

## IMPACT OF HEALTH CARE FINANCING REFORMS ON THE MANAGEMENT OF MALARIA IN GHANA

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### ABSTRACT

**Objective:** To determine the impact of the introduction of the 'cash and carry' system on how health care providers manage malaria cases in Ghana

**Design:** A cross sectional study of treatment patterns of cases of malaria.

**Setting:** Health services in Ghana changed significantly in 1992, from being virtually free to a 'cash and carry' system in which all patients attending government health services had to pay in full for drugs and services. Staff of private companies and parastatal organisations continue to enjoy free health services at other clinics and hospitals.

**Subjects:** Prescriptions for 9539 cases diagnosed as having malaria at the out-patient departments (OPD) of eight health facilities four in the 'cash and carry' scheme and four outside this scheme were reviewed.

**Results:** The mean (SD) number of drugs prescribed per case of malaria was higher for the 'cash and carry' group than for the 'free for service' group;  $4.5 \pm 1.3$  versus  $3.8 \pm 1.3$  (p value  $< .001$ ). Injection chloroquine was used more frequently in the 'cash and carry' group than in the 'free service' group 56.4% and 28.6% respectively (p value  $< .001$ ). Second-line antimalarial drugs were however, more often used in the 'free service' group 13.5% versus 7.3% (p value  $< .001$ ). About 30% of the 'cash and carry' group received antibiotics, compared with 15.5% of the 'Free Service' group. Logistic regression analysis showed that the modality of payment for services contributed significantly to whether a case of malaria was managed with more than three drugs, or received injection chloroquine or antibiotics or a non-steroidal anti-inflammatory drug.

**Conclusion:** Evidence in this study suggests that health care providers tend to pay more attention in treating the symptoms of malaria in cases in which patients pay for service. This leads to unnecessarily high costs of care for the individual and the health system.

### INTRODUCTION

The analysis of the economic realities of the health sector development in Africa has underlined the increasing contribution of the individual in the financing of health care services(1). Health care financing reforms in the governmental health care system in Ghana started with the Hospital Fees decree of 1969(2), and later with Hospital Fees Regulation Act of 1983(3) and 1985(4), all stating that only token fees should be charged for registration and other services. However, the latest reform in 1992, which brought in the 'cash and carry' system, specified that all patients (except staff of the Ministry of Health and patients of Boards and Corporations registered at the health facility) paid for the cost of drugs and services in full. Although the 'cash and carry' system increased the availability of drugs, similar attempts in 1985 initially led to a sharp fall in utilisation of health services throughout the country(5).

In Ghana, between 8% and 15% of the national budget goes into health care, 40% to 60% of this is spent on drugs with more than 80% of this expenditure in foreign exchange(6). The new reforms should free resources for the government to use elsewhere.

Malaria accounts for over 40% of daily outpatient encounters at most of the clinics in Ghana. It is the most important cause of morbidity and mortality in preschool children(7,8). The incidence of clinical malaria has been found to be about three attacks per child per year, most of it caused by *Plasmodium falciparum*(9). The disease occurs throughout the year with a peak incidence in the wet season. In Ghana and in most endemic areas, most cases of malaria are diagnosed on clinical grounds without laboratory confirmation of parasitaemia(7,8,10,11). Although this probably leads to over diagnosis, the WHO regards it as safe to treat all persons with a history of fever, without other obvious causes as malaria(10). While trying to improve clinical diagnosis of malaria, rational management of cases, would yield great savings for the health sector and for the individual.

Malaria control has received worldwide attention over the years following the failure of eradication efforts in the early 1950s(12). The Interregional Conference on malaria in Brazzaville in 1993(10) and the International Congress on Malaria in Africa, Dakar in 1997(11) emphasised disease management and prevention as the two strategies which should be adopted to tackle the

problem of malaria(10,11). Many relevant factors and relationships remain to be elucidated. For example current diagnostic capabilities have to be assessed, in particular the availability, use and quality of microscopy at different levels of the health care system. The role of health care providers, patients, drug supplies and the financing system, the quality of care in health facilities, the affordability of antimalarial drugs, the therapeutic efficacy of treatment regimes in use and equity in relation to the management of cases must be assessed as well. The objective of this study was to determine the impact of the introduction of the 'cash and carry' system on the management of malaria in Ghana.

