

# How much do Blantyre dispensers in hospital and community pharmacies know about the new Malaria treatment guidelines?

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## Abstract

### Objective

To determine the knowledge of dispensers in hospital and community pharmacies within Blantyre on new malaria treatment guidelines.

### Methods

An interviewer administered questionnaire was used for data collection and the questions focused on the knowledge of dispensers on the new malaria treatment guidelines and whether the subjects were involved in the preparation or implementation of the guidelines or had undertaken any training on how to dispense the new anti-malarial medicines.

### Results

None of the participants had been involved in the preparation of the treatment guidelines and only 45.5% of the participants had undertaken the pre-implementation training. Ninety percent of the interviewees had knowledge concerning the appropriate treatment of malaria in pregnancy. However, as many as 90.9% of the interviewed participants could not mention any possible five or more side-effects of LA and only 13.6% knew how to properly manage the possible effects. Only 27.3% knew the correct dose regimen of LA and none of them knew the condition of taking LA with a fatty meal for improved absorption.

### Conclusion and Recommendations

Lack of involvement of the pharmaceutical personnel working in hospital and community pharmacies, from the preparation of new malaria treatment guidelines to their implementation, inadequate training and qualifications of the dispensing personnel contributed to their lack of knowledge and skill on how to rationally dispense the medicines. Pharmaceutical personnel dispensing in the pharmacies need to be involved from the beginning in the preparation of treatment guidelines. Adequate training should be provided and followed by continuous professional education.

## Introduction

Over 98% of malaria infections in Malawi are due to *Plasmodium falciparum*.<sup>1</sup> Malawi changed its first line anti-malarial medicine for treatment of uncomplicated *Plasmodium falciparum* malaria from chloroquine to sulfadoxine-pyrimethamine (SP) in 1993<sup>2</sup> and not quite long after this decision, reports of high failure rates of SP began pouring in from across the country. Resistance against SP was also observed in many other countries.<sup>3</sup>

Artemisinin based combination therapies (ACT) have recently been received with great anticipation as a major breakthrough in the treatment of malaria in many malaria endemic areas including Malawi.

Therefore, In 2006, the MOH selected lumefantrine-artemether (LA) as the first-line drug and selected artemether-amodiaquine (AA) as the second-line ACT, reserving quinine for the treatment of severe malaria cases and for

the management of malaria in pregnancy. The changes were implemented in November 2007 and officially reinforced in January 2008.<sup>5</sup> The introduction of these drugs is in line with the WHO recommendation to use ACTs in order to improve malaria treatment and prolong therapeutic life of anti-malarial drugs.<sup>5</sup>

However, dosage regimens of most ACTs are rather more complicated in comparison to a single dose needed for SP. The challenge for the successful outcome of the use of ACTs, therefore, is posed by the requirement for provision of proper knowledge for both the health care providers and the patients, who are the end users. Dispensing staff in pharmacies play a significant role in pharmaceutical management and provision of relevant information to clinicians and patients, thus enhancing the improvement of rational medicine use<sup>6</sup>. However, Lack of knowledge by the dispensers for a particular medicine directly affects the quality of drug information given to clinicians and patients. The provision of inadequate drug information by the dispensers results in irrational use of medicines which, among other effects may contribute to the increased risk of unwanted effects such as adverse drug reactions and the emergence of drug resistance, e.g., malaria and Tuberculosis. Dispensing personnel in the pharmacies (especially community pharmacies) rely mostly on leaflet inserts or drug company salesmen as their primary source of information on medicines.<sup>7</sup> Sales promoters are, in most cases, not sufficiently educated to provide reliable and unbiased information since their income is largely dependent on the volume of sales.<sup>7</sup>

Since the introduction of LA as a first line treatment for malaria in Malawi, dispenser's knowledge on this new anti-malarial medicine has never been assessed. So far there is no report on the extent of the involvement of hospital and community pharmacy personnel in the preparation of the treatment guidelines or their participation in the pre-implementation training. This study reports on the level of knowledge of dispensing personnel in hospital and community pharmacies on the recommended anti-malarial drugs in terms of dosage regimen, counseling on the proper conditions for drug intake, the expected side effects and their management.

