIEWER‟S COMMENT:

PATIENT'S RECORDS REVIEW CHECKLIST TO DETERMINE THE PRESCRIPTION PATTERN OF ANTIMALARIALS – KWABRE DISTRICT-ASHANTI REGION

FACILITY IDENTIFICATION

Name of Region: **ASHANTI**

Name of District: **KWABRE**

Name of the facility_____

Type of Health Facility: (1= Hospital; 2 = Health Centre;; 3= CHPs 4=Clinic;5=Maternity home; 6= Other _____) ☐

Operating Authority:
1= Government; 2 = Quasi-government; 3 = Non-governmental organization
4=Mission/Religious; 5 = Private for profit; 6 = Other _____) ☐

Date: _____

DAY / MONTH / YEAR | | | |

Name of the interviewer_____

A) Record identification/Card No.	ID Code

Date of Consultation _____ DAY / MONTH / YEAR

Sex of the record owner (patient)	Male ……1 Female……..2 Missing……3
Age of the record owner in years	Infant (<1) ……...1 Under 5……2 Older Child (5-17)……..…3 Adult (>17)……....4 Missing……..5
Weight of the record owner (to the nearest whole number)	_____ KG

Temperature on the record	Less than 350c……..1 35.0-37.50c……...2 More than 37.50c……..3 MISSING……4

Clinical symptoms: (underline as appropriate & tick) a. fever b. headache c. body pains/general malaise d. vomiting/abdominal pain/diarrhea e. feeling cold/sweating/rigors/chills f. poor appetite/bitter taste g. fits/unconsciousness h. other specify ……	Yes = 1;	No= 2
Laboratory investigations : (underline as appropriate & tick) a. Blood film for malaria parasites b. Full blood count or haemoglobin c. Rapid Diagnostic test o. Other d. (specify)……	Yes = 1	No= 2
Diagnosis on the record	malaria.....1 clinical malaria.....2 malaria (uncomplicated).....3 malaria (severe).....4 malaria+ anaemia.....5 malaria + URTI.....6 malaria+Other(specify).....7 MISSING ……8	

Does the record have any of the following drug treatment?	YES = 1	NO = 2
ANTI-MALARIAL		
a. Amodiaquine (alone)		
b. Artesunate (alone)		
c. artesunate/amodiaquine combined		
d. Alaxin		
e. Artemos		
f. Chloroquine		
g. S/P h artesunate/ S/P combined i. Quinine		
j. Artemether/ Lumefantrine		
k. Other (specify)……		
OTHER DRUGS		
Analgesic e.g. Paracetamol, Brufen, Asprin etc.		
Haematinic/ Multivitamin		
Antibiotics		
Other		
(specify) ……		

QUESTIONAIRE ON PATIENT KNOWLEDGE OF ACTs AT THE HEALTH FACILITIES

FACILITY IDENTIFICATION

Name of Region: **ASHANTI**

Name of District: **KWABRE**

Name of the facility_____

Type of Health Facility: (1= Hospital; 2 = Health Centre; 3= CHPs 4=Clinic;5=Maternity home; 6= Other _____) ☐

Operating Authority:
1= Government; 2 = Quasi-government; 3 = Non-governmental organization
4=Mission/Religious; 5 = Private for profit; 6 = Other _____) ☐

Date: _____

DAY / MONTH / YEAR ☐☐☐

Name of the interviewer_____

Age of patient in years	☐
Sex of patient	Male ……1 Female……..2
Weight of the record owner (to the nearest whole number)	_____ _____ KG
Religion	Christian……..1 Moslem……..2 Traditionalist…….3 Other ……4 (Specify)……..
Level of education	None……1 Primary……2 Secondary…….3 Tertiary……..4

Economic status	Low income……..1 Middle income……..2 High income……..3

Knowledge of ACTs	
Patient identifies drug correctly ANTI-MALARIA a. Amodiaquine (alone) b. Artesunate (alone) c. artesunate/amodiaquine combined d. Alaxin e. Artemos f. Chloroquine g. S/P h. Quinine i. Artemether/ Lumefantrine Other (specify)……	YES = 1 NO = 2
Patient answers correctly what the medicine is used for .(i.e. an antimalarial)	YES =1 NO = 2

How long will you take the drug?

a.Amodiaquine (alone)

b. Artesunate (alone)
c. artesunate/amodiaquine combined
d. Alaxin
e. Artemos
f. Chloroquine
g. S/P
h. Quinine
i. Artemether/ Lumefantrine
Other (specify)
……
……

One day	3 days	Over 3 days

How were you told to take the drugs? (ANTI-MALARIALS	Correct= 1	Incorrect= 2	Don‟t know
a. Amodiaquine (alone)- 10mg/kg body weight bid for 3 days (Max 600mg/dose)			
b. Artesunate (alone)- 4mg/kg body weight bid for 3 days (Max 200mg/dose)			
c. artesunate/amodiaquine combined- (a & b)			
d. Chloroquine - 800mg dly for 2 days, then 400mg on 3rd day.			

e. S/P- S/P 1500mg/75mg (3 tablets) stat for Adults. f. Quinine - 10mg/kg (Max 600mg) 8 hourly for 7 days. Other (specify)……	
Have you heard about the new AMDP?	YES…….1; NO……..2
What do you know about it?	Artesunate- Amodiaquine for uncomplicated malaria……1 Change from mono to combination therapy…2 Don‟t know……..3

INTERVIEWER‟S COMMENT:

QUESTIONAIRE FOR INTERVIEW OF THE HEAD OF DHMT/ SDHMT ON IMPLEMENTATION PLANS OF THE A.M.D.P

Name of District: **KWABRE**

Name of Sub-District: _____

Date: DAY / MONTH / YEAR | | | | |

Category: (1=Doctor; 2=Medical Assistant; 3=Nurse; 4= Midwife; 5= other (specify_____

Status: 1 = Head of DHMT; 2 = Head of SDHMT; 3 = Member of DHMT ☐

What do you know about the AMDP?	ANSWERS
Did you receive any training specifically with the introduction of this policy?	YES……1 NO…….2
In what year did you receive the training?	2004……..1 2005……..2 2006……..3 2007……..4 Other (specify)……..
Do you agree to the need for a change?	YES……1 NO…….…….2
Give reasons	1. 2. 3. 4.

Do you have a copy of the New Anti malaria Drug Policy? (ask to see a copy) ,	Yes, seen ……1 Yes, reported to have…… ...2 No…… 3 Don"t know……..4

How will you rate the effectiveness of the new policy?	very effective…….1 effective……..2 effective but for the side effects…….3 not effective……4
If given the chance to decide the fate of this new policy, what will that be?	Continue…….1 Modify…….2 Take it out……3 Go back to mono therapy…….4 other ……..…….5 Specify……
How many staff have been trained in the use of the new antimalarial combination treatment?	now.....
What plans are in place to enhance the smooth implementation of the AMDP?	ANSWERS
What are the monitoring and evaluation plans put in place for effective implementation of the AMDP?	ANSWERS

Enumerate the success chalked so far.	ANSWERS
What are some of the challenges you face in implementing the new AMDP? Specify……..	ANSWERS

INTERVIEWER"S COMMENT: