

HEALTH SYSTEMS STRENGTHENING ROUNDTABLE  
*CLOVER COUNTRY REPORT: MOZAMBIQUE*



Mozambique was one of the four countries that participated in the Roll Back Malaria Essential Actions, Products and Interventions to address Gaps or 'REAPING' mission in 2003/2004 which explored the health systems gaps countries needed to address in order to achieve the 2005 Abuja targets for malaria.

This mission constituted Clover I and its findings guided the design of Clover phase II, a health systems strengthening (HSS) programme which responded to the key bottlenecks identified and was implemented from 2005 to 2007.

In Mozambique, Clover phase II played a significant role in the development of the National Malaria Control Programme (NMCP) strategic plan and provided technical assistance towards submission of the successful bid for Round 6 Global Funds. Supported interventions were aimed at weak district planning, poor information sharing between partners at national level, weak information systems, drug supply management systems and support supervision. Special emphasis was given to diagnostic strengthening as well as to management of severe malaria. Clover phase III has focused on consolidation and broadening of activities in the one province previously covered to enable visualisation of phased scale-up of best practices (Figure 1)

The fundamental commitments that have formed the basis of the cooperation of health sector partners in Mozambique are 1) the commitment to meet the millennium development goals (MDGs), 2) the commitment to ensure the quality and effectiveness of the health system, balancing gender and regional equity in service provision, 3) Ministry of Health (MoH) commitment to sound financial management and procurement practices, transparency and good governance in the use of funds and its determination to strengthen institutional and management capacity in the health sector.

## Background

The basic health indicators - infant mortality rate, under five mortality rate and maternal mortality rate are still poor in Mozambique (Table 1). The health systems are very weak and are characterised by limited access to health services, scarce and inadequate hu-

man resources with limited skills and frequent stock outs of essential medicines and other relevant supplies, resulting in sub-optimal quality of care. Other weak areas include inadequate guidelines for malaria management; weak supervision mechanisms and the weak management of health services

Mozambique has a human resource crisis. For example the Inhambane Provincial Health Authority/Directorate has a work force of 1226 staff, mainly of low level cadres with limited capacities engaged in a progressive and continuous process of upgrading skills. The total number of practicing physicians in Inhambane is 29, with most districts having only one physician, covering a population of about 52,000 inhabitants. Most doctors remain at district level and are normally engaged in administrative functions. Practically all the health facilities (109) are managed by low and medium level health staff. Only 14 health facilities (district capitals, plus 2 rural hospitals and the provincial hospital) have physicians. Weak management skills and a high turnover of health staff cause constant changes of positions and impact negatively on the sustainability and level of skills and capacities available in a given facility.

The need to increase access to health services to a bigger portion of the population and the continued inadequacy of health facilities and human resources to staff them has led the government to revitalise its strategy of community based health workers providing basic health care.

Immediately after independence, community-based interventions were developed by the MOH and its partners to deal with the lack of resources and low access to health services. Over time different approaches have evolved but not in a coordinated manner. The MOH remained focused on the expansion of curative medicine, whereas most non governmental organizations (NGOs)

prioritized preventive services. Weak coordination from and with the MOH has led to some duplication of effort, whilst the needs of many rural communities remain unattended.

Recently, the MOH has shown renewed interest in improving health interventions at community level, by reviewing and redefining a strategy for increased access to health. To reach this goal the MOH has commenced a revival of the network of community health workers with both curative and preventive skills, as part of its priority community involvement strategy.

Provision of pharmaceutical products is centralized, going from central level to province, from province to district and further down to the health facility level, based on a mixed push and pull supply scheme. While for the lower level facilities the procedure is mainly based on pre-packed and defined drug kits, the larger facilities are also supposed to generate orders.

Manual stock management methods are still in use; these make it more difficult to follow up on expiry dates, update stock levels, and link consumption and supply, in order to ensure rational use of drugs. In addition, storage may be inappropriate, often improvised spaces, with less than basic conditions.

Mozambique has a rich history of developmental support from donors, NGOs and other agencies, willing to help improve the poor situation of the health system. While some partners earmark their funds for a specific province or area of the country, others provide programmatic contributions to the state budget and most limit their support to vertical disease interventions. In the absence of an agreed, clear implementation plan to tie these efforts into strengthening the health system, the impact of all the funds added up, may not yield maximum benefit.

Table 1: Summary of basic health indicators in for Mozambique<sup>3, 4, 5, 6, 7, 8, 9, 10</sup>

a	Number and distribution of inpatient beds per 10,000	7.9
b	Percentage of people living within (10 kms) of a health facility	50%
c	Life expectancy at birth, total (years)	43
d	Infant mortality rate per 1,000 live births	94
e	Under five mortality rate per 1000 live births	138
f	Maternal mortality ratio (per 100,000 live births)	520
g	% of births attended by skilled health personnel	Doctor 2.0% Nurse 12.0% Midwife 41.2% Total 55.2%
h	Prevalence of HIV, total (% of population aged 15 - 49)	11.5
i	DPT3 immunization coverage: one year olds immunized with three doses of diphtheria, tetanus toxoid and pertusis (DPT3) %	74.1
j	Contraceptive prevalence (% of women aged 15 - 49)	18.2
k	Ratio of doctors to population, per 100,000 population	3
l	Ratio of nurses to population, per 100,000 population	2.1
m	Total health expenditure (THE) per capita (in US \$)	18

Malaria Consortium 2010: Assessing the effects of strengthening health systems and reinforcing health community activists, Inhambane, Mozambique. (unpublished report).

Mozambique Health management information system 2007

Shiyao Chao and Kees Kostermans (2002). Improving Health for the Poor in Mozambique: The Fight Continues, World bank HNP discussion paper

World Health Organisation, World Health Statistics 2010, [http://www.who.int/whosis/whostat/EN\\_WHS10\\_](http://www.who.int/whosis/whostat/EN_WHS10_)

National statistics institute (2008) Preliminary report of the multiple indicator cluster survey, Mozambique 2008 UNICEF Report "count down to 2015 Maternal, Newborn and Child Survival"

Ministry of Health and the National Statistics Institute (2009). National Survey on Prevalence, Behavioural Risks and Knowledge about HIV and AIDS in Mozambique (INSIDA).

Mozambique Demographic and health survey 2003

Mozambique Human resources for health development plan 2008-2014

World Bank, Y2007 <http://data.worldbank.org/indicator/SH.XPD.PCAP>

*Clover's current focus of support is on strengthening their overall capacity for malaria prevention and control*

Working since 2005 in the southern province of Inhambane, Clover has supported the provincial health authorities to bridge the identified gaps namely; inadequate technical knowledge and skills, logistical support and financing of activities. Clover's current focus of support is on strengthening their overall capacity for malaria prevention and control, through:

#### **Improvement of the medicines and health supplies delivery system**

Clover has worked with the Inhambane Provincial Health Authority and the district health offices to improve medicine supply chain management activities, including software packages for district pharmacy store management, assessment of rapid diagnostic test (RDT) stock and distribution systems, training pharmacy technicians and peripheral health workers on supply chain management and supporting the MOH to introduce its new malaria treatment policy, using Artemisinin based Combination therapy (ACTs) as the first line treatment of uncomplicated malaria. These activities targeted the following components of the health system: health services delivery, health workforce, and medical product supply chain.

#### **Evidence-based planning and management**

Interventions to strengthen evidence based planning included procurement of 15 computers and related equipment and software (one for each district), as well as training of 30 health workers across the province on data entry, data analysis and development of plans for health facilities, districts and provincial levels informed by local data. Health management information system (HMIS) activities targeted the following components: health services delivery, health workforce, health information systems, leadership and governance. A situational analysis was undertaken to provide a baseline on capacity gaps and to inform skills building requirements.

