Leprosy Control programme in Malaysia

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Key words: MDT, Skin Clinic, Mobile Clinic, DDS resistant cases, Health Center,

After 20 years implementation of the Leprosy Control Programme, this paper gives an overall view of the current status of leprosy in Malaysia. Thus, we hoped that, with the observation recorded, any suggestion and comments for our future improvement in the programme is greatly desired.

In this paper, the following articles are reported:
1. The Country
2. Historical Background of Leprosy in Malaysia
3. The National Leprosy Control Programme
4. Training Programme at the National Leprosy Control Centre
5. Multiple Drug Therapy Regime
6. Achievements of the Multiple Drug Therapy Usage
7. Problems with Multiple Drug Therapy Usage
8. An Example of a Leprosy Patient in Malaysia
9. The Leprosy Prevalence Survey
10. Epidemiological Evaluation
11. Clinical and Biomedical Research

1. The Country

Malaysia consists of West Malaysia (Peninsular Malaysia) and East Malaysia (Sabah and Sarawak). It is a federation of 13 states and 2 federal territories. It is a multiracial country with a population of 16.5 million. The annual rate of growth in population is 2.9%. Currently 83% of the population lives in Peninsular Malaysia, 8% in Sabah and 9% in Sarawak. Malay, Chinese, Indian and the indigenous people of Sabah and Sarawak form the majority of the population.

In 1987, it was observed that 48% of the entire population was under 20 years old, thus the health problem among the younger population has to be considered primarily in the National Health Plan. Therefore, leprosy has been given low priority in terms of financial and manpower aids. In 1987, the financial budget allocated for leprosy work amounts to M $ 5, 725, 819.

The life expectancy at birth in Malaysia has remained stable. In 1987, the life expectancy at birth for males is 69.0 and for females 73.1.

There are a total of 5794 medical practitioners in 1987 giving a doctor: population ratio of 1: 2852

* Present Address
2. Historical Background of Leprosy in Malaysia

It is not known when leprosy was introduced into Malaysia. Currently the number of leprosy patients on treatment as of 1.1.1989 were:

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<th>Region</th>
<th>Number</th>
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<tr>
<td>Peninsular Malaysia</td>
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<td>Sarawak</td>
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<tr>
<td>Sabah</td>
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<td><strong>Total</strong></td>
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Before the dapsone era, the leprosy patients were isolated in special colonies and were scattered all over the country. Then in 1926, a Leper Enactment was enforced and a compulsory notification of leprosy with mandatory hospitalization was set up, named the Sungai Buluh Leprosarium covering an area of 640 acres of the land. In 1969, when the National Leprosy Control Programme was introduced, the notification was directly under the Central Registry in Sungai Buluh Leprosy Control Centre and the automatic entry into the settlement was abolished.

3. The National Leprosy Control Programme

In 1969, a National Leprosy Control Programme was launched with the objective that leprosy would no longer be a public health problem. The main policy of the programme was the decentralization of treatment in leprosy and the abolishment of automatic entry for permanent stay in the leprosarium. Entry into the leprosarium is only directed by the Review Board. The Review Board is a committee comprising of the Director of the leprosarium, medical doctor, social worker and representative from the leprosy patient association. Thus, the population of the leprosy patients in the Sungai Buluh Control Leprosarium was slowly reduced (Fig. 1). The number of inmates in 1969 was 2410 as compared to 918 as of 1.9.1989. With the launching of the programme, treatment of these patients are fully integrated with the basic medical and health services available in Malaysia.

A consultant dermatologist of each state in Malaysia is responsible for the overall management of leprosy patients in their state. They are assisted by 24 mobile skin clinic stationed at various skin clinics in the health centers all over Peninsular Malaysia (Fig. 2). Each mobile skin clinic is staffed by an Assistant Nurse trained in leprosy control, an attendant and a driver with a vehicle. The function of the mobile skin clinic is to help the local doctors on follow-up of the patients, checking on defaulters, maintaining records and preparing monthly returns to the Central Registry in Sungai Buluh Leprosy Control Centre. There is no special mobile skin clinic in Sabah and Sarawak because of wide area for coverage and inaccessibility by roads. In Sarawak, the unit is under the State Leprosy Control Centre based at the Raja Charles Brooks Memorial Hospital. All patients diagnosed to have leprosy are admitted to this hospital. All their contact cases are routinely examined by the Public Health Inspector covering the area. Transport is either by jeep, boat or by helicopter. In Sabah, the unit is under the State Tuberculosis and Leprosy Headquarters which have similar services as in Sarawak. As for the indigenous group in Peninsular Malaysia, the leprosy patients are managed by the Jabatan Hospital Orang Asli.
(Departmental Hospital for the Aborigines) which comes directly under the mobile skin clinic of Sungai Buluh Leprosy Control Centre.

4. Training Programme at the National Leprosy Control Centre

Training programme plays a vital role in the control measures of the National Leprosy Control Programme (NLCP). The methodology which is suitable and applicable to the control programme has to be applied to the health centers and mobile skin clinics. Centralized training is conducted at the National Leprosy Control Centre (NLCC), Sungai Buluh, which is responsible for the planning, coordination and technical direction of the control programme. This training is supplemented with regular on-the-spot training, supervision and motivation by the Managerial Team which visits the facilities on a scheduled basis.

The NLCC provides training courses concerning leprosy control for medical and paramedical staffs such as Assistant Nurses, Public Health Inspectors, Medical Assistants, Public Health Nurses, Staff Nurses and Medical Laboratory Technologist. Special refresher courses are also held for Assistant Nurses from Mobile Skin Clinics, Medical Doctors attached to the skin clinics and Medical Health Doctors from the health districts. These courses are necessary to update them with all aspects of the NLCP and clinical aspects of leprosy.

Medical students and post graduate students doing masters in Public Health from the Medical Schools of local universities are required to attend compulsory formal lectures and practical demonstration on clinical aspects and management of leprosy including the Control Programme.

The NLCC also receives some foreign medical students for leprosy training. In 1988 there are 8 foreign medical students who attended the individual Leprosy Control Training Programme:

- Six Medical students from Glasgow University, England
- One Medical student from Edinburgh University, England
- One Medical student from Royal college of Surgeon Dublin, England.

In 1988 NLCC also received other medical personnels for orientation course in Leprosy Control:

- One Nurses from Cardiff University
- Eleven WHO fellows from developing countries.

5. Multiple Drug Therapy Regime

WHO Multiple Drug Therapy (MDT) was introduced in Malaysia in 1985. A pilot project was started in the state of Selangor before nationwide implementation was introduced. It was observed that there were a lot of controversies over the regime. Thus NLCC has devised a Modified Regime to overcome the limitations.

Sungai Buluh’s Modified MDT Regime

1) Paucibacillary leprosy, i.e Tuberculoid leprosy: Few lesions
   - Lepromin positive
   - Smear negative
   - Histologically epithelioid cells
   - Acid-Fast bacilli negative
   - Low titre in serological tests
Treatment: DDS 100mg daily
Clofazimine 100mg daily
Rifampicin 600mg monthly

Duration of treatment is 1 year after which:

a. Patients will be released from treatment (in areas where surveillance of patients is 75% efficient e.g., in Penang state)

or

b. Patients will be put on another year of DDS monotherapy (in areas where surveillance of patients is 50% efficient e.g., in Kelantan state) and then released from treatment.

Surveillance is for 5 years with yearly smears done.

2) Multibacillary leprosy, i.e. BB, BT, BL: Few or many lesions
   Lepromin negative
   Smear positive
   Histologically granuloma
   Acid-Fast bacilli positive

Treatment: 
**Intensive Phase** (for 3 weeks or until MI=0)

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<th>Drug</th>
<th>Dosage</th>
<th>Frequency</th>
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<tr>
<td>DDS</td>
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<td>Clofazimine</td>
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<td>Rifampicin</td>
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**Maintenance Phase**

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<th>Drug</th>
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<tr>
<td>DDS</td>
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<tr>
<td>Clofazimine</td>
<td>50-100mg daily</td>
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<tr>
<td>Clofazimine</td>
<td>300mg monthly</td>
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<tr>
<td>Rifampicin</td>
<td>600mg monthly</td>
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Patients are hospitalized during the Intensive Phase of the treatment. They are discharged from the hospital during the Maintenance Phase and continued to take the medication at home, but are requested to come to the skin clinic once a month for their medication. Mobile skin clinic will attend to those patients who are not able to come to the clinic.

Leprosy patients have to continue the MDT regime for 3 years or until smears are negative and they can be put on monotherapy for another 5 years in cases of BL and 10 years in cases of LL. To release patients from control, a minimum period of 10 years is required until the smear results are negatives.

In cases of relapse the patients are treated for a minimum period of 5 years with MDT regime.

6. **Achievements of Multiple Drug Therapy Usage**

The usage of MDT in the treatment of leprosy is a success in Malaysia. The followings were achieved after launching of MDT nationwide in 1987:

1) *Decreased in the number of DDS resistant cases*
   The percentage of DDS resistant patients have decreased (Table 1).

