



## ZAMBIA: ANTIMALARIAL DRUGS STOCKTAKING REPORT



PRESIDENT'S MALARIA INITIATIVE



**JULY 2008**

This publication was produced for review by the U.S. Agency for International Development. It was prepared by the USAID | DELIVER PROJECT, Task Order 3.



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JULY 2008

### **USAID | DELIVER PROJECT, Task Order 3**

The USAID | DELIVER PROJECT, Task Order 3, is funded by the U.S. Agency for International Development (USAID) under contract no. GPO-I-03-06-00007-00, beginning April 6, 2007. Task Order 3 is implemented by John Snow, Inc., in collaboration with PATH, Crown Agents Consultancy, Inc., Abt Associates, Fuel Logistics Group (Pty) Ltd., UPS Supply Chain Solutions, Family Health International, The Manoff Group, 3i Infotech, Center for International Health and Development (Boston University School of Public Health), and U.S. Pharmacopeia (USP). Task Order 3 supports USAID's implementation of malaria prevention and treatment programs by procuring, managing, and delivering high-quality, safe, and effective malaria commodities; providing on-the-ground logistics capacity, technical assistance, and pharmaceutical management expertise; and offering technical leadership to strengthen the global supply, demand, and financing of malaria commodities.

### **Recommended Citation**

Sanabria, Dr. Arturo, Rabson Zyambo, Gamariel Simpungwe and Walter Proper. 2008. *Zambia: Antimalarial Drugs Stocktaking Report, July 2008*. Arlington, Va.: USAID | DELIVER PROJECT, Task Order 3.

### **Abstract**

In April and May 2007, the Ministry of health (MOH), with technical assistance from USAID | DELIVER PROJECT, Task Order 3, conducted an assessment of antimalaria drugs stock status. This was part of the nationwide stocktake of essential drugs with particular focus on drugs used in treatment of malaria and opportunistic infections in Zambia.

The overall objective of the technical assistance was to ensure adequate data is collected and use the data gathered during the forecasting and quantification exercise which will be the backbone that will serve as a forum for all stakeholders to monitor the stock status of malaria-related drugs in Zambia.

Cover photo: The cover photo was taken by Dr. Arturo Sanabria, Deputy Director for Malaria with the USAID | DELIVER PROJECT and co-author of the report in May 2008. The photo is of Coartem, an antimalaria treatment, cut out in the shape of the map of Zambia.

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# ACRONYMS

AL	Artemether-Lumefantrine
BCC	Behavior Change and Communication
DHMT	District Health Management Team
HC	Health Center
HP	Health Post
MOH	Ministry of Health
MSL	Medical Stores Limited
NMCC	National Malaria Control Center
PMI	President's Malaria Initiative
PEPFAR	President's Emergency Plan for AIDS Relief (PEPFAR)
SP	Sulphadoxine-Pyrimethamine
USAID	U.S. Agency for International Development



# **ACKNOWLEDGMENTS**

## **MESSAGE FROM THE NATIONAL MALARIA CONTROL CENTER DIRECTOR**

Malaria is a major public health problem in Zambia and is endemic in all nine provinces. It is the leading cause of morbidity and second leading cause of mortality. In 2006, there were 4,978,458 reported malaria cases with an incidence of 412 per 1000 population. A remarkable reduction was achieved in 2007 with 4,442,518 reported malaria reported cases, an incidence of 358 per 1000 population (HMIS).

The high morbidity levels have contributed to decreased productivity through absenteeism and lowered output. The burden of disease is highest among children under 5 years of age, pregnant women and among the poor and vulnerable in society.

One of the main objectives of the National Malaria Control Programme is that “At least 80% of malaria patients in all districts are receiving prompt and effective treatment according to the current drug policy within 24 hours of onset of symptoms by December 2008”. To reach this objective, availability of Antimalaria drugs in all the Health Units is essential to make reality the Zambia’s vision to have a malaria free Zambia and that every Zambian has the right to access effective malaria preventive services and curative care delivered as close to the household as possible.

- Dr. Elizabeth Chizema

## **FROM THE USAID | DELIVER PROJECT**

The USAID | DELIVER PROJECT would like to recognize the high level of collaboration with the National Malaria Control Center (NMCC) and Dr. Chizema’s commitment to the establishing a malaria free Zambia. We also recognize support from USAID, and students from the Evelyn Hone College that conducted this stocktaking exercise.



# EXECUTIVE SUMMARY

**A total of 204 Health Units were visited in the 9 provinces:**

- 87 health centers
- 51 District Health Management Teams (DHMTs)
- 66 Hospitals

**From the Health Units Visited:**

- Health Centers represent the 6% of the total (87/1,529)
- DHMTs represent the 71% of the total (51/72)
- Hospitals represent 67% of the total (66/99)

**7 Products were assessed:**

- Artemether-Lumefantrine 20mg/120mg:
  - AL 1\*6 (5-14 kg);
  - AL 2\*6 (15 – 24 kg);
  - AL 3\*6 (25 – 34 kg);
  - AL 4\*6 ( >= 35 kg);
- Quinine Sulphate 300mg tablets;
- Quinine Dihydrochloride 300 mg/ml injection;
- Sulfadoxine/Pyrimethamine 500mg/25mg.

**Results:**

- 87% of the Health Centers have at least 1 product stocked out
- Only 13% of the Health Centers visited were stocked out of any products
- 41% of the DHMTs have stock out of at least 1 antimalaria drug
- 59% of the DHMTs warehouses had availability of all the antimalaria drugs the day of the visit;
- 58% of the Hospitals visited were stocked out of at least 1 of the 7 products
- 42% of the Hospitals had availability of antimalaria drugs
- We conclude that the Stock Out rates are very high for all health units visited

- We also concluded that even when antimalaria drugs are available at the DHMTs they do not reach the Health Centers;
- We are unable to conclude that the facilities with stocks available are stocked according to plan since there are no consumption data available, nor systems in place to determine the minimum and maximum levels of stock

**Challenges:**

- Scarcity of basic logistics data
- Although some facilities had stocks, it is difficult to say whether they are stocked according to plan
- No consumption data for Antimalaria (Issues and stock on hand available).

From the PipeLine System it easy to make an inference that there is no problem in the distribution of commodities from MSL to DHMTs and hospitals.

Based on the findings of the stocktaking exercise, the major bottleneck in system is the distribution of commodities from the DHMTs to the health centers.

# BACKGROUND

The USAID | DELIVER PROJECT in Zambia receives funding from the President's Malaria Initiative (PMI) to strengthen logistics and supply chain management of antimalaria commodities. In collaboration with funding from the President's Emergency Fund for Aids Relief (PEPFAR) funded project through the United States Agency for International Development (USAID), and from the USAID | DELIVER PROJECT's Task Order 1 to support all public health commodities, the Zambia office also has an expanded mandate to include strengthening of health commodities for essential drugs focusing primarily on drugs used for maternal and child health, treatment of opportunistic infections, and sexually transmitted infections (STIs).

The Ministry of Health and its cooperating partners have embarked on major efforts to strengthen the supply chain for essential drugs. The initial step was to undertake a nation-wide inventory of key essential drugs in district health offices, hospitals and selected health centers. USAID|DELIVER PROJECT in collaboration with NMCC and MOH conducted a nationwide stock take exercise for Antimalaria drugs. This exercise was funded by the President's Malaria Initiative (PMI), under USAID|DELIVER Task Order 3.

The stocktaking exercise was successfully undertaken from 28<sup>th</sup> April- 9<sup>th</sup> May 2008. In view of the relevance of the activity to the core function of drug management, pharmacy students from Evelyn Hone College were engage to do the stocktaking.

## PURPOSE

- Determine national stock status of antimalaria drugs.
- Use the data in the quantification for antimalaria drugs to be procured for the public sector

## METHODOLOGY

- Data Collection
- Logistics based
  - Physical Inventory data and national stocktaking
  - Data collecting tool developed by USAID | DELIVER PROJECT Field Office Zambia
  - Data collecting tool validated in collaboration with MOH/NMCC and other stakeholders



## ANTIMALARIA DRUGS COUNTED

Artemether-Lumefantrine 20mg/120mg:

- AL 1\*6 (5-14 kg);
- AL 2\*6 (15 – 24 kg);
- AL 3\*6 (25 – 34 kg);
- AL 6 \*4 (>= 35 kg).

Quinine Sulphate 300mg tablets;

Quinine Dihydrochloride 300 mg/ml injection;

Sulfadoxine/Pyrimethamine 500mg/25mg.



