

LEPROSY.Intro

- Caused by a bacilli - *M. leprae*. It is a chronic infⁿ affecting chiefly the peripheral nerves - also the skin, mucous memb., muscle, eye, kidney, liver, adrenal + testicle.
- Clinical signs - hypopigmented patches, partial or total loss of sensation in affected areas, thickened nerves, acid fast bacilli in skin smears.
- Importance - long duration, frequency of disabilities, social + economic consequences - but it is much less infectious + acute than TB. - often thought to be a punishment from god.
- In India called "Kushta roga or maharoga".
- Rx available only since 1941.
- Prevalence - was widespread all over the world in the middle ages. Now mainly in Asia, Africa + S. America.
In India - it is a significant public health problem. - about 3.2 million cases of which 8 lakhs are infectious - i.e. abt 25%
Most in T.N. + A.P., - high prevalence > 5/1000 + Bihar, W. Bengal, Maharashtra + Himalayan foothills. (ii) Moderate prevalence 1-5/1000 - Bihar, U.P., M.P., J+K + Karnataka (iii) low " in the north-western parts of the country.
- Agent - acid fast bacillus.
Reservoir or source of infⁿ - only leprosy pts - "open cases" from the skin, nose + upper Resp Tr.
- Host - Can occur at any age, more common in men, The great majority of people are naturally resistant to leprosy - only a few of the people exposed to the infection get the disease esp 5% of marriage partners.
- Environment - warm humid climate. It is often called a social disease - occurs more frequently in lower socio-economic groups, low standard of living + housing, poverty, overcrowding, unhygienic habits + apathetic attitude, prejudice + indifference - "fear" that it is highly contagious + incurable. Social ostracism or rejection + loss of job - This has hampered control of the disease. people hide the early symptoms.
- Transmission - Contact - Maybe droplet
- Incubation period - 2-5 yrs. but maybe few months to 40-50 yrs.

Classification - There are different types of leprosy - (i) lepromatous

(ii) Non lepromatous - tuberculoid, maculoanesthetic, polymniotic

(iii) Borderline & indeterminate

Diagnosis - patches, loss of sense + thickened nerve

Method of leprosy control

① Case finding by contact tracing esp. household contacts esp children, mass surveys in hyperendemic areas, school or house to house surveys in urban areas. Under the National Leprosy Control Programme, it is carried out by Leprosy Control Units where the prevalence rate is over 1% + SET (Survey - Education - Treatment) centres in low endemic areas.

② Chemotherapy or Rx - DDS (Diaminodiphenylsulphate) to render infectious cases non-infectious + thus prevent secondary cases + prevents deformities - DDS is cheap + effective + well tolerated. Duration - 5-10 yrs or for life. Given orally, daily if possible. Has some toxic reactions, which should be given. There are other drugs which are very expensive. Domicloxylin Rx is recommended.

Physiotherapy + care of hands feet + eyes are important

③ Follow up - v. important because of long duration of Rx there are many irregular + dropout cases - resulting in relapses. Follow up ensures regular drug intake + detects any reactions

④ Selective isolation - Hospitalization only for acute reactions, complications & surgery - otherwise in the house itself.

⑤ Prevention of contact - infectious cases - esp. for children

⑥ Rehabilitation - physical - prevention + Rx of disabilities, physiotherapy + reconstructive surgery - social + psychiatric rehabilitation also very important.

⑦ Chemo + immunoprophylaxis - DDS + BCG.

⑧ Health educ. (i) for pt + his family - need for regular Rx, repeated exam. of contacts, prevention of disabilities, protection of children (ii) for general public - a) leprosy is a disease like other diseases (b) it is not a hereditary disease (c) it is not the result of a curse but caused by minute

bacteria like TB (d) all cases are not infectious
(e) the disease is not highly contagious but rather a weakly infectious disease (f) children should be segregated from infectious parents (g) leprosy is curable (h) early Rx is important (i) 80% of deformities are due to neglect & are preventable (j) the patients need sympathy & kindness
H.E. in leprosy should be conducted in conjunction with that of other diseases.

National Leprosy Control Programme

was launched in 1954-55, since 68-69 100% controllably sponsored. Main objective is early case detection & domiciliary treatment with sulphone drugs, rendering infectious cases non infectious.

In areas where prevalence rate of leprosy is more than 1%, leprosy control units are established with one M.O. & 11 paramedical workers - each unit to cover a popⁿ of 150,000.

Where the prevalence rate is 0.5 - 1/1000 SET centres are established attached to PHC's, hospitals & dispensaries. Each centre covers 20-25,000 popⁿ & 1 paramedical worker. There is one non-medical supervisor / 5 p.m. work & the M.O. is in overall charge.

In 1973 - 235 L.C.U's & 1,488 SET centres were functioning in India.

Research & training of workers is also being done.

SMALL POX

Defⁿ - an acute highly communicable disease caused by variola virus. Clinically - sudden onset of fever & severe prodromal symptoms. On the 3rd day there is an outburst of a typical rash which is centrifugal in distribution & progresses through the stages of macule, papule, vesicle, pustule & scab. The crusts fall off in about 3 weeks leaving behind pockmarks which are permanent.

Geographic distri - It was once endemic throughout the world. Began \downarrow in 1930's. In 1967 India accounted for 65% of the global incidence - 30 countries were affected. By 1973 only 4 were affected, by 1975 only 2 & now it has been eradicated - This was possible due to national & international efforts by (i) use of potent freeze, dried vaccine & improved methods of vaccination & (ii) surveillance containment.

India - last case in May '24/1975. Spox free - July '75, Rs 1000 reward given for reporting a case.

Agent - Variable virus similar to cowpox virus.

Reservoir - Man the only source - a case - not a carrier.

Transmission - resp. li. secretions & lesions of skin, mucosa & scabs, which remain infective for a long time. ^{airborne} clothes, linen, dead bodies & person is infectious from onset of fever till last scab separates. - Max. from 3rd to 8th day. ^{fomites} Host - Can affect all ages & both sexes. Rare in persons who have been vaccinated 5 yrs earlier.

Incu period - 11-14 days.

Protection - Vaccine - cowpox, freeze dried, prim. sec. re.

- line. storage, time, site, needle, prepⁿ of skin, multiple punctured sterilizⁿ of needles & applic^r of vaccine, after care, successful vacc. & no contraindications - eczema & skin cond., an & malnutⁿ, sick. complⁿ ① skin ② neurological.

International certificate of vaccinⁿ & quarantine

S. pox eradicⁿ operation smallpox zero - NSEP in 1962 - vaccinⁿ of all newborn & revaccinⁿ of at least 80% - by 1967 tho' incidence was reduced & 100% vaccinⁿ was aimed at, it was not possible - i. surveillance & containment activities were started - in 1969. An intensive campaign with WHO support since 1973. Last case on 24th May 1975 - after that spox free for 2 yrs & now reached zero spox.

(i) Monthly / bi-monthly active village to village search for fever & rash. S. pox recognition cards, market search, sec. surveillance system. Notificⁿ (ii) confirm Δ , detectⁿ of additional cases, finding the source of infⁿ, containment vaccinⁿ, watch guards, forward tracing of contacts, follow up.

PLANTAR ULCERS IN LEPROSY

The ulcers on the under surface of the feet in patients who suffer from leprosy are peculiar in their formation. These ulcers can occur even in patients whose leprosy is completely cured. So it is not directly related to leprosy. It is the result of the damage to the nerves. In early stages nerve damage can be corrected but afterwards even with good treatment the nerve damage can be corrected only partially.

Normally when a person walks, concentrated pressure is applied on the underlying tissues over the bony prominences. The small muscles inside the foot will contract and maintain the bones in their position and so unusual pressure does not fall on bony prominences.

If the skin is sensitive, damage to the tissues produces pain over that area. This is the warning signal of the body telling the patient that damage has occurred and that part of the body needs rest or attention.

Because of the nerve damage that occurs in some patients who have leprosy, the skin of the foot becomes insensitive and the patient can not feel pain. The muscles also become weak and cannot keep the foot bones in their proper position. The bones which are deformed hit the skin and the tissues under them whenever patient walks, runs or jumps. This will damage the tissues and the tissues are destroyed and pus forms. Once the pus reaches the skin, the skin will break with any slight injury, and the ulcer becomes visible. So the ulcer is already formed within the skin much before it is seen outside. Once the ulcer has formed other germs from the soil etc. will get inside and the ulcer becomes septic. If not treated correctly the patient will get swelling of the feet and sometimes fever. During this stage the patient usually walks since there is no pain. This will allow the germs to enter deeper parts of the foot and the whole foot becomes septic.

With good treatment and complete rest the ulcer will heal but with a tough scar. This scar is not good to protect the tissues since it behaves like a pebble under the skin. This will produce tissue damage again as before. But this time the patient will get ulcer faster unless he takes adequate precautions. The important precautions and facts to remember are: 1. Even if the patient's leprosy is cured he can get ulcers if the nerves of the foot are damaged.

2. Treatment of leprosy alone will not prevent ulcers or cure them once it has already formed.
3. It is much better and easier to prevent a palntar ulcer than curing it.
4. More damage to the foot, more care to be taken to prevent new ulcers.
5. The ulcers are due to walking and running pressure with feet which have damaged nerves. In most, damage cannot be corrected fully, So other measures are to be taken. Most important of these are:
 - a. To walk as little as necessary
 - b. To walk as slow as possible
 - c. Not to walk for long distances at a stretch
 - d. To take short steps while walking.
 - e. Never run or jump
 - f. If possible to use a cycle and put pressure over the heal or other undamaged area.
 - g. Every day in the evening press the different areas of the sole and check for deep pain. If deep pain is present over any points it is certain that an ulcer is being formed under the skin there. At this stage if the patient takes rest the ulcer will not form at all.

FOOT WEAR

PATIENTS WITH DAMAGED NERVES SHOULD WEAR FOOT WEAR. The following points are important.

1. No nail or thread should be used while making the footwear. Instead only adhesives should be used.
2. The sole, if made of microcellular rubber will have a better protective effect of the tissues of the feet.
3. The foot wear should be 'worn-in'. That means the person should wear the chappals for short periods till the foot wear becomes soft and the feet adjusts to the foot wear.
4. The footwear should be made according to the individual patients needs eg. an expert cobbler can make foot wear which takes away pressure from ulcer prone areas.
5. The correct foot wear will only help to reduce the chances of ulcer formation. So all other measures should be carried out meticulously even if the person uses correct foot wear.

surveillance including relapses on monotherapy and MDT; bacteriological enumeration; hospitalization facilities; rehabilitation; training inputs; monitoring and supervision.

Analysis of operational information provides information on programme function. This information provides valuable clues to the estimation of the leprosy problem through data routinely available in most countries and provides programme managers with a rapid assessment. This has been demonstrated by experience gained in India, the Philippines, Papua New Guinea, Fiji, Western Samoa, Tonga, the Cook Islands and also Vanuatu.



The epidemiology of disability in leprosy including risk factors

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Introduction

It is disability which sets leprosy apart from other diseases,¹ and a control programme cannot be successful if it fails to control disability. Disability is a very relevant measurement of progress in leprosy control.² To the lay person leprosy means deformity³ and leprosy without disability is often not recognized as leprosy by the general public, even in the untreated lepromatous stage. It is quite clear that disability is an important measure in the evaluation of control – however, to be able to use this fact, it is necessary to be able to define disability, and correctly measure it, and to understand its determinants and distribution. In particular, it is important to understand the evolutionary process of disability in individuals and populations in order to estimate the impact of various interventions on disability in leprosy.

Definition and measurement of disability

It is rare to find in the leprosy literature a definition of disability other than the alteration of function as opposed to deformity which is defined as the alteration of shape. Most of the disability literature in leprosy lists items rather than considers definitions and these lists include deformity as well as disability, and changes in anatomy and physiological function.

An International Classifications of Impairment, Disability and Handicap (ICIDH) has been developed⁴ in parallel to the development of the use of the term disability in the leprosy world. This classification introduces concepts of disability related to rehabilitation in contrast to the strictly descriptive definition used in leprosy. The International Classification uses the following definitions:

- a. Impairment—'Any loss or abnormality of psychological, physiological, or anatomical structure or function'—WHO, 1980;
- b. Disability—'Any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner as within the range considered normal for a human being'—WHO, 1980;
- c. Handicap—'A disadvantage for a given individual resulting from an impairment or disability, that limits or prevents fulfilment of a role that is normal, depending on age, sex, and social and cultural factors for the individual'—WHO, 1980.

It can be seen from these definitions that what leprologists call disabilities are probably regarded by the ICIDH definition as impairments.

Thus the whole system of approach to disability terminology in leprosy differs from that now recommended by the World Health Organization. The approach used in leprosy is suitable for measurement and description of disabilities, and for epidemiological purposes, however, it fails to incorporate the concepts of rehabilitation, which is a major deficiency. Thus a weakness in a muscle group may be seen as a disability to be corrected surgically rather than developing an understanding of what this functional loss means to that individual patient, if anything at all.

A number of scales of disability assessment have been developed⁵⁻⁷ and it is clear that none are considered adequate by all as new modifications are developed.⁸ It may be considered that no system is ideal when so many have been developed or, perhaps, that different scales are developed for different purposes. There are two major purposes for measurement of disability and each require different tools. The first is the simple grading of the level of disability—this can be carried out quickly in the field and gives a rough assessment of disability. The second is a measurement tool which is sensitive enough to measure change in disability. The first tool cannot do this but if the first purpose is the one required then the more detailed assessment is unnecessary. The exact measurement tool used for the assessment of change depends on what changes the observer wants to examine. However, there is still the need for a standard measure which can be used to compare disabilities between places and over time. The use of a variety of measurement tools makes it difficult to compare the experience in different programmes.

A very different approach to surveying disability is taken by the ICIDH system from that generally used in the field of leprosy. The survey begins with questions to the individual about function ability to see if that person has a disability. When a disability is identified in this way then further investigation is carried out to identify which impairment gives rise to the disability and whether the disability constitutes a handicap. This is an interesting approach which would identify the disabilities that are important to the patient rather than those which are important to the health worker. This approach certainly merits consideration by leprologists.

Epidemiology of disability (impairment) in leprosy

The well-recognized risk factors for disability in leprosy are listed in Table 1. In common with most disease processes, disability in leprosy increases with age. (See Figure 1, based on a data set from India.²) This observation is well known and well documented,^{9,10} as is the fact that disability rates are higher in men than in women.

Classification of leprosy is also related to the frequency of disability, being highest towards the lepromatous end of the spectrum (Figure 2). This is not a surprising observation given the pathogenesis of the disease. The age effect, however, is independent of the type of leprosy. Duration of disease is also noted to be a risk factor.¹⁰

The treatment of leprosy is related to disability in many studies, which show that those who are receiving treatment are more likely to be disabled than those who are not receiving treatment.^{10,11} Two explanations have been proposed, first that those disabled are more easily detected and more likely to be motivated to take treatment; and secondly that treatment may cause disability. This later controversial explanation has been

Table 1. Risk factors for disability in leprosy

1	Age
2	Sex
3	Classification
4	Duration of disease
5	Site of skin lesions
6	Reversal reactions
7	Treatment
8	Socioeconomic factors
9	Educational attainment
10	Geographical factors
11	Ethnic group
12	Occupation
13	Method of case detection

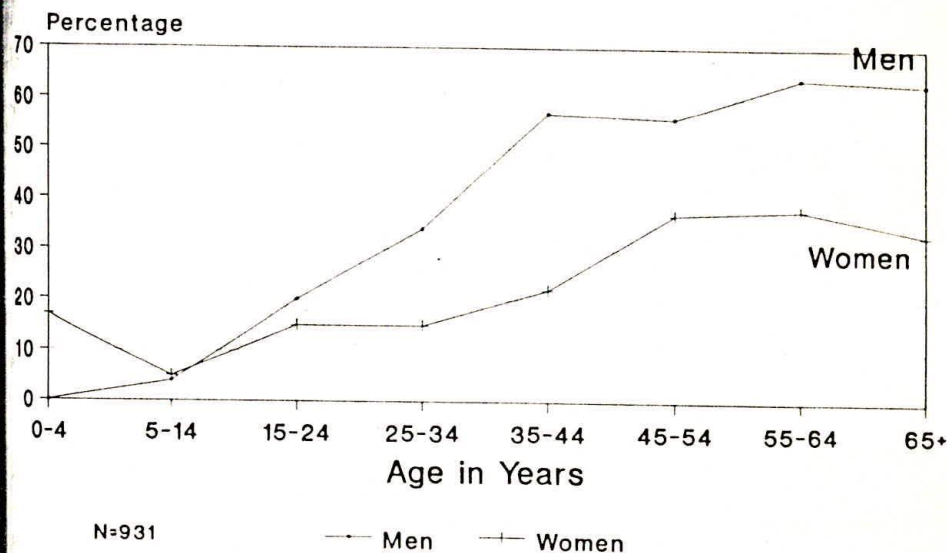


Figure 1. Percentage with impairment.

proposed during the monotherapy era and there is evidence that nerve damage occurs during MDT,¹² but whether this is more frequent than during monotherapy or when untreated is not known (Figure 3).

Poor socioeconomic status and low educational attainment have both been identified as disability risk factors,^{10,11} but whether this is cause or effect is unclear, and may in individual patients be either or both. Occupation has also been identified as a risk factor, and this is not unexpected where those with heavy manual jobs or with occupations which

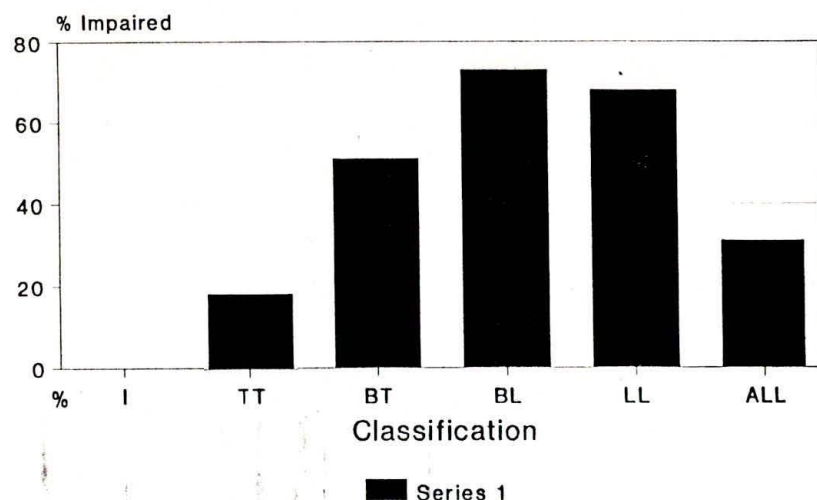


Figure 2. Impairment by classification.

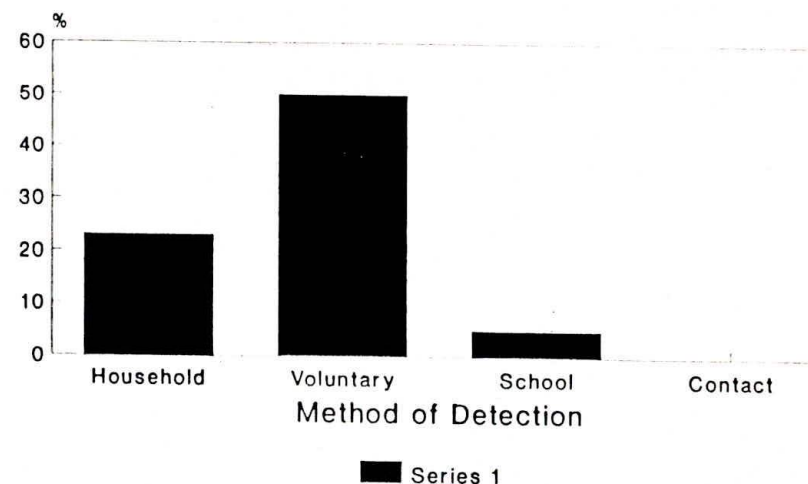
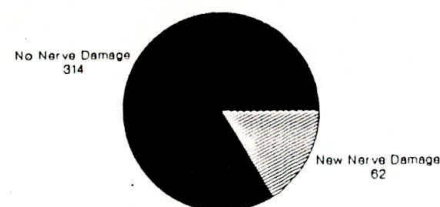
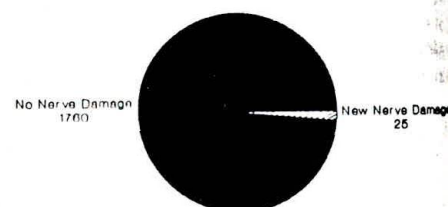


Figure 4. Impairment rates.

MB Cases on MDT



PB Cases on MDT



2161 patients

Figure 3. New nerve damage during MDT.

involve walking for long distances are more susceptible to secondary disabilities. Ethnic group and geography have both been noted as important in disability rates within individual countries, but lack of standardization of methods is often a problem in interpreting studies between countries. Factors such as different distribution of classification may confound geographical differences in disability.

Different disability rates are noted by method of case detection (Figure 4) where voluntary reporting shows the highest rates.²

Trends in impairment rates

The trends in impairment rates are important in evaluation of leprosy control programmes and a number of important points need to be emphasized. Firstly, as control programmes develop the impairment rates in newly-detected patients (Figure 5) decline.¹³ This would happen even if the treatment programme had no effect on disability and it is a mistake to attribute the effect to the programme without using a control group. This is because disabled patients are more easily detected and as programmes develop most new patients added are diagnosed earlier.

A second important point to note is that those with impairment naturally tend to deteriorate (Figure 6). The rate of deterioration varies by classification.

The current practice of deleting from treatment registers and releasing from control patients with impairment disguises the problem of disability in leprosy in a community, and this is especially true with the use of MDT. Figure 7, again based on data from India, shows the rapid decline in registered cases after the introduction of MDT but no similar decline in the prevalence of patients with impairment.^{13, 14}

Prevention of disability

This is an important element of control programmes which has recently been studied,¹⁵ where attention was focused on the leprologists' approach to disability. The ICIDH classification would suggest a broader approach to disability prevention at three levels: (1) prevention of impairment by early detection and treatment of disease and of acute nerve damage; (2) limitation or reversal of disability due to impairment using aids, appliances, surgery and patient education; (3) prevention of the transition from disability to handicap by public education, social and cultural adaptation and vocational training.

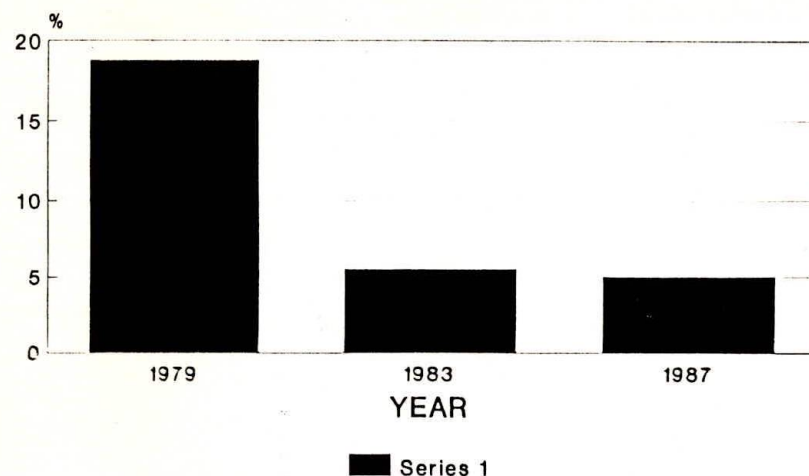
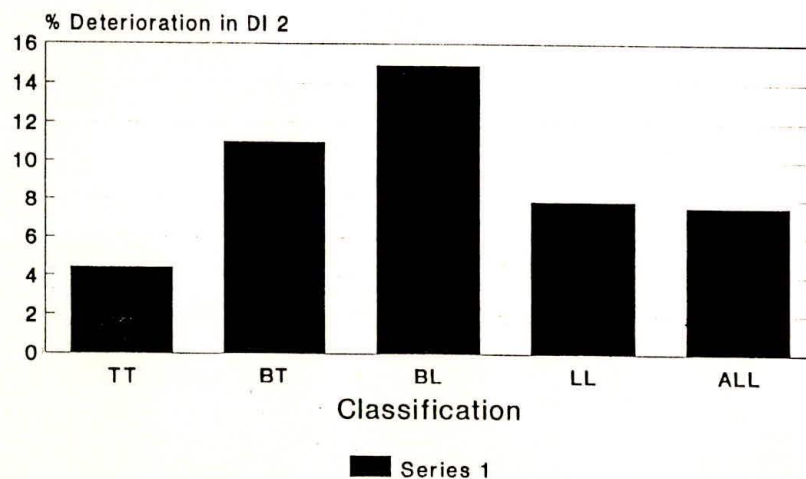


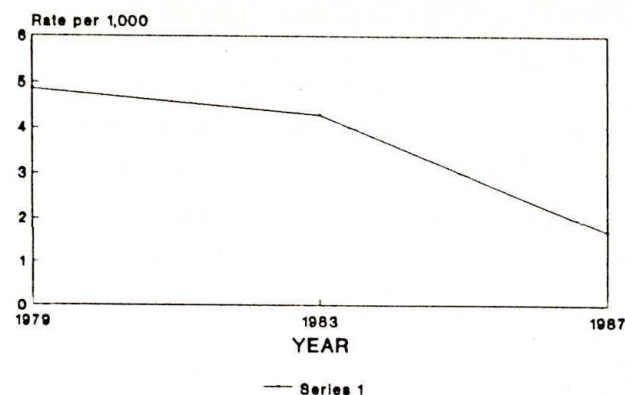
Figure 5. Impairment in new patients.



19 improved, 28 Deteriorated

Figure 6. Deterioration in impairment (118 patients followed over 4 years).

Prevalence Rate of Leprosy



Prevalence Rate of Impairment

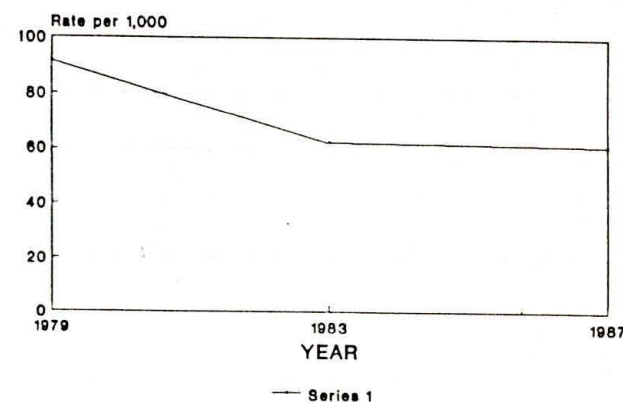


Figure 7. Prevalence changes - leprosy and impairment.

Important research questions are now being addressed as to the effectiveness of different methods of disability prevention and in particular to their cost-effectiveness. Studies are currently under way to look at these issues but it is important that analysis of these studies take account of the natural trends in disability and that proper controlled studies are designed.

Conclusions

Disability in leprosy is extremely important because to the patient and the public it is the disability that sets the leprosy patient apart. Standardized methods of measurement of

disability still need to be developed and the approach adopted by the new International Classification of Impairments, Disability and Handicaps needs to be given consideration by those in the leprosy field. Measures of disability are important for evaluation of programmes, evaluation of treatments, to identify needs for patient education and for rehabilitation. Approaches to disability prevention need to be evaluated in terms of cost-effectiveness which take into account the natural progression of disability and must be based on controlled trials. Disability is the measure of progress in leprosy control which is relevant to the general public.

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Epidemiometric modelling in leprosy based on Indian data

M F LECHAT

Introduction

Today, I suppose, any moderately bright child who has had a minimal exposure to computers could programme an epidemiometric model on a rainy Sunday afternoon using existing softwares and a technologically basic machine, but the situation was quite different in the early 1970s when the leprosy epidemiometric model was first designed.

The problem addressed was clearly circumscribed. After 20 years of large scale, mass control campaigns based on dapsone monotherapy, leprosy had not been eradicated, and even worse, it was not known whether the disease was or was not on the decrease. International funding agencies such as UNICEF, nongovernmental organizations, as well as governments, all were getting tired of emphatic promises and overdue delays. There were talks of a vaccine which could revolutionize the control strategy.

The concerns at that time were: (1) was it reasonable to expect a decline of the leprosy problem in the next 20 years, using current control methods? How much of a decline? How long would this take? (2) Could some improvements in the implementation of control, such as earlier detection or better compliance, speed up the decline? (3) Could some radical changes in the strategy, such as old-fashioned isolation or futuristic vaccination, modify the prediction? In what direction, and by how much?