2) *Decreased in the number of reaction cases*
   There has been a drop in the number of ENL cases from 0.9% in 1987 to 0.5% in 1988. The ENL wards in NLCC have been closed down in view of the declining number of ENL
3) Decreased in the prevalence rate of leprosy
With the MDT regime, the national prevalence rate has come down, because more patients on MDT are released from chemotherapy when they have completed the regime (Fig 3).

4) Decreased in the number of inpatients at NLCC
Most of the patients on MDT are treated as outpatients and this helps in the closure of the leprosaria. Indirectly, this also reflects a reduction in the work load of the staff allowing them to devote more time to the problem cases.

5) Decreased in the defaulter rate
There were less defaulters when patients were put on MDT as compared to monotherapy. This indicates an improved compliance to treatment with MDT. In 1988 the defaulter rate for MDT was 25.8% in comparison with 49.3% with monotherapy.

7. Problems with Multiple Drug Therapy Usage

Despite the achievements with MDT usage, life long monotherapy treatment is still needed in some areas due to the following reasons:
1) In Sabah and Sarawak, there is still poor supervision of patients and higher defaulter rate because of its large area and poor infrastructure.
2) Lack of trained staff in leprosy in some undeveloped states in Malaysia.
3) Insufficient laboratory facilities in some health centers and inadequate supply of vehicles for supervision.
4) Side effects of some of the drugs used in treatment namely Rifampicin and Ethionamide which are associated with severe toxicity of the liver. Pigmentation due to Clofazimine has also deterred the patients from using these MDT drugs.
5) Lack of cooperation from the patients. Patients refuse to change to MDT regime after long time usage of DDS monotherapy.

8. An Example of a Leprosy Patient in Malaysia

A patient who has a skin lesion visits the general outpatient clinic first. If the physician thinks that the patient has leprosy, the patient is referred to the Dermatology Clinic where the skin specialist who sees the patient will do the necessary examination and investigation to confirm the diagnosis. If the physician at the outpatient clinic is uncertain about the diagnosis, he will also send the patient to the skin clinic for further treatment of skin disease. In this way the patient will eventually be detected at the skin clinic. Once the diagnosis is confirmed, depending on the type of leprosy, the patient is hospitalized or sent to the skin clinic nearest to the patient’s house for regular treatment. The patients who need hospitalization are those multibacillary cases who are infectious. These patients are admitted into the general ward under the Dermatology Section. Duration of stay in the hospital is usually 3 weeks or until $M_1 = 0$, then the patient will be referred to the skin clinic nearest to the patient’s house. The patient will then visit the clinic once a month for medication. The slit skin smear will be done once every 6 months for multibacillary cases and once yearly for paucibacillary cases. If the patient lives in an area where there is no
skin clinic, or the patient is handicapped and not able to go to the clinic, the supply of medication will be sent to their house by the mobile skin clinic. The mobile skin clinic will visit these patients once a month. When it is due for the smear reading, the doctor from the skin clinic will follow the mobile clinic and examine the general status of the patient and review the medication if necessary. The serological monitoring will also be taken during this visit.

On the other hand, if the patient who had always come to the skin clinic for the medication is absent for 2 consecutive months, the mobile skin clinic will visit the patient at their home to find out the reason for their absence. Occasionally it is found that these patients had either transferred elsewhere or had died. If the patient had been transferred, the patient’s record will be sent to the Central Registry Sungai Buluh and then sent to their new residence on request by the skin clinic nearest to their new home.

A leprosy patient, who wishes to be an inmate at the leprosarium, has to request permission from the Review Board. An overall condition and situation of the patient concerning their leprosy handicapped, social status, financial background and family support will be taken into account. Patients who are severely deformed, handicapped or poor in terms of financial and family support are admitted into the leprosarium. They are given accommodation according to the severity of the disease. Those patients who are severely deformed and not able to take care of themselves, but are not infectious, are put into the decrepit wards. They are attended by the nursing staffs of the NLCC. The food and laundry are prepared by the leprosy committee which comprises of leprosy patients who are otherwise well. These patients are given a chalet, i.e., a small house with a kitchen and bath. Living allowances and daily consumer items such as firewood, kerosene and food such as fish, vegetable, meat and rice are given to all leprosy patients. These social and medical services are provided free by the Ministry of Social and Welfare and the Ministry of Health, Malaysia.