**MATERIALS AND METHODS**

Health institutions in three out of the 10 regions of Ghana, (ie. Greater Accra, Central and Eastern) were split into two categories on the basis of the main system of payment for drugs prescribed to patients: government health facilities and private clinics (which use the 'cash and carry' system), or the clinics and hospitals of parastatal organisations, such as the banks, universities and large private companies (which do not charge). Four facilities were selected from each group to ensure comparable samples of users and health providers. The 'Cash and carry' group included Amasaman Health Post (government, in rural Accra), Mamprobi Polyclinic (government, in urban Accra), Apam Catholic Hospital (non-governmental District hospital, in Central Region) and Mercy clinic (Private clinic in urban Accra). The 'Free for Service' group, included University Hospital (parastatal, in urban Accra), Medical School Clinic (parastatal in urban Accra), Trust Hospital (private, urban Accra) and Akosombo Hospital (private company, in the Eastern Region).

**Data collection:** A systematic sampling method was used to select a sample of the record cards at each study facility. Approximately 800 patient encounters were to be reviewed at each facility, the record number, patient age, sex and occupational status, date of visit, diagnosis(es), number of drugs prescribed and a list of all drug items prescribed being recorded for each encounter.

**Statistical analysis:** The data were analysed with SPSS statistical software. The variables of interest in the logistic regression analysis were the mode of payment for treatment received, ('cash and carry' versus 'free for services', the period of visit (before or after the introduction of the financial reforms of 1992), status of the patient (senior staff i.e. staff in the management level and their dependants versus the others), health facility type ('cash and carry' or 'free for service' facility), and patient age (under five versus above 5 years) and sex. The dependent variables were the number of drugs prescribed per case (less than or equal to 3 versus more than 3 items) and whether or not injection chloroquine, second-line antimalarial drug, vitamin/iron, antibiotics, antihistamines or non-steroidal anti-inflammatory drugs (NSAIDs) were prescribed for the patient.

**RESULTS**

A total of 9539 cases diagnosed as malaria at the outpatient departments of eight health facilities in the southern part of Ghana was reviewed (Table 1). Of these, 3585 (37.6%) were within the 'cash and carry' system. Patients who had to pay for their drugs had more drugs prescribed than those who did not, with mean (SD) values

of 4.5 ± 1.3 and 3.8 ± 1.3 drugs/case (p-value <.001). The use of injection chloroquine was also more frequent in the 'cash and carry' group than in the 'free for service' group 56.4% and 28.6%, respectively (p value < .001). Second-line antimalarial drugs were more often given to those who received free treatment: (13.5% versus 7.3% (p value < .001)) but antibiotics, non-steroidal anti-inflammatory drugs (NSAIDs) and first-line antimalarial drugs were more often given to those who paid for treatment. For example, about 30% of the 'cash and carry' group received antibiotics compared with 15.5% of the 'free for service' group (p< .001) and NSAIDs were used in 4.7% and 3.6% of the 'cash and carry' group and 'free for service' group, respectively (p = .008).

Approximately 50% of all study cases managed as malaria were given vitamins/iron: 55.3% of the cash and carry' group versus 56.4% of the 'free for service' group (p-value=.30). Use of sedatives and antihistamines, was also similar in both groups: 18.2% in the 'cash and carry' and 18.8% of the 'free for service' (p value=.47), (Table 1).

**Table 1**

*Management of malaria according to the Health Care financing option of the patient*

Management of malaria	Financing option for 'cash and carry' (3569)	Payment for services 'free for service' (5895)	p value
Mean number of drug items prescribed	4.5 ± 1.3	3.8 ± 1.3	<.001
<i>Drugs prescribed (% of malaria cases)</i>			
Injection chloroquine	56.4	28.6	<.001
2nd line antimalarial drugs	7.3	13.5	<.001
Antibiotics	29.7	15.5	<.001
Non-steroidal anti-inflammatory drugs (NSAIDS)	4.7	3.6	.008
Valium/Phenegan	18.2	18.8	.47
Vitamin/Iron	55.3	56.4	.30

**Table 2**

*Use of anti malarial and other drugs by type of health facility (% of malaria cases)*

	Cash & carry	Free for service
No. of malaria cases	3254	6359
% of malaria cases to all cases	47.4	32.9
No. of drugs/prescription	5	4
% with inj. chlorq.	76.5	30.4
2nd line anti malarial	4.9	13.4
Camoquine	2.2	7.7
Fansidar	1.2	4.3
Halofantrine	0.1	0.5
Quinine	0.5	-
Artesonate	-	0.1
Other	0.9	0.8
NSAIDs	3.7	6.0
Brufen	1.8	3.7
Indocid	0.9	0.5
Naprocin	-	4.2
Vitamin/iron	58.3	54.2
Valium/phenegan	16.9	19.3
Antibiotics		
Septrin	10.1	5.2
Others	26.8	12.8
Other drugs	+	+