## HEALTH UNITS VISITED

A total of 204 health units were visited in nine provinces representing 12% of the total 1,702 health units (1630 health units & 72 DHMTs) in Zambia.

- 87 (6%) of the total health centers (1,529);
- 51 (71%) of the total DHMTs (72);
- 66 (67%) of the total hospitals (99).



**Table 1: Health Centers, DHMTs, and Hospitals Assessed**

	Health Centers	DHMTs	Hospitals
<b>Lusaka</b>	12	4	4
<b>Central</b>	9	6	8
<b>Northern</b>	10	6	7
<b>Copperbelt</b>	32	9	11
<b>North Western</b>	9	4	9
<b>Western</b>	2	4	7
<b>Southern</b>	3	8	8
<b>Luapula</b>	2	4	3
<b>Eastern</b>	8	6	9
<b>N =</b>	<b>87</b>	<b>51</b>	<b>66</b>

# STOCKTAKING RESULTS

The results show a high level of stockouts in all health units visited in all the nine provinces. All health units were stocked out in at least one of the assessed products.

**Table 2: Percentage of Health Units with Stock-outs**

	DHMTs	Hospitals	Health Centers
SP	43%	39%	64%
Quinine Tab	12%	10%	41%
Quinine Inj.	22%	18%	44%
AL 1*6	14%	20%	29%
AL 2*6	25%	29%	44%
AL 3*6	22%	31%	45%
AL 4*6	17%	29%	35%
<b>N =</b>	<b>51</b>	<b>66</b>	<b>87</b>

**Figure 1: Sites by Province with Antimalarial Stock outs**

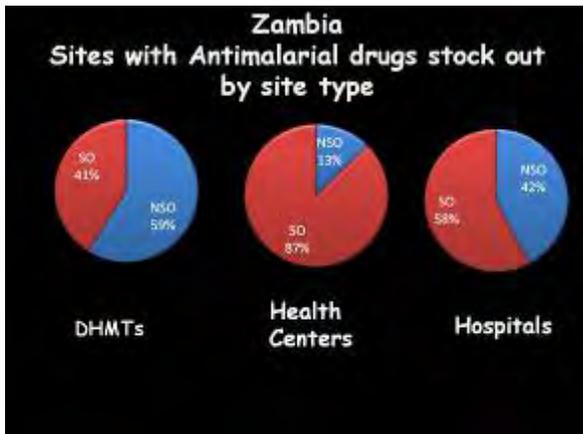


The Northern and Eastern provinces had the highest stockout percent rate (83%) followed by Copperbelt (79%), Northwestern, (73%), Central (70%), Luapala (67%), Lusaka (65%), Western (62%) and Southern Province (53%).

Of the 87 health centers visited:

- 76 were stocked out of at least one of the assessed products. This represents an 87% stockout rate. Only 24 sites (13%) were stocked with all seven products.

**Figure 2: Antimalarial Stock Outs by Site Type**



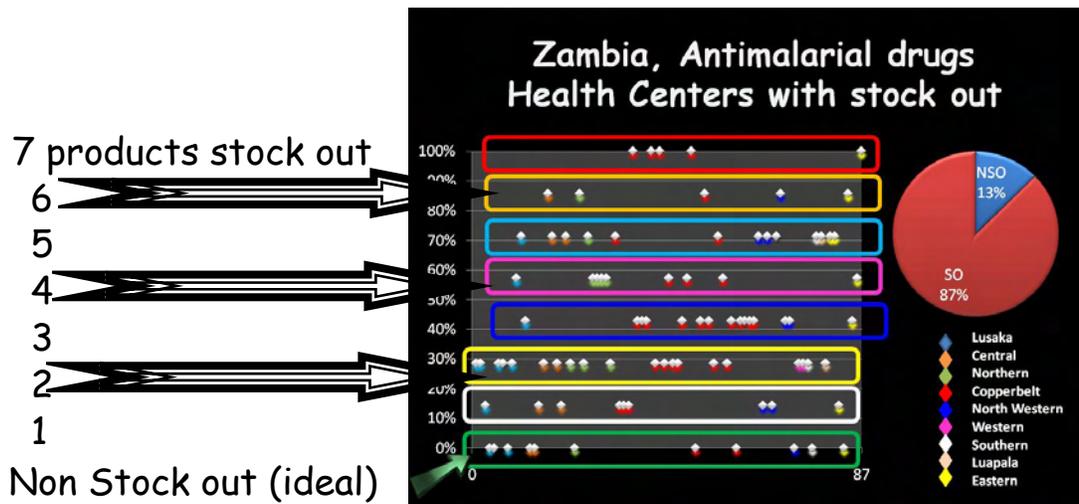
Of the 51 DHMTs visited:

- 30 were stocked out of at least one of the assessed products, representing a 41% stock out rate. 42 DHMTs (59%) were stocked with all seven products.

Of the 66 Hospitals visited:

- 39 were stocked out of at least one of the assessed products, representing a 58% stock out rate while 27 hospitals (42%) were stocked in all seven products.

**Figure 3: Number of Products Stock Outs at Health Centers**



The results show that 87% of the total 87 health centers visited were stocked out of at least one of the seven products. 13% had zero stock-outs. This is the ideal situation.

- 30% (26) of the total health centers visited had stocks of at least 2 products
- 16% (14) of the total health centers visited had stocks of at least 4 products
- 9% (8) of the total health centers visited were stocks of at least 6 products
- 7% (6) of the total health centers visited were stocks of at least 7 products