9. The Leprosy Prevalence Survey

In 1986, it was decided that a prevalence survey had to be carried out for Peninsular Malaysia and gradually for East Malaysia to determine the actual prevalence of leprosy in Malaysia. The leprosy prevalence survey protocol is based on the report by Dr. A. Louhenapessy, a WHO Consultant to Malaysia from 16.6.1987 to 13.7.1987. The duration of the project is for 2 years, from December 1987 to December 1989. The objectives of the survey were as follows:

1) To determine the prevalence of leprosy among the population and their distribution according to age, sex and nature of the disease.
2) To evaluate the objective of NLCP after 20 years of launching the programme.

The survey was done by “Multistage Cluster Sampling” method with a sample size of 25,000 people. The classification of the different territories depend on their prevalence rate. High prevalence areas are those areas where the prevalence rate is more than 7 per 10,000, and low prevalence areas are those areas where the prevalence rate is between 4-6 per 10,000. The cities and the very low prevalence areas were excluded from the survey.

The leprosy survey team was divided into 2 groups. The examination team comprises of a doctor from the skin clinic and paramedical workers from the mobile skin clinic. The registration team comprises of the administration staffs from the Central Registry. This is to avoid
double registration of patients and also for the staffs to get a closer rapport with the new patients if detected. Some of the paramedical workers are old cases of leprosy patients released from control. These patients have minimal or no deformities. They are specially trained in leprosy care and have an insight to the disease in the spiritual aspect. They give a good moral support to other leprosy patients during these visits.

In the areas gazetted for the survey, the following procedure were done with the help from the local district health authorities:
1) Briefing to the local leaders of the area
2) Identification tags to the houses
3) Registration of the population in the area
4) Scheduling of the survey
5) Survey proper

The patients were examined clinically. In the suspected cases, specimens were taken for bacteriological, histological and serological diagnosis. These specimens were sent to the laboratories in the General Hospital and Institute for Medical Research for confirmation of diagnosis. Data were processed by computers and analysis done with consultation services from WHO Regional Research Centre.

10. Epidemiological Evaluation

1) Prevalence
The true prevalence of leprosy is not known. In 1969, Jose N. Rodriguez, a WHO Consultant in leprosy estimated that there are 11,800 to 15,000 leprosy cases in Peninsular Malaysia, i.e., prevalence of 17 to 20 per 10,000 population.
In 1975, the prevalence was estimated to be not extending 15 per 10,000 population.
In 1985, when MDT was started in Malaysia there were 7135 cases registered. After a review, 2631 cases were released from control and 2219 has been confirmed to have died.
In 1987-1989, a prevalence survey was conducted and reported to have 4522 cases registered. Thus, the known prevalence rate is about 3.3 per 10,000 population for Peninsular Malaysia (Fig. 3).

2) Incidence
The true incidence of leprosy is not known, but is estimated to be about 3 per 100,000 population. In Malaysia, it is observed that the incidence of new cases is higher in the older age group, i.e., above 45 years old. A decline in percentage from the younger age group is an indication that there is less active transmission of leprosy in the community. However, in 1987, the influx of foreign immigrants into Malaysia was suspected to be the cause of the high Lepromatous \ Borderline infectious rate, i.e., 82% of the new cases detected.

3) Deformity Rate
Deformity rate reported to the NLCC had declined during the past few years, but the highest percentage of deformity is still among the LL group of patients (Table 2).

4) Case Detection
The efficiency of case detection leaves much for improvement. In Malaysia, there are 2
methods of case findings.

1) active cases: contact examination school, estate, and countryside surveys
2) passive cases: self referral, referral from government hospitals, private hospitals, health clinic and private practitioners

The detection rate shows a declining trend over the years (Table 3). There are 176 cases detected in 1988, out of which 40.9% are Lepromatous type, 31.3% Borderline type, 25% Tuberculoid type and 2.8% Indeterminate type.

5) Institutionalization

One of the aim of the NLCP, is to decentralize treatment of leprosy cases and reduce institutionalized cases which is expensive. Fig. 1 shows that the number of patients have reduced by more than 55% over a span of 19 years (1970-1989). In-patient care is only provided for infectious cases, drug resistant cases and those requiring reconstruction surgery (Fig. 1).

11. Clinical and Biomedical Research

In March 1981, the British Medical Research Council withdrew their collaboration in clinical and biological research on termination of their agreement with the Malaysia Government. Leprosy research is now the collaborative responsibility of the NLCC and the Institute for Medical Research (IMR). The present area of research is centered on drug trails, surveillance of drug resistance and immunology.

1) Drug Resistance

In Peninsular Malaysia, the first Secondary Dapsone resistant case was reported in 1964 by Petit and Rees, and the first Primary Dapsone resistant case was also reported from Sungai Buluh in 1976 by Dr. Laing. Due to past experience with dapsone resistance, all leprosy patients on treatment are tested routinely for drug resistance. All new cases were put on the Modified Multiple Drug Therapy Regime to avoid the emergence of resistance (Table 1).