## Methodology

The study employed a cross-sectional descriptive study design and involved 15 pharmacies located in Blantyre district. The names of pharmacies available in Blantyre were obtained from a list provided by the Pharmacy Medicines and Poisons Board. The sample was stratified into two categories namely; community pharmacies and hospital pharmacies. Hospital pharmacies were further stratified into public (government), CHAM and private pharmacies. Blantyre city has 17 pharmacies i.e. 10 community pharmacies, 2 public (government) hospital pharmacies, 1 CHAM hospital pharmacy and 4 private hospital pharmacies. Only 15 out of 17 Pharmacies were involved in the study. Two pharmacies were excluded because they were closed during the study period. The study population included

Pharmacists, Pharmacy Technicians, Nurses and Pharmacy clerks dispensing.

### Data Collection Method

The aim of the study was explained in detail to the dispensers and informed consent was sought before conducting the interview. An interviewer administered questionnaire comprising 36 questions was developed. Dispensing pharmacy personnel were the target respondents. The questionnaire was in five sections. The first section was to elicit socio-demographic details (age, educational level, and number of years of practice). The second section investigated knowledge about LA concerning dosage regimen, counseling on the proper conditions for drug intake, side-effects and adverse effects, and their management. The third section investigated the dispenser's knowledge in the treatment of malaria in pregnancy. The fourth section investigated the extent of their involvement in the preparation of the treatment guidelines. The final section investigated their participation in the pre-implementation training.

### Statistical Analysis

Data from all the questionnaires were coded and entered into excel sheets. Data cleaning and analysis was done using Epi Info 6.04. Frequencies and proportions were used for the descriptive analysis of the data. Three dependent variables were developed to include the following aspects: (i) knowledge of LA (a score was created with four variables: to correctly mention the dosage regimen per weight range including number of hours between each dose, to correctly mention five or more possible side effects of LA, to correctly mention the appropriate medicine for pregnant women in each trimester, to correctly mention the management of the adverse effects and to correctly say that a fatty meal increases absorption of LA.), (ii) Dispensers involvement in the preparation of treatment guidelines. (iii) Dispensers participation in pre-implementation training. Logistic regression was applied to further analyze the relationships between significant socio-demographic factors in the analysis and the various aspects of dispensers' knowledge. Correlations of dispensers' knowledge were explored.

### Results

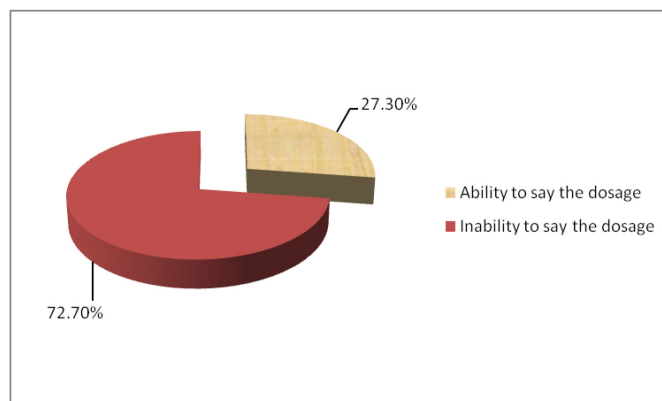
A total of 15 Hospital and Community pharmacies within Blantyre were visited. Of these 8 were community pharmacies, 4 were private hospital pharmacies, 2 were government pharmacies and 1 was a CHAM hospital. From these pharmacies 22 dispensing personnel were interviewed. The qualifications of dispensing personnel interviewed and their pharmacies are shown in Table 1.

Table 1: Distribution of interviewed dispensers as per qualification in Hospital and Community Pharmacies within Blantyre.

Facility	Pharmacists	Pharmacy technicians	Nurses	Clerks
Community Pharmacy	5	1	0	2
Government Pharmacy	0	6	0	0
Private Hospital Pharmacy	0	2	2	0
CHAM Hospital	0	0	0	4
TOTAL	5(22.7%)	9(40.9%)	2(9.1%)	6(27.3%)

It was found that all pharmacists interviewed were from Community pharmacies, while the CHAM pharmacy had clerks alone for dispensers and government pharmacies had pharmacy technicians only.