#### **Ensuring quality services**

Multiple factors, including limited human resources, inadequate supplies and equipment and poor access to services, mean the quality of health services is sub-optimal. Clover implemented innovations were geared towards improving malaria case management services, namely hands-on training of health workers and on-the-job support using coaching/mentoring approaches focusing mainly on malaria case management and use of malaria microscopy and malaria

rapid diagnostic tests (RDTs) to improve the quality of case management. These quality assurance activities targeted the following components of the health system: health workforce, health services delivery and the medical product supply chain.



*Laboratory Technician Malaria Microscopy quality control training in Inhambane, Mozambique October 2009*

*In order to address the prevailing weaknesses in medical products supply chain management, Clover adopted and introduced a stock management system soft ware used in Gaza province.*

### **Medicines and health supplies Management**

Assessments of RDTs and ACTs stocks conducted in August 2008, in all the 106 health facilities (HFs) in the 14 districts in Inhambane province, revealed that some RDT stocks had expired and others were near their expiry date. There were ACT stock outs in all of health facilities visited due to a national stock out of ACTs.

In order to address the prevailing weaknesses in medical products supply chain management, Clover adopted and introduced a stock management system soft ware used in Gaza province. The system comprised of software used for stock control and medicine quantification. It allows for automatic computation of current stock quantities and expiry dates, providing monthly reports of all the transactions and estimating the quantities for different levels of health facilities.

In addition, Clover procured a set of information technology (IT) equipment (computer, printer, modem and peripherals) for the provincial central store and conducted refresher training of 10 provincial pharmacy managers (1 pharmacist, 9 pharmacy technicians: 6 from hospital and 4 from provincial pharmacy) on stock control and use of the stock management soft ware. Fifty nurses and nursing assistants from rural health centres were also trained and given basic skills on how to manage pharmaceutical products. Subsequently on the job support supervision was implemented in all HFs to enforce skills for stock management and quantification. Supervision conducted six months later in the health unit pharmacies and drug stores showed that there was appropriate stock management.

Earlier supervision reports and findings from the assessment done in August 2008, had indicated that health professionals were reluctant to use RDTs or be guided by their results when deciding on treatment, because of lack of trust in these tests. Subsequently 61 health workers comprising of medical doctors, laboratory workers and maternal and child health (MCH) nurses were trained on malaria prevention intermittent preventive therapy for malaria in pregnancy and long lasting insecticide treated nets (IPTp, LLINs), diagnosis (RDTs), promotion of appropriate health-seeking behaviour and prompt correct treatment. Job aids and algorithms on malaria case management with emphasis on RDTs and microscopy were also developed and distributed to all the 109 HFs and 420 community health workers (CHWs).

In early 2009 under the leadership of ministry of health Clover supported the preparation and printing of the strategy and training materials for introduction of ACTs (Artemether/Lumefantrine) as first line treatment of uncomplicated malaria in Mozambique. In total, 440 health workers (HWs) and 72 community health workers were trained on ACT (Artemether/Lumefantrine) use and refreshed on RDT use.

With improved stock management skills acquired from training, supervision and provision of guidelines, later supervision activities showed that there was appropriate stock management and acceptability of RDTs had increased with subsequent increase in demand. There were sufficient stocks of ACTs. Studies done in June 2010 showed that in the 28 health facilities assessed, 89.3% and 92.9% of them had ACT (Artemether/Lumefantrine) packages for children and adults respectively in stock every day for three months prior to the study and 75.5% of the sampled patients had had an RDT done<sup>1</sup>.

### **Case Management**

A rapid assessment performed from February – April 2008 demonstrated many gaps in malaria case management including inadequate parasitological diagnosis and differential diagnosis, and poor communication with patients. Other main weaknesses identified in case management were inadequate guidelines for malaria management and weak supervision mechanisms. Clinicians did not understand how to use RDTs and did not trust RDT results. Generally there is inadequate human resource at all levels; the provincial staff are too few to effectively train and supervise the district staff.

