

# Elimination of Lymphatic Filariasis: Mass Drug Administration in Endemic Areas of (Bidar District) Karnataka-2008

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## ABSTRACT

**Background:** Lymphatic Filariasis is a mosquito transmitted disease, caused by parasitic worm *Wuchereria bancrofti*. Global Programme for Elimination of Lymphatic Filariasis was established in early 2000. The strategy recommended by the World Health Organization is annual Mass Drug Administration (MDA) of single-dose of Diethylcarbamazine 6 mg/kg (DEC), distributed to inhabitants of Filariasis endemic areas, excluding children below 2 years of age, pregnant women, and seriously ill persons, and Morbidity Management. The health system distributes the drugs by a door-to-door strategy. **Objective:** To assess the coverage and compliance of MDA in Bidar district during the campaign in November 2008. **Materials and Methods:** Cross-sectional population-based house-to-house visit. Outcome is assessed as actual coverage and compliance, in Percentage and proportions. **Results:** Eight clusters, total eligible population of 1 131 individuals were interviewed. The coverage rate was 78% with variation across different areas. The compliance with drug ingestion was 68%. **Conclusion:** The effective coverage was below the target (85%). Side effects of DEC were minimum, the overall coverage was better in rural areas compared with urban areas.

**Keywords:** Coverage, DEC, lymphatic filariasis, mass drug administration

## Introduction

Lymphatic Filariasis (LF) and Soil-Transmitted Helminthiasis (STH) are the most common human helminth infections which have public health significance in India, and has been identified as a potentially eradicable disease by the International Task Force for Disease Eradication.<sup>(1)</sup> The National Filaria Control Programme (NFPCP) was launched in 1955 for the control of Bancroftian filariasis and now, National Health Policy goal is to eliminate LF from India by the year 2015.<sup>(2)</sup>

In 1998, the WHO had targeted the elimination of this disease and formulated a Global Programme on Elimination of Lymphatic Filariasis (GPELF). The basic features of this program are Mass Drug Administration (MDA) with appropriate antifilarial drug and morbidity management. Under this program, a National Filaria Day (NFD) is being observed. On a particular day, a single dose of antifilarial drug diethylcarbamazine 6 mg/ kg (DEC) and antihelminthic Albendazole 400 mg is distributed to inhabitants of all age and sex in filarial endemic areas, excluding children below 2 years of age, pregnant women, and severely ill patients.<sup>(3,4)</sup> It aims at cessation of transmission of Filariasis in the community.

Though DEC alone was adopted as the primary strategy, India commenced pilot testing of the 2-drug strategy (DEC+ Albendazole) in 2001.<sup>(4)</sup> These strategies of GPELF are having important additional public health benefits, and the foremost among these are the effects on the

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control of STH infections in treated populations, largely because of certain similarities. Poor sanitation has led to high prevalence of this disease in this part of country. LF is second most important mosquito-borne disease prevalent in Karnataka and *Culex quinquefasciatus* is the main vector for the disease. Currently, eight districts of Karnataka are considered endemic for the disease, out of which Bidar district was selected for this study. The present study was conducted to assess the program effectiveness of the 2-drug strategy in terms of actual coverage, compliance rates of MDA against filariasis in the district, and to report the side effects of DEC if any. It was based on both quantitative (through household MDA coverage survey) and qualitative data (through semi-structured interviews with heads of compliant and non-compliant households) collected after MDA.

## Materials and Methods

MDA was conducted in the second week of November 2008. The Community-based cross-sectional study was conducted in third week of November 2008, by a team from Medical College. Assessment was conducted for four days. DEC and Albendazole tablets had been distributed to all eligible population in the district with the help of anganwadi worker and local self-help group as drug distributors (DD), making house-to-house visit with the instruction to swallow all the tablets. The coverage rate was reported by DHO as >90%. This was evaluated by P and SM faculty members.

Selection of the survey area: Bidar District has 15°34'953 eligible population from 5 taluks and all were known for filariasis. Hence, MDA activity was done in all the five taluks. First, the baseline data for the district was collected, like number of PHC/CHC and the coverage rate from the District Malaria Office, as he was in charge officer for the program.

Among the five taluks, four taluks were selected randomly. In each taluk, one PHC was selected randomly, and in district headquarters, one Urban Health Centre was selected randomly. In each PHC, two villages were selected randomly based on population size and coverage by PHC Medical officers report as village with good coverage (>80%) and poor coverage (<80%). Systematic random sampling technique was adopted for selection of 25 households in each village. Similarly, two urban wards were selected and they were visited, interviewed about MDA activity, and data recorded in format. A total of six villages and two urban wards covering 200 Households with target population of 1 131 from eight clusters were covered. They were interviewed for, if DD had visited the house, how many drugs were given, did all the members of household swallow or any tablets were left over. Awareness

about MDA activity and any adverse events were also recorded. The results of the survey were summarized in terms of coverage (the term coverage refers to the percentage of number of individuals who received the DEC and Albendazole tablets, to the total eligible individuals) and compliance (the term compliance refers to the percentage of number of individuals who consumed the tablets, to the total eligible individuals). Data were analyzed using SPSS 11.0 software. Results were summarized as percentages.

## Results

The present study covered a target population of 1 131 from eight clusters. The survey was conducted to know the gap between the coverage and compliance and to study the reasons for the poor involvement of community.

