Background

Global and Pacific programme to eliminate lymphatic filariasis

In 1997, the fiftieth World Health Assembly resolved that lymphatic filariasis (LF) should be eliminated as a public health problem. The Global Programme to Eliminate Lymphatic began its first mass drug administration (MDA) campaign in 1999 in Samoa. By 2003 more than 70 million people at risk in 36 endemic countries were covered by MDA.

Since 1999, Fiji national filariasis control program has worked closely with Pacific programme to Eliminate Lymphatic Filariasis (PacELF) aiming elimination by the year of 2010. PacELF is part of the Global Programme and provides technical and financial support specifically to its 22 member countries in the South Pacific. As part of collaboration, Fiji also receives all medicines needed for Mass Drug Administration and filariasis diagnostic kits for blood survey.

MDA in Fiji

LF elimination strategy and MDA

LF elimination is achieved only when two targets – interruption of transmission and disability prevention and control – are accomplished.

LF remains one of the most debilitating communicable diseases in Fiji. During a series of blood surveys conducted prior to 2002 under the initiative of PacELF a number of children were still found infected, showing that transmission of LF was not yet interrupted in Fiji. Thus, Fiji filariasis program has set interruption of transmission as priority and the first target to be achieved.

The main tool to achieve interruption of transmission recommended by the Global Programme is MDA. Fiji has, thus, adopted five consecutive rounds of annual MDA using single dose of diethylcarbamazine citrate (DEC) and albendazole since 2002. The same strategy recommended by PacELF has been also adopted by all endemic member countries in the Pacific. ***80%*** or above coverage is considered as effective and sustaining the effective coverage during consecutive rounds is necessary in achieving elimination of lymphatic filariasis by MDA.

DEC and albendazole

The dosage of DEC (50mg) is standardized by age groups and weight in Fiji (Figure 1). A single dose of DEC efficiently clears microfilaraemia and its effectiveness has been shown to last over a period of at least one year. Regardless of age or weight, only one tablet of Albendazole (400mg) is given. Albendazole is shown to enhance the effectiveness of DEC on microfilarial clearance and has impact on intestinal helminthes.

Age	No. of DEC tablets
2-4	2
5-9	3
10-14	6
15-19	7
20-49	9
50 +	8

Weight (kg)	No. of DEC tablets
10-13	1
14-22	2
23-29	3
30-38	4
39-46	5
47-52	6
53-63	7
64-71	8
72-79	9
80 +	10

Figure 1 DEC dosage

MDA implementation structure

Implementation unit (IU) is defined as the level of the administrative unit in a country, for which the decision to administer MDA to its entire population is taken, if endemic.
In Fiji administrative decisions regarding the program are made at national level and thus the country is considered as the implementation unit. For operational purposes, the country is divided into *4 Divisions* (Central, Eastern, Western, and Northern). These four divisions are further divided into *19 Medical Subdivisions and Rotuma*, a Medical Area under Eastern Division, which does not belong to any Medical Subdivisions. The Ministry of Health considers these 19 Medical Subdivisions and Rotuma as *MDA sub-Implementation Units* (total 20 sub-IUs). The assessment of MDA performance (i.e. coverage) and disease prevalence is supposed to be carried out at the three levels, namely national, divisional and sub-divisional (or sub IU) levels.

General Timeline of MDA in Fiji

Preparation for MDA starts in late April or early May. The tablets become available September 1st and the campaign completes on 31st of November. As soon as the campaign concludes, MDA registers and left over drugs are collected. Calculation and data input start once the records arrive at Mataika House. Data processing and analysis to estimate national and sub divisional coverage take two to four months depending on how quickly the registers are returned.

1 Preparation – MDA supplies

Starting in late April or early May, the unit prepares supplies required for MDA. MDA supplies consist of the drugs, MDA register (also called "booklets"), consumables (pencils, name lists, plastic bags for packing the tablets to go), and promotional materials. The MDA register was designed at the beginning of the MDA program and re-printed every year with a new cover (Annex 1). It also provides basic information about MDA such as the exclusion criteria and dosage. The quantity of each material required at each nursing zone/district has been estimated based on the needs from pervious rounds as well as its population (see Annex 2 for an example of packing list from 2006 MDA).

The supplies are packaged for each nursing zones, which are then packed together with the supplies for other nursing zones within the same medical area and then addressed to the respective health center.

2 Preparation – Distribution to health centers

The unit arranges delivery of the supplies to Sub Divisional Health Sisters usually based at the primary health centers or sub divisional hospitals. SDHSs are responsible for distributing the supplies to all other health centers and nursing stations within their subdivisions. During the first four rounds of MDA, the program covered all cost associated with the deliver of MDA supplies to SDHSs (i.e. driver, fuel, and postage), which was estimated to have consumed about 40% of entire MDA budget.