Figure 4: Antimalaria Stock-outs in Hospitals

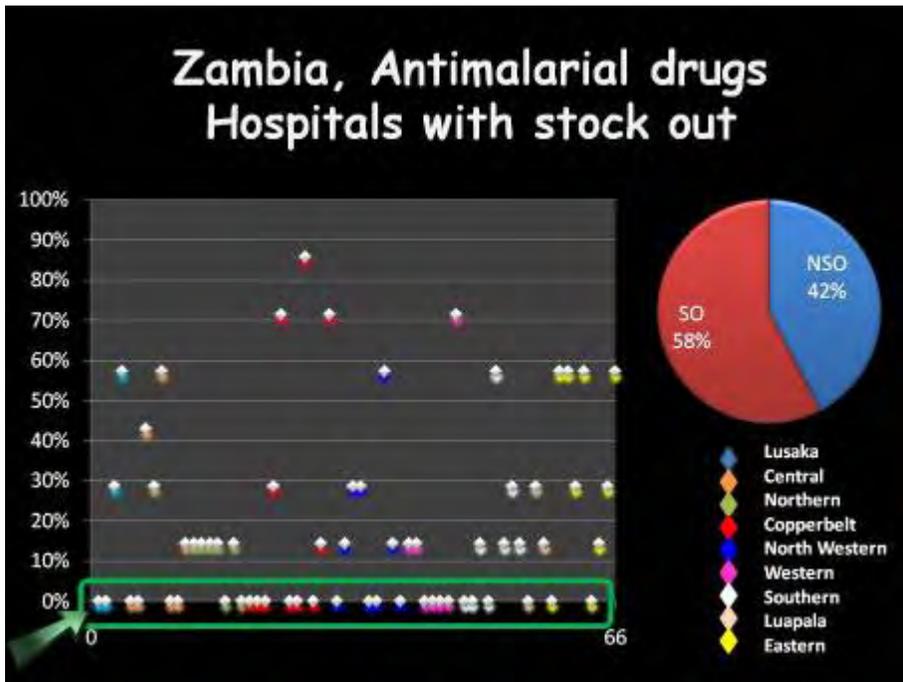
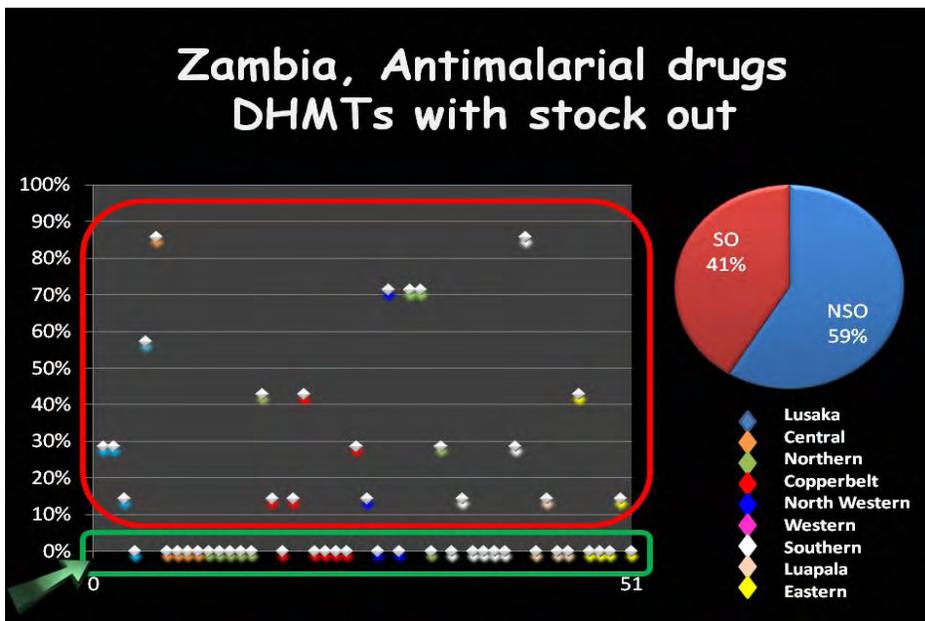
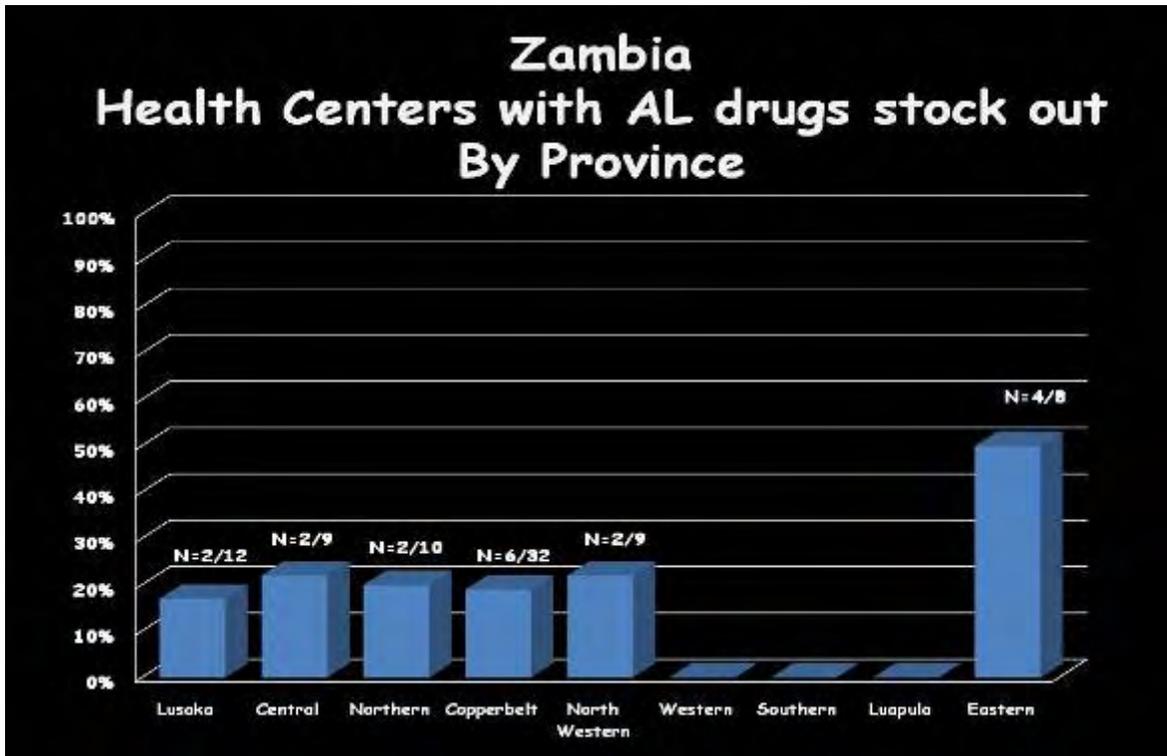


Figure 5: Antimalaria Stock-outs in DHMTs

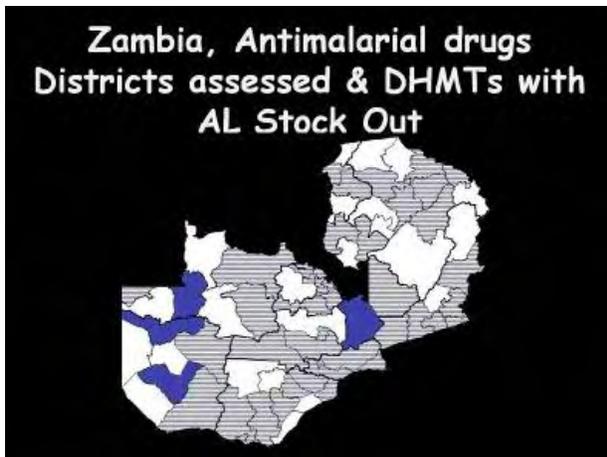


Basically the results show higher levels of stockouts when compared to DHMTs and hospitals. There was availability of stocks at the DHMT level that was not reaching the health centers. In addition, it was concluded that the facilities with stocks available were stocked according to plan since there was no consumption data available, nor system on place to determine the minimum and maximum levels of stock. Regarding AL drugs the 2 slides below show the levels of stockout at Health Center and DHMT levels.

**Figure 6: Health Centers by Province with AL Stock Outs**



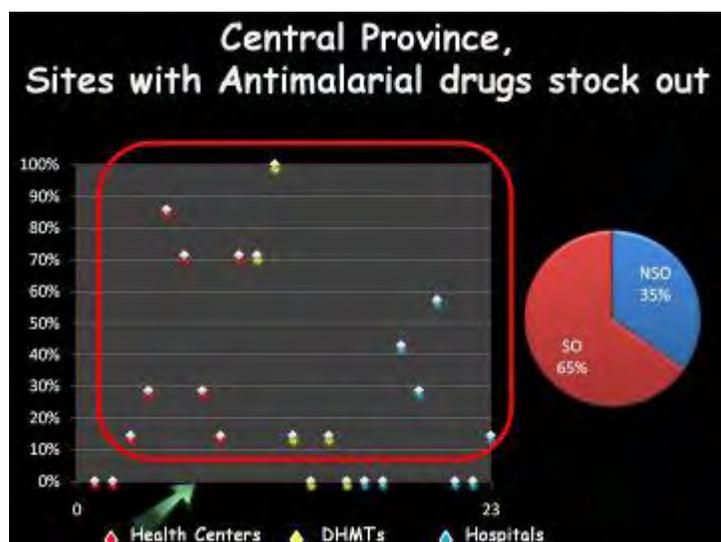
**Figure 7: DHMTs Assessed and DHMTs with AL Stock Outs**



# PROVINCES

## CENTRAL

Figure 8: Central Province, Sites with Antimalarial Stock-outs



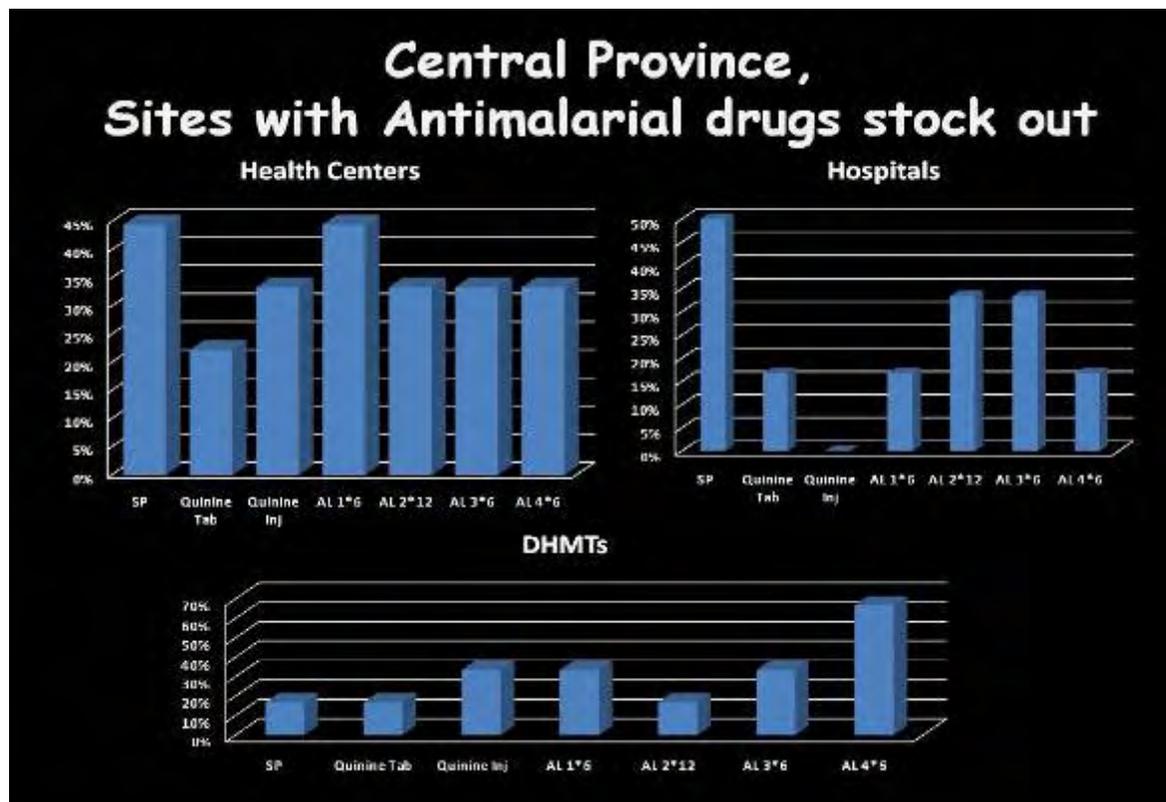
A total of twenty three (23) health units were visited in Central Province.