The model aimed at predicting the trends in incidence over 20 years by using the control methods of that day. It also attempted to simulate the trends which resulted from changes in the control parameters. The indicator used was incidence, i.e. the number of new cases per year in the population.

Structure

As a first step, the development of the model required the definition of a structure and the identification of the various population subgroups (stages) as well as the permitted transitions and their directions (Figure 1). The stages were:

healthy susceptible;

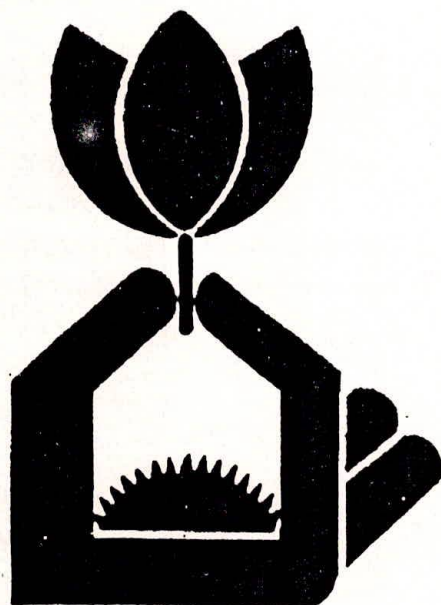
latent;

multibacillary patients, nontreated, treated for less than 1 year, treated for 1 year or more, dropped from treatment, discharged;

paucibacillary patients, with the same categorization as the multibacillary patients.

Comprehensive Rehabilitation in India

— a Community Based Approach for People
Disabled by Leprosy and Others
Report from a Preparatory Mission on Swedish support
to a Rehabilitation Programme.



सम्पूर्ण पुनर्वास
एक शार्वननिक प्रयास
रूपस्व विकर्मागो के लिये
(कुपु रोग मरिच)

COMPREHENSIVE REHABILITATION IN INDIA

A COMMUNITY BASED APPROACH FOR PEOPLE DISABLED BY LEPROSY AND OTHERS

Report from a preparatory mission on Swedish support to a
rehabilitation programme.

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March 1983

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Summary

For thousands of years people with leprosy have been considered as outcasts by society. This is probably mainly because it is a disabling and disfiguring disease. Thanks to scientific advances, first Dapsone and then the Multi Drug Therapy, MDT, it is now possible to cure the disease. It is also possible to rehabilitate those affected so that they can live and work in their communities.

It is estimated that still at least 800,000 people are handicapped in India because of leprosy and the prejudice surrounding it. The situation for women and children in leprosy families is especially difficult. There are few and only limited rehabilitation programmes for them.

In India a National Leprosy Eradication Programme was started in 1982 as a continuation of the earlier Leprosy Control Programme. SIDA has been supporting these programmes since 1978. The emphasis has been on medical treatment and there have not been any provisions for rehabilitation as part of the programmes. Parallely, a dialogue on the needs of disabled people has been going on between India and Sweden since the International Year for Disabled Persons i.e. 1981. Various alternatives for Swedish support have been presented. In February 1988 the Government of India submitted a request for rehabilitation of cured leprosy patients and other disabled people. To meet this request, a delegation was set up by SIDA with the task to make recommendations for a "pilot rehabilitation project where leprosy patients will be given a priority".

The delegation visited a number of projects all over the country. It was found that only a few of them succeeded in integrating people with leprosy into the society. Other projects were catering for the needs of specific groups of disabled people. There were, however, no rehabilitation projects aiming at social integration for disabled people in general.

Social integration is very much the aim of, or even a part of, Community Based Rehabilitation, CBR. That is the approach which nowadays has the widest acceptance internationally. India has also subscribed to it and it is being implemented in several projects run by governmental and non-governmental agencies.

One experiment with CBR in India is the District Rehabilitation Centre (DRC) programme. Eleven centres have been started, and they could be successful after some modifications to give them a real basis in the community. They could reach a majority of disabled people all over India, even in urban slums and rural areas. But as the programme stands, it lacks provisions for people with leprosy. Another experiment is going on in Kerala since eight years.

It is recommended that SIDA gives support to rehabilitation in MDT-districts, as requested. Alterations are suggested to the original proposal, so that a comprehensive rehabilitation can be provided aiming at social integration not just isolated medical, surgical, technical or other interventions. Further, it is recommended that the services be integrated to serve not only those affected by leprosy but other disabled people too.

In a first phase, a steering committee and a working group will be set up; background material, publications and documents will be produced and studied at seminars; districts and implementing agencies selected and a co-ordination between the DRC programme and this programme initiated. The estimated budget for this phase, timed for 1989-90, amounts to Rupees 3,200,000 or (with additional costs in Swedish currency) SEK 2,000,000.

The second phase, starting in July 1990, would be the creation of rehabilitation services of two or three different models with regard to the organisational set-up in the same number of districts. The first to be served would be "burned out cases of leprosy" ensuring the establishment of permanent services for different disabilities with the involvement of local people supported by those trained in the project.

March 1989

Tomas Lagerwall Gábor Tiroler

Introduction

This report is the result of a preparatory mission on rehabilitation of disabled people, with a special emphasis on those who are disabled because of leprosy. The mission was set up by SIDA following a request made by the Government of India. Terms of reference are found in Annex 1.

The delegation consisted of six people (Dr Sharad Gokhale, Ms Ratna Kapur, Mr Tomas Lagerwall, Dr Balu Sankaran, Mr Gabor Tiroler and Ms Inese Zalitis) representing different aspects of rehabilitation and of development cooperation. Mr Lagerwall and Mr Tiroler are SIDA's consultants on rehabilitation. Ms Zalitis belongs to the SIDA office in Delhi. Dr Gokhale is a specialist on the social aspects of rehabilitation, particularly leprosy. Ms Kapur is a lawyer specialized on women's rights. Dr Sankaran is an orthopaedic surgeon who has held a post with WHO Geneva.

The mission worked between January 11 and February 3, 1989. Discussions were held with representatives of the Government of India, Ministries of Health and Welfare and international agencies in Delhi, WHO and UNICEF. The delegation visited the following districts: Ganjam and Cuttack in Orissa, Amaravati and Wardha in Maharashtra and Chingelput and North Arcot in Tamil Nadu.

Apart from a continuous exchange of impressions and ideas during the mission between the consultants and the SIDA office in Delhi, which was largely facilitated by the presence of Ms Zalitis, preliminary conclusions were presented to her and to the head of that same office in a preliminary draft at the end of the mission.

Background

Leprosy has a very long history . It is mentioned in Hindu scriptures already 600 B.C. as well in the Bible. Considering this, it is remarkable that so much prejudice and ignorance surround the condition and that very little is understood about the cause of the disease, its transmission and cure.

Leprosy is not fatal in itself, rather it is disabling. Fear of it causes society to shun people who are affected or suspected to be affected, and they become socially and physically handicapped, i.e. shut out from normal, social life. A term often used in India is "dehabilitated", which has a similar meaning but with a stronger emphasis on the loss of or deprivation of abilities.

Although most people with leprosy have no significant disability, they do get handicapped by the barriers of ignorance, fear and prejudice in society. The primary aim of rehabilitation must be to remove that fear and change the attitudes in order to avoid segregation in the first place or to make social integration possible in the second. One of the things that can be done for this purpose is intensive health education involving the community as well as people cured of leprosy, the so called "burned out cases". Once fear and stigma are eliminated, many more opportunities for education, jobs and active roles in society will be available for those already treated and those under treatment. Vocational assessment, training, identification of job opportunities, counselling, loans for self-employment, assistance to the setting up of cooperatives contribute to economic self-sufficiency and give disabled people an equal role in society. This demonstrates to the society at large and to other disabled that cured leprotics are certainly not representing any risk but on the contrary a resource, and that it is correct to give them the opportunity to live and work with others.

As a matter of fact, leprosy is in large areas of India today the most important cause of motor disability alongside with poliomyelitis, and one international authority even holds the view that

"Our concern should be the occurrence of deformity rather than the occurrence of cases, since leprosy is in a very real sense deformity. Since it is disability which sets leprosy apart from other diseases, disability rates may be a more relevant measure /of a successful programme/ than the number of cases" (Antia, Lepr.Rev:51,1980:155-66).

The number of people suffering from leprosy in India is estimated to be about 4.4 million. For many decades treatment was based on a single drug, Dapsone. Though effective, it demanded a long period of medical treatment and carried quite a few side effects. During the last decade, the drug has become less effective in many cases -due to the increasing occurrence of resistance- and as a consequence new lines of treatment have been developed. The Multi Drug Therapy, MDT, combines three drugs. They are more efficient and effective but also more expensive and more complicated to administer.

A National Leprosy Eradication Programme was started in 1982 following an appraisal of the National Leprosy Control Programme and its inclusion as an All India priority in the so called 20 points programme.

Since 1978 SIDA support has been given to the National Leprosy Control Programme and from 1983 to the MDT-programme under the National Leprosy Eradication Programme. 18 districts all over the country now receive SIDA support either through WHO (15 districts) or through UNICEF (3 districts). Ganjam, Amaravati and North Arcot receive SIDA's support through WHO. Chingelput and Pune receive similar support through UNICEF. Cuttack is involved in the MDT-programme through DANIDA. All the mentioned districts have or had until recently a high prevalence rate in leprosy.

The MDT-programme has until now not contained measures directed at the disability aspects of the disease. Various NGO's have been entrusted to carry out such measures, some of which have been quite successful but only for small numbers of people and in limited areas. The WHO Expert Committee on Leprosy has stated that:

"The aim of all leprosy-control activities is to control the spread of the disease by progressively decreasing the amount of infection through the use of anti-leprosy drugs. ... The mere distribution of medicines has little effect if other measures of a social, informative and administrative character are neglected. The expert committee goes on to state, that 'In areas where an effective control has been set up no new cases of deformities should occur.'"

The Indian authorities hold in fact a similar view and one of the major recommendations in the Report from the working group on the eradication of leprosy, Min. of Health and Welfare, 1982 is that

"It is essential that rehabilitation becomes an integral part of leprosy control... for this coordinated efforts of health, education, welfare and voluntary agencies are necessary."

Multi Drug Therapy can stop the spread of the infection to others and halt the progress of the disease in the individual affected. But in many cases it cannot prevent progressive disability unless coupled with rehabilitation. When detected, at least 20% of all the patients have already suffered a loss of sensation (feeling), but not all of them will be diagnosed. Others may get nerve injuries after the first visit at the health facility. All run the risk of visual (sight) and locomotor (mobility) disabilities apart from the sensorial loss. These people need advice and training to prevent injuries to their feet, hands and eyes. They also require the provision of shoes, adaptive devices and simple aids for daily living, because, as the National Report points out, **"The stigma is largely due to the physical deformity caused by the disease"**.

These measures should have been introduced when starting a course of MDT, but since that has not been the case, the necessity of rehabilitation is even greater.

A dialogue between India and Sweden regarding the needs for disabled people has been going on since 1981, the International Year for Disabled Persons. Different alternatives for Swedish support to disabled people in India have been explored like its inclusion into the ICDS, Integrated Child Development services. In 1987 an evaluation of the SIDA support programme was carried out by Miörner. Continued SIDA involvement was strongly recommended, but **"The future support should be focused at operational and epidemiological research and rehabilitation"**.

In February 1988 the Government of India submitted a request to SIDA for rehabilitation of cured leprosy patients and other disabled people.

It should be noted here, that some people with leprosy who are infected and infective remain undetected even in areas where the control programme is well organized. It is not easy to motivate people to come forward for a medical treatment, which does not answer their felt needs, namely to cure their disabilities and remove the stigma which they

suffer from. Only when services are put into perspective, and they see other people with leprosy cured and rehabilitated will they be available for treatment, and then eradication can become a reality.

The present discussion concentrates on those people for whom medical treatment has been completed and those districts where the MDT-control programme has reached the maintenance phase. That means that the programme has been going on for a number of years and the incidence has been reduced below 5/1,000. At that stage further medical inputs will have little impact on the prevalence unless they are coupled with rehabilitation in a wide sense.

Visits to three states

In order to get a direct knowledge of the situation of disabled people in general and those disabled by leprosy in particular as well as the rehabilitation services in the field, the delegation visited three states apart from the capital New Delhi. In each of the states two-three districts were visited.

Orissa

The population of Orissa is 26.3 million on a surface of 155,782 square kms. The state is divided into 13 districts.

Orissa is one of the highly endemic states in India with a leprosy prevalence of 12.1 per thousand before the introduction of MDT which reduced the prevalence rate to 7.8 per thousand till 1987. The National Leprosy Control Programme started there in 1954, and the National Leprosy Eradication Programme was started in 1982. It is estimated that there are still 242,000 leprosy cases in the state. There are five voluntary agencies involved in leprosy work.

Ganjam District - one of the six where MDT was introduced in 1983 - was visited by the team accompanied by Dr Pani, Joint Director of Health Services, Dr T P Patro, Distr. Leprosy Officer, and the Chief Distr. Medical Officer, Dr Mrs B Dev.

A comprehensive review Report of the Multi Drug Regimen Activities in Ganjam District was presented to the team by Dr Pani and Dr Patro.

Ganjam District was one of the first districts selected to be in the MDT Programme. It is supported by SIDA through WHO.

The district is fully covered with eight Leprosy Eradication Units, one upgraded Urban Leprosy Centre, two Leprosy Rural Centres and one twenty-bed temporary Hospitalisation Ward.

Until December 1988, more than 29,000 new leprosy cases were detected through voluntary reporting and surveys. A total of near 42,000 cases were screened for MDT and started on treatment. Almost 29,000 have completed MDT and been declared cured and released from treatment.

It is remarkable that the number of active cases on record every year has not decreased since the MDT Programme began. The proportion of children (persons below 14) among new cases has gone up from 14% (1982-83) to 29% (1987-88).

On the other hand, the incidence rate has indeed dropped from around 14/1,000 (1982-83) to less than 2/1 000 (1987-88). Also, there has been a significant drop in the disability rate among new cases. It has decreased from 8% to 2%, and this is of course an important issue for the present deliberations.

There are certain drawbacks which have to be pointed out. Though there are facilities for reconstructive surgery, only 3 cases have been tackled during this period. There is no active physiotherapy unit, no foot-wear centre, no vocational placement, no rehabilitation unit and no attempt at social and economic integration into society. There is a fully operational Regional Rehabilitation Centre at Aska but few visible links between Ganjam District and the centre.

A visit to a Leprosy Colony, about two kms from the Leprosy Treatment Centre, showed the predicament of people who had or had had leprosy; they were a social and economic discard of society, their healthy children receiving no education. Most of the people there earned their living from begging. There were several who had deformed hands and feet and trophic ulcers. Microcellular rubber chappals were worn only by a few.

The team visited the National Institute of Rehabilitation Training Research (NIRTAR) about 35 kms from Bhubaneswar. It has prosthetic and orthotic facilities, an operation room, a library, a

vocational training centre including ergotherapy, a physiotherapy department, teaching facilities for 190 students in all aspects of rehabilitation and treatment of leprosy patients in the general ward.

The Director of Health Services, and the Joint Director of State for Leprosy expressed their keenness and desire to aid in any project of comprehensive rehabilitation services for all types of disability including leprosy based on a community approach.

The Secretary of the Department of Health completely subscribed to the technical views presented to her and offered to help out in the best possible manner.

Maharashtra

The population of Maharashtra in the 1981 census was given as 62,7 million and the surface as 307,762 sq kilometers. 2/3 were living in rural areas. It is the third largest State in India. It has a long history of leprosy work. The entire State is now covered by the National Leprosy Eradication Programme.

The urban slums are posing a new threat to social and individual health because of poverty, malnutrition and unhygienic conditions. In Bombay 40% of the 8 million residents live in slums, and out of all people with leprosy in Maharashtra 1/6 are found in Greater Bombay.

During the tour of Maharashtra, the team was accompanied by Dr Sontakke, the State Leprosy Officer, and Dr Yellapurkar, WHO Consultant. The visit began with informative discussions with Government officials. Thereafter they visited a number of institutions and projects in the state like the Industrial Cooperative and Rehabilitation Centre in Poona. There, disabled people of different kinds were working together, running a modern workshop and making a profit to allow reasonable wages and a contribution to the rehabilitation of others also. Gandhi Memorial Leprosy Foundation in Wardha has field work, training and education and research on its programme. A near-by locality showed us the only instance of leprotics living integrated in the society. This was said to be the result of a long and systematic public education. Even children at school were taught and educated on the subject. One way of inducing a positive attitude was to organize essay competitions, which had become quite popular.

Mahatma Gandhi used to describe Maharashtra as a beehive of social workers. The field of leprosy is no exception. There are 32 voluntary agencies in the field of leprosy work. The scope of their activities has expanded from running "Leprosy homes" to providing proper hospital facilities, reconstructive surgery, physical therapy, industrial and agricultural rehabilitation, training of various categories of leprosy workers and research.

In order to get to know a cross-section of perspectives on rehabilitation as well as on leprosy work, two meetings were held in Bombay and some 35 NGOs took part representing both agencies working in the field of leprosy and others working for the welfare of different categories of disabled people.

The following issues were highlighted among many others:

1. The insufficiency of Government grants and the often complicated procedure required to obtain them. The need of technical support and expert advice.
2. The advantages of integrated and comprehensive (multidisciplinary) rehabilitation linked to the medical treatment and started simultaneously; and as a part of this, vocational training.
3. The necessity to transform care and protection homes into Rehabilitation Centres.
4. The need to give priority to children of leprosy "patients" and special services for women. The families where one or more members are affected also need special support.
5. The reasons for a national conference of agencies involved in leprosy rehabilitation treating comprehensive and integrated rehabilitation. This should be preceded by workshops on related subjects such as the role of different categories like social workers and paramedical workers.
6. The lack of documentation on rehabilitation, which should be prepared, translated and made available to the agencies.
7. The suggestion to set up a buffer agency to guarantee bank loans and provide technical advice on marketing, production and quality control.

8. The need for training to produce technical aids locally; in particular footwear for people with leprosy.

Tamil Nadu

The population of Tamil Nadu is a good 48 million on a surface of 130,069 sq kilometers.

The team tour to Tamil Nadu began with a visit to Chingelpattu District, one of the endemic areas in the state. The MDT Programme was started in 1986 with the assistance of UNICEF, funded by SIDA and the Leprosy Mission. Since then the prevalence has been brought down from 11 to 8/1,000.

The team visited the Central Leprosy Teaching and Research Institute where we held discussions with Dr N Bhatia (Deputy Director in Charge), Dr K S Rao (Deputy Director in Charge) and Dr P S Rao (Head of Epidemiology). The District Leprosy Officer of Chingelpattu, Ashok Caradan, also attended the discussions. The centre is concerned primarily with curative services, research and the training of orthopedic and other medical officers. The Centre has no social rehabilitation component in its programme. Rehabilitation is supposed to be provided by the ten rehabilitation homes situated in the state and run by the Jail Department. Although these homes have provisions for vocational training for people with leprosy, only a low priority is given to this aspect of rehabilitation. Strict discipline and regimentation frequently provoked patients to leave the homes.

The centre undertook a survey in 1988 of 100 people with leprosy who had formed a colony near their premises and who earned their living through begging in Madras. In the beginning of the survey, 20 people were found to be bacteriologically positive. A high proportion of them were not taking treatment and only 6 had received MDT, even though the programme had been going on in Chingelpattu District for over two years. The people in the colony were not motivated to avail of treatment facilities from outpatient and field clinics located quite near to them, apparently because of extreme social, economic, and psychological debilitation. The team visited the colony, named Bethal Nagar, and talked to the people living there. In sum, it was evident that the men and women were eager to give up begging and to work if they were provided with the means including some financial assistance to begin with. The team also visited the Scheiffelin Leprosy Research and Training Centre

in Karigiri. Discussions were held with the Director, Dr Benjamin, Dr Paul Brandt and Dr Kumar Jesudasan. The Centre has launched a rehabilitation scheme known as Care after Cure with support from the Baptists in Sweden (Svenska Baptistsamfundet). They aspire to follow up all the individuals treated in the Gudiyatham Taluk, who have been released from control after being declared as cured. The data collected will be used to identify the following categories:

- a) Those with correctable deformity and disability, who will be provided with facilities for physiotherapy, and occupational therapy,
- b) Those with loss of sensation of hands or feet, who will be taught how to look after their limbs to prevent injuries. Many of them will require special footwear or other protective aids to protect their hands and feet,
- c) Those with impaired vision, who may require surgery or special ophthalmic care and
- d) Those who are primarily handicapped and require some form of economic assistance.

At Vellore, the team visited the Worth Trust (The Workshop for Rehabilitation and Training of the Handicapped) and met Dr Boose Cros, who elaborated upon the activities of the Trust. The Trust has ten centres which provide schooling, industrial training and employment to nearly 400 handicapped people, including people with leprosy. The production units of the Trust, which employ disabled people, compete with organized industries and generate enough income to meet all costs, including those for training and development. The Trust is, therefore, a selfsupporting enterprise and is a model of a successful, integrated rehabilitation project. At Vellore, the production units provide training to all disability groups for two years, and thereafter the Trust assists the workers in securing jobs in industry.

Finally, the team was able to make a brief visit to the Community Health and Development Centre (CHAD) in Vellore, where they were introduced to Dr Jayaprakash Muhiyil. They were told that the centre is designed to provide care and rehabilitation to 200,000 persons in the district and that its rehabilitation scheme adopts domiciliary approach.

Reasons for a comprehensive rehabilitation in leprosy treatment

With a comprehensive rehabilitation is meant the sum of rehabilitative measures leading to equalization of opportunities and integration into society for the person with disabilities. This is true for all disability groups, but in the case of leprosy removing attitudinal barriers, fear and prejudice, has a higher priority than otherwise, as these barriers are so much stronger. The action programme on rehabilitation includes the following:

- (i) early detection, diagnosis and intervention;
- (ii) medical care and treatment (incl. physiotherapy);
- (iii) social, psychological and other types of counselling and assistance;
- (iv) training in self care activities;
- (v) provision of technical aids, mobility aids and other devices;
- (vi) special education services;
- (vii) vocational training, placement in open or sheltered employment and
- (viii) follow-up.

Each facet of rehabilitation discussed exists singularly or in combination in the different centres visited by the team in India. However, the presence of all the factors described are essential for an effective rehabilitation programme. The most pertinent example may be that of surgery. It can be instrumental in making re-integration possible, when it is part of the whole rehabilitation plan. On the other hand, it can actually hinder re-integration when people are taken away from their ordinary environment for a long period of time, reinforced in his or her identity as a "leper" and further alienated from the same society into which he/she should have been integrated.

A rehabilitation programme aimed at integrating disabled people into society should be based in the community, the rural village or the urban slum. Experience has shown that 70% of the rehabilitation of all disabilities can take place in the village, and another 25% at the sub-district, "taluk" level. Not more than 5% require treatment at the district or state levels. The most important person in this programme would be the local supervisor. She (in most cases the worker is likely to be a woman) should be recruited from the village/community, so that she is accepted,

understood and actually controlled by the local population, which in turn would be responsible for supporting her. Her role would be to detect disabilities, provide social support, advise, train, refer, receive and make the follow-up of people who have been trained and prepared away from home.

Rehabilitation planning for the disabled person and supervision of services will be done by the multipurpose rehabilitation worker, rehabilitation assistant, social worker, occupational therapist, physiotherapist and doctor. The community based rehabilitation (CBR) programme must be aimed at maximizing the use of local resources and strengthening the existing social networks such as the family, school, panchayat and temple to ensure that rehabilitation is integrated and complete.

The staff employed in the leprosy eradication programme will require training in comprehensive rehabilitation. Similarly the rehabilitation staff working with other disability groups must be educated in the needs of people with leprosy. Experienced MDT staff can be used in the training of other rehabilitation personnel on the needs of persons with leprosy. The sharing of knowledge and experience by and between both groups is essential to the success of the programme. People who have suffered leprosy and women would be given special consideration to get training and to be teachers/trainers themselves.

It is very essential that the situation of disabled people and in particular of those with leprosy should be taken into consideration in all public services. Donor agencies like SIDA can play an important role by including these aspects in development co-operation programmes like social forestry.

Reasons for an integrated rehabilitation

With integrated rehabilitation we understand services with and for different disability groups without restraints connected with the original causes.

Leprosy control has traditionally been kept as a separate, vertical activity characterized by the leprosarium, the leprosy village and other such institutions often far removed from the rest of society. It was repeatedly brought home to us that people with leprosy can be denied access to

ordinary hospitals and other health services when suffering from other diseases or acute conditions. Still, it came as a surprise that the District Rehabilitation (DRC)-scheme lacks provisions for them and that leprosy is not even mentioned in the textbook for the DRC-staff. (Presumably, this will be corrected with time.) The separate dispensaries, schools, social institutions and regulations have been administered by a specialized staff. This is the case with the MDT- programme. The original project proposal submitted to SIDA follows the same pattern by taking cured leprotics apart and merely adding some provisions for other disabilities.

The mission has investigated the advantages and disadvantages of a vertical approach, and it concluded that the arguments for a vertical medical control programme in highly endemic areas are not quite applicable when it comes to rehabilitation.

Certainly, it is an important step forward to include rehabilitation in the leprosy programme. One can foresee, that the reduced incidence of leprosy leaves large numbers of burnt out cases to be rehabilitated, and also that specialized and often committed staff will have less medical therapies to perform. From this point of view, rehabilitation is a logical continuation of the MDT-programme. It should be remembered however, that there are other resources to tap also.

Some rehabilitative measures are specific for leprosy disabled like reconstructive surgery or the provision of some protective devices. It is also true, that leprotics may not get the attention they need in general services. Both these aspects have to be considered in a future, integrated programme.

Since it has been shown above that segregation is the main cause of handicap for leprotics, and that integration is the aim of rehabilitation, the rehabilitation programme itself should be integrated. Such a programme demonstrates that the disabilities following from leprosy are not different from other disabilities; be they sensory, locomotor or visual. As a matter of fact, the World Programme of Action concerning Disabled Persons repeatedly asserts that "Services for disabled persons should be provided, whenever possible, within the existing social, health, education and labour structures of society".

As mentioned earlier, several rehabilitation programmes are being set up in India. Apart from the DRC-scheme there are important state and NGO projects. There is an obvious risk for collisions between the programmes, unless they are co-ordinated. The resources, which are still small for a national coverage, would be better utilized. In an area where there is one physiotherapist for example, it would be unpractical to look for another to do leprosy work exclusively. Similarly, in the large areas where surgery for acute conditions is lacking, it would be strange to organize surgical facilities to correct leprosy deformities and nothing else.

With regard to voluntary agencies, quite a few were visited which specialized on leprosy work only. Some of them were performing a very dedicated and unselfish work, still they reinforced segregation. A couple of our informants were of the opinion that these agencies even upheld the stigmatization. Disability organizations only exceptionally included leprotics into their programmes, but several of them declared their willingness to do so in the future. Their interest could be stimulated, e.g. through seminars.

Conclusions and recommendations

It has been concluded by the mission that time is ripe to complement the Leprosy Eradication Programme by rehabilitation measures. It is also clear that the services should cater for people with different disabilities and not only such that follow from leprosy. This is the integration aspect of the services foreseen. Still, within the services planned, priority will be given to the so called burnt out leprosy cases. Also, within this group, women and children will be given special attention. Rehabilitation in this context will be comprehensive in that it combines all the actions and interventions which promote social integration, i.e. social, medical, pedagogical and others.

It is recommended that the programme is divided into two phases: the first phase consisting of planning, preparation and training; the second creating rehabilitation services in two or three districts. The districts should be located in different parts of the country selected among those which have a SIDA-supported MDT-programme.

For the overall supervision and co-ordination the naming of a steering committee is recommended with representatives from the ministries,

first and foremost those of Health and Welfare, SIDA and non-governmental agencies.

Likewise, for the running and monitoring a working-group should be composed and a short-term consultant contracted to assist it. Their first task would be to make a detailed plan and a time schedule for the first phase of the programme.

During the first phase, which would last one year, the following activities would be carried out:

1. Select districts and devise the organizational set-up of the development projects; the distribution of roles between government and NGOs, such as organizations of disabled people and organizations catering for various disability groups;
2. Designate an implementation organization through which the SIDA funds would be channeled and define its role clearly;
3. Work out a plan of operation and a budget for the second phase of the project;
4. Identify the staff on different levels which would carry out the projects in the districts chosen and take part in the development work; starting with master-trainers;
5. Translate into hindi and other languages and produce the WHO-manual "Training in the Community for People with Disabilities" and David Werner's "Disabled Village Children";
6. Identify and adapt other texts already existing;
7. Organize seminars and workshops on subjects like:
 - comprehensive rehabilitation emphasizing the social aspects,
 - changing attitudes using media and information campaigns,
 - specific measures for rehabilitation of people with leprosy,
 - specific measures for children with leprosy or with leprotic parents,
 - roles of government and non-governmental agencies, with emphasis on organizations of disabled people,

- community involvement and participation in rehabilitation and
- local production of technical aids.