3 MDA- Distribution of drugs

The primary drug distributors are zone and district nurses. A number of approaches, in order to achieve a high coverage, have been identified and adopted since the first round of MDA in 2002:

- **Villages –** Community hall distribution, distribution at schools, distribution assisted by village health workers
- **Settlements –** House to house, distribution at nearby shops, public buildings, and schools
- **Urban areas –** House to house, Booth distribution at events, distribution at schools, work sites, shopping areas, and public buildings

4 Booklet collection and calculation

As soon as MDA is completed, the booklets and leftover tablets are returned from health centers and nursing stations to the primary health centers where SDHSs are based. Mataika House usually sends transport to collect them from the primary health centers in Central and Western divisions.

Subdivisions in Northern mail them to Mataika House. Nurses in Eastern division often send the booklets directly to Mataika House once MDA is completed in his/her own area to avoid unexpected delay in shipping.

Once the booklets start to arrive at Mataika House, they are sorted by medical area and each booklet is calculated (meaning summing up all figures for each statistic such as the number of people registered, treated, and tablets distributed) and verified for data input. Data input and calculation are carried out simultaneously until all the booklets are returned. Data processing and analysis are done during this calculation process to provide on-going coverage and at the end to estimate national and sub divisional coverage of the round. Until 2006, coverage figures were only reported to the higher authorities within the Ministry of Health however not to health centres or even to sub divisional offices where MDA is actually carried out. In 2006, prior to commencing the fifth round campaign, the coverage figures of the fourth round MDA (2005) were reported to each subdivision and the unit received very positive feedback.

Human resources

Currently the program based at the Mataika House is run by four personnel; one filariasis project officer coordinating for post 2006 MDA activities (the term expires in late March 2007), one assistant microscopist and awareness campaign officer for the Mataika House, and one program assistant officer (usually a member of Japanese Overseas Cooperation Volunteers, or JOCV). None of the four is established staff. While the four has been working together, a large proportion of the works carried out by the program has been assisted by casual laborers, called "volunteers". The volunteers are employed to carry out physically demanding tasks during MDA supply packing, to assist MDA, and to assist menial tasks during coverage calculation including sorting out the returned MDA registers and leftover tablets. They have been indispensable part of the program.

Epidemiological assessment

Diagnostic tools

The current Global guideline[1] recommends two diagnostic tools for *Wuchereria bancrofti* LF monitoring – think blood films for microfilariae detection and the filarial antigen detection test.

ICT

Immunochromatographic test (ICT) detects *Wuchereria bancrofti* adult antigen circulating in the blood of infected individuals. The test can be carried out any time of the day and the sensitivity of the test is high; however infected individuals can harbor the antigen at least one year after treatment. Thus, those who have been treated and no longer have live adult worms actively producing microfilariae can be tested positive. In Fiji, ICT has been used as the standard diagnostic tool since the baseline survey.

MF

In Fiji, the causative agent of LF, *Wuchereria bancrofti*, is diurnally subperiodic and its microfilariae appear more in the blood of infected persons in the afternoon (the peak time is around 1600). Thus, it is recommended that the films be prepared between 1500 and 1700 in Fiji. Since the baseline survey, thick blood films were prepared for all persons tested with ICT and only the films from ICT positive persons were stained and examined for microfilaraemea.

Sentinel and spot check sites

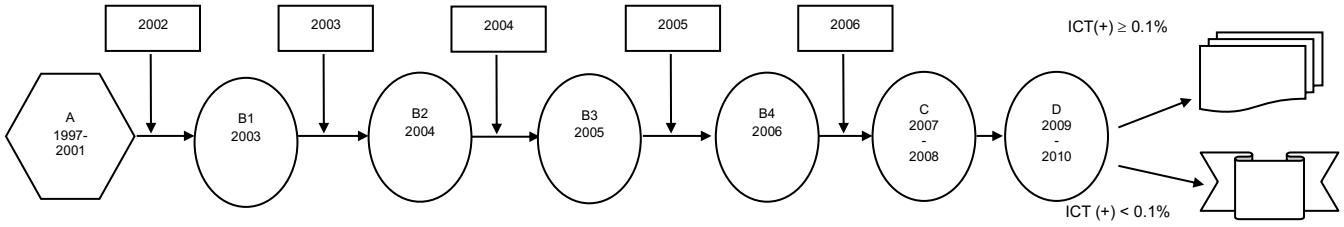
According to the Global guideline, for effective and practical monitoring of the impact of MDA, sentinel sites should be selected before the implementation of MDA to ascertain baseline indicators

[1] Monitoring and Epidemiological assessment of the Programme to Eliminate Lymphatic Filariasis at implementation unit level, WHO (2005).

(i.e. parasitological indicators, in case of Fiji antigen prevalence, microfilaraemia, and clinical case incidence) and should be periodically, throughout the course of the program, assessed for the parasitological indicators. The guideline also notes that ideally a sentinel site should be chosen from an area of high transmission or from an area expected to have low drug coverage and should have a stable population. It also recommends different "spot check sites" to be chose for every survey. Spot check sites are to provide additional information about the disease prevalence and the performance of the program.