- 9 Health Centers
- 6 DHMTs
- 8 Hospitals

Of the total health units visited, at least one of the assessed products were stocked out. This represents a 65% stockout rate. Only 8 units (35%) had stocks of all seven products. The results show high levels of stockouts at all levels. The results show a high levels of stockouts at all levels. The DHMTs,

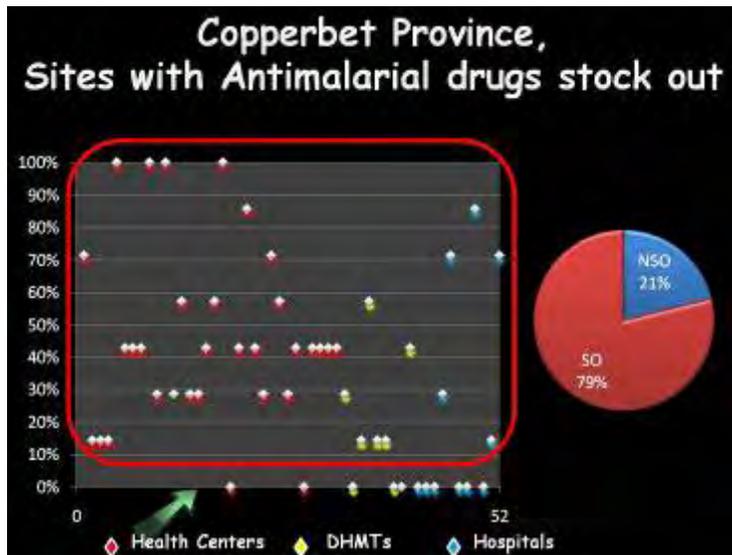
hospitals and health centers were stocked out of all seven products, except for quinine injections in hospitals.

Figure 9: Central Province, Sites with Antimalarial Stock-outs



# COPPERBELT

**Figure 10: Copperbelt Province, Sites with Antimalarial Stock-outs**



A total of fifty two (52) health units were visited in Copperbelt Province.

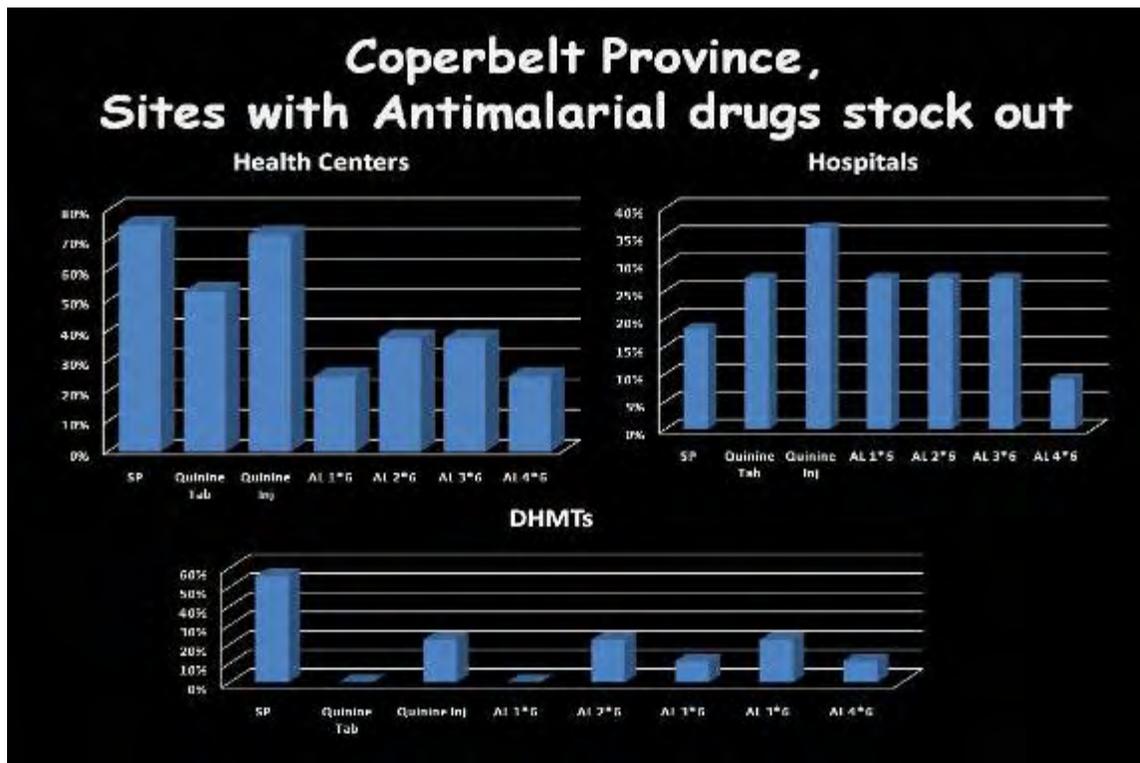
- 32 Health Centers
- 9 DHMTs
- 11 Hospitals

Of the total health units visited 41 stocked out in at least one of the assessed products representing a 79% stockout and only 11 health units (21%) had stocks of all seven products.

The results show a high level of stockout at the health center and hospital levels as compared to

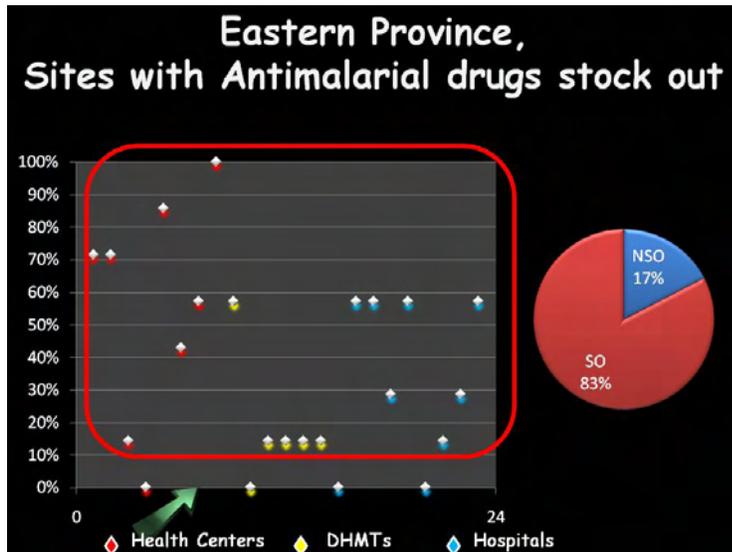
DHMTs. Health centers and hospitals were stocked out of all the 7 products, DHMTs were stocked out of SP, AL 2\*6, AL 3\*6 and AL 4\*6 but had stocks of AL 1\*6 and Quinine tablets hence the high levels of stockouts at health center level. However, despite DHMTs having stocks in AL 1\*6 there were still stockouts at health facility level. **(Please Note:** Copperbelt has the highest the number of health facilities and good road network.)

**Figure 11: Copperbelt Province, Sites with Antimalarial Stock-outs**



# EASTERN

**Figure 12: Eastern Province; Sites with Antimalarial Stock-outs**



A total of twenty three (23) health units were visited in Eastern Province.