Figure 1 shows the knowledge of the interviewees of the dosage of LA in milligrams per weight range.



About 90% of the personnel were aware that LA is the first line medicine for uncomplicated malaria but had little knowledge on the dosage of the new anti-malarials and likely side effects as well as instructions on how to take the medicines. Half of these were from community pharmacies thus, mostly pharmacists by qualification. These were able to mention the possible side-effects of LA and explained how to manage the side effects mentioned. The majority (86.4%) of the dispensers interviewed, could not properly explain how to manage the side effects that may be caused by anti-malarial medicines, let alone mention the side-effects themselves. The personnel from the community pharmacies were neither involved nor trained in the new malaria treatment guidelines but reported obtaining their knowledge concerning LA from school and from drug leaflet inserts.

The majority of the dispensing personnel could not tell the dosage of LA. Some (especially those from Government and CHAM Pharmacies) were able to say the dosage in terms of number of tablets per weight range, however their knowledge in the dosage regimen of LA in mg per weight range as indicated per guideline was very poor at 72.7 % of the respondents not being able to tell the dosage regimen. Of the 22 interviewees only 2 were able to mention five or more side effects whilst the 90.9% majority were unable to do so. The majority of dispensers interviewed could not properly explain how to manage the side effects that may be caused by LA. 19 of the 22 gave improper management suggestions whilst only 3 gave the correct responses indicating proper management.

Dispensers were asked their knowledge on the appropriate treatment of malaria in pregnancy with regard to which medicines were appropriate or inappropriate per trimester of pregnancy. It was found that the majority (90.9%) were able to mention appropriate medicines for all trimesters.

With regard to the ability of dispensers to say that a fatty meal increases absorption of LA, only 1 out of 22 dispensers interviewed was able to say that patients must take LA after fatty meal because it increases absorption. 95.5% of the dispensers failed to say so.

The Table below shows the level of education of the interviewed pharmacy personnel including whether they received special training on the new malaria treatment guidelines, against their knowledge of specific points of the

new guidelines.

*Table 2: Knowledge of dispensers on new malaria treatment guidelines in proportions versus education level.*

Level of education	Knowledge	Training received	On Dosage	On S/Es	Rx of Malaria in Pregnancy	Appropriate Mx of S/Es	Fatty meal and absorption	Average Knowledge Score
Pharmacist	0/5 0%	2/5 40%	2/5 40%	4/5 80%	3/5 60%	0/5 0%	44%	
Pharmacy technician	8/9 88.9%	3/9 33.3%	0/9 0%	8/9 88.9%	0/6 0%	0/6 0%	24.4%	
Nurse	0/2 0%	0/2 0%	0 0%	2/2 100%	0/4 0%	0/4 0%	20%	
Clerk	1/6 16.7%	1/6 16.7%	0/6 0%	6/6 100%	0/6 0%	1/6 16.7%	26.8%	
Total	9/22 40.9%	6/22 27.3%	2/22 9.1%	20/22 90.9%	3/22 13.6%	1/22 4.5%	Ave 28.8%	

It was found that dispensers lack knowledge about the new malaria treatment guidelines with an overall average of 28.8% being knowledgeable.

Pharmacists did not attend training but had better knowledge than the rest. Most pharmacy technicians attended training but still lack knowledge compared to pharmacists but are better than nurses. Nurses were the worst group of dispensers having not attended the training nor academic qualification in the field. One pharmacy clerk out of six attended the training. Overall pharmacy clerks had more knowledge than nurses and technicians.

None of the 22 dispensers were involved in the preparation of the new malaria treatment guidelines. 54.5% of the dispensers reported that they had not had the opportunity to participate in any seminar or training related to the new malaria treatment guidelines before or during the implementation of the new treatment policy. Those that participated were mainly from the public/ government pharmacies.