PacELF surveillance

Implementation of adequate epidemiological assessment is essential in monitoring of the program performance and decision making. The PacELF surveillance guideline[2] recommends four types of blood survey for monitoring of program performance (Figure 2); A type assessment (Baseline survey), B type assessment (Midterm survey), C type assessment (C survey), and D type assessment (D survey).



Source: PacMAN Book 2004

Figure 2 PacELF Flow chart for Fiji: Circles (B, C, and D) and the hexagon (A) represent blood surveys while rectangles represent MDA.

Timing of surveys

PacELF defines a country endemic when filarial antigen prevalence (% ICT positive) is found at or above *1%* during a baseline survey and recommends endemic countries five consecutive rounds of annual MDA. After the five rounds, C type assessment targeting entire IU should be conducted to assess the effectiveness of five MDA and, if it finds antigen prevalence of less than 1%, MDA can be stopped. D type assessment is to assess whether the transmission of LF has been interrupted and to be carried out during the following year of C survey after MDA is discontinued. The target population of D type assessment is thus children born after MDA started (usually 5 to 6 year olds).

Baseline survey

Three sets of blood survey were conducted in Fiji prior to the first round of MDA. The first of the three is a survey in Rotuma conducted in 1997. The second survey between 2000 and 2001 covered areas previously known as highly endemic including small island communities. The third of the three was conducted in some of the areas that were not visited during the survey between 2000 and 2001. These three surveys and their results are combined and called "baseline survey" in Fiji. The survey covered the total of 13 subdivisions and Rotuma and found the filarial antigen prevalence of 15.7% among 9197 individuals examined (Annex 3). The details of the survey methodology, such as how sites and individuals were selected, are not available and the results are unlikely to represent the true disease distribution of Fiji prior to MDA (all raw data are missing and even some of the

[2] PacMAN Book, PacELF (2004).

sampling sites are unknown and thus in some areas only pooled results are available). Still, the survey was able to confirm some of the high prevalence areas that are previously identified by Dr Mataika and categorized as high risk areas. Those include Beqa, Kadavu, some of small island communities in Lau, Taveuni, Rotuma, Rewa, and Naitasiri. Based on this initial assessment, Fiji was categorized as an endemic country and "five rounds of MDA" was chosen as a method of intervention.

5 sub divisions (Ba, Cakaudrove, Lautoka, Suva, Tailevu, and Tavua) were not included during the baseline and subsequent surveys. Some of these excluded areas such as Taileve and Cakaudrove are in fact, according to Dr Mataika's classification, considered as high risk areas and should be surveyed.

Sentinel and midterm surveys

One survey was conducted in 2003 after the first MDA; however all the data and results have been lost and no information is available. A post 2nd MDA blood survey was conducted in 2004 testing total 667 persons at 14 sites. 23% of the examined were positive (Annex 3). The antigen prevalence was higher than that of the baseline survey partly because some sites (5 sites) were one of the highest antigen prevalence sites found during the baseline survey and (probably) selected as sentinel. The rest seem to have been selected more or less haphazardly.

B type assessment, also called midterm survey, was carried out in 2005 to evaluate the impact of the initial three rounds of MDA. Some sites that were found to have high prevalence during the baseline survey or post 2nd MDA blood survey were visited. These include four sites in Beqa, one site each in Kadavu, Lomaloma, Nadi, Naitasiri, and Taveuni subdivisions, and five sites in Rotuma. Most of these sites showed very high prevalence within the respective subdivisions during the previous surveys. In Rewa subdivision, one of the high risk areas, 33 villages, 2619 persons, were surveyed and 6.3% were found ICT positive. Overall, the filarial antigen prevalence was 11.4 % among 3823 individuals tested.

Limitations in interpreting survey results

In Fiji, during the three surveys (baseline, 2003, and midterm), at least 95 sites were visited. 25 sites were visited at least twice (once during the baseline survey and another visit during one of the two surveys) and among those only five sites were visited every time (Annex 3). 21 out of the 25 sites are in Rewa subdivision, an area that has been considered as high risk area for a long time. How and why those sites were chosen is not clear. Furthermore, though there is no documentation that described the survey methodologies, and sampling seems to have been convenience. Thus, although the results of the three surveys can provide some indication of MDA performance, in particular in Rewa, it is difficult to generalize the results and apply conclusions to other subdivisions or draw conclusions about the performance of the program as a whole.

C survey

The C type assessment, also called C survey, is scheduled to be conducted in 2007 after five rounds of MDA. Its main purpose is to determine the direction of the program after five rounds MDA. Objectives are to assess the impact of MDA, to determine whether MDA can be stopped (i.e. filarial antigen prevalence is less than 1 % in all areas of country), and to find the remaining pockets of high prevalence areas. C survey will be the largest and most comprehensive blood survey carried out by the filariasis control program in Fiji with the expected minimum sample size of 17,250

Advocacy
Well designed and planned advocacy campaign is essential in influencing the public attitudes and thus behaviour regarding MDA. It plays a key role in raising awareness not only towards MDA but also about the disease. The performance of advocacy campaign has been evaluated by two independent KAP surveys during the first four years (after 2nd and 3rd MDA) and a series of KAP surveys carried out as part of post 5th round coverage survey.