- 8 Health Centers
- 6 DHMTs
- 9 Hospitals

Of the total health units visited 19 health units were stocked out of at least one of the assessed products, representing a 83% stockout. Only 4 (17%) had stocks of all seven products. The results show:

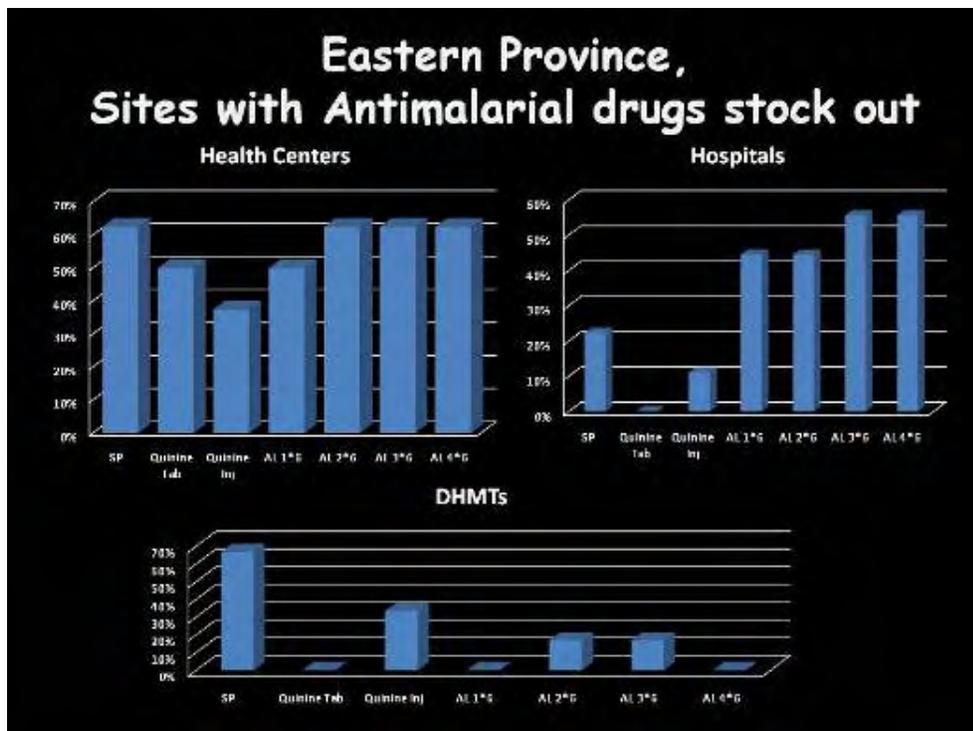
- No stockouts of AL 1\*6, AL 4\*6 and Quinine tablets at DHMT level

level even though health centers stocked out in all seven products (i.e. SP, Quinine tablets and Injection, AL 1\*6, AL 2\*6, AL 3\*6 and AL 4\*6 at health centers.

- The hospitals stocked out of SP (50%) and AL 3\*6 (25%) respectively
- The levels of stockouts at DHMT level were lower than the stockout levels at health center.

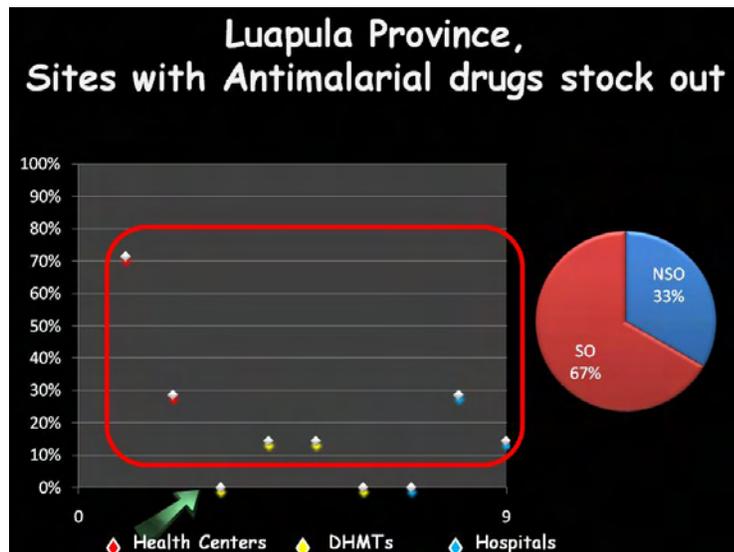
There was availability of stocks of AL 1\*6, AL 4\*6 and Quinine Tablets at the DHMT level that was not reaching the health centers.

**Figure 13: Eastern Province, Sites with Antimalarial Stock-outs**



# LUAPULA

**Figure 14: Luapula Province; Sites with Antimalarial Stock-outs**



A total of nine (9) health units were visited in Luapula Province.

- 2 Health Centers
- DHMTs
- 3 Hospitals

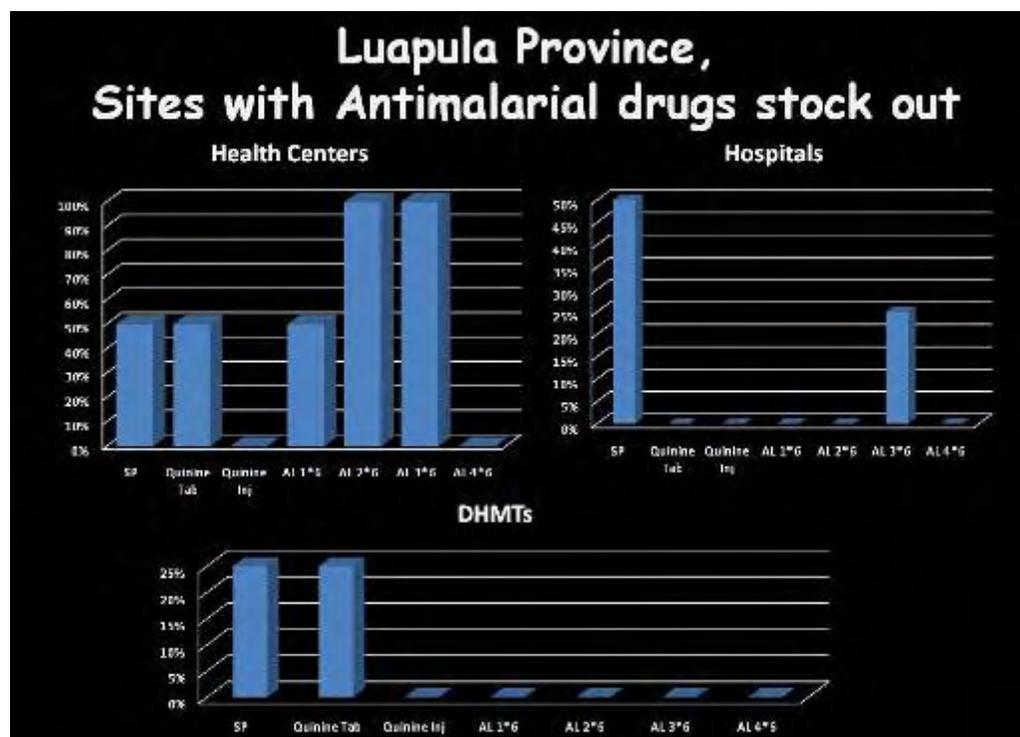
Of the total health units visited 6 were stocked out of at least one of the assessed products representing a 67% stockout rate and only 3 (33%) had stocks of all the seven products.

The results show:

- No stockouts of any of the ALs and quinine injection at the DHMT level even though there were stockouts of AL 1\*6, AL 2\*6 and AL 3\*6 at health centers, i.e. AL 1\*6 (60%), AL 2\*6 (100%) AL 3\*6 (100%) stockout.
- The hospitals were stocked out of SP (50%) and AL 3\*6 (25%)
- The levels of stockouts at the DHMT level were lower than the stockout levels at health center.

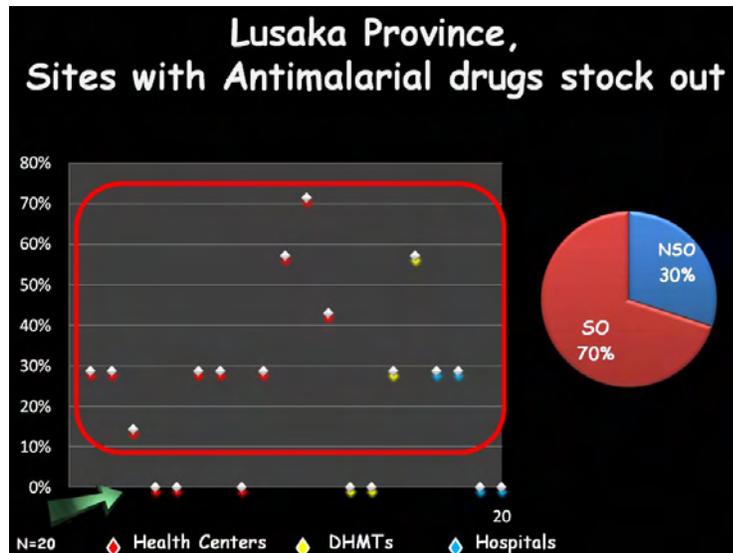
There was availability of stocks of AL 1\*6, AL 2\*6 and AL 3\*6 at DHMT's level that was not reaching the health centers.