To address these gaps Clover, working with the provincial and district health authorities, initiated the district peer supervision method for case management. This innovation was developed when it became clear the workshop mode of training was not yielding satisfactory results. In addition, supervisors from provincial or central levels tended to be more inspective (fault finding) rather than supportive. The peer supervision engages participatory methods that are supportive, advisory, provide demonstrations and cordial; all of which are significantly more conducive to positive change.

This innovation attempted to overcome the challenge of scarce numbers of health workers with insufficient expertise and insufficient time to supervise others. As a result, a core team of the more dynamic professionals (doctors, nurses, pharmacy technicians,

laboratory personnel) from district level were trained in order to refresh their skills and then were used as supervisors for neighbouring districts. This approach has been well accepted, is feasible and less costly because the supervisors come from neighbouring districts instead of the centre. Case management supervision was performed in 16 health facilities and targeted 101 health workers comprising clinical practitioners, laboratory technicians, maternal and child health nurses and pharmacy technicians. Supervision focused on staff skills for using RDTs, malaria microscopy skills, malaria microscopy internal quality control skills and malaria case management clinical skills. Reports from the second round of supervision conducted nine months after training, indicated improvements in quality of care through better diagnosis and treatment skills and compliance with guidelines. Health workers were using and interpreting RDTs correctly and applying the results to inform patient management .

“RDT use has enabled us to increase accurate diagnosis for malaria, we use them a lot. I always emphasize to my staff to always confirm malaria diagnosis using RDTs or microscopy” Dr.Hafsa, the district health director of Massaninga hospital

The National Malaria Control Program (NMCP) was supported to revise, print and disseminate the new guidelines for RDT use at provincial, district and community levels. Additionally, the MOH was supported in the harmonization of the malaria case management algorithms produced by different partners resulting in a single MOH-approved standard document for use by health workers.

Of the 349 patient records assessed in June 2010, 99% of the prescriptions for malaria followed the national guidelines and 97% of these were informed by RDT results. However communication to patients remained poor, with only 49.1% receiving instructions on the dosage of antimalarials, and only 34.7% receiving instructions on feeding<sup>1</sup>.

### **Community Health Workers**

Strengthening community health services is one of the strategies for increasing access to care in Mozambique. In this regard, 72 CHWs were trained on ACT and RDT use. Additionally, 268 community health workers were trained to conduct health promotional activities on malaria, pneumonia, diarrhoea and malnutrition. A video to educate communities and to train CHWs is being developed on community case management.

### **Severe malaria case management**

Findings from the February – April 2008 assessment revealed missing patient records, including incomplete records of patient assessment and non compliance to severe malaria treatment guidelines. To address these gaps, Clover worked with the district and provincial health teams to develop and print severe malaria management guidelines. A mechanism of regular support supervision was started in all the 14 districts, with 26 doctors in Inhambane province trained on severe malaria to refresh their knowledge and skills. They formed part of the core team of supervisors for malaria case management activities in each district, providing peer supervision of the facilities for case management services on a monthly basis and to provide on the job support. Peer supervisors formed regional health teams and supervised the health facilities within their respective regions (assigned districts) on a quarterly basis.

The provincial health authority undertakes supervision twice a year, and uses supervision checklists and guidelines which were developed and tested during the project. There have been some improvements reported; an assessment done in June 2010 showed 89% of the children treated for malaria had been weighed; in 54% their temperature was taken and recorded and 81% of children had been assessed for at least one danger sign.