Advocacy campaign during the first two rounds of MDA focused on production and distribution of printed IEC materials (Information, Education, and Communication) such as posters and leaflets, partly due to the limited budget. The first KAP (Knowledge, Attitudes, and Practice) survey conducted in 2003 after the second round of MDA clearly showed that a large proportion of survey respondents did not identify the printed IEC materials as a source of information about MDA and LF. The survey team also found that many respondents did not actually read the materials given during MDA. While the survey also identified the great need for providing adequate information, on printed materials, to health workers and other possible drug distributors, following the survey the program has shifted more towards utilizing local mass media, in particular radio and TV.

KAP survey in 2005 was conducted in Rewa subdivision in conjunction with the midterm blood survey. The sample population was Fijians of all ages living in rural villages. Female/male ratio was approximately 2 to 5. The survey results showed that 82% understands how filariasis is transmitted, while few still think the disease was "genetic". 89% of those surveyed said that they have taken the tablets in the past. The survey results showed that the percentage of people who actually ingested the tablets in the area has been increasing since 2002, the first round of MDA in Fiji, with the highest percentage of 85% achieved in 2004. The most common reason why they took tablets was "I don't want to get the disease", showing the understanding on the relation between the MDA programme and filariasis by the surveyed population is high. The majority said that the information on MDA and filariasis to the surveyed population was obtained through medical professionals and mass media (TV and radio).

The awareness committee comprised of the National filariasis unit and the Centre of Health Promotion was established in 2005, prior to the fourth round of MDA, with the aim of delivering a consistent message on MDA and relating issues to the public of Fiji. The message was broadcasted through radio in all three vernaculars, namely Fijian, Hindi, and English, and on TV in English.

MDA coverage
Definition of coverage
Currently Fiji program reports two types of MDA coverage, Registration coverage and Treatment coverage, defined as follows;

- Treatment coverage = Number of people who received tablets during the campaign / Total population * 100
- Registration coverage = Number of people who were registered during the campaign / Total population * 100

Note that registered population includes those who failed/refused to receive tablets as well as ineligible population (sick, pregnant, and children under two years old).

Treatment coverage is the proportion of population who received tablets. However, it does not completely reflect the true coverage of MDA (whether or not those who received have swallowed tablets). Registration coverage is the proportion of population who were given opportunity to receive tablets. The difference between the two can indicate the proportion of people who did not receive tables from various reasons despite being given the opportunity. This may be only informative in analyzing MDA performance when reasons of not receiving tablets are clear and

well-documented. Since this information (the reasons) is not available from the initial four MDAs in Fiji, only the treatment coverage is considered in evaluating the performance of previous MDAs.

Population and estimating coverage

Using accurate population figures (as much close to the real population as possible) in estimating coverage is essential in order to obtain reliable coverage figures.

In 2002, in preparation for initiating MDA, the program obtained population figures directly from health centers and nursing stations. The figures were compiled to estimate sub divisional and national population and those figures were used to estimate sub divisional and national coverage as well as analyzing all other data under the LF program. However, when compared with the population projections by SPC and Fiji Bureau of Statistics, the estimated national population of 776,173 was underestimated even at the time it was compiled in 2002 and thus, all coverage figures reported during the first four rounds of MDA most likely overestimated the true coverage figures.

MOH statistics section keeps all health related statistical records including the population of each medical area, mortality, birth rate etc. The primary source of the statistics is zone and district nurses, who work in nursing zones and at nursing stations respectively. It is not clear how MOH ensures and evaluates the accuracy of these statistical figures because, for example, no explanation is given to a significant difference in national population between 2003 and 2004 (decreased by 2% or 17,452 persons). Furthermore, the accuracy of these figures is difficult to measure as the next census is to be conducted this year, 2007. Still, the figures provided by MOH correspond well with the projections made by SPC and thus the sub divisional. For example, national coverage for each round of MDA, when estimated based on the figures provided by MOH, differs from the previously reported figures by approximately 9 to 10 % whereas it only differs from the estimates based on SPC projection by 1 to 5 % (Figure 3). It is, thus, reasonable to conclude that more accurate estimates of coverage can be obtained using MOH figures and therefore the sub divisional and national estimates of coverage during the first four rounds were recalculated and presented in this report.