8. Revise the curriculum in the training of DRC-staff and leprosy-staff to include leprosy and rehabilitation and enable them to work together and work in a co-ordinated, uniform manner;

9. Carry out studies on subjects like the situation of women with leprosy;

10. Make an index of relevant organizations and services existing in India,

11. Organize a Congress to launch the programme.

The second phase would start in the second half of 1990. By that time, two or three districts will be selected for the pilot projects according to the plans worked out earlier. The development of the programme should be monitored and assessed by the steering committee and the short-term consultant before the programme is expanded to further districts.

Budget

Estimated costs for Phase One

Translations and adaptation manuals	100 000
Printing	150 000
Seminars	1 100 000
National conference	1 000 000
Public awareness campaign	500 000
Short-term consultancies; nationals	150 000
Working-group activities	50 000
Miscellaneous	100 000
TOTAL Rupees	3 200 000
 Equivalent SEK	 1 400 000
SIDA consultants	400 000
Unforeseen	200 000
 TOTAL SEK	 2 000 000

1988 12 07

DRAFT TERMS OF REFERENCE FOR PREPARATORY MISSION
ON SWEDISH SUPPORT TO REHABILITATION PROGRAMME,
INDIA

BACKGROUND

Sweden has supported the Multi Drug Treatment Programme (MDT) within the Indian Leprosy Eradication Programme since 1978. One can now see results of the MDT in that more and more patients are declared cured. Many of them need rehabilitation, both medical social and economic rehabilitation. SIDA received in February 1988 a request from Ministry of Finance (DEA) for Swedish support to a rehabilitation programme in the MDT districts financed by SIDA, which are in the "maintenance phase".

In the discussions regarding the Indo-Swedish development cooperation for the period 1989/90-1991/92, SIDA has considered the request in a positive way and decided to send a fact finding mission to India in January 1989.

It has been decided to engage International Child Health Unit, University of Uppsala (Mr Gabor Tiroler) and the Swedish Institute for the Handicapped, Stockholm, (Mr Tomas Lagerwall) to participate in the mission together with one or two Indian consultants.

On the basis of the Indian request and on the direction of DCO-New Delhi the consultants shall

- discuss with GOI the size and the geographical location of a pilot rehabilitation project,
- visit and discuss ongoing rehabilitation projects both Government and NGO schemes,
- design and make recommendations with regard to coverage and size of a pilot rehabilitation project where leprosy patients will be given a priority,
- give a brief oral and written report before leaving India and,
- a final written report with draft project document for a pilot rehabilitation project before the end of February 1989.

LIST OF PERSONS MET AND ORGANIZATIONS VISITED

GOVERNMENT OF INDIA

1. H.E.. Ms Saroj Khaparde, M.P.
Minister of State for Health & Family Welfare
2. Dr Ashish Mukerjee, M.S., Ph.D.
Additional D.G.H.S.
Government of India
3. Mr R. Dayal
Additional Secretary
Ministry of State for Health & Family Welfare
4. Dr B.N. Mittal
ADG (Lep), DGHS
Government of India
5. Mr S.S. Varma
Secretary, Ministry of Welfare
Government of India
6. Mr R.S. Pandey
Director
Ministry of Welfare
Government of India

GOVERNMENT OF ORISSA

1. Mrs S. Narayanaswami
Secretary
Minister of State for Health & Family Welfare
2. Dr H.C. Mishra
Director of Health Services
3. Dr Mrs B. Devi
Chief District Medical Officer
Ganjam District
4. Dr T. Pani
Joint Director of Health Services (Le.p. & Tub.)
5. Dr T.P. Patro, MD, D.L.O.
Ganjam, Berhampore, Orissa
6. Dr H. Sahu, WHO Consultant, NLEP

7. Dr
DANLEP Programme
Cuttack
8. Dr
DANLEP Programme
Cuttack

GOVERNMENT OF MAHARASHTRA

1. Mrs S. Modi
Secretary, Social Welfare
2. Dr Mrs
3. Dr V.D. Sontakkey
Joint Director
Health Services
4. Dr Yelapurkar
WHO Consultant
NLEP, Maharashtra

VOLUNTARY HEALTH ASSOCIATION OF INDIA

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The disability process and Community Based Rehabilitation

An overview of the terminology and some of the principal ideas

The definitions and concepts related to disabilities and to rehabilitation in a wide sense have been formulated by the UN and its specialized agencies and adopted fully or partially by governmental and non-governmental organisations concerned. (The UN World Programme of Action Concerning Disabled Persons, the UN Manual on the Equalization of Opportunities for Disabled Persons and the WHO manual Training in the Community for People with Disabilities are the main documents to refer to.) The following is an attempt to review the terminology and principal ideas and to relate them to the situation in developing countries.

The **disability process** follows a disease or a trauma, if they are not cured, and it is divided into three stages **impairment**, **disability** and **handicap**.

- **Impairment** is related to human organs, denoting the loss of one or the disturbances in its function.

- **Disability** is related to the individual as a whole, meaning the lack or restriction of a function (like moving around, hearing or speech).

Disabilities have been divided into eight groups, largely on the basis of how the disabled person or his/her surroundings experience them. They are durable or permanent states, and the disease or trauma that caused them has more often than not become irrelevant. The groups are :

1. Fits (mainly epilepsy)
2. Difficulty with learning (as in mental retardation)
3. Difficulty with hearing and/or speech (this includes deafness)
4. Difficulty with seeing (this includes blindness)
5. Strange behaviour (mainly psychoses)
6. Lack of feeling in the hands and/or feet (mainly leprosy)
7. Difficulty with moving (because of weakness, deformities or amputations)
8. Other disabilities (alcohol- and drug abuse, chronic respiratory- or circulatory diseases, allergy etc.)

- **Handicap** is a social phenomenon occurring when an individual cannot fulfill his/her role in a given society after getting an impairment or a disability. Thus, a disabled person may live normally in one social situation but be handicapped in another.

Poverty and handicap are linked to each other. Poor and underprivileged groups are more exposed to health hazards and accidents than the well-off. When they are stricken by one, they have fewer opportunities to get care than the well-off, who have access to treatments, medicines or technical aids of the kind existing in the West. Serious disease or disabilities worsen the economy of a family already poor. Therefore, disability projects can be seen as an element in development cooperation and in the fight against poverty.

The concepts of impairment, disability and handicap correspond to measures aiming at the equalization of opportunities or equality and full participation.

Impairments and disabilities should be **prevented**. Persons who have a disability must get **rehabilitation**. Furthermore, an **adaptation of the society** is needed for those who can neither eliminate their disability through training nor compensate for it through a technical aid.

- **Prevention** should eliminate the occurrence of psychical-, physical- or sensorial injuries or diseases. If it cannot, it should hinder that they lead to permanent impairments. Then, we talk of secondary prevention.

- **Rehabilitation**, strictly seen, starts after acute treatments such as operations, pharmacotherapy or physiotherapy. It includes all measures which reduce the impact of disabling and handicapping conditions and make a social integration possible. Habilitation is a term used in relation to children, who have not acquired the abilities normally associated with their age. In such a case there is no question of re-gaining a capacity.

Community Based Rehabilitation, CBR, involves measures taken at community level to use and build on the resources of the community, including the impaired, disabled and handicapped people themselves, their families and their neighbourhood. It is further described below.

Vocational rehabilitation is the sum of the measures which make it possible for a disabled person to secure, retain a suitable employment and thereby promote the integration or re-integration into society.

- **Adaptation of the society** demands a legislation which insures the same opportunities for persons with disabilities as those enjoyed by others. Consequently, all kinds of discrimination must be abolished. The environment must be made accessible for all. Consumer advocacy is needed, and organisations of disabled persons have a very essential role to play. On the one hand, they should take part in controlling and running services for disabled persons, and on the other hand they should set positive examples as peers for them.

To achieve an equalization of opportunities, a redistribution of resources and wealth will be required. The same applies to rehabilitation technology and facilities, which are at present concentrated within urban areas, controlled and enjoyed by the privileged minorities.

The new approach of Community Based Rehabilitation

During the seventies it was realized by many, that the rehabilitation services developed up to that period and supported by organisations such as the WHO and ILO were inadequate or even irrelevant to the needs in developing countries. The institutions with their specialists are not only costly and exclusive; in many instances they are also more beneficial to the service providers than to the clients. Conventional rehabilitation as exercised there all too often lead to the very segregation it is meant to eliminate.

That was why Community Based Rehabilitation, CBR was started. In 1979 an experiment version of a manual -Training Disabled Persons in the Community- was worked out at the WHO by Gunnel Nelson, Padmani Mendis and Einar Helander. The manual contains training programmes based on observations of spontaneous, and informal rehabilitation performed around the world with addition of professional experience collected by the authors and a large number of reference persons. The manual was tested in nine countries and comments were collected. An evaluation meeting was held in 1982 with participants from the experiments. The authors made extensive field trips and collected comments from disabled persons and their families, primary health workers and others who had been involved like physiotherapists, doctors and teachers. After this, the manual was submitted alterations and improvements.

It has been translated into at least 27 languages and printed in more than 100, 000 copies. It has subsequently been distributed to nearly all countries in the world. Many countries have adapted the manual to their

conditions. In Hong-Kong for example a manual for use in urban areas has been produced.

Between 1984 and 1988 a number of top experts in different fields reviewed the different chapters of the manual. Taking their views into consideration a new version has been elaborated.

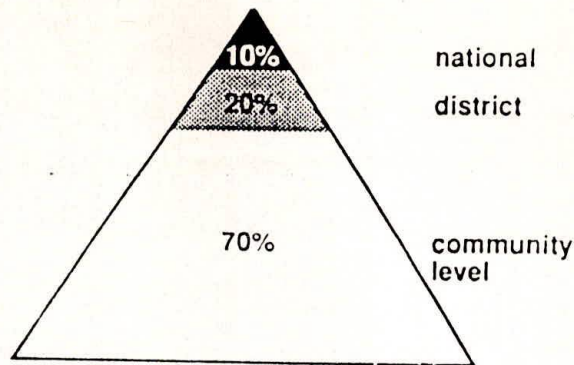
In addition an evaluation methodology has been designed and tested for measuring quality and quantity of rehabilitation services. Efficiency and effectivity are measured both in relation to individuals and to communities. Parameters used are such as a) the number of disabled children integrated into regular schools, b) the number of disabled adults gainfully employed and c) the creation of organisations of disabled persons.

During 1989 the final, printed version of the manual will be published. It contains some 800 pages with texts and accompanying illustrations to be used directly by lay people. The language has been systematically simplified, and not more than 1,800 different words are used. Like before, the different sections can be used separately. They number 31 training packages and guides for community leaders, persons with disabilities and their organisations, local supervisors and teachers. The manual will be distributed from the WHO headquarters.

The CBR approach has three main components viz,

- i community involvement.
- ii a simplified technology and
- iii an appropriate service delivery system.

This approach is expected to meet the needs of 70 per cent of all disabled persons as compared to conventional, institution based rehabilitation which does not cover more than 1 - 2 per cent at present in most countries. Institutions and more sophisticated services do have their place in the CBR approach also, if they support community efforts, serve as referralpoints for more complicated cases and provide training for rehabilitation personnel. Possibly, some of the special institutions could help manage CBR-services. Still, the distribution of resources and personnel should have a relationship to the service-pyramid, in which 70% of the population are catered for in the community, 20% at district level and only 10% require services at tertiary and quaternary levels of specialization.



In the CBR ideology, rehabilitation is viewed as a means for people with disabilities to achieve health. (*Health* in turn is taken in its wide sense as the "state of complete physical, mental and social well-being and not merely the absence of disease ..."). Consequently, the social elements in both the aims and the means are constants - be they explicit or implicit - in all CBR-activities.

CBR can be said to be , Primary Health Care, PHC applied to the field of rehabilitation; it is based on the same concepts. CBR contains essential rehabilitative measures which are appropriate in each community.

Essential is used here with the same implication as in *essential drugs*. It is not only adaptable to but also founded on local needs and resources.

From this it follows that CBR measures are affordable on the one hand and making full use of available resources on the other.

CBR services may be tied into the PHC network or be coordinated with it. Services on higher levels, institutions and specialists can then be referral points for more demanding cases and sites for the training of personnel. Local supervisors, corresponding to Village Health Workers, are those who carry out the work in the field together with disabled persons, their families and local people. They are supposed to detect and register persons with disabilities, establish their needs for rehabilitation, select the training material, find a trainer, follow-up the rehabilitation with assessments and records and finally to refer the person to other services (if they are available) when need be. In some places they are volunteers like the Red Cross Youth or members of religious organisations. Elsewhere they are employed more or less formally by health- or

education services. In turn they get support from Intermediate Level Supervisors, who may be Rehabilitation Assistants, Nurses, Therapists, Social Workers or the like.

Both the WHO and the UNICEF have formally recommended CBR to replace the conventional services, while the ILO has a slightly different interpretation of the same basic ideas. The WHO Global Programme for the current period has set the target that 50 per cent of all countries will initiate CBR programmes.

Although CBR from the management point of view first and foremost belongs to health services, there is an absolute need for involvement by other branches of administration and society. The fact that this is a prerequisite for national programmes is expressed in the World Programme of Action:

"They should be an integral component of the nation's general policy for socio-economic development." "Each ministry or other body within the public or private sector responsible for, or working within, a specific sector should be responsible for those matters related to disabled persons which fall within its area of competence. Governments should establish a focal point (for example, a national commission...) to look into and follow the activities ... of various ministries, of other government agencies and of non-governmental organizations."

In all of the above mentioned activities it is desirable that the persons with disability remain in their own communities. They should have access to the regular services for others like schools, health, social services etc. and get through them any extra support needed. They should take part in all decisionmaking concerning them.

When it comes to formulating or assessing projects for disabled people, one should examine who will actually benefit. We should consider as targets not only the person with a disability but also the family and the community.



MODIFIED MULTI DRUG TREATMENT REPORT OF
BANGALORE (U) DISTRICT

FOR THE MONTH OF _____ 199

Place :

Name of Centre.....

Date :

	MB	PB	TOTAL
1. Total known cases before start of MDT			
2. No. Screened			
3. No. Found fit for MDT			
4. No. started on MDT at the commencement of programme			

5. SURVEY & DET. AFTER THE COMMENCEMENT OF MDT

A. DURING THE MONTH

Type of Survey	No. Examined		No. of cases det.		No. with deformities	
	Adult	Child	Adult	Child	Adult	Child
General Survey						
School Survey						
Random Survey						
Contact Survey						
Vol. Reporting						

B. TOTAL ADDED UPTO END OF MONTH (Cumulative)

General Survey						
School Survey						
Random Survey						
Contact Survey						
Vol Survey						

6. No. ADDED TO MDT AFTER COMMENCEMENT OF MDT

(after the No. of cases started at the commencement of MDT)

A. DURING THE MONTH

No. added subsequently during the month			
No. added till the end of month			

B. Total cases brought under MDT (cumulative)
from start (No. started at the beginning
and those added later)

7. No. DELETED FROM MDT

A. DURING THE MONTH

a) By RFT	—			
b) By Death	—			
c) L.C.A	—			
TOTAL	—			

	MB	PB	TOTAL
B. TILL THE END OF MONTH (Cummulative)			
a) By RFT	—		
b) By Death	—		
c) L.C.A	—		
TOTAL	—		
8. I. No. OF PATIENTS UNDER MDT AT THE END OF MONTH			
No. treatment took during the month			
a) under MDT			
b) under Mono			
II. REMAINING PATIENTS AT THE END OF THE MONTH (defaulters)			
a) under MDT			
b) under Mono			
c) Not taken treatment			
9. No. UNDER SURVEILANCE			
9.1 R F T cases at the end of last month			
9.2 No. RFT added during the month			
9.3 No. deleted from Surveillance (RFT, Death, LCA etc.)			
9.4 No. under observation			
9.5 No. examined during the month			
9.6 No. Relapsed (only confirmed by D.L.O or consultant)			
10. No. OF SKIN SMEARS TAKEN during the month			
10.1 Found +ve			
10.2 Found -ve			
10.3 No. of smears cross checked during the month			

ANTI LEPROSY DRUG REPORT

	DDS			CLF		REF	
	25	50	100	50	100	150	300
No. of Drugs on Stock at beginning of the month (OB)							
No. received During the month							
No. spent During the month (consumed)							
Balance of Stock (closing balance)							

Signature & Seal

MONTHLY REPORTING FORM
NATIONAL LEPROSY ERADICATION PROGRAMME

STATE/U.T.
DISTRICT/s

MONTH/QUARTER19

		URBAN		RURAL		TOTAL	
		MB	PB	MB	PB	MB	PB
1. Number of persons examined during the month	ENU						
	EXAM						
2. Tot. cases det. during the month							
2. a. By population Survery	EN						
	EX						
2. b. By contact Survey	EN						
	EX						
2. c. By voluntary	EN						
	EX						
2. d. By School Survery	EN						
	EX						
2. e. By any other method	EN						
	EX						
3. Cross Checking :							
3. a. No. of Pts. Cross Checked for drug consuming tabs with the Pts.							
3. b. No. of Pts. found consuming tab regularly.							
3. c. No. of Pts. examined for consumption by urine check							
3. d. No. found +ve for urine test							
4. Cases registered :							
4. a. No. Reg. till the end of last month							
4. b. No. Reg. during the reporting month							
5. a. No. cases discharged as cured / RFT							
5. b. No. discharged as dead							
5. c. No. discharged as left the area							
5. d. Total discharged during the month							
6. No. of cases on record at end of month							

	URBAN		RURAL		TOTAL	
	MB	PB	MB	PB	MB	PB
7. Number of new cases under treatment at the end of last month.						
7.a. With dapsone monotherapy						
7.b. With multi drug treatment						
8. Number of registered cases treated during the month						
8.a. With dapsone monotherapy						
8.b. With multi drug treatment						
9.a. Number of newly registered cases having disability (of grade 2 and above)						
10. Number of new child cases (0-14 Yrs. registered during one month.						
11. Number of registered patients examined for AEB (smear/slid)						
11.a. No. of Pts. found positive						
12. In-Patients						
12.a. Number of registered in patients at the end of last month						
12.b. Number of registered in-patients during the month						
12.c. Number of in-patients discharged during the month						
12.d. Number of in-patients at the end						
13. No. of relapse patients registered during the month						
14. No. of cases referred for suspected resistance during the month						
15. Number of cases referred for Surgical procedures during the month						
16. No. of old cases under treatment for which smear is to be taken						
16.a. No. of smears actually taken						
16.b. No examined						
17. No. of cases completed treatment to be followed-up clinically						
17.a. No actually assessed Clinically						

	URBAN		RURAL		TOTAL	
	MB	PB	MB	PB	MB	PB
18. No. of inactive cases to be followed bacteriologically						
18.a.No. actually followed up						
19. Total No.of smears examined (col.11 + 16.b + 18.a)						
19.a.No sent for cross - check						
19.b.No. of variations reported in the month +ve as -ve						
Negative as positive						
B I difference						
20. Tot. No. of Slums						
20.a.No. of Slums without Lep. cases						
b.No. of slums with only PB cases						
c.No.of slums with only M.B. cases						
d.No. of Slums with both M.B. & P.B. cases						
e.No. of Slums with No data						

DATE :

PLACE :

SIGNATURE :

NAME :

DESIGNATION :

POSTAL ADDRESS :

HEALTH EDUCATION ACTIVITIES

Group meeting	
Health talks	
Film Shows	
Exhibitions	

Repeatability of nerve thickness assessment in the clinical examination for leprosy

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Summary The assessment of the thickness of the superficial peripheral nerve trunks to document nerve involvement is an important aspect of clinical examination in case finding for leprosy, and is usually done by trained paramedical workers (PMWs). This assessment is subject to variability and has implications on the outcome of the survey. The present study proposes to quantify this variability. In this study, 242 individuals, consisting of 50 neuritic cases, 143 nonneuritic cases of leprosy and 49 normal controls, selected from the records of the trial of BCG prophylaxis in leprosy in South India, were examined by a doctor and paramedical workers. Repeatability of nerve thickness assessment for ulnar and popliteal nerves between the medical officer (MO) and the PMWs was quantified using Kappa statistics. The Kappa values for repeatability between the MO and the PMWs ranged from 0.45 to 0.54 and 0.52 to 0.69 for ulnar and popliteal nerves, respectively. The implications of the variability in nerve assessment are discussed.

Introduction

Leprosy surveys very often employ trained PMWs for screening the population. The MO examines the individuals diagnosed by the PMWs as having leprosy for confirmation. The clinical examination for the diagnosis of leprosy includes the palpation of superficial peripheral nerve trunks, especially the ulnar and popliteal nerves in order to assess their thickness. The proper assessment of nerve thickness is essential for the diagnosis and classification of disease. The clinical examination by palpation is the only way to diagnose nerve thickening and, in neuritic leprosy, the assessment of nerve thickening is often the only means of diagnosis.

Since the clinical assessment of nerve thickness is not based on objective criteria, variability between 2 assessors or the same assessor at 2 different times could be

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expected. Neuritic leprosy constitutes about 14% of the prevalent cases of leprosy.¹ But the proportion of leprosy patients with peripheral nerve trunk involvements will be much higher. Therefore the variability in clinical assesment of nerve thickening is likely to have a considerable influence on the estimates of prevalence rates so obtained. This study presents an attempt to actually quantify this variability.

Materials and methods

Since the prevalence of thickened nerves among the general population is very low, the study sample is selected to include a fair proportion of individuals with thickened nerves. We selected 242 subjects, consisting of 50 (21%) patients with neuritic leprosy, 143 (59%) with nonneuritic leprosy and 49 (20%) normal controls, from the records of the South Indian Chingleput trial of BCG prophylaxis in leprosy. The assessment of repeatability was carried out between 8 PMWs and 1 MO who were engaged in the BCG Prophylaxis Trial in leprosy and had at least 10 years experience in the clinical examination for leprosy. Out of the 244 selected, 242 were examined by the MO (2 were not available for examination). Following the examination by the MO of an individual, each of the 8 PMWs examined him/her independently. The interval between the MO and PMW examination for any individual varied between 0 and 7 days. The PMWs recorded their findings independently on a separate precoded sheet without knowing the findings of the other PMWs and the MO. Each single examination was independent of any other examination.

The findings of the clinical examination were recorded on the prescribed form in a precoded format for each individual. While assessing the nerves, both thickness and consistency were assessed and recorded.

STATISTICAL ANALYSIS

The measurement of interexaminer agreement

Suppose that each of a sample of n subjects is rated independently by 2 examiners on a categorical scale consisting of 2 categories:

		First examiner	
		Positive	Negative
Second examiner	Positive	a	b
	Negative	c	d

A measure of agreement is the mean pair agreement index P_0 , which is obtained as

$$P_0 = \text{number of agreements} / \text{Total No. of pairs} \\ = (a + d) / (a + b + c + d)$$

This varies considerably with the prevalence. Any characteristic with a low prevalence will have a higher value for d and a higher repeatability, i.e. the value of P_0 is inflated. Thus it is clear that except in the most extreme circumstances some degree of agreement is to be expected by chance alone.

Let us consider an index that assumes the value 1 when there is complete agreement. Let P_0 denote the observed value of the index. Let P_e denote the value expected on the basis of chance alone.

The obtained excess beyond chance is $P_0 - P_e$, where the maximum possible excess is $1 - P_e$. The ratio of these 2 differences is denoted by Kappa (K) and is defined by

$$K = (P_0 - P_e) / (1 - P_e).$$

Kappa is a measure of a chance corrected agreement between 2 ratings. A value of '+1' for Kappa indicates complete agreement. A value of '0' implies agreement no better than chance. Negative values indicate more disagreement than expected by chance.

In this study, interobserver variations were measured using the Kappa statistic for the chance corrected agreement as described by Fliess⁴. This approach was preferred because of its ability to quantify the maximum possible agreement on abnormalities.

Results

In leprosy surveys and control programmes, PMWs are used for screening purposes only. Case diagnoses are made by MOs whose clinical examination is considered as standard. In this study the variability between the standard examiner (MO) and test examiner (PMW) was assessed for each of the 8 PMWs independently. The prevalences of thickened ulnar and popliteal nerves of the study population were 23% and 26%, respectively. The prevalences of altered consistency of the same nerves were 5.5% and 9.2%, respectively. Since the prevalences of altered consistency were low in the study population, the findings on consistency are not reported here. Table 1 shows the distribution of various categories of study population as seen by the MO and PMWs. The study population consisted of a reasonable mix of all types of leprosy in which nerve thickening could be expected. Table 1 shows the number of individuals examined by each PMW. The MO had examined 242 cases, out of which at least 212 had been examined by

Table 1. Distribution of the study population according to disease status

Case category	MO	Number examined by the PMWs							
		1	2	3	4	5	6	7	8
Maculo anaesthetic	35	30	30	31	31	29	29	31	30
Tuberculoid	17	16	16	16	15	16	15	15	16
Neuritic	50	44	49	50	48	49	49	49	47
Lepromatous	14	10	11	11	11	10	10	11	10
Borderline	49	39	43	43	41	41	41	43	40
Suspect	28	28	28	28	24	28	26	28	26
Normals	49	45	49	49	48	48	49	49	49
Total	242	212	226	228	218	221	219	226	218

Table 2. Interobserver agreement in the assessment of nerve thickening

	No. of nerves assessed	Kappa Statistics			
		Ulnar nerve Kappa	(95% C I)	Popliteal nerve Kappa	(95% C I)
PMW	424	0.50	(0.40, 0.60)	0.69	(0.60, 0.79)
	452	0.51	(0.41, 0.60)	0.57	(0.48, 0.66)
	456	0.54	(0.45, 0.63)	0.59	(0.49, 0.68)
	436	0.53	(0.44, 0.62)	0.56	(0.47, 0.65)
	442	0.49	(0.40, 0.58)	0.54	(0.45, 0.63)
	438	0.45	(0.36, 0.55)	0.55	(0.46, 0.64)
	452	0.47	(0.38, 0.56)	0.58	(0.49, 0.67)
	436	0.49	(0.40, 0.58)	0.52	(0.43, 0.61)

each PMW. Table 2 shows the Kappa statistics for ulnar and popliteal nerve thickness between the MO and each PMW. It is seen that the Kappa values for the 8 PMWs for ulnar thickening ranged from 0.45 to 0.54. The corresponding ranges for popliteal nerve thickening was 0.52–0.69.

Discussion

The sample is selected in such a way that a satisfactory level of prevalence of study characteristics can be ensured in the study population. The study was also confined to nerve thickening, since this is the sign that will be used for case detection in the field, and therefore other signs such as nerve tenderness and sensory deficit were not looked for.

The repeatability of a qualitative measurement like the thickening of a nerve is dependent upon the 2 components of variability, namely the biological variability and measurement variability. Dr Noordeen¹ has reported spontaneous regression of thickened nerves in leprosy patients (biological variability). In the present study, the biological variability is minimized by having the paired examinations for each observer within 7 yrs. It is therefore reasonable to assume that the interobserver variation in this study is almost entirely due to the measurement variability. There is a certain inherent lack of precision in the method adopted for the assessment of nerve status. Obesity, occupation and the size of the corresponding nerve in the contralateral limb are the factors that influence the decision on nerve thickness status. Since the above-mentioned criteria are subjective in nature rather than objective, the repeatability as expressed by the Kappa statistic is not very good. Earlier studies^{2,3} have studied the repeatability for the diagnosis of leprosy between MOs and between the MO and senior PMWs, respectively.

Neelan *et al.*³ have studied the repeatability of diagnosis and classification of early leprosy among medical officers. They have not, however, studied the repeatability of nerve thickening assessment in that study. Gupte *et al.*² reported Kappa values (0.78) for agreement between 3 pairs of examinations for assessment of nerve thickness with sensory deficit. They had studied nerve thickening not in isolation but as a part of total clinical examination. However, they did not study ulnar and popliteal nerve

thickening separately as was done in this study. The objective of the present study was to view nerve thickening as a clinical sign by itself. Therefore a complete examination of the patients was not carried out and only their nerves were examined. This was expected to eliminate expectation bias due to knowledge of the case status of the individual. In the present study the Kappa values for ulnar thickening range from 0.45 to 0.54 and the popliteal thickening from 0.52 to 0.69. According to the classification of Landis & Koch⁵ Kappa values of between 0.4 and 0.6 could be taken as moderate agreement. We note that agreement is better for popliteal thickening than for the ulnar thickening, but for both nerves it is still only moderate.