### **Malaria Microscopy Quality Control**

There is no national laboratory to act as a reference point. The provincial level therefore sought to establish a system for assuring the quality of its malaria microscopy. A team of 38 laboratory technologists/technicians drawn from provincial and district levels were identified and given refresher training on laboratory quality control and RDTs (Figure 2). They subsequently supervised 4 laboratories and 11 laboratory personnel in the district hospital laboratories in 3 districts. In each laboratory, 10 positive and 10 negative slides were randomly selected by non-laboratory personnel using the records. Selected slides were re-checked by the supervisors and findings compared with the original results. The findings indicated that generally there was no major problem with identification of parasites and preparation of reagents. However in one health facility, Magungumete, there were problems with preparation of reagents and parasite identification and three out of the 40 slides (7.5%) re-checked were discordant (were recorded as positive when actually they were negative). The microscopists (lowest cadre of laboratory staff) who had read the slides were given immediate on site-on job training by the provincial supervisors. Quarterly supervision of the laboratory staff by the provincial team has been established.

### **Health Management Information Systems**

The HMIS operational in Mozambique was introduced more than twenty years ago and has not been adapted to the current information needs. Computer use is not yet widespread due to lack of equipment, lack of power supply and low computer skills. Most managers still use manual methods to register, compile and analyse data. Consequently availability of HMIS is limited and not easily accessible for regular use to inform planning. At the start of Clover III, information was gathered to guide the content of HMIS training. Thirty district staff were trained on HMIS, focusing on data entry, data analysis and development of plans for health facilities, districts and provincial levels, with emphasis on evidence based planning. Fifteen computers with printers, software and peripherals were purchased for the 14 districts and provincial level in Inhambane province, to enhance data capture, storage and analysis. Thirty five health workers of the main departments of the Provincial Health Authority were also trained on operational research to introduce them to the application of research to programme management (Figure 3).



*An HMIS training in Inhambane province, Mozambique March 2009*

*Competing priorities at all levels of the health system (FMOH, RHB, ZHB, WoHO) interferes with timely implementation of activities. Harmonisation of plans at sub-national level is critical to reduce competition and avoid duplication.*

### **Strategic/operational challenges faced**

CLOVER supported Inhambane, a rural remote province with limited services which required significant support to overcome the numerous bottle necks as outlined below.

**Extensive human resource constraints:** characterised by inadequate numbers of provincial staff, usually newly qualified graduates with very limited clinical experience and skills, and no management skills. The Provincial Health Authority's Chief Medical Officer is responsible for overseeing the planning, supervision and monitoring of the progress of all health programmes, including HIV/AIDS, TB, Malaria, maternal and child health, as well as attend to administrative matters. The district staffing suffers the similar constraints with 1 doctor per 52,000 patients and inadequate supervision from the province or MOH headquarters. Provincial and MOH staff may not always be sufficiently experienced to offer adequate technical support supervision and they suffer similar resource constraints.

**Expired medicines:** There were large stocks of expired medicines and others near their expiry date due to lack of skilled manpower to manage drugs within the province. The whole province had one pharmacist, newly qualified from university, with no experience, working alone. Other pharmacy staff had basic or intermediate level training. The single pharmacist in the province (of 1.5 million people) has the responsibility of managing the provincial drug store, provincial drug management and all provincial pharmaceutical related issues.

**Health Professional Practices:** Health professionals were reluctant to use RDTs or to be guided by their results when deciding on treatment, viewing with suspicion RDTs as new technology. This necessitated repeated training and supervision to build trust, subsequently slowing down the speed of implementation and institutionalization of the approach.

**Inadequate Tools:** Lack of training materials on diagnostics (RDTs), treatment guidelines and job aids meant considerable time and effort had to be set aside to develop (and test) them prior to implementation. The process of developing such materials is time consuming since it involves stakeholder meetings and consensus building, thereby leading to limited time for using these materials to support the interventions

and assess the accrued benefit.

**High Staff turnover** There is an extremely high staff turnover or rotation policy within the National Health System. Almost all the key staff that have been trained by Clover for different activities such as drugs supply management (DSM), HMIS have left the position they held within the province. This means there is a constant need for refresher and/or orientation to bring the new staff up to speed, institutional memory is lost and continuity interrupted. This has had a negative effect on the speed of implementation of planned interventions and the achievement of results. For example, Clover supported DSM activities and established electronic stock control management. The software is now available within the province and is functional; however the key person (pharmacist) who was playing a lead role in ensuring appropriate use of the application, training and supervising other staff on its use, left the province after its establishment and has not yet been replaced. As a result, the investment made in training this pharmacist has been lost to another province or NGO and further investment in another person who may also depart after a short while is required.