	2002	2003	2004	2005
1	70.46	64.91	69.42	70.16
2	66.64	60.82	64.45	64.72
3	63.41	58.17	63.49	64.12

Figure 3-1 National coverage; 1 Previously reported figure, 2 figures calculated based on SPC projections, 3 figures calculated Based on MOH population

	2002	2003	2004	2005	2006
Mataika House	776,173				
SPC	820,769	828,385	836,000	826,075	831,263
MOH	862,537	866,099	848,647	849,361	N/A

Figure 3-2 Population of Fiji from 2002 to 2006 from three different sources

National coverage

The trend from year to year remains the same as previously reported; coverage has not been improved significantly since the first round of MDA. It also shows that coverage never exceeded 70% (Figure 3-1).

Sub divisional (plus Rotuma) coverage

The average coverage (simple mathematical average of four figures) of four rounds was estimated for each sub implementation unit (19 subdivisions and Rotuma) (Figure 4). It shows that no sub implementation unit of MDA in Fiji achieved the average coverage (simple mathematical average of four figures) of above 80% and only three subdivisions were able to achieve the average coverage of above 75%. It further reveals several important issues. First, those subdivisions with particularly low coverage are mostly located mostly in Western and Central divisions, where the program provided more support in the past (e.g. transport) and assumed less logistical problems, whereas some subdivisions such as Cakaudrove and Macuata that cover more challenging areas (e.g. hard to access areas and geographically large areas with a small number of staff) were performing much better. Second, some areas, such as Rewa and Naitasiri, known to have high LF prevalence, show low coverage, while the residents are probably well aware of the disease and MDA. For example, the KAP survey in 2005 conducted in Rewa shows that the residents were well informed about the program and recognized that the disease still existed within their communities. Although the KAP survey reported high (above 80%) survey coverage among the surveyed population, the coverage estimate based on MDA booklets (registers) has turned out to be low.

Division	Sub IU	2002	2003	2004	2005	Average
Eastern	Kadavu	77.29	79.78	74.83	83.86	78.94
	Lakeba	53.55	66.65	70.60	74.89	66.42
	Lomaiviti	65.16	70.82	82.09	60.46	69.63
	Lomaloma	60.48	70.44	82.02	82.81	73.93
	Rotuma		87.67	80.60	65.22	77.83
Northern	Bua	72.63	75.36		74.49	74.16
	Cakaudrove	73.42	75.97	73.12	85.59	77.02
	Macuata	38.22	61.73	94.27	99.65	73.47
	Taveuni	58.79	77.05		76.57	70.80
Central	Naitasiri	49.87	51.30	50.07	51.73	50.74
	Rewa	70.18	65.82	64.62	62.06	65.67
	Serua/Namosi	74.09	72.17	55.88	70.63	68.19
	Suva	64.02	46.65	52.02	59.95	55.66
	Tailevu	63.09	75.28	76.35	62.76	69.37
Western	Ba	73.16	60.37	67.98	54.31	63.95
	Lautoka	63.84	41.61	56.01	50.93	53.10
	Nadi	72.17	52.52	73.50	63.42	65.40
	Nadroga	58.54	77.65	70.26	44.48	62.73
	Ra	75.73	54.73	67.45	68.72	66.66
	Tavua	60.67	53.04	74.36	64.77	63.21

Figure 4 Coverage of the first found rounds of MDA and average of the four figures
Note: Bua, and Taveuni figures are the average of three MDAs (2002, 2003, and 2005) as they were unable to return MDA records in 2004. Rotuma figure is the average of three MDAs from 2003 to 2005 as the coverage of 2002 was not available.

Problems hindering good performance seem to vary from subdivision to subdivision as there are no apparent factors (e.g. geographical) shared among those with low coverage. Thus the problems must be identified by/at each subdivision and solved accordingly. Identifying the problems in such way will help us to develop a “micro plan” for individual subdivisions, which is more customized and thus should be more effective.

Achieving 80% throughout successive rounds of MDA is necessary in interrupting transmission of LF. Although some of the sub implementation unit occasionally achieved high coverage, it is most likely that the transmission has not been interrupted if the area was endemic.

Immediately and Later

"Treatment coverage" used to discuss coverage above does not take into consideration that in Fiji MDA is not always directly observed. When a person is not able to consume the tablets at the distribution site, drug distributors pack the tablets for the person to take home. Many also collect the tablets for others, for example, for their family, friends, and coworkers. These practices are more common in urban areas where residents are often responsible for collecting the tablets on their own (direct delivery to home by house-to-house is less common) and many do not feel convenient or comfortable to consume the tablets right at where they receive. It was estimated that only 28.5% of those who received the tablets during the fourth round (2005) MDA actually consumed the tablets at distribution venues. The rest, 71.5% a significant proportion of the treated population, received the tablets with the intention of consuming them later. During the four years of experience, the program is aware that some of those who received the tables "to go" do "procrastinate" and end up not consuming the tablets without having the clear intention of refusal. It has become even clear during the recent coverage survey that the practice was still common during the fifth round of MDA. It should be also noted that the proportion of those who said to consume later was much higher in Central and Western divisions (>80%) where "treatment coverage" was already low. In Eastern and Northern divisions, more than 60% of those who received the tablets consumed the tablets while being observed by distributors. Thus, it is important to keep in mind that "treatment coverage" itself may overestimate the true coverage – the actual proportion of people who eventually consumed the tablets proportion to the population of Fiji. A strategy needs to be developed to encourage distributors to conduct directly observed MDA more often and to encourage the public in a way that they themselves feel responsible for consuming the tablets.