**Figure 15: Luapula Province, Sites with Antimalarial Stock-outs**



# LUSAKA

**Figure 16: Lusaka Province; Sites with Antimalarial Stock-outs**



A total of twenty (20) health units were visited in Lusaka Province.

- 12 Health Centers
- 4 DHMT's
- 4 Hospitals

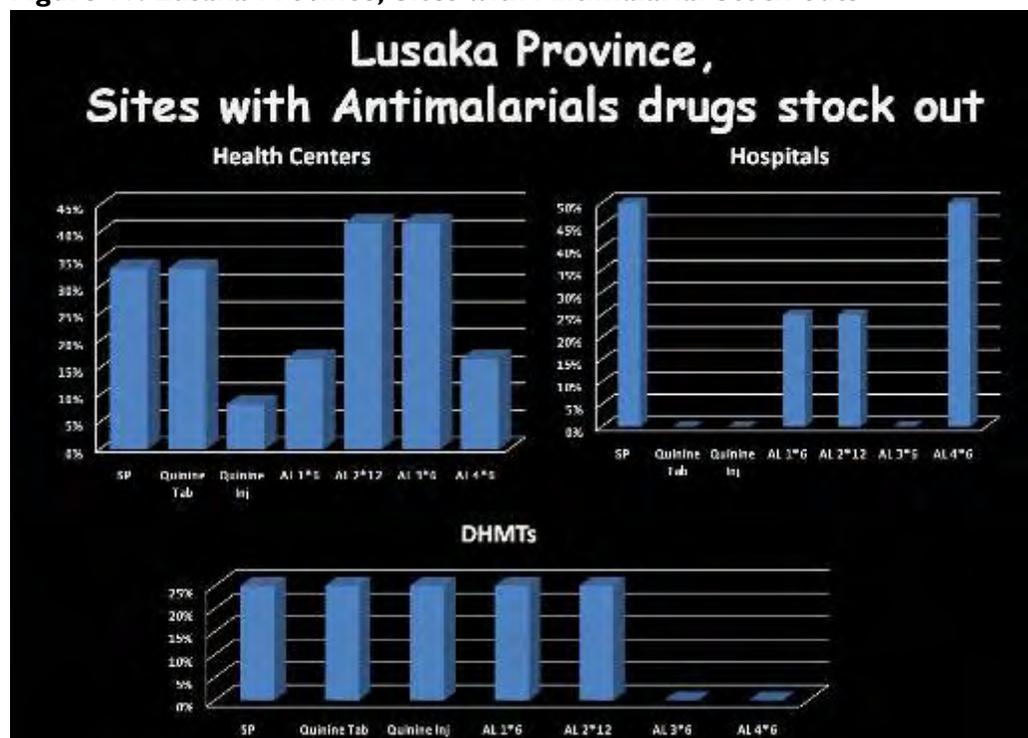
Of the total health units visited 14 were stocked out of at least one of the assessed products representing a 70% stockout and only 6 (30%) had stocks of all seven products. The results show:

- No stockouts of AL 3\*6 and AL 4\*6 tablets at the DHMT level even though there were stockouts

of these two products at health centers i.e. 40% AL 3\*6 and 16% AL 4\*6 stockout.

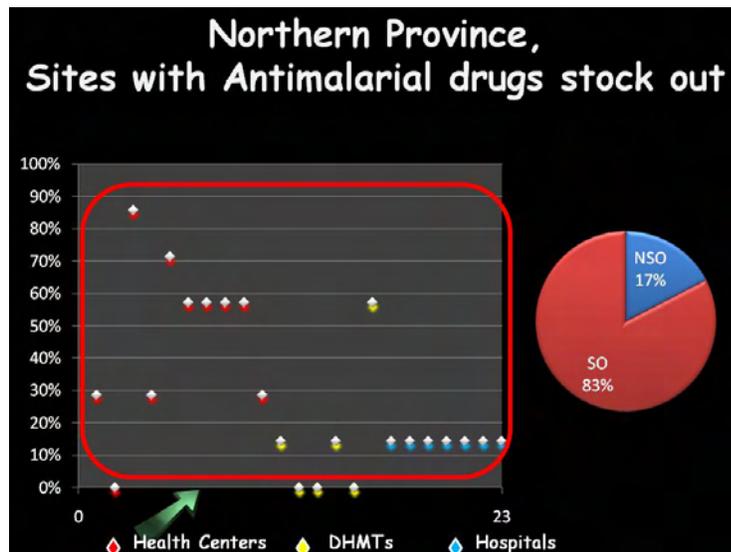
- The hospitals were not stocked out of Quinine Injection and tablets (for the treatment of severe complicated malaria)
- The levels of stockout at the DHMT level were lower than the stockout levels at health centers.
- AL 3\*6 and AL 4\*6 were available at the DHMTs but were not reaching the health centers.

**Figure 17: Lusaka Province, Sites with Antimalarial Stock-outs**



## NORTHERN

**Figure 18: Northern Province; Sites with Antimalarial Stock-outs**



A total of twenty three (23) health units were visited in Northern Province.

- 10 Health Centers
- 6 DHMTs
- 7 Hospitals

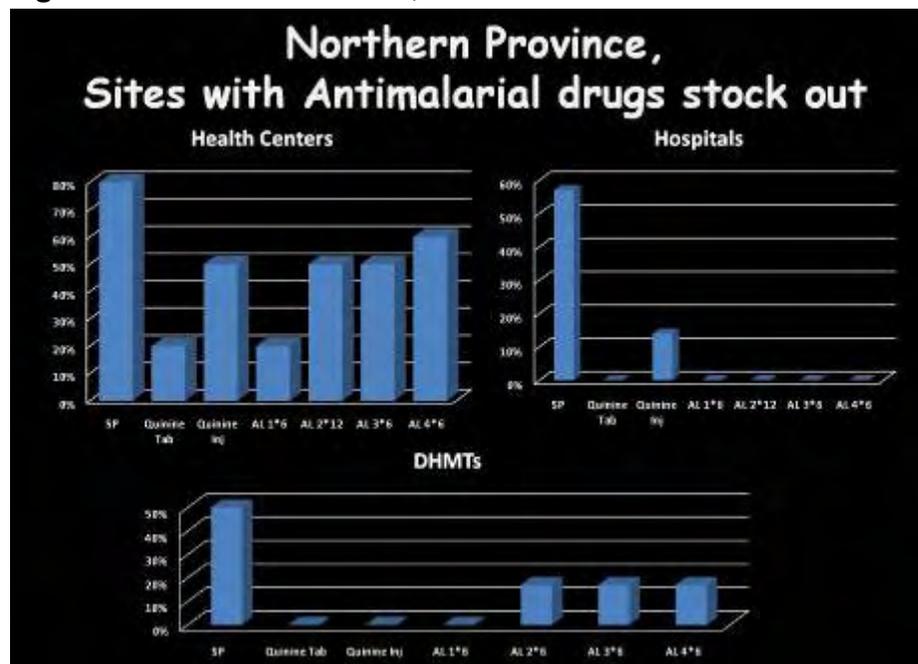
Of the total health units visited 19 were stocked out of at least one of the assessed products, representing a 73% stockout rate. Only 4 unites (27%) had stocks of all seven products. The results show:

- High stockouts levels for all seven

products at the health centers.