A more striking difference in the management of malaria was noticed when the data were analysed on the basis of the facility type. It must be noted that the private patients attending 'free for service' facility paid for their drugs as if they were in a 'cash and carry' facility. The use of injection chloroquine was on average given to 76.5% of the cases diagnosed as malaria at the 'Cash and Carry' facilities compared to an average of 30.4% at the 'Free for service' facilities. Second line antimalarial drugs were used less frequently at the 'Cash and Carry' facilities (4.9%) compared to (13.4%) in the other group. Antibiotics were used in 36.9% of the malaria cases in the facilities operating, the 'Cash and Carry' system compared to 18.0% at the 'Free for service' facilities. Non-steroidal anti inflammatory drugs (NSAIDs) were also used in the management of malaria, 3.7% at the 'Cash and Carry' facilities and 6% in the other group (Table 2).

Analysis of the data according to the occupational status of the patient revealed very interesting findings which also confirm the pattern of treatment according to the payment system. The 'private' category of the occupational status was the private patients who attended the 'fee for service' facilities and it is interesting to note how they were treated as if they had attended a 'cash and carry' facility. Another interesting observation is the fact that even in those who were to enjoy 'free' service, (staff of parastatal health facilities), the senior staff and their dependants were treated differently from the junior staff and their dependants (Table 3).

Trend analysis of the data between 1990 and 1995 (Table 4) showed a peak use of injection chloroquine in 1992 which coincided with the period of introduction of the latest policy of 'fee for service' from the Government health system. Fortunately, there is some indication of a general trend towards a decline in the use of parenteral chloroquine by the 'cash and carry' group though antibiotic use has not changed over time.

Table 3

*Management of malaria according to the 'occupational status of the patients (all facilities)*

Status	Total malaria cases	Anti malarial drugs			Other drugs
		Inj. Chloroq %	2nd line anti malarial	Indocid Brufen Naprocin	
Senior member	75	39.5	25.0	3.9	
Dependant senior member	187	36.2	24.5	2.7	
Senior staff	211	33.8	19.2	13.7	
Dependant senior staff	710	35.5	10.4	2.7	
Junior staff	639	22.9	9.0	4.6	
Dependant junior staff	858	26.0	6.2	1.3	
University student	899	25.6	24.2	7.0	
Others	563	33.3	10.5	6.1	
Private patient*	102	56.7	11.1	6.7	
Not classified (60% 'cash & carry' patients)	5292	58.9	6.9	5.6	

\* private patients at 'free for service' facilities

Logistic regression analysis (Table 5) showed that the modality of payment for services contributed significantly to whether a case of malaria was managed with more than three drugs or received injection chloroquine or antibiotics or a NSAID. In particular, the second most important contributing factor to whether a case of malaria received a sedative or an antihistamine in addition to the antimalarial drugs was the payment modality. The role of the type of facility was similar to that of the modality of payment (financing type), giving a strong association with the number of drugs given per treatment and the use of injection chloroquine. The sex of the patient did not play any role in the pattern of treatment of malaria in the study.

Table 4

*Trends in the management of malaria by type of facility  
Percentage of malaria cases managed with injection chloroquine and antibiotics over time*

Year	Malaria cases		Inj. chloroquine		Antibiotics	
	Cash & carry	Free for service	Cash & carry	Free for service	Cash & carry	Free for service
1990	753	848	72.9	35.1	15.4	18.3
1991	332	1151	80.1	31.8	40.7	17.7
1992	887	1107	90.9	24.5	45.1	18.3
1993	301	1065	80.4	22.5	48.2	19.7
1994	493	1023	60.2	26.7	42.0	18.6
1995	473	720	67.7	41.5	40.2	17.1