2006 MDA

General

As in previous years, preparation for the fifth round of MDA started in late April. All supplies were prepared on time and reached at health centers across the nation in time for MDA, which officially commence on the first of September. The awareness campaign on radio and TV was originally planned to start two weeks prior to the beginning of MDA; however due to the limited budget and delay in preparing LPOs the very first messages were aired on the same week as MDA commenced.

Budget proposals and allocation

Though there were delays in preparation and submission, all sub divisions submitted their budget proposals to Mataika House in time for MDA, which were then received by Headquarter. However, only those submitted by subdivisions in Western and Northern divisions were approved and no clear explanation was given to the disapproval of proposals prepared by subdivisions in Central and Eastern divisions. Furthermore, it became clear during meetings and discussions with nurses that meal and overtime claims from previous years were still not completely paid and they have been discouraged to work extra hours for MDA. The situation was not different in Western and Northern divisions where the proposals that include overtime and meal claims were approved.

Training of nurses

Suva subdivision requested refresher training for nurses and training of new nurses for upcoming MDA. A half-day training was held on 24th of August, 2006 (Annex 4). The main objectives are to provide a brief review of MDA operational procedure, including precautions and basics about the disease, and to discuss the performance of the previous four rounds in the sub division. The advocacy campaign plan was also presented and administrative changes were also discussed.

Delivery of drugs to health centers

One of the biggest changes to the program during 2006 MDA was partnership with local companies in delivering the MDA supplies to health centers. The partnership helped to reduce the cost for the delivery significantly (total cost of shipping 137 FJD). Those companies include CDP (70% of the entire MDA supplies including all supplies to Western and Northern divisions), Consort Shipping (Koro island), Patterson Brothers Shipping (Ovalau). They offered free delivery and guaranteed that the supplies would be delivered on time for the campaign.

Advocacy

The committee established in 2005 continued its campaign during 2006 MDA and this time utilized TV and radio ratings to identify specific timings that the campaign advertisements should appear in order to capture the attention of audience belonging to different social and age groups. For example, spots during the morning and evening rash hour shows were chosen to target commuters whereas spots during early morning hours to target mothers and school children. The similar approach was taken for TV campaign to target primarily urban residents at home in the evenings. The committee chose spots during an evening drama show, Shortland Street, as it had one of the highest ratings during weekdays. The messages on TV were originally prepared for 30 seconds as in previous years however were aired in 15 seconds spots (the clip was modified to fit) due to 1. unexpected shortfall in budget, 2 our observation that the reach of TV is more limited geographically and socially, and thus the population it covers would be smaller and miss out certain groups of the population. It seems that the shorter airing time of 15 seconds did not affect the effectiveness and impact of the messages as we received feedbacks from the public on the TV messages as soon as it was aired.

The committee worked together with the Ministry of Health media spokesperson and the local press agencies to hold a press conference at the start of MDA campaign in 2006. The conference also emphasized the partnership with CDP. Press releases were also prepared at times during MDA campaign when news from the field arrived.

2006 MDA coverage

As of 15 March 2007, among 20 sub implementation units of MDA (19 subdivisions and one medical area of Rotuma), the individual coverage of 18 subdivisions and Rotuma is available. The individual coverage of 2 subdivisions (Lomaiviti and Macuata) is not available as some medical areas under the subdivisions that account for rather significant proportion of the population in the subdivisions have not yet returned the booklets at the time this report was prepared (Ovalau in Lomaiviti and Wainikoro in Macuata). Thus, the national coverage of 2006 MDA cannot be estimated as it would most likely underestimate the true national coverage unless coverage of all subdivisions is available. Coverage was estimated based on the population of 2005 provided by Ministry of Health, except the population of Lakeba and Lomaloma subdivisions, Kese, Nacula, and Malolo medical areas in Lautoka, Keiyasi and Lomawai medical areas in Nadroga, and Rotuma are as of December 2006.

Sub divisional estimates of coverage from most areas have become available earlier than in previous years. This can be attributed to efficient and swift collection of booklets done during coverage surveys and the volunteers who worked harder and more diligently than in previous years.

Sub implementation (sub divisional) coverage

Six sub IUs (five subdivisions and Rotuma) achieved above 80% coverage during 2006 MDA whereas nine sub divisions only achieved at or below 65% (Figure 5). The best coverage was achieved in Rotuma (92%). The lowest was 42 % in Naitasiri, a subdivision that has been experiencing the lowest coverage since the first round of MDA. The sub IUs that achieved high coverage during 2006 have performed well throughout the five year program. It is interesting to note that these areas include some of the most remote islands and many hard-to-reach areas. Low coverage was more common in Central and Western divisions as in the previous years, where health service is more accessible and more information is available. One factor contributing to the low coverage in Central and Western divisions is inadequate human resources allocated for MDA. Central and Western covers a large population in urban areas and thus requires more staff committed to MDA with adequate logistical and financial support.