2) Slit Skin Smear and its Quality Control

The slit skin smear is done on all patients taking treatment. In multibacillary cases they are taken every 6 months and in paucibacillary cases they are taken every year. All skin clinics and mobile skin clinics are required to send the slit skin smear slides with the result readings to Sungai Buluh NLCC for verification and quality control. This is to assess the accuracy of the reading and the quality of staining technique by the Assistant Nurses of the skin clinics. The clinics are required to send:

1) All bacteriological positive slides (100%)
2) All slides of new cases detected (100%)
3) 25% of all negative slides from originally smear positive cases

In 1988, 1183 slit skin smears were received by the NLCC. Out of the total number of smears received, 95.6% were found to have accurate reading.

Conclusion
In Malaysia, the Control Programme has to some extent succeeded in achieving its target despite the constraint in financial and manpower. The outlook remains bright, and it is hoped that the epidemiological impact will be much more striking with the successful implementation of the Multiple Drug Therapy Regime. It is greatly desired that the staffs would continue to strive to improve the performance of the programme so as to ensure that the ultimate goal of eradicating the disease is achieved.

References


Acknowledgements

I wish to express my gratitude to Dr. T. Ganesopillai, Dr. M. Alias, S.C. Gan and M. Mahmud (Malaysia), Dr. A. Yamagami and Dr. T. Hirata (Japan) and also to the Japan ODA grant for the invitation to Japan through the efforts of Japan International Cooperation Agency (JICA).

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Fig. 1  Number of Inmates against Year

Number of Inmates

2200
2000
1800
1600
1400
1200
1000
900

72  74  76  78  80  82  84  86  88  Year

2098
1697
1619
1432
1349
1184
961
Fig. 2 Distribution of the Mobile Skin Clinics in peninsular Malaysia
Fig. 3 Prevalence Rate/10,000 Against Year

Prevalence Rate/10,000

Year
National Leprosy Control Centre Sungai Buluh

Mobile Skin Clinic
マレーシアにおけるらいのコントロール・プログラムについて

ファジーラ・カマルディン

（マレーシア・スンガイ・ブルー、国立らいコントロール・センター、——現・国立多摩研究所研究研修生）

キーワード：MDT, Skin Clinic, Mobile Clinic, DDS 耐性, ヘルスセンター

マレーシアのらいのコントロール・プログラムについて概説した。
1. マレーシアの地理・人口等について略説した。
2. マレーシアのらいに関する歴史的背景について簡単に説明した。現在（1989年）のらい患者は5723人で、いずれも治療中のものである。ダブソンの時代以前は、患者は全国的に散在しており、一部は特別なコロニーに隔離されていた。
3. マレーシアでなされている現在のらいのコントロール・プログラムの一端を紹介した。
4. らいコントロール・センターの活動状況を説明し、これまでの実績を述べた。
5. WHO の MDT (multiple drug therapy) が 1985年からマレーシアに導入された。治療を有効にするために、NLCC（National Leprosy Control Centre）をの形で用いている。Paucibacilli 患者は、毎年 BI を調べて、5年間観察している。Multibacilli 患者の場合は、3週間入院させて集中治療をおこなった後、退院させて自宅で維持療法をやってい る。その間、1月に1回 Skin Clinic に来させるか、Mobile Clinic が自宅に同診している。MDT 開始後3年または BI が陰性になってから、5〜10年の mono-therapy に切り換えていている。再燃の場合は、5年間の MDT をおこなっている。
6. MDT の成果は、1）DDS 耐性の減少、2）らい反応、例えば ENL の減少、3）prevalence 率の減少、4）NLCC 入院患者の減少、5）治療中断患者の減少等にみられる。
7. MDT に関して次のような問題がある。1）サバ州やサラワク州のまだ貧しい地区で治療中断患者が多い。2）まだ開発の進んでいない州で治療スタッフが不足している。3）検査設備が不備なヘルスセンターある。4）リファニシン、クロファジミン、エチオナミドの副作用が観察されている。5）患者が DDS の mono-therapy から MDT への変更を拒否する場合がある。
8. マレーシアにおけるらい患者の検査、診断、治療および経過観察の現状を、いろいろな患者の場合について例示した。
9. らいの実態調査の方法を簡単に述べた。
10. らいの疫学的調査をもとにし、その有病率の変化等について図示し、解説を加えた。
11. らいの研究面—臨床検査の実態—について概説した。