In view of the above findings, it would appear that one cannot expect more than a moderate level of reliability for a clinical examination undertaken by PMWs with respect to nerve thickening. However, standardizing PMWs and selecting those with high levels of interobserver agreement would minimize measurement errors, especially in rapid prevalence surveys.

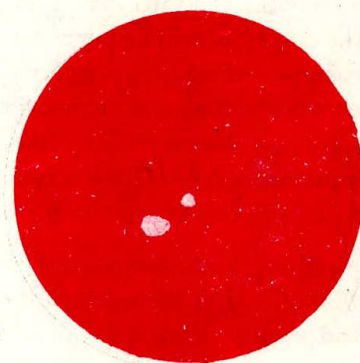
Conclusion

The assessment of thickness of ulnar and popliteal nerves is an important aspect of routine clinical examination. Leprosy screening examination is usually carried out by trained PMWs. Each PMW acts as an independent screening test and the MO acts as the confirmatory standard test. In this study, the repeatability of nerve thickening assessment between the MO and the PMWs was studied. The study shows that the Kappa statistic for interexaminer repeatability varies between 0.45 and 0.69. The present study underlines the fact that this clinical sign (nerve thickening) assessed in the clinical examination for leprosy is a soft parameter and even experienced workers show considerable variability in its assessment. This may be kept in mind while assessing prevalence in large surveys.

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May-June, 1997

Immunity, Ethics & Control of Leprosy

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Since a mycobacterium, *M.leprae*, is associated with leprosy, it is an infectious disease. Indeed this assertion comes handy to combat superstitions that surround the cause and effect of leprosy. It is carried a bit too far however when public advertisements assert that it is one of the least infectious diseases. This statement is wholly scientifically wrong. What they mean to convey is that leprosy does not occur easily. The scientifically correct assertion should be : while getting infected is quite easy, infection does not automatically result in leprosy, the disease. And, this phenomenon, transformed into scientific jargon would imply that human ability to contain the infection and prevent development of clinical leprosy is high. This also means, mobilising of protective immunity to leprosy is the rule, and occurrence of leprosy as a disease is rather infrequent.

Now since the word immunity is brought in here, we will use a few words to explain how it relates to leprosy. Immunity normally connotes **resistance**. However, the immune process and, the immune system is not that simplistic. Immunity can both be protective, as well as, devastatingly damaging to health. Of the various immune processes, delayed type hypersensitivity, or DTH, is one such process that can do a lot of damage to host tissues.

We all know what happens to a patient of tuberculosis

with excessive DTH there is liquefaction at any site where *M.tb* is lodged, and in matter of weeks both the patient's lungs will be destroyed making living impossible. In the normal run, i.e., in patients not excessively hypersensitive, DTH offers temporary retreat though, in the way of caseation, sealing off of the affected part with dead tissue and cessation of blood supply making the bacilli in it dormant and the infection latent—*M.tb* are aerobes. This is far from being a protective response and can break down any time.

The Immune Process

In leprosy, DTH, as manifested by Type-I reactions in the so called paucibacillary leprosy (Indeterminate, tuberculoid, borderline-tuberculoid, or BT, and neural, or polyneuritic leprosy) bring with them neuritis and deformity (initially reversible), lesional exacerbation and dissemination (intensity of neuritic pain may drive a patient to commit suicide) and transient, low-grade bacillation. A BT patient that is nominally bacteriologically positive, will become positive of a grade that will be easily detectable in a skin smear. If the neuritis is not promptly treated with steroids and/or neurolysis, defor-

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mity which is initially reversible with the subsidence of the reaction, will be permanent after suffering a few such reactive episodes. Similarly, since the reactional site provides ideal sanctuaries for *M. leprae* to resurge, the paucibacillary (PB) disease will slowly become multibacillary (MB)—a reaction site has a low PO_2 and pH, both conditions favouring *M. leprae* multiplication.

Further, with increasing bacillary load, the lipids of *M. leprae* that are notoriously immunosuppressive add to the suppression with incremental loss of immune response of the cell-mediated (CMI) variety, with the antibody component becoming hyperactive, producing large quantity of antibodies that do not protect but add an extra dimension to the disease in Erythema Nodosum Leprosum (ENL), called in leprological jargon a type-II reaction. This is an acute vasculitis resulting from deposition in small blood vessels of something like a small embolus consisting of bacillary fragments that ties up the abundant antibodies which, in turn combines with complement. This is really an immune-complex disease, is very painful and relieved only with steroids or thalidomide, and clofazimine. After healing, thick scars are left behind on the skin, and repeated attacks leave the skin in a cosmetically repulsive state and the normal texture of the skin does not return even after years of recovery.

Reaction & Deformity

All aspects of the disease of leprosy, and morbidity arising from it are reaction-related. These reactions are always occurring at a micro-level. Only when they are clinically obvious and cause much suffering do we call them reactions. The basis of leprosy pathology is reaction, appropriately called immune-pathogenesis of leprosy. The term immune-pathogenesis should imply that pathogenesis of leprosy is immune-mediated.

In the spectral classification of leprosy, we have two extremes—at one end lie the TT-BT types that are prone to DTH, and bacilli are but rarely encountered with ease; at the other extreme are the so-called multi-bacillary leprosy, the borderline lepromatous and true, or polar lepromatous leprosy. In our country *de novo* lepromatous are very rarely encountered (I have seen only two so far in my over 30 years of dealing with leprosy), and are quite deceptively normal looking unless when you take a skin smear that is highly positive. Almost all the BL-LL cases that we see had started with tuberculoid, or indeterminate disease, and have downgraded to BT or BL-LL

disease due to various reasons. *The important cause for downgrading are these reactive episodes, and a common, cause of reactions are some anti-leprosy drugs, notably dapsone.* Notwithstanding whatever has been said in defence of its anti-reaction role, I am convinced this drug dapsone is the most destabilising of all anti-leprosy drugs and almost all those begging on the streets, or at the places of pilgrimage with badly deformed hands, legs, feet and eyes are largely the result of indiscreet treatment with dapsone that they were taught to go on taking for life to prevent relapse.

The other reaction-inducing agent is concurrent cross-reactive mycobacteria—these are quite frequently encountered in attempted culture to grow *M. leprae*, and many a scientist has gone through this experience of 'growing' *M. leprae*, when actually they isolated the co-existing cultivable mycobacterium that behaved initially quite fastidiously as if they were indeed non-cultivable. Immunocytes of LL-BL leprosy, while non-responding to *M. leprae*, are easily stimulated by non-leprosy mycobacteria inducing release of the cascade of cytokines. This leads to DTH, and the oxidative metabolic burst in the phagocyte, leading to production of toxic oxygen and nitrogen radicals, the lethal chemicals that damage the lysosomes, releasing the lytic enzymes in them that can kill both the bacilli and their phagocyte sanctuaries.

To Dapsone or not to Dapsone

Unless these immune-mediated dimensions are understood, appreciated and always kept in mind, and guide our actions, rational designing and delivery of anti-leprosy chemotherapy or immunotherapy is not possible.

The guidelines of the Directorate General of leprosy, that can be taken to mean the WHO, to leprosy staff (of all grades, from the State Leprosy Officer down to the field-level supervisor and paramedical worker) strictly advise the workers to continue with dapsone in full dosage (100 mgm a day for an adult), reaction or no reaction. How I wish I could make these jet-setting leaders in leprosy to suffer the pain of leprous neuritis! And it is not just the pain. The most unacceptable aspect of it is the muscular weakness, the sensory paralysis and a continuing, smouldering pathology in the nerves that I strongly feel becomes a life-long association.

I cite here a small passage of an Editorial article from a group of Latin American Leprologists—*"From the point of view of evolution, it is important to bear in mind that*

peripheral neural damage and its side-effects frequently follow a course which is independent from the systemic manifestations of the basic disease. This means that in 'leprologically inactive' patients a progressive exacerbation of their neuropathies may occur... from the practical point of view, this implies that 'dermatological discharge' does not necessarily coincide with 'neurological quiescence' of the disease" (Int. J. leprosy, 1983 : 51 : 576-586). Charosky, Gatti and Cardoma are but a small group from a vast pool of highly experienced leprologists from South America that base their observations on meticulous clinical and pathological observations over long years on large number of patients. I have a feeling that their observations and conclusions are ahead of time. Unfortunately these Latin Gurus of leprology are hardly ever referred to in contemporary literature, leave alone be seriously considered.

Fortunately, due to the presence of clofazimine in the regimen for multi-bacillary leprosy, Type II reactions (ENL) occur but infrequently with somewhat diminished severity. But the regimen for PB leprosy does not enjoy this privilege of clofazimine. As mentioned earlier, a large majority of our MB cases arise from Immuno-clinical downgrading of PB leprosy, and it should be quite obvious that these patients should also receive the reaction-sparing benefit of clofazimine. I now hear that the WHO is looking for a suitable group/institution to initiate a study on the role of clofazimine in type I (DTH) reaction in PB leprosy. It was in a WHO-sponsored DGHS organised workshop at Jamshedpur in 1983 that this author showed the value of clofazimine in preventing type I reactions if it was used as a routine. Clofazimine was recommended as a preventive of type I reaction, not as a cure after letting it develop. Unfortunately, when the type I reactions do set in, clofazimine alone usually does not help; it has to be supplemented with corticosteroids for a suitable duration, i.e., until clofazimine asserts itself as its effect is slow in coming. I have been treating hundreds of cases at our small pay clinic essentially without DDS; it has to be mentioned that the cases that gravitate to our clinic are mostly MDT (WHO) failures. I do not want to invite trouble of a type I reaction—I use clofazimine as a compulsory component of PB treatment. Against all the incessant publicity of the WHO regimen's virtue, I cite the sane voice of a late veteran, Dr. Stanley Browne, in the context of ENL reaction of MB leprosy—*"While stopping dapsone may not always result in rapid improvement in ENL, it is incontestable that resumption*

of dapsone therapy in such patients, even in minute doses, will often precipitate a recurrence of the signs and symptoms of ENL" (Int. J. Leprosy, 1967 :35 : 395-403). This was 30 years ago, pointing an accusing finger at DDS on causation of reactions.

Until the 1960s, we were somewhat helpless, as DDS was the only drug available for leprosy. That does not apply now, and there is no need for the whole programme to be strait-jacketed into just one regimen proposed by the WHO after very limited hospital-based studies. **DDS can be easily substituted with clofazimine in PB leprosy, and temporarily or permanently withdrawn from the MB regimen as there are two other drugs in the regimen.**

The whip, reaction or no reaction, DDS must be continued in full dosage, might as well mean: deformity or no deformity, DDS must be continued. Now, deformity is often a very deceptive phenomenon in leprosy. It may, or need not be a spectacular development, meaning, developing with obvious visual impact. One often finds the tell-tale wasting of the hypothenar or thenar eminences, or the grooving of the dorsum of the hand due to the slow paralysis of the interossei. Paradoxically, it is the acute onset deformities that are more easily reversed and corrected, and there is very little one can do to reverse the deformities/disabilities that are late and slow in coming. However, in both situations, withdrawal of DDS, introduction of clofazimine in the PB regimen, or raising its dose in MB regimen, with a short course of steroids has almost always a salutary effect on checking the progression of deformity/neuritis, and its slow reversal, unless it has been more than one year in developing.

At the Deoghar district MDT project, this author served as a consultant, which position he resigned after two years when the leprosy directorate objected to his modifying the regimen whenever called for. One of the number of consultants that followed me objected to this modified regime—by then all the MDs, supervisors & PMWs were convinced of the usefulness of withdrawing DDS in reactive or non-responding patients. When the concerned NMS (non-medical supervisor) explained how reactions could be rapidly resolved with DDS withdrawal, the consultant advised introduction of steroids without suspension of DDS. The NMS said something that silenced the said consultant—Sir, your advice is like bandaging a person after thoroughly bashing him up. Needless to say, all the staff in Deoghar district now

follow this modification—no 'expert' could change their conviction.

So where does ethics stand here? Be ethical and obedient, or change course under an expert guide? I have always questioned the need for consultants if consultants were simply to follow a set pattern for all situations. Then you do not need a consultant, you need a manager !

Therapeutic Intervention in Children

We had followed the clinical evolution (as relevant to leprosy) of hundreds of children in our Jhalda study areas. Lesions of leprosy developing in them were recorded, but we never put them on treatment but they were put on observation with a physical check-ups every 3 months. We never even told their parents about their leprosy. Every child resolved his/her lesion spontaneously. Even if a stray child was diagnosed by the leprosy Mission staff who run the leprosy control unit in Jhalda, we would counsel the parents not to give the dapsone. Because of our very frequent visits, and our generally taking care of their minor medical needs also, the parents cooperated, and neither they, nor we had any occasion to regret our intervention. The rationale is simple. Children in these areas almost universally develop self-healing minor lesions, and this inconsequential early lesion is like an immunisation. Why intervene with treatment and interrupt this immune process? Medical ethics dictates any case diagnosed as leprosy must be put on treatment. Rationality dictates that the child patient (one can hardly call the child a patient, that small spot is a part of living) be allowed to evolve with his early and limited leprosy under the watchful eyes of the health worker, ready to intervene if there is any sign on non-containment. **Which is ethics : compulsory treatment, or non-intervention under adequate surveillance?**

Elimination of Leprosy by 2001 AD?

Under the pressure of the WHO, and the World Bank, the Government is now frankly resorting to grossly unethical, if not illegal practices. They have to meet the deadline to show elimination of leprosy, meaning reaching a prevalence of one case or less per 10,000 population, by the year 2001 AD. The World Bank has advanced a loan of over 3 billions of rupees on this assertion. How do they propose to achieve this miracle? Prevalence is being

projected as a better index of success than incidence, or crude new case detection rates (NCDR)! And how is this reduction of prevalence, and of course NCDR, which currently, even by official estimates is a staggering 450,000 cases annually, or around 4.5 per 10,000 population, is to be achieved? Give a one day regimen to PB cases, and a 28 days all-bactericidal regimen to all known MB cases and declare them cured, and remove them from the register! Never bother to look for what happens to them, the bacilli they have been harbouring, or the disease they have been suffering.

Has any infectious disease been controlled/eradicated by chemotherapy alone?

Now, is that what you call ETHICS?

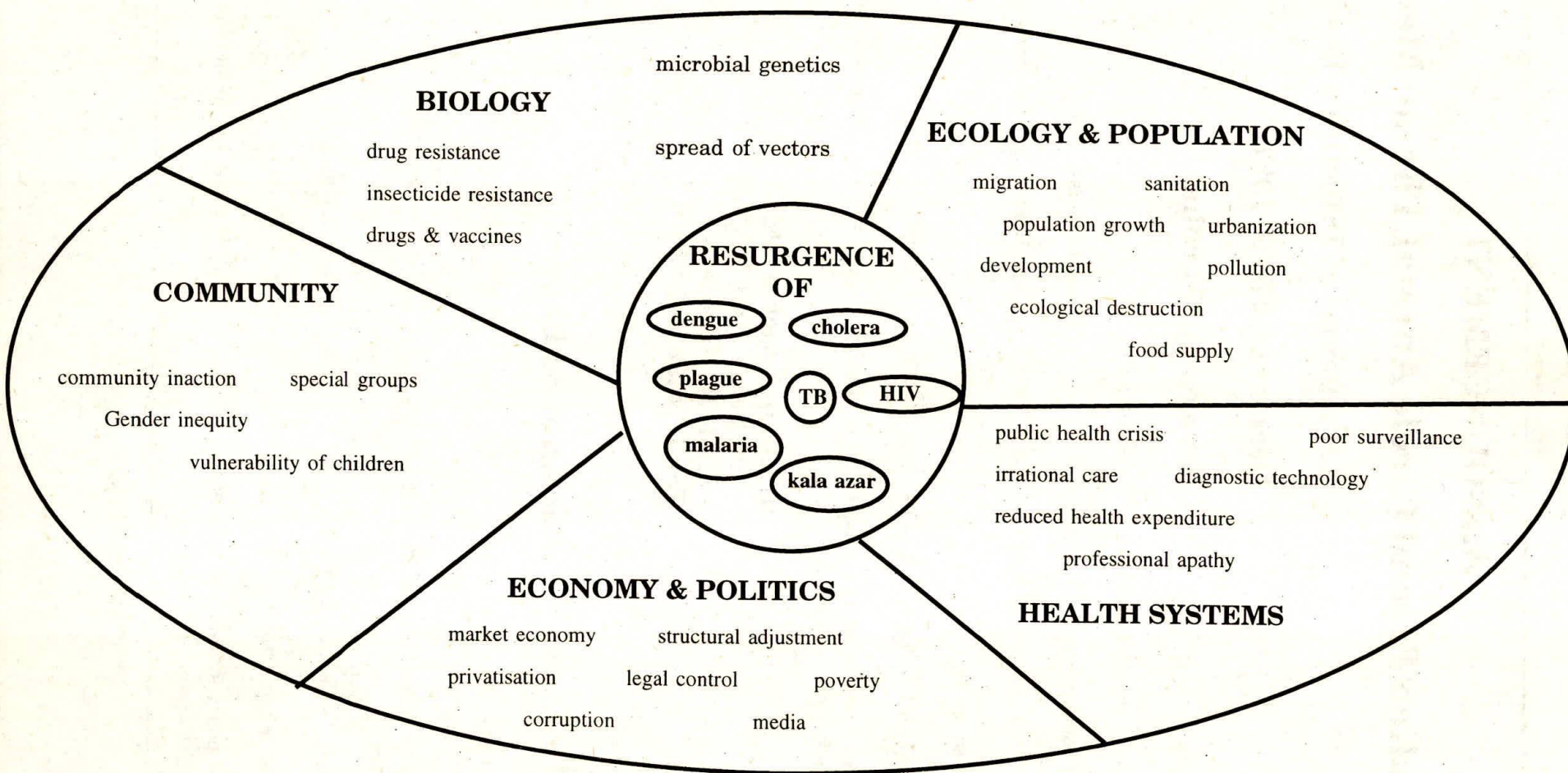
Don't do any survey to detect cases, don't do any absentees retrieval, or any post-MDT surveillance. Because they all have been cured! About the deformed, the ulcerated, the economically and socially displaced, that is not the job of the leprosy directorate to bother about any way!

Normally, the NGO working in leprosy have been catering to the needs of about 15% of the patients. By, and after 2001, they are going to have to shoulder the whole burden of the problem, because after 2001, apparently leprosy will have been eliminated—a few straggling cases that may have escaped the dragnet will be treated in an integrated set up. Who are they deceiving, these International experts?

The count down has begun! By 2001, they are sure to show less than 100,000 cases in the country. Any group of leprologists/epidemiologists that have looked at the situation with a dispassionate view in any area undergoing MDT have come up with a 3-4 folds rate of prevalence over that shown in government returns. What we do ? Pray or fight ?

There are other areas, notably the combination of drugs in the MDT regimens that we follow, where the WHO is not ready to concede that mistakes have been made in their undue haste to 'eradicate' leprosy. I propose to write another piece highlighting these inconsistencies, and suggesting alternatives.

Resurgence of Infectious Diseases and the Indian Society



A Zachariah, M Pai, P Chatterjee

ANNOUNCEMENT

Medico Friend Circle Annual Theme Meet

Theme : Resurgence of Infectious Diseases
Date : December 27-29, 1997
Venue : Sevagram, Wardha

The topic will be discussed under the following headings:

- | | |
|------------------------------------|----------------------------------|
| 1. International perspectives. | 2. National perspectives |
| 3. Case studies of local responses | 4. Public Health system response |

The diseases focussed on are :

1. Malaria, 2. Dengue, 3. Plague, 4. Kala azar, 5. Cholera, 6. HIV, 7. TB

We would invite papers on broad perspectives and case studies of local responses to individual problems. Kindly send papers to :

**Dr. Anand Zachariah,
 Medicine Unit I,
 CMCH, Vellore,
 Tamil Nadu 632 004.**

Background Papers

- | | |
|---|--------------------------------|
| 1. Resurgence of Malaria
—A case study | Ravi Narayan |
| 2. Re-emergence of Kala azar and Indian Society
—A Case study | Prabir Chatterjee |
| 3. Dengue haemorrhagic fever in Delhi | Yogesh Jain & Sathyamala |
| 4. *Drug resistance and irrational therapy | Delhi Group |
| 5. Anti-malarial policy system and resurgence
of infectious diseases | J.P. Mulliyil and Madhukar Pai |

- | | |
|---|---|
| 7. *Resurgence of TB | Thelma Narayan |
| 8. "Of Cholera and Post-Modern World" EPW
August 22, 1992 | P. Mohan Rao |
| 9. HIV/AIDS | Anand Zachariah |
| 10. Contextualising Plague—A reconstruction
and an analysis EPW, November 19, 1997
p 2981-2989. | Imrana Qadeer. |
| 11. Epidemiological Overview of Infectious diseases,
resurgence in India | Pankaj Mehta, Manipal Hospital, Bangalore |
| 12. Rethinking Public Health : Food, hunger and
mortality decline in Indian history
(Presentation at School of Social sciences, JNU) | Sheila Zurbrigg |
| 13. Resurgence and Children | Sanjeev Lewin,
St. John's Med. College, Bangalore. |
| 14. *Market economy and infectious disease resurgence

Economic impact of resurgence of infectious diseases

(if the above do not agree, to plan modification of "Communicable Diseases : Costs and expenditure",
RJH Vol. 2 No. 1 Jan-Mar 1996) | Requests sent to Ghanshyam Shah) CSCM,

Rama Baru) JNU and Abhay Shukla, Pune |
| 15. Urbanisation
Agricultural development
Ecological changes and resurgence of Infectious Disease | Dr. Vanaja, Bangalore |
| 16. Community participation in vector Borne
Disease Control : Facts and Fancies,
Ann. Soc. Belg. Med. Trop. 1991, 71 (Suppl-I) 233-242, | Dr. P.K. Das Vector control
Res. Centre, Pondicherry. |
| 17. Clinial Re-appraisal series | C. Sathyamala and Yogesh Jain |

Articles of general critique

- | | |
|---|-------------|
| 1. From Philanthropy to human Rights. | Amar Jesani |
| 2. Social Medicine for Holstic Health. An alternative response to present crisis. Rudolf C. Heredia. EPW
Dec. 1, 1990. | |

*Not yet confirmed

Resurgent Tuberculosis in New York City : Human Immunodeficiency Virus, Homelessness, and the Decline of Tuberculosis Control Programs

Karen Brudney and Jay Dobkin*

Introduction

Reported tuberculosis (TB) cases in New York City have been increasing since 1979 after decades of steady decline. The epidemic of infection with the human immunodeficiency virus (HIV) is often blamed for this resurgence. Although a substantial part of the increase may well be due to concomitant HIV infection, significant social, economic, and historical factors contributed to increasing tuberculosis rates several years before the full force of HIV infection was felt. The growth of homelessness among urban drug abusers in the 1980s paralleled the spread of HIV infection, greatly complicating tuberculosis treatment and probably promoting further spread of this infection. In this report we document the enormous treatment failure rate caused by noncompliance among patients with tuberculosis and at high risk for HIV infection. We trace the decline in TB control programs that materially contributed to the failure rate, and we suggest some new (and old) solutions.

Central Harlem has been the area in New York City with the highest rate of TB since before 1960. It has seen a more dramatic increase in TB than any other area in the city during the past decade (table 1). It has also been an area of unemployment, poverty, and high rates of drug and alcohol abuse and the acquired immune deficiency syndrome (AIDS). During the past 10 to 15 years, the scourge of homelessness has been particularly brutal in Harlem, with streets of abandoned buildings and empty lots turning certain areas into "no-man's land", and two massive shelters for the homeless earning notoriety as breeding grounds for crime and the spread of infectious diseases.

Because of the concurrent increase in AIDS and tuberculosis, we prospectively studied all patients with TB admitted to Harlem Hospital, a 700-bed public hospital, from January 1, 1988 to September 30, 1988. Our purpose was to ascertain and document factors that might predict loss to follow-up, as well as to determine a more exact rate of HIV infection among those with TB.

Methods

All inpatients at Harlem Hospital Centre with suspected or confirmed TB were evaluated by one of us. Only patients with culture-confirmed *Mycobacterium tuberculosis* were included in this analysis.

The detailed interview included information on the patient's previous tuberculosis history, current housing situation (what type of dwelling it was and who paid for it, current address, and whether there was heat or hot water), employment status, alcoholism, drug use, sexual partners, and transfusion history. Charts of patients whose diagnosis was made after discharge or death, when a specimen whose smear had been negative subsequently grew *M. tuberculosis*, were reviewed. All patients were encouraged to undergo HIV testing, which was performed, after informed consent, by the standard ELISA method with western blot confirmation. Patients with acknowledged HIV risk factors who refused HIV testing were deemed HIV positive if severe oral candidiasis was documented on examination by one of the authors. Each patient was given an appointment to the Harlem Hospital chest clinic at discharge. Patients with symptomatic HIV disease were also given an appointment to the infectious disease clinic. At 4-month intervals, the records of both clinics were searched to determine follow-up frequency. All patients who failed to keep clinic appointment were entered into the hospital's computer system to determine whether they had come to any other clinic or had been readmitted to the hospital. At the end of 8 months and again at 15 months, a list of all patients lost to follow-up was compared with the New York City Department of Health Bureau of Tuberculosis computerized registry to determine whether patients had been admitted to other hospitals, entered treatment in another chest clinic, or died.

Background paper for the MFC Annual Theme Meet, December, 1997

* Reprinted from the *Journal of Public Health Policy*, Winter 1992, p 435-450

Table I
Tuberculosis Rates 1969-1989*

Year	Central Harlem	New York City	United States
1969	121.2	36.4	19.37
1970	135.0	32.8	18.22
1971	131.7	32.6	17.07
1972	123.0	28.8	15.79
1973	103.3	26.6	14.77
1974	105.5	25.6	14.25
1975	105.5	27.2	15.95#
1976	75.4	27.3	14.96
1977	64.2	21.1	13.93
1978	52.2	17.2	13.08
1979	50.9	20.1	12.6
1980	78.6	19.9	12.2
1981	79.9	22.4	11.9
1982	104.0	22.5	11.0
1983	109.0	23.4	10.2
1984	90.7	23.0	9.4
1985	110.9	26.0	9.3
1986	130.4	31.4	9.4
1987	134.9	31.1	9.4
1988	158.9	32.8	9.1
1989	169.2	36.0	9.5

* New cases per 100,000 population.

National reporting criteria changed effective 1975.

Definitions

Intravenous drug abuser (IVDA): Patient who used drugs intravenously at any time in his or her life.

Homosexual: Men who have had sex with men.

Sexual Partner: Patient who had heterosexual contact with a partner in an HIV risk group.

Crack abuser: Patient who denied all HIV risk but admitted to smoking "crack" cocaine.

Homeless: Patient who lived in the streets or one of the shelters for the homeless.

Unstably housed: Patient who had lived in rooming house for less than 6 months, stayed with someone but paid no rent, or lived in a drug treatment centre and had no plans for future housing.

Unemployed: Patient who had not worked for 1 year or more.

Sporadically employed: Patient who had worked occasionally during the preceding year.

Employed: Patient who had worked until developing symptoms of TB, or elderly patient employed for more than 20 years and retired at the time of TB diagnosis.

Alcoholism: Daily consumption of more than three beers, one bottle of wine, or 1/2 pint of hard liquor or a history of alcohol-related illness (upper gastrointestinal bleeding, alcohol-related seizures, pancreatitis, or cirrhosis).

AIDS: Patients meeting Centres for Disease Control (CDC) criteria for AIDS.

AIDS-related complex (ARC): Patient with HIV-related symptoms not meeting CDC, AIDS criteria.

Results

Tuberculosis was diagnosed in 224 patients from January 1, 1988 through September 30, 1988. The group was predominantly male (79%), with high rates of alcoholism (53%), homelessness or unstable housing (68%), and unemployment (82%) (table 2). Of 193 patients on whom the information was available, 50 (26%) had been previously treated for TB, and nearly all of them admitted that they had never completed treatment. Over two-thirds of the patients reported HIV risk factors, and 80% of those tested were positive for HIV antibodies (table 3). Among crack abusers 49% were women compared with only 21% of the total study population. Of six crack abusers who denied risk factors, three were HIV positive. Of the 66 tuberculosis patients without HIV risk, nine of 24 who consented to testing (38%) had positive HIV antibody tests.

Table 2
Demographic Features of 224
Consecutive Tuberculosis Inpatients

Feature	%	No.
Male	79	177/224
Alcoholic	53	103/196*
Homeless	45	85/189*
Unstably housed	23	43/189*
Stably housed	32	61/189*
Unemployed	82	171/208*
AIDS/ARC	40	89/224
Age, mean years \pm SD: 42.5 \pm 12.4		

*These denominators include only those patients on whom the information was obtained and are therefore less than the total 224.