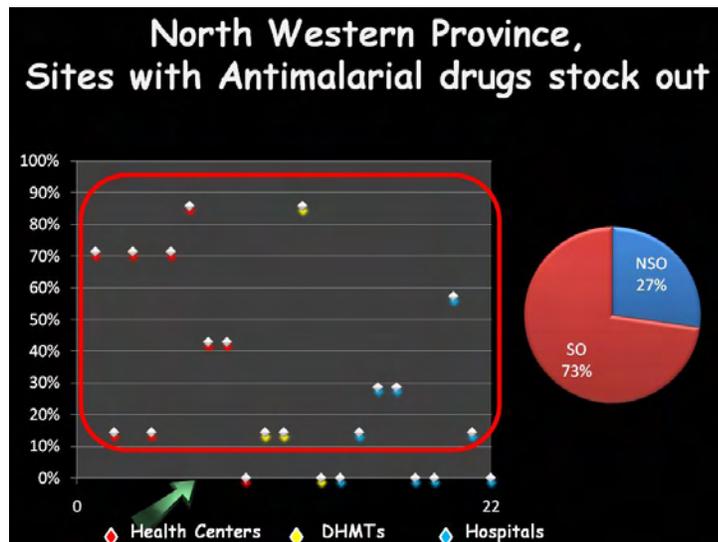
- DHMTs were stocked out of SP, AL 2\*6, AL 3\*6 and AL 4\*6.
- Even though there were no stockouts of Quinine injection, Quinine tablets and AL 1\*6, at DHMTs level, health facilities were stocked out of these products.
- The hospitals had stocks of all products except for SP and Quinine injection.
- DHMTs had stocks of AL 1\*6, Quinine tablets and injection that were not reaching the health centers.

**Figure 19: Northern Province, Sites with Antimalarial Stock-outs**



# NORTHWESTERN

**Figure 20: Northwestern Province; Sites with Antimalarial Stock-outs**



A total of twenty two (22) health units were visited in North Western Province.

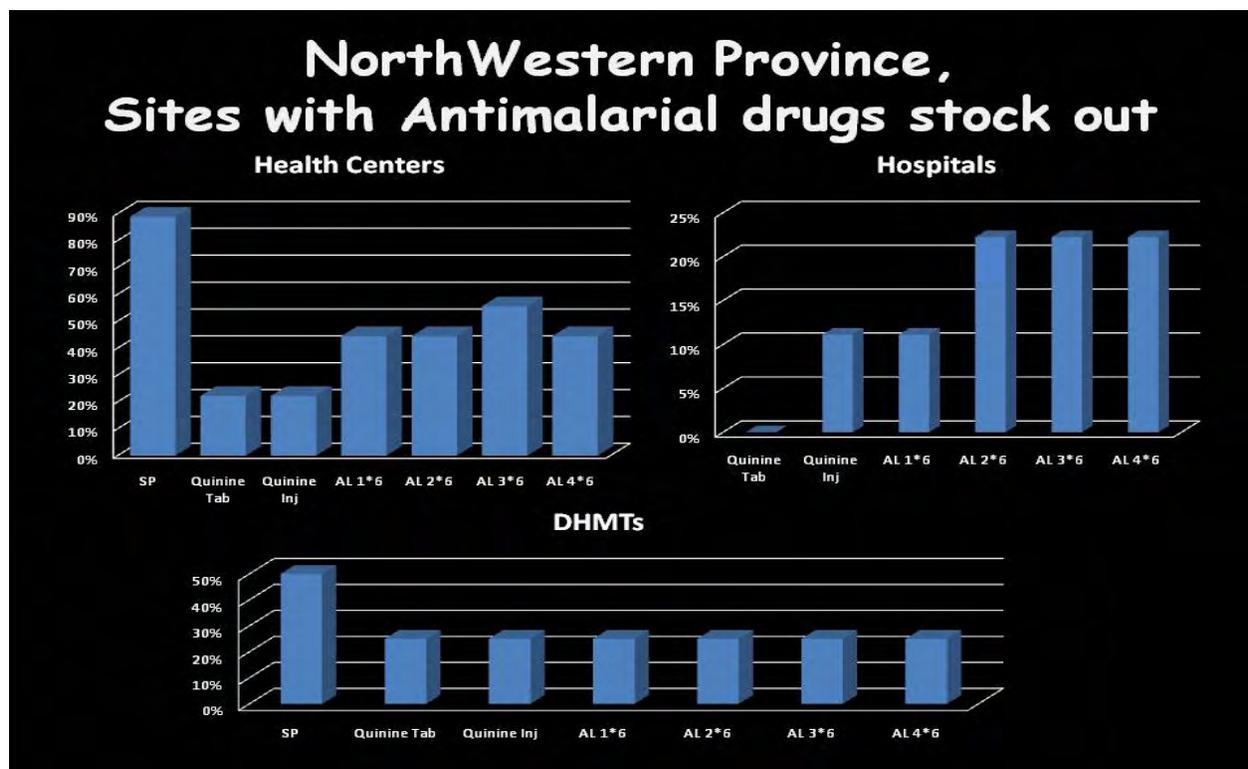
- 9 Health Centers
- 4 DHMT's
- 9 Hospitals

Of the total health units visited, 16 were stocked out of at least one of the products, representing a 73% stockout rate while only 6 unites (27%) had stocks of all seven products. The results show:

- High stockouts levels in all the assessed seven products ( i.e. SP,

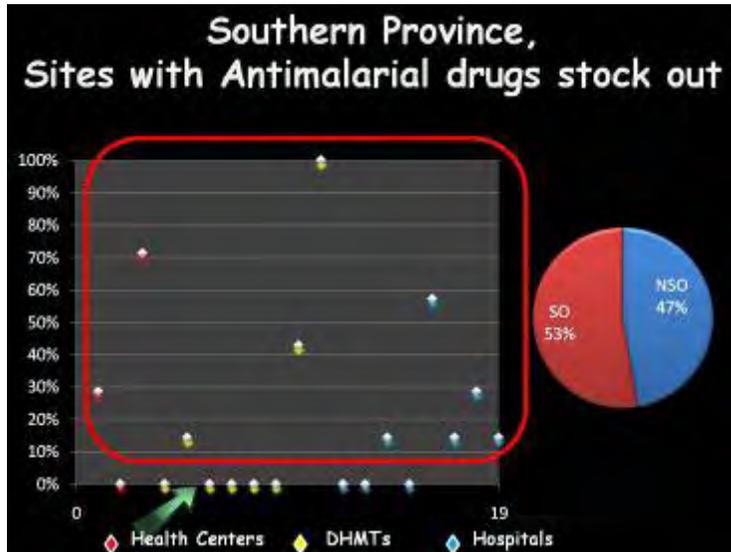
Quinine Injection, Quinine tablets, AL 1\*6, AL 2\*6, AL 3\*6 and AL 4\*6 tablets) at both health center and DHMT level, except for hospitals that had not stocked out in Quinine tablets.

**Figure 21: Northwestern Province, Sites with Antimalarial Stock-outs**



# SOUTHERN

**Figure 22: Southern Province; Sites with Antimalarial Stock-outs**



A total of nineteen (19) health units were visited in Southern Province.

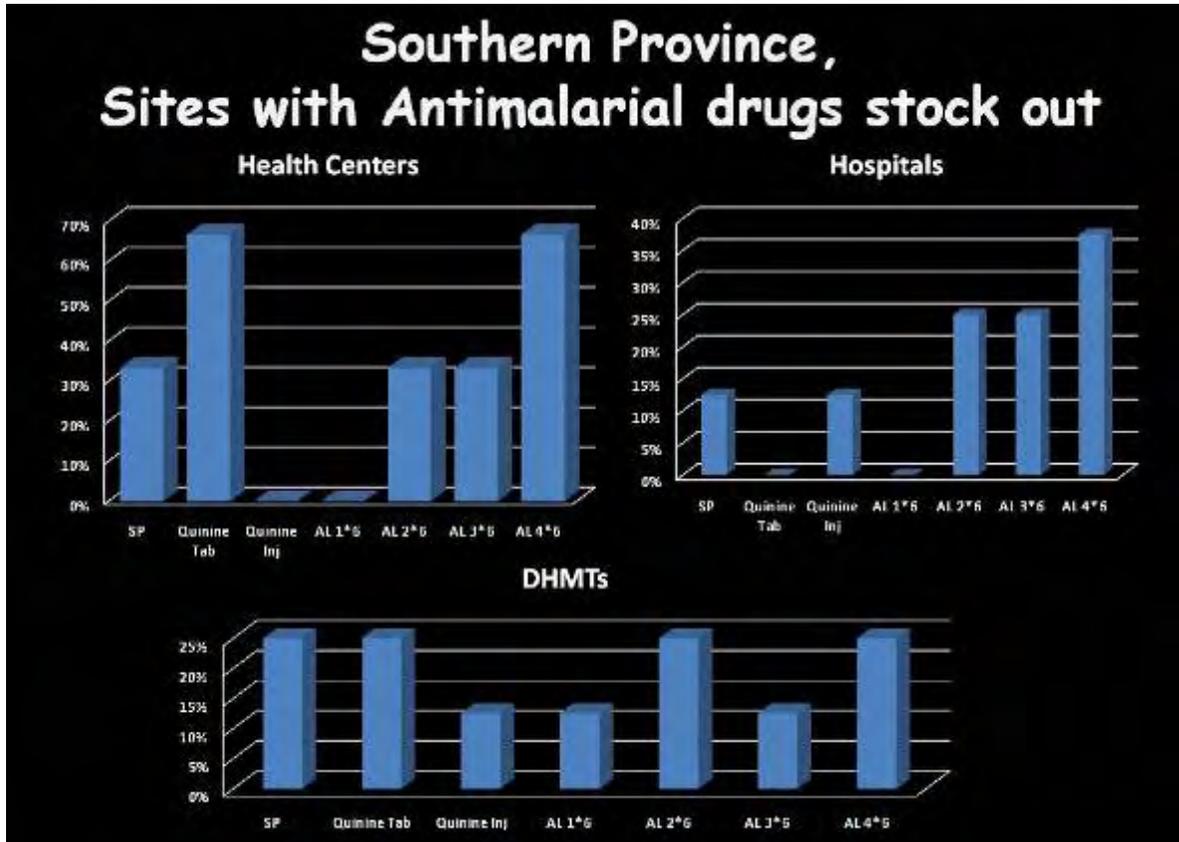
- 3 Health Centers
- 8 DHMTs
- 8 Hospitals