Table 5

Logistic regression analysis

	Wald	p-value	OR	95% CL	
<i>Number of drugs</i>					
Age	16.04	.000	0.80	.72	0.89
Date reforms introduced	7.07	.008	1.13	1.13	1.25
Facility type	446.20	.000	4.19	3.68	4.77
Financing type	76.03	.000	1.78	1.56	2.01
Sex	5.81	.016	0.89	0.81	0.98
Status	36.93	.000	1.52	1.38	1.75
<i>Injection chloroquine</i>					
Age	xxxx	xxx	xxx	xxx	
Date reforms introduced	18.84	.000	0.81	0.74	0.89
Facility type	1065.49	.000	6.67	5.95	7.48
Financing type	33.93	.000	1.52	1.32	1.76
Sex	7.01	.008	1.13	1.03	1.23
Status	15.50	.000	1.35	1.16	1.57
<i>Second line anti malarial drugs</i>					
Age	122.47	.000	4.29	3.32	5.56
Date reforms introduced	18.51	.000	1.39	1.19	1.60
Facility type	80.33	.000	0.38	0.30	0.46
Financing type	16.75	.000	1.65	1.30	2.10
Sex	xxxx	xxx	xxx		xxx
Status	72.52	.000	2.80	2.21	3.55
<i>Antibiotics</i>					
Age	221.44	.000	0.45	0.41	0.50
Date reforms introduced	50.57	.000	1.46	1.31	1.63
Facility type	113.68	.000	1.90	1.69	2.14
Financing type	55.29	.000	1.97	1.65	2.35
Sex	7.47	.006	0.67	0.79	0.96
Status	27.09	.000	1.66	1.38	2.02
<i>NSAIDs</i>					
Age	76.09	.000	11.82	6.83	20.84
Date reforms introduced	82.09	.000	3.46	2.65	4.53
Facility type	39.69	.000	0.43	0.33	0.56
Financing type	29.33	.000	2.81	1.93	4.08
Sex	xxxxx	xxx	xxx		xxx
Status	5.66	.017	1.63	1.09	2.43
<i>Valium/phenegan</i>					
Age	15.70	.000	1.29	1.14	1.47
Date reforms introduced	4.38	.036	1.12	1.01	1.25
Facility type	7.62	.006	0.83	0.73	0.95
Financing type	43.8	.000	1.87	1.55	2.24
Sex	4.01	.045	1.11	1.00	1.25
Status	72.59	.000	2.28	1.89	2.75
<i>Vitamin/iron</i>					
Age	85.33	.000	1.55	1.41	1.70
Date reforms introduced	42.49	.000	1.33	1.22	1.44
Facility type	49.18	.000	1.40	1.27	1.53
Financing type	xxxx	xxx	xxx	xxx	
Sex	xxxx	xxx	xxx		xxx
Status	49.51	.000	1.47	1.32	1.44

xxxx no significant contribution to the model...

Whether the patient's visit was before or after the introduction of the 'cash and carry' system had a very important effect on the use of NSAIDs (OR = 3.46) and antibiotics (OR = 1.46). The occupational status of the patient was important in the use of second-line antimalarial drugs (OR = 2.8) and the use of valium/phenegan (OR = 2.3). Patient's age affected the use of second-line antimalarial drugs and the use of NSAIDs, with OR of 4.29 and 11.81 respectively i.e. older patients were more likely to receive the above two drugs. However, with respect to antibiotics, the age effect was reverse, younger patients being more likely to receive antibiotics.

## DISCUSSION

Charging Ghanaian patients the full cost of treatment for malaria has affected the treatment, increasing the number of drugs prescribed per patient and increasing the use of injection chloroquine and antibiotics as elaborated by the trend analysis of the cross sectional data. Patients who pay for service even in the 'free for service' facilities are treated differently.

That the use of chloroquine injection should be higher in those who paid for treatment is not surprising. Most patients in Ghana consider parenteral management to be superior to oral management and any 'cash and carry' health facility generates higher profits when prescriptions containing injections are given (13). Use of injection chloroquine in the 'cash and carry' group is therefore satisfying to both the providers and the patients even though it may not be good health practice or good for the economy of the country. This preference for injections may explain why second-line antimalarial drugs are not used as much in 'cash and carry' facilities as in 'free for service' clinics, injection of chloroquine being preferred to an expensive second-line antimalarial drug.

The pattern of management observed among the different categories of the occupational status could also confirm the role of 'ability to pay' for drugs in the management of malaria. In the 'free for service' status, when the prescribed drug is not available at the facility, the patient is to purchase the drug and to be refunded later by the employers. This is where ability to pay becomes a factor since most of the second line antimalarial drugs happened to be more expensive than chloroquine.

Firm diagnoses are difficult in many health facilities in Ghana because of poor laboratory support. Many clinicians are therefore tempted to use unnecessary drugs to cover all the possible causes of the signs and symptoms they see in patients, particularly when the patients are paying for the treatment and are less likely to return than if treatment was free. This probably explains why antibiotics were prescribed for suspected cases of malaria, particularly in the 'cash and carry' facilities.

There are several possible explanations for the observations in this study especially the level of education of the health provider in terms of training received regarding case management. The availability of essential drugs at the health facilities could influence the management of the cases. The pressure from patients may not be uniform in the health facilities. Most of these could not be controlled for in the study.

In conclusion, introduction of the 'cash and carry' system appears to have increased the use of (largely unnecessary) chloroquine injections and antibiotics in the management of malaria and the number of drugs prescribed per case while reducing the use of second-line antimalarials. A desire to increase the profits of a 'cash and carry' facility may have led to the common prescription of vitamins and sedatives for malaria cases. However, with any new change in a system, there is bound to be a period of adaptation and it is hoped that over time services will improve.

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