In the study population, 51.5% were males and 48.5% were females. 10% were 2 to 5 years of age, 22% population were in the age 6 to 15 years, 68% were more than 16 years old [Table 1].

Among the 1 131 population surveyed, only 78% said they received the DEC and Albendazole tabs from DDs. As per District Health Office report, the coverage is 90.75% in selected eight clusters as well as in the entire district. According to the survey, it is 78% only [Table 2]. The minimum required target of 85% coverage for elimination is not fulfilled. Among 1 131, only 68% (768) of the people consumed DEC and Albendazole tablets and remaining population did not consume the tablets. This compliance rate was poor in urban area (46%) compared with rural area (74%). The difference between the coverage and compliance for both rural and urban were found to be significant. Many households said the DD did not explain properly how to take and why to take DEC and Albendazole tablets. Only 40% of people were aware of the MDA activity through News paper, TV, Banner/Health worker (HWs).

**Table 1: Distribution of study population by age and sex**

Age group (yrs)	Male	Female	Total	%
2-5	57	56	113	10
6-15	128	121	249	22
16	397	372	769	68
Total	582 (51.5%)	549 (48.5%)	1131	100

**Table 2: Coverage of MDA as per DMO/Survey report for the Bidar district**

	No. of PHCs	Target population	Population covered	Percentage
As per DMO	42	15,34,953	13,93,022	90.75
As per survey	04	1131	888	78

MDA: Mass drug administration, DMO: District malaria officer, PHC: Primary health center

Among 363 non-compliant populations, 55% said they were not at home during MDA activity. 19% people did not consume because of fear of side effects [Table 3].

## Discussion

The effectiveness or success of LF elimination depends on the consumption of the drug by the affected population and intermediary evaluation of the program.<sup>(5,6)</sup>

In the study group, the coverage rate is 78%. Remaining 22% people said DDs/HWs had not visited their house to distribute tablet/they were not at home, which is worse in urban than rural area (Kumar *et al.*, 2009 and Babu *et al.*, 2008). Hence, DD/HWs should be aware of the area and each allotted area to be covered on the day, or revisit the next day.

Among 363 non-compliant individuals, 19% people did not consume the tablets because of fear of reactions<sup>(7,8)</sup> (few case of reactions due to the drug in last round MDA were reported in some areas), and 9% said this is not for me or healthy,<sup>(9)</sup> over dose, forgotten, etc. The side effects were few and they were also minor in this round. DEC is available as 100 mg strength tab, it should be swallowed as one, two, and three tabs for age <14 years, 15 to 45 years, and >46 years, respectively, and Albendazole tab available as 400 mg strength single tab for all age group. All the two or three DEC tablets are to be swallowed with Albendazole tablet together as per guidelines. Majority of population swallowed one in morning and one in night, because the DD did not specify. These non-compliances can be reduced by reorienting the DD and convincing the people by giving adequate information on correct dosage of tablets. Better coordination with other sectors, like involvement of NGOs, Local Leaders, and Self-help group, were recommended.

In countries like India, annual MDA is an economic option. The existing government healthcare system is capable of conducting the program, although more inputs are required to achieve desired levels of compliance. Though this drug has limited effect on adult filarial worm, it clears microfilaria from the circulation

**Table 3: Distribution of study population according to reasons for not taking DEC and Albendazole tablets (n = 363)**

Reason for non-consumption	Frequency	Percent
Not at home	200	55
Fear of reaction	69	19
DD did not come to house	43	12
Not worth	33	09
Forgotten	11	03
No response	7	02
Total	363	100

DEC: Diethylcarbamazine, DD: Drug distributors

of the affected hosts, thus preventing the mosquito from transmitting the infection. The main aim of MDA is to remove microfilaria from blood and check transmission.

The major challenge with the currently available drugs is that the interruption of transmission requires very high treatment coverage (probably >85% of the total population) to achieve elimination. But current approaches to drug delivery do not achieve this (only 68% gets treated). Hence, there is an urgent need for more effective drug delivery strategies for LF. A special challenge will be drug delivery in urban settings. Although some states are able to achieve high compliance with MDA, others lag behind due to ineffective IEC and the inability to tap all the available resources. In order to attain a high level of IEC, the education system should be involved at all levels, i.e., from primary education to college level. This could be achieved by incorporating information about the disease in the study syllabus, conducting of camps, health melas, drawing competitions, etc., and to run these programs continuously for the entire MDA period. Children should be involved in finding out ways to teach their elders about filariasis. Each school should have a wall painting highlighting the importance of MDA. Involving School Principal and PT masters can improve the coverage among young children. The survey indicates some important shortcomings like poor coordination in the district authority, non-involvement of middle-level health staff in MDA planning, and poor training to DDs regarding micro planning, area to be covered, and stress the need of consuming the drugs. These problems require powerful advocacy tools and strategies. Some of these issues can be overcome by making effective micro plans, improved supervision, and emphasizing more strongly on selection criteria in training. The MDA program clashed with one of Sikh religious function in the area, which affected the supervision of MDA. Efforts are to be made to avoid clashing of such programs.

## Conclusion

In the study group, the coverage rate is 78% and the compliance rate is 68%. MDA awareness is only 40%, IEC activity should start early and strengthened by local methods and proper supervision during MDA activity involving local or community leaders were suggested.

In the absence of vaccine, elimination of Filariasis can only be possible when the program becomes a mass movement.

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