Table 3.
HIV Risk Factors and Seroprevalence in 224
Tuberculosis Patients

Factor	No.	(%)	No. HIV Infected	(%)
IVDA*	124	(55)	88/97	(90)
Homosexual	10	(5)	9/10	(90)
Sexual Partner	3	(1)	3/3	(100)
Crack abuser#	21	(9)	3/6	(50)
Denies risk	66	(30)	9/24	(38)
Total	224	(100)	112**/140	(80)

*Includes two homosexual IVDA.

Denies all HIV risks but admits smoking crack cocaine.

** Includes six patients with HIV risk factors who declined HIV antibody testing but were deemed HIV positive by diagnosis of oral candidiasis.

A total of 48 patients (21%) had extrapulmonary disease, of whom 27 had pulmonary tuberculosis as well, and 21 had only extrapulmonary disease. Of the 203 patients whose sputum grew *M. tuberculosis*, 104 had at least one positive smear for acid-fast bacilli (AFB), and 99 had only negative smears. A total of 178 patients were discharged, and 46 died during hospitalization. Of those discharged 89% failed to complete treatment (table 4). Of the 178

discharged patients, 99 never returned for outpatient follow-up or renewal of medication, and an additional 49 failed to complete 3 months of treatment. A total of 19 patients (11%) were cured, died of other causes while on treatment, or remained on therapy at the end of the study period.

Table 4
Compliance and Outcome of 178 Patients Discharged
on Yuberculosis Treatment

	No.	(%)
Compliant		
Cured	7	(4)
In treatment	10	(6)
Died of AIDS	2	(1)
Total	19	(11)
Noncompliant		
No follow-up treatment	99	(56)
Lost to follow-up		
<3 months treatment	49	(28)
>3 months treatment	11	(16)
Total	159	(89)

Within 12 months of discharge, 48 of 178 patients (27%) were readmitted with confirmed active tuberculosis at least once (table 5). Almost all of those discharged were again lost to follow-up, with 20% admitted a third time as of April 1989. In a multivariate logistic regression model, noncompliance was significantly associated with homelessness, alcoholism, and the absence of AIDS or ARC (table 6). Women were somewhat more likely to be noncompliant than men (97 versus 87%), and crack users were totally noncompliant. Female gender was borderline in significance as a factor contributing to non-compliance in the regression model.

Noncompliance among patients with asymptomatic HIV infection was the same as among patients who were uninfected with HIV. Non-compliance among patients with ARC or AIDS, however, was significantly lower than among those without ARC or AIDS (75% [42/56] versus 96% [117/122]; $\chi^2 = 15.5$; $p = 0.0001$). Among the patients with AIDS or ARC who were lost to follow-up, 4 of 40, of 85% of the total, were homeless.

Table 5

Outcome of 48 patients Lost to Follow-up and Readmitted with Active Tuberculosis*

Outcome	No.
Died hospital	7
Remain in hospital	1
Discharged	40
Again lost to follow-up	35 #
Placed in TB homeless shelter	1
Follow-up < 30 days	4

*Culture positive

#Of these patients eight were admitted a third time with active TB.

Table 6

Factors Associated with Noncompliance*

Factor	Odds Ratio (85% CI)	p Value
AIDS or ARC	0.08(0.02-0.34)	<0.001
Homeless	2.61(1.34-5.08)	<0.005
Alcoholic	4.57 (1.07-19.50)	<0.05
Male sex	0.12(0.01-1.15)	0.06

*By multivariate logistic regression.

Historical perspective

In 1968, a special task force appointed by then Mayor John Lindsay published a comprehensive report detailing the strengths, weaknesses, and future priorities of the New York City TB Program. At that time, \$40 million was being spent annually on TB in New York City in 21 health department district chest clinics, seven "combined clinics" operated jointly by the Department of Health and the Department of Hospitals, over 1,000 designated TB beds in hospitals throughout the city, and a small number of beds for New York City patients in New York State-operated TB hospitals (2). Almost all the TB beds in New York City were in municipal hospitals, with the voluntary hospitals referring to these facilities patients with or suspected of having TB. The average cost per hospital day was \$ 97.93 per patient on July 1, 1968, and a patient with TB had a average length of stay over 100 days(2).

The task force recommended earlier discharge, the elimination of 100 TB beds annually, and an expanded

effective outpatient program that would have \$18 million/year to spend by 1973, given the projected closure of 500 beds by that time. The task force outlined the requirements of such a program:

Clinic hours should be adjusted to the needs of the patient. Include trained residents of poverty areas in clinic and home care staffs. Provide domiciliary care and chronic disease care facilities and appropriate living quarters for TB patients who need them. Integrate the care of TB drug addicts and TB alcoholics in the developing community programs for addiction and alcohol control.

Ten years after the Lindsay Task Force report was issued, amidst New York City's fiscal crisis, the nearly 1,000 designated TB beds were virtually gone, and the private sector now diagnosed more than one-half of all new TB cases, cutting the city's inpatient expenses even further (3). The combined city and state expenditures for the outpatient activities so strongly recommended 10 years earlier were less than \$2 million. When the New York City TB rate increased in 1979 for the first time in decades, another task force was appointed, this time by the Council of Lung Associations of New York.

In its report in 1980(4), this task force alleged :

It must be strongly suspected that the increase in newly reported cases in New York City is in part the result of fiscal neglect of the TB problem in the State's largest city. The resurgence of the disease, a bitter reversal of the expected trend, is related to a failure of both health authorities and government at all levels to muster a public health program.....At federal, state and local levels, public health funds allocated to TB are inadequate, in some instances so grievously inadequate as nearly to amount to dereliction and default on legal mandates.

New York City's fiscal crisis in the mid-1970s led to a drastic cut in appropriations for all public health programs, TB included. New York State progressively cut back its contract, which had accounted for 50% of the support for New York City's TB control activities, terminating it entirely as of September 30, 1979 (5). Federal support in the form of public Health Service monies decreased 80%, from a peak of \$ 1.4 million in 1974 to \$ 283,000 in 1980 (4).

In 1978, between \$23 and \$25 million was spent on TB in New York city, well below the \$ 40 million being spent

annually between 1968 and 1973, and taking inflation into account, the reduction was far greater (4). Inpatient costs now comprised 93% of the total, compared with 80% in 1971. The dramatic decrease in beds and inpatient days had been accomplished, but outpatient expenditures not only did not increase correspondingly, they were in fact cut (4,5). In 1978, \$1,630,000 was spent on TB "public health control" services, including all the TB activities of the New York City Department of Health, far below what had been spent, given the cut in inpatient costs (4,5). (Calculating annual costs is impossible as the New York City Department of Health did not make budgetary appropriations programmatically until quite recently.)

None of the outpatient services recommended by the task force 10 years earlier were being offered. The number of health department chest clinics had been cut from 22 to 9 (5). Neither public health nurse home visits nor health aide home visits were taking place since the mandated staff increase had not occurred. The number of contacts identified per TB case had dropped, and drug treatment programs to which patients reported daily for their methadone had received no impetus to screen or treat patients for TB despite the fact that the increased incidence of TB among intravenous drug users was known long before the appearance of AIDS (6).

The incidence of TB in New York City continued to increase during the next 10 years (table 1), with only minor additions in allocations to the public health control aspects of the problem (7-9). The federal government funded a new pilot project beginning in 1980, the Supervised Treatment Program (STP), in response to the increasing number of TB patients failing to complete treatment. A group of patients was identified who were clearly at high risk for treatment failure, including those who repeatedly failed clinic appointments, alcoholics, and patients with psychiatric problems that impinged on their ability to take their TB medication. The program mandated daily visits to the homes of patients who met these criteria, with direct observation of the patient ingesting his or her medication, and had an excellent success rate, with 90 to 95% of its patients completing therapy, cured (7). The federal government failed to increase funding to enable expansion beyond the initial pilot project level, and neither the state nor the city contributed significantly to enlarge its scope in the intervening years (1). By 1989, only five or six workers were assigned to this program, which therefore include

a maximum of 40 to 50 patients annually from the entire city, a fraction of those eligible.

Furthermore, STP did not include the homeless, one of the criteria for enrollment being a permanent residence. As the homeless population increased during the 1980s, with crowding and unsanitary conditions in the shelters where masses of them were housed, the classic historical conditions for the spread of TB were recreated. Given this background, the advent of AIDS and the rapid spread of HIV among intravenous drug abusers, large numbers of whom inhabit the shelters, created a potentially explosive situation.

Discussion

Compliance with medication is a universal problem among patients with asymptomatic and/or chronic diseases, long ago noted among hypertensive individuals (10). Once therapy has been initiated, tuberculosis usually becomes both an asymptomatic and a chronic disease (11,12). Although the recommended duration of tuberculosis treatment in the United States was reduced to 9 months more than a decade ago, and to 6 months more recently, noncompliance has remained the major obstacle to eliminating what is essentially a curable disease (13-15).

Non compliance with medication in general does not correlate with education level, socioeconomic status, age, sex, or marital status (13, 16). Alcoholics, drug users, and the homeless have a particularly high rate of noncompliance and are likely to fail ambulatory treatment (17-20). Although it has been shown that a patient's beliefs about his or her illness, that is, the cause, the seriousness, and the likelihood that a prescribed treatment will help, can influence compliance (10), the relative importance of the illness to the patient, particularly when asymptomatic, depends on the stability of other factors in the patient's life. To a patient dependent on alcohol or drugs or unable to assume continuity of shelter, the importance of taking a pill or keeping a clinic appointment diminishes drastically.

Housing status was clearly a very important predictor of noncompliance in our study, with patients who were frankly homeless and patients who floated from one rooming house to the next doing equally poorly, significantly worse than patients with stable housing. The patient population of this report reflects the increasingly publicized inner city housing crisis that has grown

unchecked for the past decade, as well as the chronically prevalent problems of alcoholism and drug use. Although central Harlem may be an extreme case, these problems are by no means unique to this community. Tuberculosis is a growing problem in impoverished populations, with concomitantly higher noncompliance rates in the other boroughs of New York City, as well as in Washington, D.C., Boston, and San Francisco (17-19,21).

Homelessness has become the blight of urban life in the United States, and the publicly funded solution, mass shelters, may have created more problems than it has solved. Despite official denials by the agency that runs them of the existence of tuberculosis in the New York City shelters, there is no doubt that the disease is well established there. In a recent study, 1,853 homeless men attending a shelter-based clinic in New York were screened for tuberculosis. The overall infection rate was 42.8%, with 100 cases of active tuberculosis (6% of those screened) (22). In a survey of all the shelters in the New York City shelter system, 3% of 810 residents actually admitted that they had tuberculosis and were in treatment or supposed to be in treatment (23).

The connection between HIV infection and tuberculosis was first noted among the newly arrived Haitian immigrant population in the United States and subsequently described in urban IVDAs (24-28). Given the high background rate of tuberculosis infection in both groups and the immunosuppressive action of HIV, it was predictable that active TB rates would be high.

Although it has been assumed that the rising rate of tuberculosis in New York City largely reflects coinfection with HIV and that active tuberculosis in HIV infected patients represents reactivation of old infection, a substantial amount of primary tuberculosis may also exist. This seems increasingly likely as more individuals with inadequately treated tuberculosis are crowded together with highly susceptible HIV-infected homeless people. The alveolar macrophage's ability to inhibit intracellular multiplication of the bacillus when first infected depends on its activation by immunologically primed CD4 lymphocytes (29), and patients who are immunocompromised are far more likely to progress from primary infection to active disease (30). The radiologic picture of pulmonary tuberculosis in AIDS patients is atypical of reactivation disease since cavitation is less common and middle or lower lobe infiltration more common (31). Although this pattern parallels the appearance of reactivation in other

compromised hosts, such as diabetic or lymphoma patients, it is also compatible with primary infection or reinfection.

One prospective study evaluating tuberculosis risk in HIV-infected methadone maintenance patients found that seven of eight active cases occurred in patients known to be purified protein derivative (PPD) positive (32), but no data were provided on the housing status or likelihood of reinfection or primary infection in the study population.

The report by McAdam and colleagues of a 42.8% tuberculosis infection rate in the clinic of one New York City homeless shelter points to the likelihood of spread of tuberculosis within this shelter with its high HIV risk population, particularly since length of shelter residence there was independently associated with both infection and active disease (21). Point-source spread of tuberculosis in another homeless shelter has been documented by phage typing the organisms (22), and is likely to occur in similar settings. A 19% prevalence of isoniazid (INZ) resistant tuberculosis among homeless patients recently reported from a New York City hospital raises the ominous prospect of substantially greater difficulty in treating this already refractory group (33).

The resurgence of TB in the AIDS era is surrounded by ironies. Increasingly potent antituberculosis agents are powerless to overcome massive noncompliance. Tuberculosis, among all the serious complications of AIDS, stands out simultaneously as both the most curable and the most contagious to the HIV negative population. Regaining control of epidemic tuberculosis will be difficult and will require effective approaches to hardcore issues also common to the AIDS epidemic: poverty, homelessness, and substance abuse. The AIDS epidemic has created severe financial stress on the health care system in many communities. It would be tragic mistake to divert vital resources to AIDS activities from essential public health programs like tuberculosis control.

In combating resurgent tuberculosis in New York City, long abandoned strategies will need to be reinstituted for homeless and non-compliant patients: prolonged initial hospitalization, residential TB treatment facilities, and aggressive community-based supervision. Strong positive incentives will have to be offered, both because they have demonstrated efficacy among noncompliant substance-abusing patients in the past, and because, however costly, they will ultimately be less costly than the

multiple hospitalizations documented in our study population (19,34,35). Mandatory confinement, erroneously promoted by some to control AIDS, may in fact be needed to effectively treat some recalcitrant TB patients.

As our data demonstrate, noncompliance with treatment for tuberculosis is both massive and predictable. Identification of patients likely to be noncompliant during initial hospitalization is possible and should be coupled with an aggressive supervised treatment program. Unfortunately, the needed resources and, more importantly, the needed commitment for such an effort have yet to appear.

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Dengue mosquitoes make an appearance in High Court

The dozen-strong contingent of Aedes aegypti, dead and alive, were produced before the divisional bench

Express News Service

New Delhi, May 1

AEDES aegypti, or the dengue-causing mosquitoes, which last year claimed over 400 lives in the capital, finally made an appearance in Delhi High Court today.

Brought before the bench of acting Chief Justice Mahinder Narain and Justice S.K. Mahajan by the scientists of National Institute of Communicable Disease, the dozen-strong contingent of Aedes aegypti were brought to the court in six test tubes.

Besides the NICD scientists, hordes of MCD doctors also accompanied them. The larvae—eggs which produce this deadly mosquito—was also produced before the court in a polythene bag.

They were produced before the court on the directions given yesterday, when the bench had expressed its desire to have a look at the deadly mosquito and its larvae.

Both the judges inspected the Aedes aegypti—both dead and alive—with the help of magnifying glass before hearing the resumed arguments by the MCD counsel on the measures taken by the civic body to check the spread of dengue fever this year.

Apparently dissatisfied with the claims of the civic body about the measures and action plan, the bench which *suo moto* initiated action against the local bodies, noted: "Strangely, the government action plan, submitted by the Union Health Ministry and the MCD did not mention any awareness campaign."

Coming down heavily on the MCD, the bench also asked the authorities to involve the information and broadcasting ministry in giving wide publicity to the preventive measures against dengue.

During an hour-long arguments on various scientific and civic causes which lead to its breeding, Dr. S K Sharma of the MCD informed the court that about 32 catching and two mobile vans are operating round-the-clock in the city to prevent its breeding.

He, however, denied to disclose their locations and said that "If we disclose the catching stations, there is possibility of furnishing false information by the MCD staff."

When the bench asked whether the MCD has identified the area where dengue mosquitoes and what action had been taken so far to prevent the disease, Dr Sharma said that "we can do nothing without the co-operation of the people."

Dengue mosquitoes breed in any water-catching or storage container in shaded or sunny place including barrels, drums, jars, pots, plant saucers, tanks, cisterns, bottles, tins, tyres, pans, roof gutters, drip pan of refrigerators, drains, cement blocks, cemetery urns, bamboo stumps and other places where water gets collected.

Source : Indian Express, 2.5.97

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The Medico Friend Circle (MFC) is an all India group of socially conscious individuals from diverse backgrounds, who come together because of a common concern about the health problems in the country. MFC is trying to critically analyse the existing health care system which is highly medicalized and to evolve an appropriate approach towards developing a system of health care which is humane and which can meet the needs of the vast majority of the population in our country. About half of the MFC members are doctors, mostly allopathic, and the rest from other fields. Loosely knit and informal as a national organization, the group has been meeting annually for more than twenty years.

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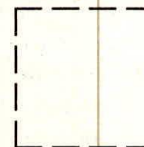
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Essential steps and inputs required for inter-sectoral collaboration and community participation in vector-borne disease control programmes.

DIS-2

Introduction

The shift in emphasis from malaria control by specialized organisations to malaria control following the PHC approach with community involvement and integrated in the health services system has resulted in a welcome addition of new vector control tools and strategies suitable for "community participation", such as impregnated mosquito nets. However, (malaria) disease vector control requires specialists with a background in applied epidemiology, operational research and programme design and management special expertise.

The design of locally appropriate interventions should start with a situation analysis, including the collection of sufficiently detailed data on the epidemiology, vector biology and behaviour, and human risk behaviour. Without expert input it is likely that precious resources will be wasted.

An essential part of achieving community participation is the creation, where possible, of alliances (inter and intra-sectoral collaboration) between MOH malaria and vector control specialists and community based "partners in health", such as NGOs, churches, companies, plantations, schools, etc. The "partners" become local vector control implementing agencies, involved in local planning and management. The malaria specialist and the public health system provide technical and other essential support, including official endorsement. WHO's malaria and vector-borne disease programmes should provide long-term advisers and other technical support to develop and maintain specialist capacity within endemic countries.

Step 1. Awareness of problem

The health services or the media report the problem to the (local) Government. Several steps should already have been taken by the (district) public health services: confirmation of the problem and rapid response measures if necessary. Government (health) authorities need to be involved when special emergency measures are required or when a long-term programme needs to be established. Because the problem may be due to the failure of an already ongoing programme the (health) authorities may want to have an independent evaluation of the situation. It may be decided to establish temporarily a *taskforce* under the MOH which will be responsible for reviewing the situation, and recruiting and commissioning experts to conduct a situation analysis and prepare a report with recommendations for action to be taken. The health services should have their own experts in the (malaria) programme. However, ideally an *experts group* is formed from experts in universities, NGOs as well as from the control programme. The experts group may be supported technically and otherwise by a technical agency such as WHO.

Step 2. Situation analysis

The experts should cover different areas of expertise. Sufficiently detailed data need to be collected on the epidemiology, vector biology and behaviour, and human risk behaviour. Because routinely collected surveillance data are often inadequate additional surveys are probably required. Case investigations are needed to verify the probable place of transmission. Interviews and direct observations should produce data on the exact site and time of transmission and on the risk factors which play a role. The vector species, its biting and resting behaviour, and its breeding sites need to be identified. Available literature should be reviewed and contacts with other investigators established.

Step 3. Presentation and discussion of report and recommendations

A draft report of all observations with literature review is prepared and a control strategy is proposed to address the problem in the most cost-effective and locally appropriate way possible.

The report is first discussed with the taskforce and government officials. A decision is taken about the course of action to follow. A final report with preliminary plan of action is then prepared for presentation to the health

services, the "partners" (local and external) and the community (for ethical reasons they should always be given feedback), including the media.

Step 4. Operational research to develop or adapt a control strategy

Operational research is needed in many situations to adapt existing strategies to the local situation, to develop improved control tools, or to evaluate the cost-efficacy of certain methods under local conditions. The end result should be a proposal for a control strategy which is cost-effective and makes optimal use of locally available resources. The MOH taskforce assigns local experts and assures the availability of the necessary resources. The experts may include experts who participated in the situation analysis but usually specific expertise is required for the trials. The experts may be assisted by external experts from WHO or elsewhere. In some cases WHO and aid organizations may provide long-term expertise from outside.

Step 5. Preparation of Integrated Plan of Action

The experts propose not only a strategy but also an institutional policy (who will be involved). Both should be endorsed by the MOH taskforce. In most cases the MOH disease control programme, the local "partners" and the community will have to be involved in the preparation of a detailed integrated plan of action that gives tasks and responsibilities to all parties involved. The POA should give overall objectives and specific objectives. A detailed activity programme with identification of resources and timeframe is prepared for each specific objective.

Step 6. Implementation of a vector-borne disease control programme

Implementation of the POA ideally requires a minimum of input from (scarce) experts and generally understaffed and under funded public programmes. A local, community-based "partner" or programme implementation agency (PIA) may provide many of the required inputs. Important is that the Government (MOH) is fully behind the programme and provides official endorsement. The experts may provide essential assistance in the micro planning, advice on selection of equipment and supplies, the contents of IEC and training material, interpretation of monitoring data, limited staff training, advice for programme adjustments. If well-planned, the need for expert input, although essential, can be kept to a minimum. The experts may be supported with the above activities by external, long-term, technical advisers. The (specialized) health services may assist with certain activities, such as microscopic diagnosis, susceptibility testing, vector species identification, training of spray men, etc. External donor assistance can through the government programme also be used to support integrated programmes, including NGO partners.

6a. management, monitoring and training

Ideally, a local "partner" organization (or PIA) takes care of local management issues. This should include routine monitoring and evaluation of the programme. Experts should assist with the design of the system and the interpretation of the data. Training of "partner" (PIA) personnel or community members in specific activities can be provided incidentally by experts and specialists from the specialized government programme.

6b. financing, equipment and supplies

Depending on the recommended strategy a local "partner" (PIA) may be able to incorporate the programme in already ongoing activities at no additional cost with available equipment and supplies. However, where additional equipment and/or supplies are needed, for example insecticide, the disease control programme manager could provide this.

6c. Information, Education, Communication and promotion for community action

IEC is the task of the government but local community-based "partners" are usually best-placed to create community awareness. A well designed and targeted promotional campaign is sometimes required to turn community awareness and knowledge into action. This usually requires special expertise and may have to be supported by the MOH and external partners organizations.

6d. specialized activities

Implementation of specialized activities requiring special training and probably a salary. Local "partners" can sometimes to a limited extent take care of this, for example a laboratory technician or pesticide applicators (already available on plantations). In other cases, the government special programme provides this input for short periods (spray teams). A local "partner" may then assist with the logistics.

6e. community action

community involvement can be classified into several categories: 1) passive, for example allowing a spray man to enter the house; 2) limited active, for example using IMNs, 3) full active, for example taking care of the environment to control vector breeding

17

>>>PK: do you have a better classification + examples here?

Whatever the level of community involvement, their participation in the planning is essential. As a minimum requirement, the community should understand and endorse what is being done on their behalf. Misunderstandings have in the past often led to lack of collaboration and even opposition.

Step 7. Programme adjustments following monitoring and evaluation

The transmission dynamics of vector-borne disease change continuously. The control programme may induce further changes.

The local Programme Implementation Agency should continuously monitor relevant indicators (designed by experts) and conduct special evaluations from time to time. Experts should assist in the interpretation of the data and propose programme adjustments when necessary. The necessary adjustments should be discussed with all partners and a new POA may have to be prepared.

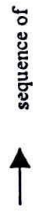
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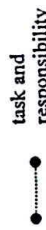
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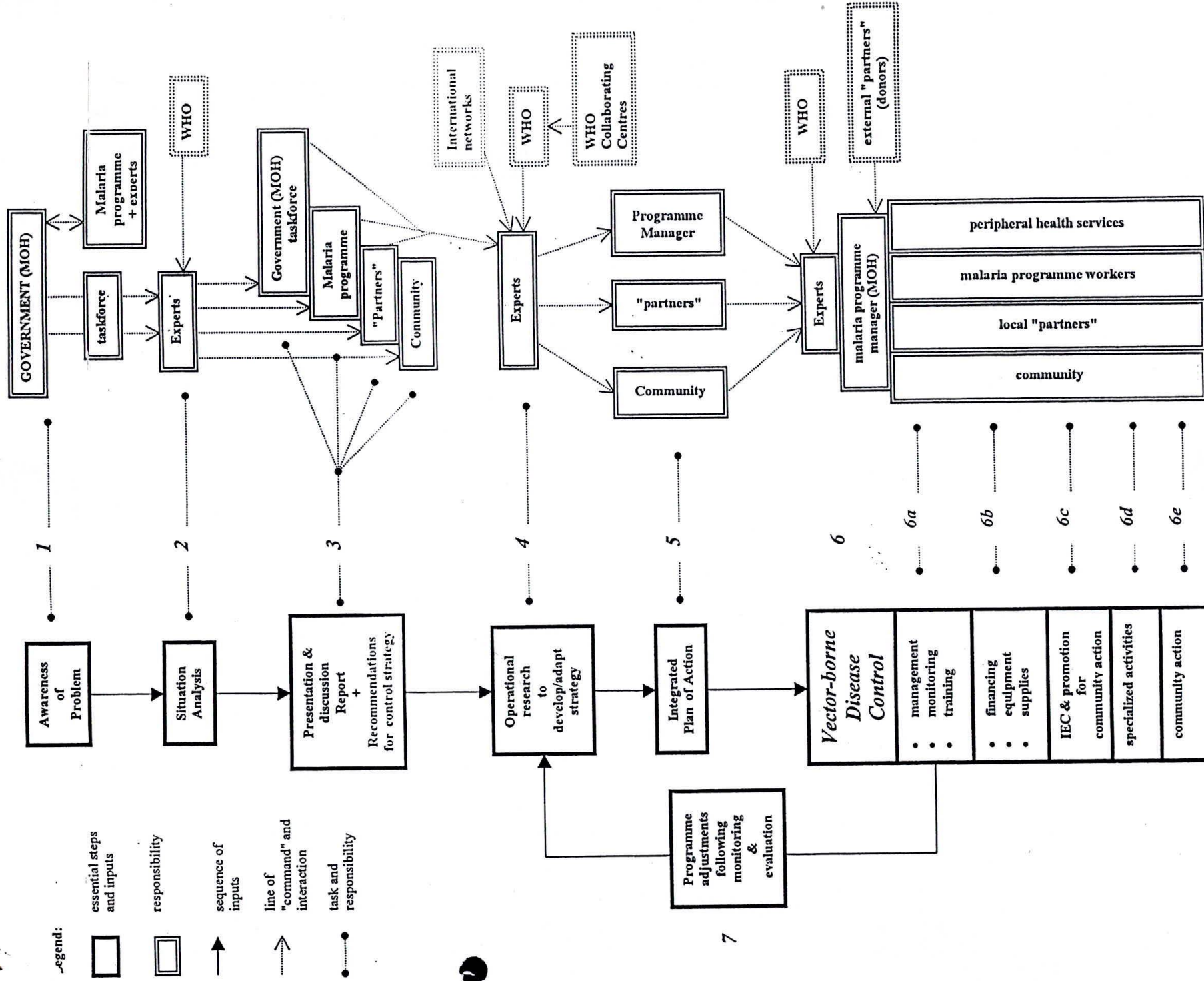
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task and responsibility



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LESSON PLAN ON MALARIA

It was the month of Savan. Yashodabai was working in her onion plot. In the afternoon she got chills and fever. She had to return home. At night, she sweated and the fever went off. The next day she could work and had almost no illness. But the same things repeated the day after, forcing her to go to the township doctor. Here she got an injection and few pills but there was no cure. The fever came day after day in that week making her very weak. Haribhai the village health worker gave her some tablets and she was all right after two days.

Did such a thing ever happen to you?

That was malaria. There can be no other sickness giving chills and fever every other day. It is common in villages in rainy season, as there are more mosquitoes. We can treat it with few tablets. We will learn a few things about malaria in this chapter.

1. What is malaria?

Malaria is the commonest fever illness in our villages. Minute germs called plasmodia cause this illness. The germ spreads through mosquito bites. After the bite it takes a week or two for the illness.

The illness comes in two types since the germ has two subtypes. The common illness is because of Vivax germ. This is simpler to treat. The other type is falciparum germ, which gives a more dangerous illness. Both the illnesses can be dangerous if we do not treat.

Few tablets can cure malaria effectively. But mosquitoes are the real problem.

2. Why do we get malaria?

We all get mosquito bites. Anopheles mosquito, which abounds in villages - causes malaria. It takes the germs of malaria from a sick person, breeds them in its stomach. After 10 days the mosquito is ready to give it to others. The bite, injects few germs inside us. These then reach the liver through blood. They breed there within a week or two. The germs now are in new forms, ready to infect blood cells. After getting inside the red blood cells they eat the cell, much like grain insects. Within 48 hrs, the attacked cells burst open, releasing many more germs. These then attack new cells. Every time the cells burst open in batches, we get chills and fever. This bursting happens every alternate day.