### **Human Resources**

Mozambique is hampered by inadequate human resources with limited skills. This calls for creative interventions that will build the capacity of existing human resources whilst the MOH begins to apply its human resource development plan. Such an innovation has been the use of skilled yet scarce human resources to mentor their colleagues through approaches like peer supervision.

### **Decentralisation**

The roll out of decentralisation has been inconsistent and sometimes unclear, with sub-national teams often proving unable to address the bottlenecks at decentralised levels. This affects the speed of implementation. Sometimes there is poor alignment between Provincial Health Authority and MOH plans and ownership of these sub-national plans by the Province is not strong, making it difficult to implement them.

### **Supervision**

Many doctors within the province have little work experience (often only about 6 months) and they themselves require capacity building efforts to improve their skills in order to be able to supervise other health cadres.

### **Health Management Information System**

The HMIS in Mozambique is slowly undergoing revision in order for it to capture more updated information of programmatic and planning relevance on a regular basis. Alongside this long overdue systemic overhaul is the need to improve skills and understanding of the relevance of information captured, and how this can be applied to improve activities on a range of levels. Work at both national and sub-national levels is essential to achieving results. The use of training materials must be adjusted to fit changing data gathering efforts, and greater harmonisation of tools is required. The promotion of targeted supervision at those health workers and regions where data collection is identified as weak is vital to improving information flow, usefulness and understanding.

### **Case Management**

Even though most staff have the skills to perform good work, working conditions (large number of patients, lack of or poor equipment and materials, isolation, inadequate support etc) contribute to preventing them from following standard procedures such as proper patient assessments, improper interpersonal communication during the consultations, little confidence in test results etc. Investment in innovative support supervision mechanisms, identification of key needs and resource mobilisation support are important factors for incorporation in responses.

**Tools developed by Clover**

Clover has supported Inhambane provincial and district health authorities to review and develop guidelines, algorithms and check-lists. These will continue to be used irrespective of Clover’s presence.

**Malaria treatment policy change**

The policy change to ACTs as first line treatment of uncomplicated malaria was supported (development of guidelines, training) by Clover. Implementation of this policy will continue country wide.

**Supervision**

The peer supervision mechanisms innovated by Clover for improving quality of care have been incorporated into district mechanisms and will continue.

All Clover supported interventions were undertaken in coordination and cooperation with other partners. The lessons learned and best practices have been shared at different fora. It is anticipated that some partners will scale up some of the interventions, namely;

**Malaria microscopy quality control**

The districts have a core team for laboratory personnel who will continue the approach, if logistical support is available. Internal quality control is widely in place, but external quality control is more related to further steps to be developed at MOH level. Malaria Consortium is currently involved in supporting this activity.

**DSM Stock Management**

The electronic DSM stock management established at the provincial level has a high potential for continuity provided staff constraints can be overcome and supervision is provided regularly. Technical support is available on local arrangement with Gaza province.

**HMIS**

Each district has been provided with a computer and the appropriate software for HMIS and at least two people have been trained on data management. The use of these computers should continue, with minimum investment devoted to software updates, refresher training and supervision of the staff. Resources are required to scale up this approach.

Figure 1: Mozambique showing Clover supported province



**Malaria Consortium**  
Development House  
56-64 Leonard Street  
London, EC2A 4LT  
+44 20 7549 0210  
  
Malaria Consortium  
disease control, better health  
[www.malariaconsortium.org](http://www.malariaconsortium.org)

**Irish Aid**  
Department of Foreign Affairs  
Riverstone House  
23-27 Henry Street  
Limerick  
+353 1 408 2000  
  
[www.irishaid.gov.ie](http://www.irishaid.gov.ie)