## Discussion

Few dispensers from public and private pharmacies (these were pharmacy technicians) were able to properly say the dosage of LA in mg per weight range. These dispensers were not involved but attended the pre-implementation training. The training was done in two days after which there was no follow-up training. The fact that dispensing personnel from CHAM were pharmacy clerks who were neither involved nor trained explains why they failed to say the dosage of LA in mg per weight range and failed to mention possible side effects and their management.

Most participants demonstrated a good knowledge of treatment of malaria in pregnancy regardless of qualification, involvement and participation in the training and implementation of the malaria treatment guidelines. The majority, about 90.9% were able to mention appropriate medicines for all trimesters. This is explained by the fact that management of malaria in pregnancy did not change in the new malaria treatment guidelines and all participants were very conversant with it as it has not changed for over five years.

Most participants were not aware of the fact that taking LA after fatty meal increases absorption. Only 1 out of 22 dispensers interviewed (4.5%) were able to say that patients must take LA after fatty meal because it increases absorption. Interestingly this was a pharmacy clerk working in a community pharmacy under the supervision of a pharmacist.

Irrational prescribing has recently become a growing problem

of global concern <sup>8,9</sup>. Updated dispensing personnel in community and hospital pharmacies have a great role to play in curbing the number of irrationally written prescriptions and related problems since they provide health care services to a large majority of the community. If strategies aimed at updating the dispensing personnel in these pharmacies on the changes of treatment guidelines were put in place from the very beginning, pharmacies would complement efforts by the public health facilities in reducing morbidity and mortality in Malawi<sup>10</sup>.

The fact that most of the dispensers in hospital and community pharmacies, could not state the dosage of LA in mg per weight range, nor the possible side effects and their management, nor the condition of taking LA with fatty meal without referring to the leaflets, notwithstanding the fact that they stocked and dispensed the medicines, is an additional evidence of their lack of adequate knowledge and skill on how to dispense and give counsel on the use of the medicines, and expresses the dire necessity for exposure of the personnel to continuous professional education.

Elsewhere it has been shown that conducting educative seminars and training of health workers improved their performance in care and treatment of patients<sup>11</sup>. Formulation of good treatment guidelines and policies may not necessarily achieve the desired outcome. For this to happen they have to be correctly interpreted and then implemented as intended. A recent report has shown positive results in achieving policy change from CQ to SP in a district in which the targeted community had been sensitized prior to the implementation of the policy<sup>12</sup>.

Hospital and community pharmacies whose dispensing personnel were the subjects of this study are health care outlets which are readily available and accessible to the large majority of the general public hence the need for adequate and appropriate training. This study demonstrates the inadequacy of the training received and that no follow-up training or continuous professional development has been done to reinforce the knowledge on the guidelines. Some of the personnel involved in dispensing are not trained to dispense for instance, nurses and pharmacy clerks in CHAM, Private hospitals and Community pharmacies hence the need for training.

Pharmaceutical personnel involved in dispensing medicines are supposed to be responsible for counseling patients on all matters related to, and leading to rational medicine use. To accomplish this need to be equipped with adequate skills and knowledge not only in terms of counseling the patients on how to correctly take doses of the medicines, but also on proper conditions for taking the medicines e.g. whether the medicines should be taken with or without food, with what other medicines should they not be co-administered, and at what time intervals they should be taken. Additionally, the staff should be able to educate their patients on any other restrictions/contraindications that are specific for the medicines<sup>13</sup>. The personnel should be able to forewarn their patients about the type of adverse reactions to be expected and be in a position to explain to them what measures to take should these reactions be experienced as a result of taking the medicines.

## Conclusion & Recommendation

This study has concluded that:



- Dispensers in community and hospital pharmacies in Blantyre have inadequate knowledge concerning the new malaria treatment guidelines.
- The pre-implementation training that was conducted on the new malaria treatment guidelines was inadequate.

It is therefore recommended that:

- Pharmaceutical staff working in hospital and community pharmacies should be involved at all stages from guideline preparation, sensitization and training on all the necessary drug updates.
- Training concerning the new malaria treatment guidelines be re-conducted and should include both hospital (i.e. public and private) and community pharmacy dispensers.
- Continuing professional education for dispensers should be conducted to include refreshing on the new malaria treatment guidelines.

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