Sub IU	Treatment coverage	Registration coverage	Proportion of treated population that took tablets at the distribution sites	Proportion of treated population that said to consume later
Rotuma	88	93	87	13
Cakaudrove	84	90	80	20
Kadavu	84	90	57	43
Lomaloma	84	90	70	30
Lakeba	83	89	46	54
Bua	81	85	65	35
Nadroga	77	79	53	47
Taveuni	73	83	78	22
Ra	71	75	15	85
Nadi	65	66	5	95
Tavua	65	66	48	52
Lautoka	63	63	33	67
Serua Namosi	61	65	14	86
Ba	55	56	9	91
Tailevu	54	56	64	36
Suva	48	49	1	98
Rewa	45	47	20	80
Naitasiri	42	45	22	78

Figure 5 Coverage of sub implementation units during 2006 MDA

Based on the available sub IU coverage, the national coverage is expected to remain at the same level as in previous four rounds, if not lower. Therefore it is reasonable to conclude that during the five rounds of MDA, Fiji never achieved 80% coverage – sustaining the coverage successively is a definite requirement for interrupting transmission of and thus eliminating LF.

Coverage survey

Background

MDA coverage survey allows MDA implementing team to assess the accuracy of reported coverage or coverage estimated from the MDA registers. It is also useful in estimating coverage of implementation unit before the coverage based on the MDA registers can be obtained. In the past no post MDA survey was conducted in Fiji, making it difficult for the program to review the performance of MDA in a timely manner as well as to obtain feedback from the field.

After the fifth MDA completed in December 2006, two sets of coverage survey, one in Western and Central divisions and another in Northern division, were conducted by the project officer and her team. By conducting a coverage survey, the program hoped to obtain not only the coverage estimate but also feedback from the field. The survey also included a simple questionnaire to assess public awareness and knowledge on lymphatic filariasis and MDA program. (Annex 5 for detail methodologies and results)

Summary of findings

Western and Central coverage survey

The coverage survey in Western and Central divisions was conducted in December soon after MDA was officially completed. We originally hypothesized that there may be a difference in attitudes toward MDA between two different divisions of Western and Central. Though the estimated coverage among the respondents was slightly different between Western (80%) and Central (87%) divisions, the difference is probably insignificant. No marked difference was observed between the two divisions in reasons why some eligible persons fail to consume the tablets – the most common answer was “refused”. The question and answer options did not provide enough clarity as to differentiating intentional refusal from accidental refusal; for example some respondents commented that they did not intentionally refuse however just have not yet taken time to consume the tablets that have been in hand since distribution. In Central, in terms of proportion, more Indians (38% of all Indian respondents) did not take the tablets. However, the results most likely do not represent the attitudes towards MDA of the true Indo Fijian population. The sample size was disproportionately small for Indo Fijians and most (22 out of 33) of those who did not take the tablets come from one particular sampling site. There was no significant difference between male and female in the attitudes towards MDA.

Northern survey

The coverage survey in Northern division took place in late January 2007, approximately 6 weeks after the official conclusion of MDA. The survey team found that distribution continued in some areas until late December 2006 and even until January 2007. The respondents were geographically well distributed and had a male-to-female ratio very similar to that of SPC estimate for Fiji in 2006. Fijians were again over-represented among the survey respondents.

During the survey, all four divisions in Northern division were visited and information on whether or not a person participated in 2006 MDA of 2162 persons was collected. 578 persons were further interviewed using a KAP questionnaire adopted from WHO protocol. An estimate of coverage for the entire surveyed area obtained by aggregating data from each lot was 94.5%, very high coverage compared to the register based estimates of previous years. We originally hypothesized that there

could be a difference in the attitudes towards MDA between female and male populations. Thus, samples were collected separately and analyzed accordingly. Of all eligible female respondents 3.2% did not consume tablets during 2006 MDA. The most common reason was “no distribution in the area”. In most cases, respondents knew of MDA and that the tablets were available at the nearest health center or nursing station. Of all eligible male respondents 3.7% did not consume tablets during 2006 MDA. The most common reason was “Away from residence”, showing that the person was not at home or in his village during house-to-house distribution or during nurses’ visit to the village during the distribution (usually once during MDA). No significant difference was observed between three ethnic groups in the surveyed population

The estimate coverage in the survey area (94.5%) can be interpreted in a few ways – an excellent performance of Northern division during 2006 MDA or false reporting by respondents (answering “yes” while not actually taking or receiving the tablets). While it is difficult to assess the proportion of false reporting among the survey respondents, the survey was carried out approximately 6 weeks after the official closing date of 2006 MDA and it is possible that some respondents had difficulty in recalling when they took tablets, which could be during 2005 MDA.