If we have two batches of germs breaking blood cells on separate days, we get chills with fever every day.

So, we lose blood cells & hemoglobin in malaria. This gives the weakness till blood cells are replaced.

3. How does malaria spread?

Mosquitoes spread malaria. They pick up germs from a person taken ill with malaria. But it needs special forms of germs to spread. These forms - male and female cells of germs - are ready in that person's blood after 10 days of getting sick.

The mosquito - the straight-backed anopheles type -- is responsible for spreading the illness. The mosquito breeds in fresh water - stagnated or flowing. Often it is the pools of rainwater or wastewater collecting in our neighborhood.

The mosquito bites in evenings and nighttime. Once it has germs inside it, the insect remains infective till it dies. Remember that it can live for a month or so.

The mosquito can fly around for a km, So one just pool can threaten every house in the village. So think of water pools in the whole village as well as the one near your own house.

4. How to make out malaria?

1.1.1 Fever with chills

Any fever coming with chills and every alternate day is surely malaria. The fever breaks with a sweating.

Day 1	Day 2	Day 3	Day 4	Illness
				Fever, holiday, fever sequence
				Fever everyday

If the chills and fever come daily, think of other illnesses also given in the fever chart.

The usual malaria fever is moderate-between 100 to 103F. Sometimes it rises even higher.

1.1.2 Sometimes chills may be missing

- In children chills may be absent.
- Persons having had incomplete treatment of fever may have no chills.
- In some areas, malaria fever may have no chills.
- Falciparum malaria often comes without chills.

1.1.3 Headache, bodyache, ill feeling and vomiting at times.

Malaria gives intense headache and bodyache. Backache is common. One feels very ill and weak. Some get vomiting or just the sensation of it (nausea). One eats poorly, as happens in so many illnesses due to germs

1.1.4 Check spleen

Check it under left ribs. Spleen often gets tender and bigger in malaria after a week of fever. This happens, as spleen has to store the debris of broken blood cells. Do not expect this to happen on the first few days. It is prominent in chronic malaria. Spleen swelling is more common in children.

1.1.5 Take a blood smear

Take a blood smear on a glass slide and get it checked in the health center. (It is surer if done during chills and fever.) If the smear shows the plasmodium germs, it is sure malaria. But if it does not show these germs, do not say it is not malaria. Remember that only about 10% smears of fever cases show malaria germs.

1.1.6 A falciparum sickness is different

A falciparum sickness causes fever. The fever may continue for days, unlike Vivax malaria, which has intermittent fever. The fever is often higher than the Vivax malaria. It can affect brain, kidney etc, often leading to death. Watch out if you happen to be in known falciparum areas.

5. Is malaria dangerous?

Yes. Sometimes!

- The usual vivax malaria illness often cures with simple treatment.
- If it is a pregnant mother, malaria can cause an abortion, premature childbirth, or a weak and small baby. All these are bad effects indeed. Start treatment the same day.
- Untreated malaria-any type- can cause severe anemia and weakness.
- Is your area known for falciparum malaria (check with the primary health center or ANM)? If yes, take care!

Falciparum malaria illness is a great risk. If it affects brain, the person shows confusion, delirium, confusion and even unconsciousness. When brain gets swollen, pulse is slower and vomiting is prominent. Check neck for stiffness. It may be stiff in brain illness due to infection. Send every such person to the hospital.

- If it hurts kidneys, one gets dark urine. This is called blackwater fever. It may clog and shut the kidneys. This is very dangerous.
- Sometimes the person with falciparum malaria is cold and sweaty. This is called algid malaria. This too is dangerous.

6. Can we treat malaria in the village?

Yes, and with simple tablets. Chloroquine is the main drug. Primaquine is additional, necessary for killing sticky/lingering forms of the germs in blood and liver. If you are sure it is malaria, even without blood report, give the following treatment:

1.1.7 Anybody above 13 years

Day	chloroquine	Aspirin or Paracetamol	Primaquine
Day1 (first dose)		4 tabs after food	2 tabs -
After 6 hrs of first dose		2 tabs with food	2 tabs -
Day 2	1 tab in morning and 1 in evening.		2 tabs as needed
Day 3	As above	As above if necessary	2 tabs with meals
Day 4 ,5 & 6	Stop	Stop.	2 tabs daily.

1. Always give these tablets with food or meals

2. Explain the side effects of chloroquine.
3. The cure of fever comes after 48 hrs of starting treatment
4. Take blood smear before treatment
5. Some people are very sensitive to Chloroquine; they vomit after taking the tablets. In such cases give antacid tablet with the medicine. Or give tab famotidine 30 minutes before the medicine.
6. Chloroquine injection is necessary if pt vomits tabs even after all precautions. Refer such person to doctor.
7. You can give chloroquine in pregnancy.
8. RARELY Primaquine can give breathlessness when swallowed. See the drug-info table for more details

1.1.8 Chloroquine dose for children

Age	First dose	After 6 hrs	2nd day	3rd day
0-1 yr.	One half	1/4th	1/8th	1/8th
1-4 yr.	1 half	1/4th	1/4th	
4-8	2 One	Half	Half	
9-13	3 1& half	1	1	

For a baby, syrup is better. (50 mg per 5ml)

1.1.9 What if chloroquine fails?

If chloroquine fails to cure within 3 days: Give combined pill of Sulfodxine + Pyrimethamine. The adult dose is 2tabs at once after food.

1.1.10 Is there any Ayurvedic cure?

You can try Chirayata, but do this only in vivax areas. Do not take any chance with Falciparum malaria. The dose of Chirayata, available as Chirakin tab is one tab 3 times a day for 10 days.

8. When to refer a patient with malaria fever

- No cure within 72 hrs of starting chloroquine treatment (or any antimalarial).
- Very high fever (above 104F)
- Any signs of brain illness like confusion, convulsions, unconsciousness, and neck stiffness.
- Dark colored urine,
- Severe anemia with malaria

9. How can we avoid malaria?

Here are some simple precautions!

1.1.11 Eliminate water collections

First of all, take care of the wastewater from your own home. Dig a soak pit. Request the neighbors to do the same. If every house takes care, we will be free of mosquitoes. But mosquitoes can fly around for a km, so look for other pools in the village.

In rainy season, there are many more pools. The village panchayat will have to eliminate all such pools.

1.1.12 If the pools can not go, try one of the following things:

- Spread Paris green or waste crude oil on the pond. Ask the PHC worker about how to do this.
- You can spread thermocol granules on the pool. These float for months on the pool and prevent mosquito breeding. Under these granules, the larvae can not breathe.
- If the pool is going to stay for long, get special fish like guppy from the PHC staff. These fish eat up mosquito larvae.
- If there are too many mosquitoes, get the village homes sprayed, inform the PHC about this. They will decide about spraying. Spraying leaves pesticide on surfaces for as long as 6 months, except when people wrongly smear it with something- cowdung, mud or paint.

1.1.13 At home

Use bed nets, and tell others how good a net is. You can soak the nets in keothrine. This stays for six months and kills mosquitoes perching on the net. Apply mustard oil or other repellants on the body to ward off mosquitoes. (Bad mustard oil can give dropsy, even if massaged)

1.1.14 Think of water in farms

Open irrigation systems and wasteful watering practices create pools, breeding mosquitoes. Drip irrigation eliminates this problem. In some districts, rice fields are the source of mosquitoes. Ask agricultural experts in the Panchayat samiti if this problem can be solved. As a rule, water standing for more than week causes mosquitoes, so let it off in between.

1.1.15 In travel

When travelling to another village/town where malaria is too common, one

can get mosquito-bites. One can avoid the illness by taking 1st dose of Chloroquine once every week. Take it the day of entry to the area.

10. Summary table

Cause of malaria	Germs spread by mosquito bites. Germs are of 2 types-Vivax (less dangerous) and falciparum (dangerous)
Symptoms	Fever with chills in most cases. Sometimes just fever.
Diagnosis	Mainly clinical
See	fever chart and for other illnesses
Test	Send blood smear to PHC.
Treatment	Chloroquine for 3 days, followed by primaquine for 5 days. Also give anti-fever medicine. All tabs after food. A child needs small doses.
Dangers	Pregnant mothers can have an abortion, pre-term delivery, and small baby.
	If it is falciparum malaria, illness may affect brain, kidney etc. Remember signs.
Prevention	Prevent mosquito breeding. Prevent mosquito bites
	Think of watering practices

11. Some important tips

- Fever with chills; every alternate day is no other illness but malaria.

See next line

- Malaria fever may come every day.

- Chills stay for 10-30 minutes. One feels helpless, but it goes off.

There is no medicine for chills, just give blankets.

- Children may get just fever, no chills.

- After treatment, it takes nearly two days for fever to stop coming.

Explain this to the patient, else they go to doctor for injections.

- Give all tabs after food; repeat tabs if pt vomits the medicine. Try famotidine before chloroquine, or antacid with chloroquine. This prevents vomiting.

- Weakness stays for a week due to loss of blood cells. Rest and food cure the weakness.

12. Reference material

1. Fever-general principles of treatment

2. Fever flow chart for adults

3. Fever ready reckoner (table)

4. Drug info table: see chloroquine, primaquine and aspirin

13. Further reading

14. Learn these simple skills

- Checking spleen

- Checking neck stiffness

- (Other fever skills)

- Making a blood film

- Making a soak pit

- Spotting mosquito-breeding sites

- Soaking bed nets in keothrine

Questions

Choose one of the given answers, mark with

1.1.16 Malaria illness is due to:

Mosquitoes

Germ infection due to mosquito bites

Rainy season

1.1.17 It is surely malaria if someone has

Fever

Fever with chills

Fever with chills every alternate day

Fever and cough

1.1.18 Which of the following statement is true

Blood smear is always positive for germs if it is malaria

Blood smear test shows tells us about the type of malaria-vivax or falciparum

Blood smear test is essential before we starting chloroquine treatment

Blood smear test tells about ..

1.1.19 Which of the following statement is true?

Chloroquine is useless if it is falciparum malaria.

Chloroquine cures any fever

We should not give Chloroquine if the woman is pregnant.

Chloroquine -

1.1.20 The best medicine for malaria is:

Chloroquine and some fever remedy

Chloroquine, primaquine and some fever remedy.

Injections and IV saline

Single dose of malaria tablet.

1.1.21 Arrange the following statements in order of importance in prevention; with most imp action the top.

Use of bed nets by all people

Eliminating all stagnant pools in the village

Treatment of every fever case

Applying mustard oil at bedtime

1.1.22 Strike out the wrong statement

It takes one before mosquito eggs finally develop into adults, so a weekly action on ponds and pools is good enough.

1.1.23 Which of the following statements about Falciparum malaria is wrong?

This illness may appear as just fever.

Along with fever it may cause confusion, convulsions even unconsciousness.

This illness is rarely dangerous.

1.1.23.1 Fill the gaps

If chloroquine fails to work cure in 3 days, we should try the combined pill of -----.

Tab of-----or ----- take care of fever as well as aches and pains of malaria.

Chloroquine irritates stomach, so we should give -----with it, or -----half hour before chloroquine.

----- is necessary for curing lingering forms of malaria germs.

Exercise on:

Attitude and beliefs:

Mark the statement, which you feel as the most correct one:

1.1.23.2 About malaria prevention

Treatment is easy but prevention is difficult.

Soak pits are not rewarding, as there are other breeding places.

Rainy seasons brings malaria with it, you can not prevent it.

Nets are costly, difficult to manage and many people dislike nets.

1.1.23.3 In treatment of malaria;

Injections are a must.

Saline for curing weakness is necessary.

Injections are necessary only if the patient is serious.

Building Capacities of Women's Groups on Women's Health

District Level Training Modules MALARIA*

August '99

Developed by

CHETNA, Ahmedabad
for

Ministry of Health and Family Welfare, New Delhi

*Chapter written by CHC team

Malaria and Women's Health

District Level Training Module



2 hours

Learning Objectives

At the end of the session the participants will learn about

- spread of Malaria
- signs and symptoms of Malaria
- treatment and prevention of Malaria
- Warning signs of Malaria epidemic
- effect of Malaria on household routine

Design

Time in minutes	Topic	Methods
15	Local terms for Malaria	Discussion
60	Signs and symptoms, spread, prevention and treatment of Malaria	Discussion, Activity 1, and 2-Story telling
15	Warning signs of Malaria Epidemic	Discussion
30	Effect of Malaria on women's health and on daily household routine	Role Play

Material Required

Blackboard and chalk or flip charts and markers, For activity 1, blank paper slips, pen, small basket or any container, ball (if the ball is not available make a ball out of old cloth)

Note for the trainer

Welcome the participants.

You may start the session by saying....

"Dear friends,

Malaria is a commonest fever in our country. There will be hardly any one of us who had not contacted Malaria, once in a lifetime. Every year in our country many people have Malaria and many die due to this fever. Let us learn about Malaria today so we can take effective steps to prevent it."

- Ask the participants, whether they know about fever with shivering. What do they call it? Make a list of the names they suggest. Once the list is developed, use the local term instead of the Malaria. For example, Malaria is known as "Tadhio Tav" (in Gujarati). Use this local name of Malaria during the whole training in Gujarati.
- Majority of people all over the country know about the symptoms of Malaria. Ask them to list the signs and symptoms. Write them down on black board or flip charts. If they miss-out any point you add it.
- To explain the spread treatment and prevention of Malaria, introduce Activity 1, - story telling. You may read it in advance and tell the story in an interesting way in your own words. Ask the questions given along with the story. Make sure that they have internalized all the points to be remembered.
- Ask them to perform a role-play depicting a woman, who has contacted Malaria and how the household routine gets disturbed. How to introduce the role-play is given in Activity -2
- Play a game- Activity 3-"Find the correct answers" to evaluate the participants learning.

Please Note: If there are other mosquito borne diseases common in your area please discuss them during this module

Points to be Remembered by the Participants

Malaria is specific type of fever, which is spread through the bite of female anopheles mosquito. It carries malaria germs (malarial parasites) from a malaria patient to a healthy person and infects her. These mosquitoes breed in clean, stagnant water. Malaria is classified as a water related disease.

Signs of Malaria

- Shivering followed by high fever
- Headache
- Fever comes down with perspiration
- Fever usually comes in alternative days

Incase of Falciparum Malaria there will also be severe headache. The person may start babbling or become unconscious.

Spread of Malaria

- Malaria spreads due to mosquito bite from a female anopheles mosquito.
- When the mosquito bites the person suffering from Malaria, and later bites a healthy person that person, may develop Malaria within 2-3 days.
- These mosquitoes breed in clean, stagnant water.

Treatment of Malaria

Ensure the following

- Let the health worker take the blood sample when the fever is rising. This will help to know whether the person is suffering from Malaria or not
- The Malaria Health Worker will start the treatment. S/He will give chloroquine tablets.
- It is important to complete the course of 10 tablets of chloroquine
- As the red blood cells are destroyed due to Malaria, a woman may become anaemic. To treat anemia please take a course of iron folic acid tablets. Eat green leafy vegetables, citrus fruits like guava, amla (gooseberry), lemon etc and pulses like, green gram (mung) whole, Mung soup, Tur (red gram) dal, Mung dal, Urad (black gram) dal, Chana (bengal gram) dal etc.
- You may want to take the herbal remedies suggested herewith to prevent repeated occurrence of Malaria.

Treatment of Malaria Under the National Malaria Control Program

The National malaria control programme has very clear guidelines for the PHC and the sub-center teams regarding the follow up of cases of suspected malaria fever. Under the programme any case of fever can be given presumptive treatment by giving chloroquine tablets and blood is taken for examination on a glass slide (blood slide) to test the presence of malaria parasite. The male multipurpose health worker is supposed to send the slides with blood films of patients with fever to the Primary Health Centre (PHC) twice a week. Here the trained laboratory technician is supposed to detect the malarial parasite in the blood. If the blood slide is positive, which means if the malaria

parasite is present in person's blood than the person is given radical or active treatment of chloroquine and primaquine. Treatment is according to the instructions of Medical Officer at the PHC. Treatment can start immediately as the drugs are to be stocked with the health worker. It is also available at all government institutions, subcentres, PHCs, dispensaries and hospitals all over the country. The malaria inspector is a key member of the team; he directs anti-mosquito measures.

The state government has also opened Fever Treatment Depots (FTDs) and Drug Distribution Centers (DDCs) in villages which are run on voluntary basis by a voluntary worker, teacher, social worker, etc. At FTDs chloroquine tablets are given to fever cases and blood slides are taken for examination while at DDCs only chloroquine tablets are given to the patient with fever. These tablets are also sold in shops.

Prevention of Malaria

- Mosquitoes, which spread Malaria, breed in clean stagnant water. So cover the water utensils, big water storage container and pits around your house
- Get your house sprayed with anti Malaria spray. Do not wipe the spots of the spray at least for three months.
- Pour used oil in the stagnant water of the big pits
- Breed gambuchi fish in the lake
- If possible use mosquito net while sleeping. If financially viable use impregnated bed-nets.
- Fumigate your house with Neem leaves.
- Grow a bush of damro or tulsi near your house
- If possible apply neem oil on the uncovered body part before going to sleep.

To avoid repeated infection of Malaria and have a healthy life there are herbal remedies, which are been used by people since years, it may be promoted:

Chiretta Andrographis Paniculata	Boil 60gms of Chiretta in two glasses of water and reduce it to half a glass. Add 60 gms of Tulsi leave to the hot decoction, cover and let of for an hour. Squeeze out the leaves into the decoction. Strain and drink <u>Dose:</u> 1 cup thrice a day for 3-5 days
Tulsi, Holi Basil	Mix 10 gms of Tulsi leaves juice with 5gms of powdered black pepper to be given to the patient in the cold stage of fever. One may also add jaggery of sugar. The decoction must be sipped slowly.
Guduchi Tinospora Cordifolia	Six tea spoons of the juice must be given three times a day.
Neem Azadirachta Indica	Neem bark is most useful, though the leaf has a role. 2 ounces of neem bark bruised, 1 teaspoon cardamom and coriander and 20 ounces of water boil for 30 minutes. Grind 2-3 fresh neem leaves and 2-3 corns of black pepper with a few drops of water. <u>Dose:</u> 2 ounces to be given before the fever rises.

When can a Community know about Malaria Epidemic (spread in community) in their area?

Some warning signals to lookout for, otherwise many lives may be lost before action is taken.

- Increase in number of fever cases during the transmission season of malaria-from July (beginning of monsoon) to November.
- Intermittent rainfall at intervals of 5 to 7 days in monsoon.
- Increase in number of breeding places either due to rains or badly managed irrigation channels.
- News of malaria epidemic in neighbouring areas.
- No insecticide spraying activity in the past six months or more.
- High fevers with shivering followed by deaths.

Effect of Malaria on Women's Health

Recurrent or chronic episodes of malaria can lead to abortion and stillbirths. These have profound social implications in our society, where a woman's childbearing capacity is considered very important. It can further weaken a woman, who is already weak and anaemic. It will also lead to low birth weight babies, affecting the start of their lives. Thus in addition to the suffering from the symptoms of malaria directly, she indirectly suffers in a social context where her capacity to produce healthy, living children is in danger.

Useful Health Education Material

- Malaria Control in Villages, VHAJ Tong Swasthya Bhawan, 40 Institutional Area, Near Qutab Hotel, New Delhi-110016, Language-Hindi
- National Malaria Control Program, Ministry of Health and Family Welfare, Nirman Bhawan, New Delhi-110011
- Flip Charts on Malaria; Gujarat Sahitya Prakash, P.B.No.70, Anand, District Kheda-388001, Gujarat, Language-Hindi, Gujarati, English

Activity 1 Find the Correct Answers

Objectives

To evaluate the learning related to signs, symptoms, treatment and prevention of Malaria

Material Required

Blank paper slips, pen, small basket or any container, ball (if the ball is not available make a ball out of old cloth)

Preparation

Before introducing the game you have to do some preparation. Write correct and incorrect symptoms in the paper slips. Write only one symptom on one slip. You can write/draw the following symptoms

- | | |
|--------------------------|-----------------------------------|
| ➤ Severe headache | ➤ Fever recedes with perspiration |
| ➤ Fever with rigors | ➤ Fever on alternate day |
| ➤ Vomiting | ➤ Running nose |
| ➤ Body-ache | ➤ Coughing |
| ➤ Rash on the body | ➤ Toothache |
| ➤ Feel very hot | ➤ Weakness |
| ➤ Fever at the same time | |

Fold the paper slips and keep them in a basket.

Method

Ask the participants to sit in a circle.

Keep the basket with the written slip in the centre of the circle. You stand facing the opposite side. You have to clap for some time and then stop. When you are clapping the women will exchange a ball from one woman to another.

When you stop clapping the woman who has the ball has to get up and take one slip from the basket and read/ interpret the drawing. If she can not read you can help her to read.

She has to inform other women whether the sign of Malaria given on the slip is correct or incorrect. Have a discussion on her answer. If the answer is wrong you can explain to the group. You can ask the woman to do an activity like bark like a dog, jump like a frog etc.

At the end of the game you may repeat the signs of Malaria to refresh their memory.

You can play this game for the prevention of Malaria. In that case make another set of slip from the points given below and play the game again

- | | |
|---|--|
| <ul style="list-style-type: none">➤ Wash your hands with soap➤ Keep you nails cut➤ Do not sleep in Mosquito net➤ Cover the water pits➤ Eat leafy vegetables➤ Make a smoke of neem leaves➤ Apply neem oil on the uncovered body parts before going for sleep➤ Pure used oil in the big water pits | <ul style="list-style-type: none">➤ Ensure the anti Malarial spray in the house regularly➤ Wipe of the spots of the spray immediately after the spay➤ Every day have a bath with clean water➤ Never let the water get logged near the hand pump and stand post➤ Always keep the big water containers open➤ Breed Gambuchi fish in the village lake➤ Cover all available big water storage containers |
|---|--|

Activity 2- Story-Malaria, a Concern of Rampur Village

This is Rampur village. There are about 500-600 houses in the village. Every one in the village lives peacefully. Champaben is the Sarpanch of the village. She is very active. She makes sure that the village is progressing. Difficulties of the village are her own difficulties. She makes sure to solve the difficulties of her village. She made efforts so that each house has a tap at the doorstep. Now the village women do not have to walk long distance to fetch drinking water.

But....

along with water, Malaria epidemic has affected the village. Majority of houses have one or two persons suffering from fever with rigors, severe body-ache and head ache. The fever comes down with perspiration. Since the villagers are not getting the correct treatment they continue to get repeated bouts of Malaria.

Champaben is worried. She does not know how to overcome this problem. She approaches the village health worker and talks about the problem.

The health worker Samajubhai called a village meeting. Everyone, young and old, girls and boys, men and women came to attend the meeting. Samajubhai explained that Malaria spreads through mosquito bite. These mosquitoes breed in clean stagnant water. He mentioned that Champaben got us water at our doorstep but we did not manage it properly. The collection of water has become a breeding ground for mosquitoes and therefore the Malaria fever has come with it. He explained that we have to fill up the water pits, the water containers need to be covered, stagnant water next to the stand post need to be drained away. He also explained that everyone has to fumigate their houses with neem leaves, particularly after sunset. This will help to get rid off the mosquitoes from the house. He also promised that he will spray anti Malaria liquid in the houses to kill the mosquitoes

He urged every one to take precautions to prevent Malaria immediately. Next day early in the morning the villagers got together. They started covering the water pits. In the big pits they poured the used oil, they drained of the water logged next to the standpost. Samjubhai got Gambuchi fish, and put it in the village pond. He along with his other workers started spraying in the house. He also took the blood sample for the Malaria testing and started the treatment of chloroquine. He repeatedly told all the villager to complete the course of the treatment.

Champaben was very happy to see the enthusiasm of the villagers. With the constant watch on the preventing aspects of Malaria, Samajuben could control Malaria in her village.

Ask the following questions:

What was the reason of malaria epidemic in Rampur village?

What steps they took to solve the problem of Malaria?

What else could have been done?

Activity 3-Role-Play

Malaria causes severe weakness. If the key person of the house get Malaria it affects all the routine of the house. If a woman is pregnant and gets Malaria, she could have an abortion or premature delivery or give birth to a dead child. There are various social factors attached to Malaria if the woman of the house get Malaria. The participants can perform a role -play to depict this. You may give the following points prior to performing the role-play.

- The woman of the house is married since last 10 months. She got malaria twice in last 2 months. Due to Malaria she has become weak. She feels tired and giddy. She is pregnant too.
- She can not perform all the household work.
- Other members of the family do not appreciate this and behave badly. The woman one day get severe abdominal pain. She had miscarriage.

Please Note:

Ask the participants to develop the end keeping their socio cultural situation in view.

DIS-7-

TOWARDS A TEN POINT STRATEGY FOR MALARIA / DENGUE CONTROL IN MANGALORE

(Some points for Discussion)*

1. NOTIFICATION AWARENESS

On 13th March, 1988, the Government of Karnataka notified Malaria / JE / Dengue fever as notified infectious diseases under the Karnataka Public Health Act.

- (a) Are doctors and health care providers aware of this notification?
- (b) If so, how effective has the post-notification response been? Are we more aware of the magnitude of the problem?
- (c) If not, how do we make more health care providers aware of this notification and their responsibilities?
- (d) Are there other groups in society who should be made aware of this notification? If so, how?

2. MANGALORE CITY CORPORATION BYE-LAWS

Bye-laws have been prepared by the City Corporation and forwarded to the government for action

- i) What has been the follow up action
- ii) In everyone aware of the contents of the bye-laws
- iii) The Mangalore bye-laws are different from the Bangalore bye-laws in some section. Is every one aware of the differences?
- iv) Has the Corporation Health authorities geared up to enforce the bye laws? Can anything further be done in preparation?

3. STUDY OF VECTOR DYNAMICS

NMEP and MRC have constantly stressed the need for local assessment of specific vector dynamics so that local action can be focussed around specific local realities

- i) Do we know enough about the local vector species to initiate action?
- ii) Do we need further studies to understand the vector dynamics of all potential mosquito vectors in Mangalore?

** A Workshop Discussion paper
prepared by Community Health Cell, Bangalore, April 1999.
For the Workshop "Towards an appropriate Malaria/Dengue Action Plan for Mangalore
City involving 'Civic Society'"
Organised by Malaria Jaivika Niyantrana Samithi
At KMC, Attavar on 6 - 7th April, 1999*

iii) Have the MRC visiting teams studies helped to identify special situations / features?

iv) What further studies are needed on an ongoing basis to enhance local / focal integrated vector control?

4. GUIDELINES FOR INTEGRATED VECTOR CONTROL

Different types of mosquito breeding sites have been identified in Mangalore city and its environs. What guidelines can we evolve for vector control in each specific situation?

- Overhead tanks?
- Cemented tanks?
- Curing tanks?
- Fountains?
- Wells (used)?
- Wells (unused)?
- Any other collections of water?

5. RATIONAL TREATMENT AND CARE

Rational Malaria Care and management are an important component of effective Malaria control. Rational, low-cost, effective and prompt treatment should be undertaken by all alert health care providers.

- i) What has been done so far to educate local health practitioners and providers in Rational Malaria treatment and management?
- ii) What more can be done?
- iii) How significant is the problem of 'resistance'?
- iv) Can the IMA-NMEP Guideline be widely circulated? If so how?
- v) Who all could be actively involved with CME's on Malaria in Mangalore? How and what could they do?
- vi) What arrangements can be made to strengthen
 - Laboratory Diagnosis of Malaria / Dengue
 - Treatment of complicated cases?

6. INVOLVEMENT OF CIVIC SOCIETY

Community participation has been identified as a key component of successful control strategy.

- i) Who are all the components of civil society in Mangalore, who could be made aware and involved in action against Malaria and Dengue?
 - NGOs and voluntary agencies

- Environmental groups
- Trade unions
- Women's groups
- Peoples organisations
- Religious / social /cultural organisation
- Others?

- ii) How can they be made aware of the problem? How can they be involved in action? In what way, can they participate in control efforts?

7. INVOLVEMENT OF EDUCATIONAL SYSTEM & HEALTH EDUCATION

Children and all those who are involved in the educational system should be made aware of the problem of Malaria and Dengue, In addition, community Health education is urgent.

- i) How could schools and colleges be involved in the programme?
- ii) What activities could they do? Who would facilitate this and how?
- iii) Are there any educational modules available for malaria training in school / college curriculum
- iv) How can the media be involved in health education?
- v) What are the other modes of health awareness building that can be used in Mangalore? Who / How would facilitate this?