Of the total health units visited, 10 unites were stocked out of at least one of the assessed products, representing a 53% stockout rate and only 9 (47%) had stocks of all seven products. The results show:

- High stockouts levels for all the seven products (i.e. SP, Quinine Injection, Quinine tablets, AL 1\*6, AL 2\*6, AL 3\*6 and AL 4\*6 tablets) at the DHMT level even though there were no stockouts of Quinine injection and AL 1\*6, at health centers level.

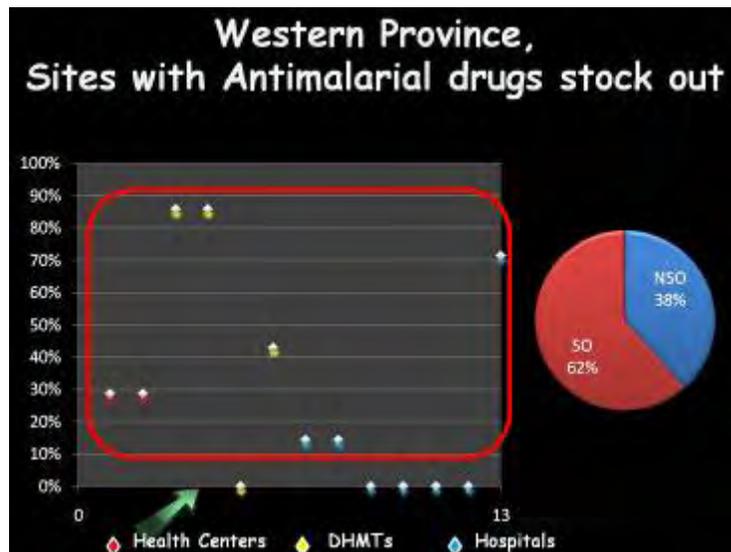
- The hospitals were stocked out in all the products except for AL 1\*6 and Quinine tablets

**Figure 23: Southern Province, Sites with Antimalarial Stock-outs**



## WESTERN

**Figure 24: Western Province; Sites with Antimalarial Stock-outs**



A total of thirteen (13) health units were visited in Western Province.

- 2 Health Centers
- 4 DHMTs
- 7 Hospitals

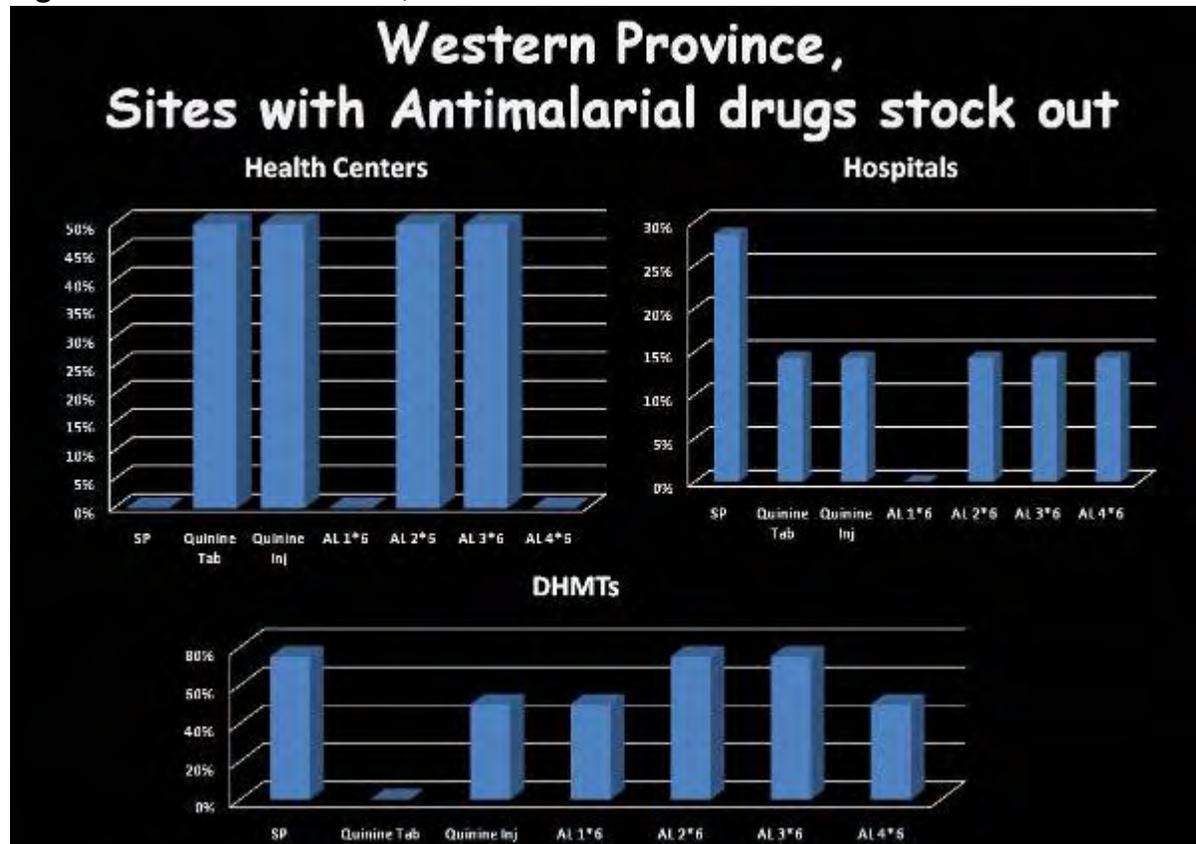
Of the total health units visited 8 units were stocked out of at least one of the assessed products, representing a 62% stockout rate and only 5 units (38%) had stocks of all seven products. The results show:

- High stockouts of AL 1\*6, AL 2\*6, AL 3\*6 and AL 4\*6 tablets at

DHMT level even though there were no stockouts of SP, AL 1\*6 and AL 4\*6 at health centers level.

- The hospitals were stocked out of all the products except for AL 1\*6 tablets

**Figure 25: Western Province, Sites with Antimalarial Stock-outs**





# CONCLUSIONS

## CHALLENGES

- Scarcity of basic logistics data;
- Although some facilities had stocks, it is difficult to say whether they are stocked according to plan;
- There is no consumption data for antimalarials (Issues and stock on hand available);

From the PipeLine application (software) it is easy to make an inference there is no problem in the distribution of commodities from MSL to DHMTs and hospitals.

Based on the findings of the stocktaking exercise, the major bottleneck in the system is the distribution of commodities from the DHMTs to the health centers.

## RECOMMENDATIONS

Based on the challenges outlined above it is recommended that:

- A single malaria pipeline is established and adhered to ensure antimalaria drug availability;
- A max-min system should be established. This will ensure health facilities and DHMTs are stocked according to plan, thereby minimizing stockouts.
- However, this is likely to be taken care of during the MOH/World Bank/ USAID | DELIVER PROJECT ED/malaria Pilot.

**LET'S WORK FOR A MALARIA FREE ZAMBIA AS DR. ELIZABETH CHIZEMA SAID WE ARE THE MOST VULNERABLE GROUPS.**



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