During 2005 MDA Northern division reported the highest directly observed treatment during MDA (60.8% of total treated population), which possibly contributed to the high survey coverage.

The coverage survey in Northern revealed another interesting issue. While there was no significant difference in the estimate coverage between female and male, it showed that men were more likely to miss the opportunity of collecting the tablets due to absence from their village or residence.

Clinical cases
One case of hydrocele was reported during the coverage survey in Northern division. The case was reported by villagers; however the zone nurse was not aware of the person. Lymphoedema was reported by two households; one case was being treated with annual dose of “filariasis tablets” for five consecutive years.

KAP survey Northern
KAP survey was also conducted in Northern division along with the coverage survey. The survey found that health workers were the most common source of information about MDA. Furthermore, it revealed that, while the public had a good knowledge and understanding of MDA and LF, some respondents, more than our original expectation, did not consider taking the tablets as a preventative measurement. Some respondents (30%) also raised concern about adverse reactions; however it was not clear from the questionnaire, whether they have experienced and thus were worried or they have heard of adverse reactions and thus were worried.

The survey identified a few issues that can provide a clear direction on our future advocacy campaign. First, in order to ensure that the public feel assured about taking the tablets and giving the tablets to their family members, a future advocacy campaign should clarify the purpose of MDA and give clear explanation on possible side effects. Second, according to the results, health workers (distributors) were the most important source of information. Thus, all distributors should be capable of and willing to providing proper information about filariasis and MDA and communicating with the public.

Towards the elimination of LF in Fiji
Since 2002, Fiji national filariasis control program has worked with PacELF towards the elimination of LF. The achievements of the last five years are;

- Five rounds of MDA implemented with the average national coverage of 62% (the average of the first four rounds as the fifth round coverage is still unavailable as of March 2007; however the coverage of the fifth round is expected to remain at the same level)

- Baseline survey, post 2nd MDA survey, and midterm (post 3rd MDA) survey conducted to assess filarial antigen prevalence primarily at "sentinel" sites

Furthermore, advocacy campaign has raised awareness towards the program considerably since 2002 and has created very supportive environment for the program by deepening the public understanding of not only MDA but also LF.

Upon the review of the fifth round MDA and the last five years of program implementation, following problems are found persistent throughout the program;

Low coverage
National coverage remained low and did not improve since the first round of MDA. At sub divisional level, the same group of subdivisions performed poorly (below 60%) throughout the five years while subdivisions performed well at initial rounds performed relatively well throughout the program

Poorly defined survey sample sites and convenience sampling
Survey sites seem to have been chosen conveniently and only a small number of sampling sites were revisited to track the impact of consecutive rounds of MDA. Furthermore, convenience sampling was the norm and poor documentation made it impossible to verify and review the results of the three surveys. Consequently, these practices resulted in the datasets that are difficult to interpret as an indicator of program performance and that do not provide representative and up to date epidemiological information of Fiji, on which decisions for the future post fifth MDA strategy should be made.

The possible causes of these problems that act as the limiting factors of the program are identified as follows;

Unpaid, or delay in payment of, meal and subsistence claims and other administrative issues
Although these administrative issues were dealt between Headquarter and Mataika house administrative personnel and the filariasis unit was not in a position to deal with the issues directly, it has continued to discourage nurses who were the primary drug distributors and has created hostile attitudes towards the unit and MDA.

No review of each round of MDA and thus no feedback to divisions and sub divisions
During the initial four rounds, no critical review of the program was done. The national coverage estimate was presented as the only indicator of program performance and only reported to the higher authorities within the MOH and to WHO as a form of annual report. Thus, problems that might have arisen during the last round of MDA were not identified clearly and consequently not solved. Furthermore, there was no reporting of coverage estimates (national, divisional, and sub divisional) to divisional and sub divisional offices, which would have helped them to review their program and to set a target for the next round of MDA.

Improper documentation of survey protocols and results
Since the beginning of the program in 1999, there have been continuous changes in the establishment of the unit and handing-over from leaving personnel to the unit seems to have been inadequate, resulting in improper documentation.

Insufficient review or analysis of blood survey result
There has not been a report that contains the epidemiological analyses of the three surveys conducted since the baseline survey. The review of baseline survey would have been critical in order to establish proper "sentinel sites" and periodic epidemiological evaluation protocol including well defined indicators of MDA performance. The results of three surveys were not also shared with divisional or sub divisional offices.

No program coordinator
These problems have been raised repeatedly during the last five years and recommendations have been made; however there has been nobody to coordinate the program, and adapt and implement the recommendations.

Solutions to these problems have to be identified upon discussion within the unit and in a close liaison with Headquarter and Mataika House administrations and need to be implemented.
The program currently prepares for C survey. Implementation of properly designed and planned survey is crucial in order to obtain valid results, which in turn should provide data, on which decisions for the future direction of the program can be made.