8. FORMATION OF WARD COMMITTEES AND ENHANCING LOCAL LEVEL COMMUNITY PARTICIPATION

- i) What has been the experience of ward committees in the past? In the present?
- ii) What could be the composition of such committees?
- iii) What could be the functions of such committee?
- iv) Are there other methods of involving the community at local level?

9. PROTECTION AND MANAGEMENT OF CONTRACT LABOUR AGGREGATIONS

Recently, the Goa Public Health Act has notified that contract labour must be under surveillance and given treatment when required. The onus is on the contractor.

- i) Are we aware of the provisions of this Act?

- ii) How can it be applied / evolved in Mangalore city?
- iii) What would be the key components of such an initiative?
- iv) How could it be introduced? Enforced?

10. INTER-SECTORAL ACTION

There is urgent need to tackle the problem of resurgence of Malaria /Dengue and other vector borne diseases through coordinated inter-sectoral action

- i) What are all the sectors that contribute to the problem and hence should be involved with contribution to control / action
 - (a) Agriculture Department?
 - (b) City Corporation?
 - (c) Urban Development?
 - (d) Construction sector?
 - (e) Fisheries department?
 - (f) Local industries?
 - (g) Any other?
- ii) How can these be involved in control / action
- iii) What specific contribution could each make to the programme?

11.ANY OTHER POINTS?

Finally, the participants can suggest other areas of action initiative that have not been covered by the areas / questions listed above?

Are there other issues of concern?

Are there other strategies for action?

PROBLEMS AND STRATEGIES OF MALARIA CONTROL IN ORISSA

INTRODUCTION

RUHSA has been involved with NGOs of Orissa in Human Resource Development for health care since 1993. Through participatory needs assessment processes malaria was identified as a major health problem in Orissa. As part of a first phase intervention 625 NGO staff were trained on malaria in a comprehensive manner. All of them were taught how to obtain blood through finger prick method and make a thick and thin smear in addition to health education. Some of them were able to apply the principles learned in their project areas.

However, it was realised that the first phase of training was not adequate. There was a need felt for a more comprehensive planning to control malaria in Orissa. Therefore, some NGOs who were earlier trained were invited for a 3 day workshop at RUHSA and a strategic planning exercise was carried out by the team of NGO personnel from Orissa as well as staff from RUHSA who had earlier participated in the malaria control programme in Orissa.

As an initial step we identified the problems faced in malaria control in Orissa. Subsequently a problem tree was also developed to facilitate easy planning. Against each identified problem a suitable strategy was identified. The following pages list the problems identified and the corresponding strategies for each of the problem.

The problems of malaria control relate to all the three following areas.

- Diagnosis
- Treatment
- Prevention

PROBLEMS

STRATEGIES

1. Long Distances

-

a. To train local health volunteers

b. Establish (DDC) - Drug Distribution Centres

- Chloroquine

- Paracetamol

c. Establish (FTD) - Fever Treatment Depots

- Chloroquine

- Paracetamol

Slides/Lancets

This problem of long distances can be overcome by identifying and training the following categories of volunteers and personnel to report on various aspects of malaria epidemiology. Sentinel surveillance centres may also be started.

2. Scattered Habitations

1. Establish Mobile Health Facilities

This implies that the following categories of personnel would be trained in collecting blood smear and or at least provide presumptive treatment.

Persons

- Volunteers
- Health Workers
- Link Health Workers
- Postmen
- Panchayat Members
- Teachers
- Preachers
- NGO Staff

They would carry the following materials

- Slides
- Lancets
- Chloroquine
- Paracetamol

They would conduct the following activities

- Collect Smear
- Provide presumptive treatment
- Train local volunteers on smear techniques

3. Poor Communication

To develop link person

4. Poor Surveillance

Activities to promote surveillance

- Identify and develop sentinel surveillance centres
- Train Health Workers & Volunteers to report on fever cases and take blood smear for microscopy
- Create Awareness on giving blood for testing
- Malaria Camps conducted periodically
- Link Health Workers to be introduced
Link health workers are trained in smear technology and would link up with microscopists for quick diagnosis. They can also provide presumptive treatment.
- Work with government spray technicians in facilitative insecticide sprays where indicated.
- Time bound programmes in interior areas
- Seasonal Programmes
- Improving existing facilities
- Empowering the community - Health Education
- Impregnated bednets with skills in treating nets periodically.

Workers and the Activities

Volunteers	-	Reporting Fever Cases
Trained workers	-	Blood Examination ABER
Trained workers	-	Reporting case/type
Project Personnel	-	Reporting cases
Health workers	-	No. of Cases treated
Health workers	-	No. of Cerebral Malaria

5. Lack of trained persons

- Train village volunteers
- Train NGO workers
 - Smear Techniques
 - Microscopists

6. Lack of equipments	<p>Existing</p> <ul style="list-style-type: none"> - Map Centres with Microscope - Map Centres with Technicians - Map Centres regularly working <p>Future - facilitate new microscope</p> <p>Identify NGOs with Trained Health Workers Microscopes may be provided to organisations based on demand for equipments based on smear collection</p>
7. Cost of Test	<ul style="list-style-type: none"> - Channelise the Government resources to NGOs - Make people aware of Government facilities - Make people contribute according to ability
8. Improper Diagnosis	<ul style="list-style-type: none"> - Refresher Training - Smear Preparation Training - Microscopy Training - Motivation of laboratory technicians - Monitoring & Support
9. Delayed Diagnosis	<p>Levels of delays</p> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="text-align: center; margin-right: 10px;">Smear</div> <div style="margin-left: 10px;">2</div> </div> <div style="text-align: center; margin-bottom: 10px;">↓</div> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="text-align: center; margin-right: 10px;">Lab</div> <div style="margin-left: 10px;">1</div> </div> <div style="text-align: center; margin-bottom: 10px;">↓</div> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="text-align: center; margin-right: 10px;">Diagnosis/Reports</div> <div style="margin-left: 10px;">3</div> </div> <div style="text-align: center; margin-bottom: 10px;">↓</div> <div style="text-align: center;">Patient/Worker</div> <ul style="list-style-type: none"> - Focus on specified months of year - NGO person using Govt. equipments - Planning with the PHC - Request PHC - smear - day once in a week - Planning with higher officials for instructions <p>Pressure from Higher Officials for accountability from above</p> <div style="text-align: center; margin-bottom: 10px;">↓</div> <div style="text-align: center; margin-bottom: 10px;">PHC</div> <div style="text-align: center; margin-bottom: 10px;">↑</div> <div style="text-align: center;">Motivation, Rapport & Community Demand from below</div>

10. Inadequate involvement of NGOs
- Drug Distribution Centres (DDC)
 - Fever Treatment Depots (FTD)
 - Mobile Health Facilities (MHF)
 - Volunteers
 - Health Workers
 - Link Health Workers
 - Postmen
 - Panchayat Members
 - Teachers
 - Preacher
 - NGO Staff
11. Inadequate Govt Efforts
- Maintain rapport with the PHC
 - Regular reporting of cases & drugs used
 - Carrying out studies on herbal medicines
 - Orientation Programme for GOVT & NGO
 - Training HW/Volunteers/MHF
 - Community education - dosage/regular treatment/usefulness of Govt. medicines
12. Lack of Knowledge of Service Providers
- Rapport building with Govt staff
 - Lobby and advocacy
 - Demand creation through community
 - Sensitisation of Govt by NGO
 - Strengthening PHC on malaria control
 - Spraying, Larvicide support to NGOs
13. Lack of medicines
- Training of Trainers
 - Publications distributed free
 - Use of Media
 - Refresher Training at PHC
 - Personal contact
 - Seminars for Senior Level Personnel
10. Inadequate involvement of NGOs
- Rapport with Govt for Govt medicines
 - Include small amount in NGO proposals
 - Philanthropic donation of medicines
 - Free samples Medicines
 - Encourage patient to purchase the medicines

14. Lack of awareness : Effective communication on the following aspects of malaria listed below and using any strategies.

1. Cause
2. Manifestation
3. Consequences
4. Treatment
5. Prevention including personal protection

Strategies

- Message through cultural programmes
 - Health education on malaria
 - Village level meetings
 - Street plays
 - Puppet shows
 - Multimedia publicity
 - Education by Volunteers
 - Capaigns/Padyatras
 - Flash Cards
 - Handbills
 - Posters
 - Video Shows
 - One to one education
 - Group education
 - Others
15. Trust in indigenous system of medicines (ISM)
- Present only proven medicines
 - Study effectiveness of ISM
 - Herbal medicines through community based research
16. Lack of Personal Protection
- Keep surroundings neat & clean
 - Use of mosquito nets
 - Mosquito repellants cream
 - Consume full dose of medicines
 - Study on the use of neem based repellants
 - Mosquito proofing of all room/building/ bedrooms where feasible
 - Use of mosquito mats in sleeping places
 - Electricity operated
 - Lantern operated

17. Uncontrolled Mosquito
Breeding

- Avoid stagnant water
- Keep area dry & clean one day in a week
- Clean the surrounding
- Study neem based repellants

18. Tribal Malaria

In interior inaccessible areas
systematically promote impregnated
bednets.

In addition use other strategies
identified for problems relating to long
distances, scattered habitation and poor
communication

May need a local conference on Tribal malaria
involving malaria experts, NGO personnel, community
representative and traditional practioners.

Malaria Control - Implementation Plan

1. Planning conference at start of programme will identify agreed strategies
2. Organise Training of Trainers 30 participants x 10 programmes
3. Trained trainers will train others
4. Assignment to NGOs for next step
5. NGO capacity building for malaria

Project Formulation
Curriculum designed based health education
6. District level planning by NGO (? Lead NGO) and or DAGs
Motivate trained persons to work at district level
7. Motivate interested NGOs to participate in malaria control
8. NGOs to integrate malaria control programmes with ongoing NGO programmes
 - NFE
 - Health Programme
 - Self Help Groups/Credit Unions
 - Agriculture Programmes
 - Community Development Programmes

9. Working with Government

- a. Have recognised FTD/DDCs as much as possible
- b. Maintain continuous supply of diagnostic materials and drugs
- c. Submit timely and regular report on material usage
- d. State level - advocacy on appropriate policy
- e. District - to enlist support of district officials
- to plan for spraying with Government team
- f. PHC - to utilise available diagnostic facilities
- to refer cases needing additional treatment
- to utilise available medicines as needed and available

10. Key activities to be implemented would include:

- | | | |
|---|---|------------------------|
| 1. Health Education | | LHW |
| 2. Support to diagnosis | | FTD |
| Smear Technician | ↔ | DDC |
| Microscopists | | MHF |
| 3. Provide Treatment | | Malaria Camps |
| | | Study herbal medicines |
| 4. Provide impregnated bednets to interior tribal habitations | | |
| 5. Work with Government to obtain materials for diagnosis and treatment | | |
| 6. Work with Government to carryout periodic spraying | | |
| 7. Carryout sentinel surveillance | | |

Dr. Rajaratnam Abel
HEAD of RUHSA Department.

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**TRANSMISSION CONTROL THROUGH COST-EFFECTIVE AND SUSTAINABLE
INTERVENTIONS IN SOUTH EAST ASIA REGION**

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Abstract

Malaria situation in the south east asian countries of the WHO has been described bringing out the current strategies of malaria control. The trend in vector control is to use organic phosphate insecticides and synthetic pyrethroids. Insecticide treated mosquito nets are being introduced in malaria control in almost all countries of the region. Cost effectiveness studies have revealed that ITMN per capita cost may be about equal as compared to DDT but DDT spraying lacks effectiveness in malaria control. ITMN are cheaper than OP and SP insecticides but impact on malaria varies depending on the vector and the implementation strategy. Since SP compounds are being used in the IRS and bed nets it is important to take up basic research and monitoring of SP resistance in malaria vectors and their sibling species. Sustainable malaria control requires the selection of insecticide which is lethal to the vector, safe, and affordable. Because of the hazards associated with the chemical control of vectors, high cost of insecticides, and the problem of resistance, selective application of insecticides is indicated. Bioenvironmental methods of malaria control are low cost, indigenous, eco-friendly and sustainable. The first line of attack on malaria should be the application of bioenvironmental methods of malaria control. In places where bioenvironmental interventions are not feasible, ITMN and or a mix of interventions with selective spraying may give sustainable malaria control.

1. Introduction

Southeast Asian region of the WHO reported 3,706,694 cases and 8,053 deaths due to malaria in 1996. Since realistic malaria incidence and deaths figures are not available WHO estimated 25,924,348 malaria cases and 30,816 deaths in 1996. Figures for 1997 are provisional but the reported and estimated cases and deaths due to malaria were 2,969,909 cases and 4,203 deaths and 25,810,010 cases and 27,540 deaths respectively. Contribution of SEARO countries in terms of % malaria cases and % deaths due to malaria, out of a total figures in 1997 were: Bangladesh 2.18 & 10.83; Bhutan 0.29 & 0.32; India 78.01 & 16.42; Indonesia 5.71 & 3.42; Maldives nil & only 10 imported cases; Myanmar 3.57 & 67.61; Nepal 0.21 & 0; Sri Lanka 6.94 & 1.41; and Thailand 3.1 & not available. WHO data brings out that in this region India contributes highest malaria incidence i.e., 78.01 malaria cases

and Myanmar contributes highest deaths due to malaria i.e. 67.61%. National Anti-Malaria Programme (NAMP) of the Government of India reports 2.5 to 3.0 million malaria cases annually. It may be noted that on the basis of reports received till 25-2-1999 there has been a decrease in malaria cases in 1998 compared to 1997 i.e. from 2,526,509 to 2,070,909 and Pf cases from 981,263 to 904,408, and deaths from 808 to 642. NAMPs surveillance system is inefficient and lacks adequate man power. Therefore malaria incidence data provides yearly trends of malaria and not the realistic figures. This is illustrated by the fact that in 1992 a group of scientists in Malaria Research Centre estimated 38 million malaria cases based on the consumption of chloroquine. World Bank estimated 0.95 million disability life years (DALY) due to malaria in 1993. Similarly deaths due to malaria reported by the vital statistics of the Government of India were 1,85,000 in 1985 against c 200 reported by the NAMP (GOI). The malaria scenario in India is far from satisfactory as illustrated by the following observations.

(1) In 1977, the high risk malarious population (doubling of SPR in last 3 years) in the country was 219 million (24.57%). This population lives in 135834 (23.13% villages and 303 (69.90%) districts (NAMP).

(2) In 1995 the targeted population for spray was 158.34 million and % spray coverage was 73.34. In 1996 targeted population for spray was 161.51 million and spray coverage was 48.04%. In 1997 targeted population was 164.75 million. Each year atleast 55-60 million high risk population is not included in the target population requiring spraying (NAMP).

(3) Expert committee of NAMP identified 29 towns with SPR > 10 (in any of the last 3 years).

(4) India's 7.8% (68.66 million) population contributes 40% malaria cases, 68% *P. falciparum* cases and > 50% deaths due to malaria. Malaria control in this population has been unattainable since the launching of the NMEP, and in this population indoor residual spraying had failed to interrupt malaria transmission.

(5) Chloroquine resistance is widespread and accounts for 35-40% *P. falciparum* cases. Resistance to chloroquine has surfaced in *P. vivax* and since there is no systematic monitoring of resistance the problem of vivax resistance may be the tip of the iceberg. Resistance has also appeared against Sulphalene/sulphadoxine pyrimethamine combination, mefloquine, and quinine, although very small foci in case of last two drugs.

(6) In the last 3 decades malaria has occupied new ecotypes created under the 5 year plans. Malaria control in these new ecotypes requires local knowledge of malaria transmission and integrated approaches. This would require human resources development, intersectoral coordination community participation, health impact assessment and application of geographical information system to prepare annual plans for sustainable

malaria control. A flexible and completely decentralized epidemiological approach in malaria control would be desirable.

(7) Indoor residual spraying for 4-5 decades has resulted in vector resistance, exophilic vector behavior, high residues in the environment and harmful effect on human health. Incessant spraying has results in diminishing returns. Therefore selective use of insecticides is indicated. Areas of research that may be given priority are (i) estimate of the true incidence of malaria (morbidity and mortality figures); (ii) where the deaths are occurring and why, and (iii) stratification of malarious areas to bring out malaria receptivity and vulnerability to plan focused attack on malaria. Roll back malaria therefore faces inter alia above challenge in obtaining sustainable transmission control.

2. House Spraying in Southeast Asian Region

There are > 16 malaria vectors in the SEA region. Malaria control in the rural areas is carried out by indoor residual spraying (IRS). DDT was the first insecticide used in Malaria control. In areas with poor epidemiological impact of DDT, other insecticides replaced the use of DDT. DDT (50% instead of 75% WDP recommended by the WHO) is manufactured in India by Hindustan Insecticides Ltd. In 1997 targeted population for DDT was 123.7 million population. DDT has been banned in agriculture. As per the Government policy 10,000 mt. of DDT can be produced by the HIL for NAMP, but DDT production has not exceeded beyond 5000-7000 mt in the last decade or so. Further, the use of DDT in malaria control should be phased out and banned by 2005 AD. DDT is sprayed in malaria control in Myanmar. DDT spraying in Thailand will continue till the stocks last. No other country in the region is using DDT in malaria control. UNEP is contemplating ban on the use of DDT by the year 2007 AD. In India in areas with DDT resistance, HCH was used in malaria control, but due to sub-acute toxicity of HCH, this insecticide has been banned beginning from April 1997. In areas with DDT and HCH resistance malathion was sprayed in malaria control. In 1997 41.38 million population is targeted for malathion spray. Malathion was used in Sri Lanka and few other countries. Vector resistance and pungent smell of malathion are two strong deterrents in its acceptability and therefore coverage is low. Odorless malathion may be a good option to increase its spraying coverage.

Synthetic pyrethroids (SP) have been introduced in malaria control in the region. In India deltamethrin and cyfluthrin have been used in malaria control in high risk populations or to fight epidemics. IRS of deltamethrin in Ghaziabad district, U.P. India by the Malaria Research Centre reduced *An. culicifacies* densities to almost negligible levels and completely interrupted malaria transmission. Synthetic pyrethroids were introduced in malaria control by the NAMP in 1995 in *An. culicifacies* areas. However the experience of NAMP has not been so spectacular. In

Maharashtra the decline in SPR was 42.4 to 43.8%; in Karnataka the decline was 38 to 59% and in Tamil Nadu 65%. Spraying reduced cases in Gujarat as well. The impact of SP spraying was therefore far from satisfactory. Since more and more synthetic pyrethroids are in demand in malaria control, there is a need to apply some restrictions in its application in malaria control. In this connection it is important to mention that: (i) in *An. gambiae* s.s. in West Africa pyrethroid resistance rapidly developed in areas with DDT resistance; (ii) in *An. gambiae* s.s. and *kdr* gene confers cross resistance to other pyrethroids; (iii) knockdown time is a good indicator of incipient resistance, and monitoring can provide vital information on the possible involvement of *kdr* gene; (iv) agriculture and domestic use of insecticides will increase the level of resistance to synthetic pyrethroids; and (v) in India synthetic pyrethroids are used to protect crops from pest infestation. Approximately 20,000 mt of formulated products are used in agriculture. Most of it is Cypermethrin followed by felforate, and small quantities of deltamethrin, alphaspermethrin and lambda-cyhalothrin.

Per capita cost of spraying in 1998 are: DDT 1g/ sq.m. for 2 rounds Rs. 13.81; malathion 2g/ sq.m. 3 rounds Rs. 42.75; lambda cyhalothrin 25 mg.m. 3 rounds Rs. 49.39; deltamethrin 20 mg/sq.m. 2 rounds Rs. 49.51. Alphacypermethrin @ 25 mg/sq.m. 2 rounds Rs. 32.5 and at 40 mg/sq.m. 1 round cost is Rs. 25.39. Table given below gives per capita cost of malaria control with various insecticides.

COMPARATIVE COST OF INDOOR RESIDUAL SPRAYING (IRS) IN MALARIA CONTROL (1998 Prices in Indian Rupee)

INSECTICIDE	COST/mt	OTHER COST per million	PER CAPITA Cost	RELATIVE COST DDT = 1
DDT (50%WP); 1g; 2R; 150 mt/m.	72,601	2,916,000	13.81	1
Malathion (25%WP); 2g; 3 R; 900 mt/m.	40,316	6,468,000	42.75	3.1
L-cyhalothrin (10%WP); 0.025g; 2 R; 18.75 mt/m.	2,496,000	2,590,000	49.35	3.5
Cyfluthrin (10%WP); 0.025g; 2 R; 18.75 mt/m.	2,496,000	2,590,000	49.39	3.6

Deltamethrin (2.5%WP); 0.02g; 2R; 60 mt/m.	780,000	2,714,000	49.51	3.6
A-cypermethrin (5%WP); 0.025g; 2 R; 37.5 mt/m.	800,000	2,447,000	32.5	2.4
A-cypermethrin (5%WP); 0.04g; 1 R; 30.0 mt/m.	800,000	1,391,000	25.39	1.8

There is an annual increase in the cost of insecticides and labour and therefore increase in the spraying cost has made field operations difficult. Due to financial crunch about 50% of the targeted population receives the spraying. Targeted population in itself is about half of the population requiring spraying. Table below gives the trend of per capita cost of spraying in the last 15 years.

COMPARATIVE PER CAPITA COST* OF MALARIA CONTROL IN INDIA

YEAR	DDT	HCH	Malathion	Deltamethrin
1984	3.4	3.7	19.9	-
1992	9.11	10.59	33.89	38.18
1998	13.81	-	42.75	49.51
				61.7 ITMN

*Indian Rupee

UNEP is organizing workshops for a convention to ban dirty dozen chemicals. DDT is on the top of the list. WHO is in favour of the continued use of DDT. Two UN agencies have divergent views on DDT. This position should be resolved.

Field operational research is important to develop a rational vector control strategy. Some priority areas of field research are : (i) studies should be initiated on the mode of inheritance of insecticide resistance in malaria vectors and their sibling species; (ii) studies on vector biology in relation

to control; (iii) development of integrated control strategy applicable in various ecotypes of malaria; (iv) cost effective and safe application of insecticides; (v) countermeasures to tackle the problem of insect resistance; and (vi) improvement in the spraying technique to ensure uniform deposits of insecticides on the walls.

3. Monitoring of Resistance

Resistance in malaria vectors is monitored at the larval and adult stage. WHO provides insecticide susceptibility test kits for this purpose. However monitoring of insecticide resistance is not done on regular basis. Based on the results of monitoring of vector susceptibility in India insecticide resistance against DDT and HCH in *An. culicifacies* has been reported from almost all parts of the country and to malathion from Gujarat and Maharashtra. In *An. stephensi* vector resistance in adults is not a problem as vector control is based on larviciding. Unfortunately there are reports of resistance to organophosphate larvicides in *An. stephensi*, and therefore *An. stephensi* control should switch over to *Bacillus thuringiensis* H-14. In other vectors the problem is exophilic vector behavior thus mosquitoes do not come in contact of the sprayed surfaces. Recent researches have revealed that *Anopheles* mosquitoes are invariably a species complex e.g. *An. culicifacies* comprise of 4 sibling species viz. species A, B, C and D. Response to insecticides varies from one sibling species to another. Also vectorial capacity varies greatly e.g. *An. fluviatilis* comprises of S, T and U sibling species. Of the three sibling species species S is the vector and therefore monitoring of resistance in only species S is important.

Priority areas of research in monitoring of insecticide resistance are: (i) systematically monitoring of the susceptibility status of malaria vectors and their species complex against insecticides used in public health. This should be done in a networking mode; (ii) diagnostic concentration of SP compounds should be determined for each vector species; (iii) shelf life of SP impregnated papers should be determined, and a period of full efficacy should be indicated for monitoring resistance; (iv) as and when resistance develops to synthetic pyrethroids it may be desirable to study the impact of SP resistance on the efficacy of ITMN; and (v) WHO may consider designating a collaborating centre for the use of PCR to detect *kdr* gene.

4. Cost Effectiveness Studies on Bed Nets

We have examined the cost effectiveness of insecticide treated mosquito nets (ITMN) in comparison to the indoor residual spraying and also the impact on malaria API. Table given below

gives the results of 4 field studies carried out in Orissa against the vectors *An. fluviatilis* and *An. culicifacies*; and in Assam against the vectors *An. minimus* and *An. fluviatilis*. Table below gives the cost comparisons of 4 field studies carried out under the auspices of MRC. Per capita cost of bed net programme was low and varied from Rs. 15.58 to Rs. 26.75. However the impact on malaria reduction was about 50% or so. In no experiment ITMN interrupted malaria transmission. It may be noted that in

RESULTS OF FIELD STUDIES ON THE COST EFFECTIVENESS OF INSECTICIDE TREATED MOSQUITO NETS IN INDIA

	Assam	Orissa I	Orissa II	Orissa III
Per capita cost, 3 year average	26.75	15.58	23.80	22.02
IMPACT ON API				
1st Year				
Treated	190	243	166	327
No net	73	437	437	301
2nd Year				
Treated	106 -44%	194 -20%	149 -11%	312 -5%
No net	108 +48%	329 -25%	329 -25%	417 +39%
3rd Year				
Treated	51 -73%	121 -50%	74 -55%	133 -59%
No net	270 + 269%	227 -48%	227 -48%	275 -9%

Africa widespread use of ITMN can reduce overall mortality by about a fifth. For 1,000 children protected, on average about 6 lives can be saved in the age group 1-59 months every year. The impact of ITMN on clinical episodes of malaria is also pronounced halving the attacks in stable malaria transmission areas in

Africa. ITMN in Asia and Latin America also reduced significantly the number of clinical attacks of malaria in areas where the EIR was <1. Therefore there is no evidence where ITMN may have successfully interrupted transmission. This happens with IRS provided spray coverage is >95% with a potent insecticide and the vectors are endophilic. Table below gives the cost of ITMN as calculated in 1997. Per capita cost varied from Rs. 23.7 to Rs. 32.65. This cost was calculated on the basis of one million bed nets. The per capita cost is lower when bed nets are purchased

COST OF INSECTICIDE TREATED MOSQUITO NETS
(1997 Prices in Indian Rs.)

Insecticide	Dose/ sq.m. & Quantity per net/dip	Quantity 2 dips/yr	Cost Nets+SP+other	Per capita Cost
Deltamethrin (2.5%)	25 mg 12.5 g	15.0 mt	14.2+10.8+1.2	26.2
Cyfluthrin (10%)	50 mg 6.25 g	7.5 mt	14.2+17.25+1.2	32.65
L-cyhalothrin	25 mg 3.125 g	3.75 mt	14.2+8.30+1.2	23.70

Note: 0.6 m. nets/m. population; Size: 3mx1mx1.75m = 12.5 sq.m.

from open market and quality is determined by experience. However when bed nets are ordered in bulk with standard specifications acceptable to the international organizations, this cost becomes high as shown in the table below.

CURRENT PRICES OF INSECTICIDE TREATED MOSQUITO NETS (> 50,000)

Single; 75 denier (70x180x150 cm)	Double; 75 denier (100x180x150 cm)	Family; denier (130x180x150 cm)
Rs. 218.4	Rs. 260.51	Rs. 281.71
Rs. 43.7	Rs. 52.10	Rs. 56.34
Rs. 9	Rs. 11	Rs. 15
1st year Rs. 61.7	Rs. 74.10	Rs. 86.34
2nd year Rs. 63.5	Rs. 76.30	Rs. 89.34

3rd year Rs. 65.48	Rs. 78.72	Rs. 92.64
4th year Rs. 76.66	Rs. 81.38	Rs. 96.27
5th year Rs. 70.05	Rs. 84.31	Rs. 100.26

In comparing the cost with DDT IRS the cost of ITMN is equal to twice as expensive depending on the options of 1 or 2 dips and distribution pattern. However data collected from the field on the impact of DDT on various vectors show very poor impact on malaria API. This is illustrated by the malaria API recorded from areas where DDT IRS was carried out to control malaria. Impact of DDT on malaria API in districts with *An. dirus*; *An. minimus* and *An. fluviatilis* in Arunachal Pradesh (1986-1995): East Saing 44.50-100.65 API, Lohit 15.37-125.29 API, Subansir 17.32-32.67 API; Assam (1986-1995) Keonjhar 6.16-25.1 API; Karbi-Anglong 15.63-25.23 API, NC Hills Haflong 10.44-26.95 API; Mizoram (1986-1995) Aizwal 17.66-28.22 API, Lunglei 24.42-82.79 API, Chhimtuipui 19.53-36.97 API. Impact on API in areas with *An. culicifacies* and *An. fluviatilis* was: Gujarat (1984-1994) Panchmahal 10.42-28.76 API, Orissa (1986-1995) Dhenkanal 7.25-23.20 API, Keonjhar 22.02-49.00 API, Koraput 12.79-19.36 API, Mayurbhang 15.18-28.82 API, Phulbani 21.75-43.49 API, Sundergarh 15.55-31.52 API. In *An. culicifacies* areas the impact on malaria API was: Madhya Pradesh (1986-1994) Jagdalpur 12.59-25.00 API, Kanker 16.94-51.27 API; Maharashtra (1986-1994) Gadchiroli 10.3-26.95 API, Tamil Nadu (1986-1995); Ramnathapuram 3.47-26.29 API, U.P. (1990-1995); Sonbhadra 11.32-42.18 API. In *An. sundaicus* areas the impact on malaria API was Andman and Nicobar islands (198-1995); Nicobar islands 17.81-60.57 API. Therefore against all vectors DDT spraying is not productive in malaria control. ITMN is a cost effective strategy when examined against the use of IRS DDT.

HCH has been banned in malaria control. However malathion is still sprayed to control malaria. Spray coverage of malathion is poor and it is not very productive in areas with *An. culicifacies* species C as malathion rapidly induces resistance. Pungent odor of malathion is another reason of poor coverage. ITMN are cheaper compared to malathion. A DFID project on the ITMN in Surat (Gujarat) has reported better control of malaria by using ITMN against the spraying of SP compounds in *An. culicifacies* areas. Success of ITMN would depend on the health education, socio-economic and behavioral factors, vector biology particularly the biting time etc. A well organized ITMN programme did not reduce malaria transmission because of these factors in *An. culicifacies* areas in Mandla (M.P.). In another project funded by the TDR, DDT supervised spraying Vs. ITMN revealed that ITMN is superior to DDT spraying. However from both these

trials it was abundantly clear that for the success of ITMN health education is absolutely essential and therefore social scientists should be involved in developing appropriate message for the communities.

Research is required on the (i) delimitation of areas where ITMN would be more cost effective in comparison to other methods of malaria control. Cost of nets produced by the industry is very high and therefore research in social marketing of bed nets and indigenous production of nets should be emphasized; (ii) monitoring of SP resistance in areas with ITMN; (iii) effectiveness of ITMN in areas with emerging SP resistance; and (iv) studies on the use of SP compounds in agriculture and its impact in the evolution of resistance in malaria vectors.

5. National Policies on Insecticide Resistance

DDT (50% WP) @ 1 gm/ sq. m. 2 rounds are sprayed in area where the vectors are still susceptible to DDT. However monitoring of resistance is inadequate and epidemiological impact of spraying is often unreliable. Therefore DDT is still sprayed against *An. culicifacies*, *An. fluviatilis*, *An. minimus*, *An. dirus*, and *An. sundaicus*. In areas where DDT resistance was high and there was rising trend of malaria. HCH was sprayed @ 200 mg/sq. m. 3 rounds each year. There is a strong environmental lobby to ban the use of chemicals in vector control. The main targets are the organochlorine compounds, particularly DDT and HCH. Monitoring of residues by various agencies revealed that residue levels in almost all food items were very high and there are neither any regulation nor quality control procedures to regulate the residues. HCH was also more harmful due to presence of other isomers e.g. alpha and beta isomers which have pronounced toxicity. Therefore beginning from April 1998 HCH has been banned in public health and this is being followed rigidly. In agriculture DDT and HCH has been banned. But due to low cost of DDT and the fact that NAMP has been pressing for the use of DDT in malaria and Kala Azar control, the Government of India has fixed a ceiling of 10,000 mt DDT to be used by the NAMP. Further the GOI has directed that use of DDT should be phased out so that by 2005 DDT is banned in the country. In areas with resistance to DDT and HCH malathion was sprayed @ 2 gm/sq m. 3 rounds. Malathion was very effective in malaria control but *An. culicifacies* developed resistance rapidly in Gujarat and Maharashtra leading to triple resistance. In areas where species C is prevalent use of compounds in agriculture has induced resistance in *An. culicifacies*. Therefore in species C areas malathion should not be sprayed. Beginning from 1995 synthetic pyrethroids are finding increasing use in malaria control. So far Tamil Nadu, Maharashtra, Karnataka, and Gujarat have sprayed SP compounds in malaria control. The spraying has been in areas where *An. culicifacies* is the vector and almost epidemic situations prevail. Spraying of malathion is not recommended in *An. culicifacies* species C areas instead it is a good insecticide

for species A. Cost wise DDT is the cheapest insecticide followed by malathion and SP compounds are most expensive. The budgetary provision is too small to cover the entire country either by malathion or SP compounds. Therefore DDT spraying would continue, although it completely lacks epidemiological impact. Enhanced malaria control project envisages phasing out of chemicals in malaria control. SP compounds would be used selectively in IRS. Insecticide treated mosquito nets would replace IRS wherever feasible and found cost effective. Tables given below give the comparative toxicity of the insecticides in vector control. Toxicity should be an important criteria in the selection of an insecticide.

In the control of *An. stephensi* Temephos is used, but in almost all towns malaria is rising and in some towns epidemics have been recorded. *Bacillus thuringiensis* H-14 is being introduced in the control of *An. stephensi*. Bt is still not recommended for use in potable water and therefore Temephos would continue in the treatment of potable water. There is a lot of interest in the integrated control to minimize the use of insecticides in agriculture and public health. The following technologies are being introduced in India in malaria control. Insecticide treated mosquito nets/curtains; selective use of insecticides, bioenvironmental malaria control; biolarvicides; and repellents. Research is required on the i) cost effective integrated vector control; ii) biological control methods; iii) application of GIS in planning malaria control; iv) biology of sibling species in relation to control; v) rapid health impact assessment methods, technique to delay the onset of resistance and combating resistance; and species specific vector control.

6. Rational Use of Insecticides

Rational use of insecticides in public health requires careful consideration of a variety of factors. Safety is an important consideration in the selection of an insecticide. All pesticides are injurious to human health and environment. Insecticides persist in the environment and some of these do not breakdown and recycle in nature, contaminate food chain, interfere with the immune system, destroy biodiversity and beneficial fauna. The choice of insecticide in vector control should be guided by the lack of its capacity to recycle in nature and rapid biodegradability. In this context replacement of CH insecticides by organophosphorous, carbamate and synthetic pyrethroids is advisable. However replacement insecticides are more toxic, costly, damage biodiversity and interfere with the immune system. It is therefore imperative that insecticides are used selectively, under special situation and in emergency. Table given below gives relative hazards of various insecticides used in malaria control in India.

RELATIVE HAZARDS OF DIFFERENT INSECTICIDES USED IN MALARIA CONTROL IN INDIA

Insecticides	Per capita requirement of insecticides (a.i. in grams)	Risk ratio as compared to deltamethrin IRS
1. Cyfluthrin	1.5	0.7:1
2. Deltamethrin	1.2	1:1
3. Lambdacyhalothrin	1.5	3:1
4. Malathion	180	9.6:1
5. Lindane	18	23:1
6. Fenitrothion	180	40:1
7. DDT	60	59:1
8. BHC (All isomers)	18	76:1

Basis of calculation : The average sprayable area of the house is 150 sq.m. with five inmates. Therefore per capita area is 30 sq....

Therefore research should be directed on the methods of integrating these insecticides in vector control. In areas with the problem of insecticides resistance application of replacement insecticides is indicated e.g. DDT followed by malathion, and SP compounds. Use of SP insecticides in IRS should be avoided and reserved for the ITMN. Cost is an important consideration and it should be examined in relation to the epidemiological impact of spraying. Spraying of insecticides in populations which are either resistant or show pronounced exophilic behavior is unlikely to produce epidemiological impact and therefore alternate strategies should be used. In this connection NEERI, Nagpur (Table below) has suggested selective use of ITMN instead of mass distribution from toxicity considerations.

RELATIVE RISK OF INSECTICIDE TREATED MOSQUITO NETS

Insecticide	Strategy	Per capita insecticide (a.i. in gms.)	Risk ratio as compared to deltamethrin mass
1. Deltamethrin	Selective	0.03125	0.08:1
	Mass	0.375	1:1
2. Cyfluthrin	Selective	0.625	0.09:1
	Mass	0.75	1.10:1
3. Lambdacyhalothrin	Selective	0.03125	0.20:1
	Mass	0.375	2.40:1

Note: Data suggest that selective use of ITMN is safest method. Mass use of ITMN is also safe as compared to IRS. The average sprayable area is taken as 112.5 sq.m. and 3 bed nets are required for a family of 5.

It is also advisable to examine the current use of insecticides in agriculture to decide on the insecticides to be used in vector control. Research therefore should be directed on the integrated control of malaria and development of new technologies in vector control. In the control of urban malaria, malathion fogging is in demand all over the country. Malathion fogging is very expensive, hazardous to human health and as a routine control measure does not produce epidemiological impact on transmission. This should be discouraged or banned. There is also an increasing use of a variety of insect repellents. Most of these use allethrin compounds. These repellents are injurious to human health and their use should be avoided. Neem based repellents are equally effective and safe and should replace the allethrin based repellents.

7. Sustainable malaria control

Sustainable malaria control would depend on the vector and their biology. In India malaria control is based on DDT, malathion and synthetic pyrethroid spraying. *An. culicifacies* transmits 65% malaria cases in the country. NAMPs 80% efforts go in the control of *An. culicifacies*. DDT spraying does not produce epidemiological impact and therefore it should be stopped. Table given below gives the contribution of each vector in the transmission of malaria. Malathion spraying induces resistance in *An. culicifacies* species C in about 2 to 3 years. Spraying of OP

Role of Anopheles Mosquitoes in Malaria Transmission

Malaria Vectors	Anthropophilic Index	Species-wise Contribution (%)	
		Malaria +s	Pf +s

Major Malaria Vectors of India

<i>An. culicifacies</i>	+	65	55
<i>An. stephensi</i>	++	12	05

Major Malaria Vectors of Regional Importance in India

<i>An. fluviatilis</i>	++	15	30
<i>An. minimus</i>	+++	5	5
<i>An. dirus</i>	+++	3	5

Major Malaria Vector of the Coastal Areas

An. sundaicus

++

.039

.001

Note: Broad categorization. + predominantly zoophilic; ++ zoophilic and anthropophilic; +++ anthropophilic.

Insecticides in agriculture also induces resistance in species C. Therefore malathion spraying should not be done in areas with Species C. However in areas with species A malathion spraying is very effective and it takes a long time to build up resistance in species A. It may be noted that malathion spraying is not accepted by the communities because of pungent smell. In order to overcome this problem odorless malathion should be sprayed. Malathion spraying reduces vector populations dramatically to low levels and interrupts malaria transmission. Therefore after interruption of transmission spraying should be withheld until there is evidence of active transmission. *An. stephensi* transmits about 12% cases in the urban and semi-urban areas of the country. IRS is not feasible in the urban areas and therefore larval control and source reduction are the main strategies in malaria control. Health impact assessment, municipal bye laws and *Bacillus thuringiensis* H-14 may be introduced in urban malaria control to increase impact and enhance sustainability of the field operations. *An. sundaicus* transmits < 0.01 malaria cases and malaria control based on DDT spraying had no impact on the API. In the Car Nicobar island installation of one way sluice gates and the introduction of larvivorous fishes reduced malaria API from c 100 to < 10. Installation of sluice gate in one more creek will eliminate malaria from this island. Such a low level of malaria was not attainable with the spraying of DDT. *An. fluviatilis* comprises of three sibling species designated as S, T, and U. Species S is the vector but environment pollution and major ecological changes displaces this species by non-vector species T and U. Therefore in areas where *An. fluviatilis* is the vector agricultural developments may displace this vector. *An. minimus*, *An. dirus* and *An. fluviatilis* are the vectors in north eastern states. Vector control is problematical because of pronounced exophilic vector behavior. Insecticide treated mosquito nets have been very productive in malaria control.

In attaining sustainable malaria control our first line of attack should be the bioenvironmental methods of malaria control. There are a very large number of examples of sustainable malaria control from throughout the world e.g. Tennessee Valley Authority (TVA), USA; and from Malaysia, Indonesia, Caribbean islands, India etc. Successful malaria control would depend on the vectors and human settlements. It may be difficult to apply these methods where population density is low e.g. in NE states human population is 50-100 per square km as against in the plains of India where the population density is 300-1000 per sq. km. Control in low population settlements is expensive and implementation difficult. ITMN technology may be superior.

However environmental management methods eliminate transmission completely as was done during the second world war in Manipur station. Large scale drainage was organized to control *An. minimus* and *An. dirus* transmitted malaria by armed forces. By clearing jungles and improving drainage upto 500-1000m. malaria was completely eliminated and there were malaria free camps and roads where army could move without contracting malaria. In India in the 1980s successful demonstrations were made in the control of rural, urban, industrial and coastal malaria. Currently bioenvironmental malaria control is in progress in Hassan district in Karnataka. In villages under the implementation of these methods malaria has been wiped out in about 2 years. In Kolar district, Kamasundaram PHC in 6 sections with 35,000 population one introduction of larvivorous fishes reduced malaria API from 41.8 in 1993 to 4.1 in 1997 and now there is no evidence of active transmission. In Hassan district Karakatte PHC with 35,000 population in 30 villages malaria API in 1995 was 77.63 and introduction of fishes reduced API to 19.71 in 1996 and 1.3 in 1997. In Banavara PHC of the same district in 107 villages in 55,000 population introduction of fishes in 1995 reduced malaria API from 154.6 in 1995 to 70 in 1996 and 5.2 in 1997. Per capita cost (inclusive of salary of staff) of field operations comes to Rs. 4.36 when a separate staff is being maintained for the transfer of technology to the state government. Based on the experience in Karnataka bioenvironmental methods have been introduced in the entire state of Maharashtra. Bioenvironmental methods are also eco-friendly. A study in BHEL, Hardwar showed that the residue levels of HCH and DDT were 27 and 73.5 times higher in soil and 20.2 and 8.1 times higher in whole blood samples respectively from Bahadrad (Control), as compared to the BHEL (bioenvironmental interventions). The data is give below in the table.

MEAN CONCENTRATION OF HCH AND DDT IN SOIL, WATER AND WHOLE BLOOD SAMPLES FROM BHEL AND BAHADRABAD

	BHEL (Bioenvironmental control)		Bahadrad (Chemical control)	
	HCH	DDT	HCH	DDT
Soil (ug/kg)	2.26	3.68	61.12	270.51
Water (ug/l)	ND	ND	0.18	0.07
Whole blood (ug/l)	1.2	4.71	24.30	38.31

The total cost in the first year was Rs. 41 lakh to cover the entire state. In Gujarat bioenvironmental malaria control was linked with income generating schemes of tree plantations and edible fish culture. An estimated one million trees were planted which have improved the environment besides the wealth it would provide in due course. Edible fish culture in village ponds generated enough income to take care of malaria control including the staff salary. Table below gives the production of edible fishes in Nadiad. Part of the money generated was spent in laying underground drainage. Interventions have already started in

ESTIMATED INCOME FROM FISH CULTURE AND EXPENDITURE ON MALARIA CONTROL IN NADIAD TALUKA

1. Ponds suitable for fish culture	201
2. Total area of ponds	481 ha.
3. Income @ Rs.9091 /ha./year	Rs.43,72,771
4. Expenditure on fish production	Rs.14,50,215
5. Net income per year	Rs.29,22,556
6. Bioenvironmental malaria control cost @Rs.4.97 per head, actual project cost	Rs.17,39,500
Net savings per year	Rs.11,83,056

Ahmedabad city to control malaria and dengue. Bioenvironmental methods are superior to chemicals in many ways as shown in the table below. Cost wise bioenvironmental methods are the cheapest and require very little expenditure on th maintenance.

BIOENVIRONMENTAL VS. CHEMICAL MALARIA CONTROL STRATEGY

Concern	Bioenvironmental Control	Chemical Control
1. IMPACT	+	-
a) Malaria	Long term	Seasonal
b) Vectors	Long term	Seasonal (R)
c) Parasite (R)	-	+
d) Human Health	+	-
e) Environment	+	-

2. SUSTAINABILITY	+	-
a) Cost	Low to High	High
b) Returns	+	Diminishing
c) Skills	Local	Training
d) Technology	Local & Universal	Sophisticated & Time Limited
3. GAINS	+	?
a) Other Diseases	+	
b) Development	Linked	Isolation
c) Indian ethos	+	-
d) Community	+ Response	? Response

+ = Positive; - = Negative; R = Resistance; ? = Doubtful
Source: Sharma, V.P. 1998a.

Therefore in the control of malaria our first line of attack should be the application of bioenvironmental methods. Selective IRS should be carried out if indicated strongly. Selection of insecticide should depend on the vector susceptibility and endophilic behavior. In areas which are not suitable for IRS and implementation of bioenvironmental methods is not feasible insecticide treated mosquito nets should be used in malaria control. If IRS is to be carried out and malaria has been successfully controlled the budget of malaria control should be diverted in the environmental management to reduce malaria receptivity. Such an approach would be an ideal solution to attain sustainable malaria control in the country. Areas of priority research in the sustainable malaria control are: (i) application of remote sensing (RS) geographical information system (GIS) in understanding malaria transmission dynamics and early forecasting of malaria epidemics. GIS should also be applied in the preparation of annual plans of malaria control; (ii) studies on larval ecology to reduce malaria receptivity; (iii) biology of sibling species complex of malaria vectors in relation to control; (iv) health impact assessment in the environment impact assessment; and (v) search of new biological control agents.

References :

We deeply regret that due to time constraints and the fact that script was erased by mistake at the last moment references could not be included in the paper.

MALARIA ERADICATION AND THE SELECTIVE APPROACH TO HEALTH CARE: SOME LESSONS FROM ETHIOPIA

Oscar Gish

Analysis of the failure of the World Health Organization's global malaria campaign has contributed to the formulation of the primary health care concept as the basic international strategy for health improvement. The Primary Health Care Conference held in Alma-Ata in 1978 was to have ended the period of vertical disease control programs, such as the one against malaria, stressing instead the integration of these programs into horizontal community-based health systems. Malaria control programs, however, have not been integrated well—or in some cases at all—into primary health care networks. An analysis of the Ethiopian experience, as part of the worldwide malaria eradication program, illustrates the political and economic forces that have worked against the move from vertical to integrated malaria control activities, and from vertical to integrated health programs more generally.

In 1969 the World Health Organization sounded the retreat in its 15-year global war to eradicate malaria. In much of the world the heavily subsidized, military-style campaigns that had mobilized hundreds of thousands of workers armed with DDT and antimalarial treatments had not managed to interrupt transmission of the disease. Reported cases were on the rise, both the malarial parasite and its mosquito vector were becoming resistant to the drugs and pesticides being used against them, and external donors and national governments were tiring of the continued costs of what was to have been a lightning strike to eradicate this costly disease once and for all. Analysis of the underlying reasons for the campaign's failure contributed to the formulation of the primary health care (PHC) concept as the basic international strategy for health improvement. The Primary Health Care Conference held in Alma-Ata in 1978 was to have ended the period of vertical disease control programs, such as the one against malaria; integration was the word of the day, and popular participation was to be the basis of improved health and health care systems.

Now, 14 years later, the question of integration remains on the agenda. Malaria control programs have not been integrated well—or in some cases at all—into PHC networks; indeed, the transformation (or perhaps corruption) of PHC into so-called selective PHC offers clear evidence on a broader plane (if any such evidence is required) that vertical programming is, in fact, still alive and doing well. An analysis of the Ethiopian experience, as part of the worldwide malaria eradication program, will

illustrate the political and economic forces that have worked against the move from vertical to integrated malaria control activities, and from vertical to integrated health programs more generally.

HISTORICAL BACKGROUND

In 1955 the Assembly of the World Health Organization voted overwhelmingly in favor of the creation of a worldwide malaria eradication program. The early results of this campaign were spectacular: India, which was reported to have had as many as 75 million cases and 800,000 annual deaths from the disease, was able to reduce the number of known malaria cases in 1965 to 100,000 after an eight-year campaign. The effort expended in accomplishing this decrease was enormous, requiring the deployment of more than 80,000 people armed with sprays and tablets. Similar results were achieved in other countries. For example, in 1964 Indonesia reported only 8,000 malaria cases compared with 120,000 five years earlier. In 1967, Pakistan, then including Bangladesh, recorded just 6,500 cases and Thailand only 16,000 (1, p. 25). Similar successes were reported in the Americas, the eastern Mediterranean, and the eastern Pacific. However, no progress could be reported in Africa south of the Sahara, at least partly because no overall malaria eradication effort was undertaken in this part of the world.

The basic techniques of the malaria eradication program were relatively simple. Since late in the 19th century it had been known that mosquitoes spread malaria. These mosquitoes rest on the walls of houses when they have fed. DDT, a recently available, inexpensive and effective pesticide, was to be sprayed on the inside of the walls of every house located in a malarious area. About 30 days later the houses would be visited again and selected occupants given blood tests. If the disease was confirmed, an antimalarial drug, usually chloroquine, would be administered. This program of biannual fumigation coupled with monthly visits to treat malaria cases was followed for many years in a great number of countries.

Selling the Concept

Obviously, a worldwide disease eradication effort requires some central coordinating body; in the case of malaria that coordinating body was WHO. In its diversity, the organization has been more responsive to proposals coming from some of its member states than others. Given the technical capacities as well as resources of the more industrialized countries of the world, it is not surprising that views held in Washington, D.C., or London or Moscow on the nature of health-related issues would carry great weight in policy making at WHO headquarters in Geneva. Also, during the period when the global eradication effort against malaria was being discussed, a significant part of the third world (with the exception of Latin America) either was not yet part of the United Nations/WHO or else had only recently joined. The impetus for the malaria eradication effort came, in the first place, from the industrialized countries—the United States in particular (2, especially pp. 13, 17)—and WHO was the natural vehicle for its implementation.

Gabriele Gramiccia, a malaria expert who worked with WHO for 27 years, has described the initiation of the malaria campaign (quoted in 1, p. 26):

The salesmanship of the malaria eradication programme was superb, and raised both interest and funds. One of the most effective methods used was a world tour by a highly reputed malariologist-consultant who visited the minister of health of each country and asked him how much was spent each year for malaria control. Once the answer was obtained, he asked again, 'What would you say to spending 20% more for three years and then no longer a single cent for malaria?' 'I would do it,' was usually the answer. 'Then you are in favor of malaria eradication.'

The bases for optimism about the possibility of completely eradicating malaria were the positive results obtained in some relatively marginal malarious areas during the ten-year period following World War II, in particular the southern part of the United States, southern Europe, and parts of Venezuela. Because eradication could be accomplished in these areas, it was assumed that the same could be done elsewhere. But, as Gramiccia points out, "malaria is not the same everywhere. Mosquito behavior, operational capacity, available resources and the demands of other health problems vary from country to country. Malaria could be eradicated in some countries, but not, despite prolonged and expensive efforts, in several others" (1, p. 26).

Despite the questions raised about the feasibility of successful eradication programs, the concept was accepted with enthusiasm by most health officials of independent third world countries. This fact may be only partly explained by the inexperience and lack of technical capacity of many countries. Professor D. Banerji, the distinguished Indian public health authority, has summarized the history of the vertical campaign approach to malaria in India as follows (3, p. 10):

The fact that despite their obvious over-riding importance, preventive services have received a much lower priority in the development of the health service system of India provides insight into the value system of the colonels of the Indian Civil Service and, above all, the value system of the political leadership of free India. The colonels did not appear to relish the prospects of dirtying their hands getting involved in problems which required mobilization of vast masses of people living in rural areas. The rural population raised in the minds of these decision-makers the specter of difficult accessibility, dust and dirt and superstitious, ignorant, ill-mannered and illiterate people. Therefore, when they were impelled to do some preventive work in rural areas, characteristically they chose to launch military style campaigns against some specific health problems. Undoubtedly, because of the enormous devastation caused by malaria till the early fifties, this disease deserved a very high priority. But the programme became a special favorite of the colonels not only because it required relatively much less community mobilization, but it also provided them with an opportunity to build up an administrative framework to launch an all out assault on the disease in a military style—in developing preparatory, attack, consolidation and maintenance phases, in having 'unity of command', surprise checks and inspections, and in having authority to 'hire and fire'. Significantly, some of the followers of the colonels went so far as to compare the malaria campaign with a military campaign.

The issues raised by Banerji are important in that the emphasis given to vertically organized specific disease control programs, in contrast to more generalized integrated and horizontally organized approaches to health, has in many parts of the world—as will be discussed later in the Ethiopian context—tended to unbalance the whole of health development systems. In practice, the vertical campaign approach has created barriers to the possible development of technically integrated, community-controlled health systems of the kind being advocated in the context of PHC. The campaign technique has

been fostered in particular by those who seek the basis of ill-health in the characteristics of individual diseases rather than in the "situation" of those diseases within overall social structures. In the case of malaria, its coexistence and interrelationship with many other parasitic and infectious diseases, generally in the context of extreme poverty and considerable malnourishment, are basic to the continued importance of the disease in so many countries.

Disillusionment

By the mid to late 1960s observers began to perceive that something was going wrong with the malaria effort. Not only was overall progress toward the eradication of malaria virtually halted, but in some areas there was an absolute increase in the number of reported cases. Although this was partly due to improved reporting, the experts accepted that malaria in fact was on the increase in some areas at least. The reasons offered for the difficulties encountered by the eradication effort included: vector resistance to insecticides; parasite resistance to chloroquine; inadequate application of eradication techniques, including poor case finding and premature moves into the consolidation phase of control; shortage of experienced professional and field personnel; bureaucratic manipulation of the program; the rising cost of all antimalarial activities; attacks on the vertical approach of the program by integrationists; and, in particular, the loss of "will" and related decline of financial support by donor agencies, especially the United States Agency for International Development (USAID), which had been a key conceptual, political, and economic supporter of the program (2).

In 1969 WHO's World Health Assembly decided that global eradication of malaria was not feasible, at least in the foreseeable future, and instead recommended a strategy of control. Following this decision and the related decline in country and donor agency antimalarial activities, the overall number of cases reported worldwide (not including Africa south of the Sahara, which had never entered into eradication, and China, for which data were not available) increased about 2½ times. However, virtually all of this increase occurred in southeast Asia; of the recorded increase of almost 5 million cases between 1972 and 1976 (again, excluding Africa and China) all but 16,000 took place in that part of the world. Subsequently, the number of cases reported in southeast Asia declined from its 1976 peak of 7.3 million to 4.3 million cases in 1978, a fall of over 40 percent (4, especially Table 1). By 1983 the comparable figure was 2.5 million. The greatest part of the worldwide malaria problem remains in southeast Asia and Africa, the latter area reporting 4 to 8 million cases per year between 1972 and 1982 (5, p. 97). As already suggested, the number of cases reported represents only the "tip of the (malaria) iceberg." The current number of people worldwide suffering from malaria annually is estimated to be around 130 million (110 million reported clinical cases), while 270 million people are thought to be carrying the parasite (6, p. 2).

There were at least two major reasons for the large reported increase in malaria that followed the 1969 World Health Assembly resolution. One was the persistent resistance by national malaria organizations and their remaining international supporters to any move away from an eradication strategy toward one of control. In most cases, the isolated and well-funded structures that had been created to support the eradication program were inappropriate for a long-term control strategy; in addition, the malaria

bureaucracy seemed to have taken on a life of its own. Administrators within the malaria service feared the repercussions of having to fire or retrain such a large labor force, and the efforts of public health policy-makers and administrators to integrate the programs with the general health services caused an ever-widening gap between the different interest groups. Where hasty integration efforts were initiated they were frequently poorly designed, resulting in systems that achieved neither the single-mindedness of the vertical approach nor the potential stability of the integrated one.

The other major reason for the dramatic increase in malaria following the World Health Assembly's 1969 resolution was the absence of any clear definition of exactly what was meant by malaria control, as opposed to eradication. The goal of eradication and the consequent vertical campaign approach to malaria was justified by the argument that with sufficient spraying supplemented with case treatment it would be possible to interrupt transmission of the malaria parasite and thus see the complete disappearance of the disease; in contrast, a control strategy contemplates the long-term reduction of morbidity to a level where it no longer poses a major public health threat. The basis for the creation of independent malaria organizations and the input of a large volume of resources, at least as measured in Africa and Asia, into these structures was justified by the expectation that malaria would be done away with everywhere—both nationally and internationally—and forever. However, if control was to be the target it then became necessary to weigh expenditures directed against malaria in keeping with other priority areas, at the very least those within the health sector. In 1969, however, the proponents of the strategy change had no clear guidelines to direct this transition and the PHC approach and its implications for specific disease control activities was still almost a decade away. In any event, it remains the case that malaria "control based on eradication principles still dominates, despite the fact that eradication is no longer believed to be a viable concept under prevailing conditions. The legacy of eradication is probably the single most important factor constraining control programs from developing new strategies" (6, p. 17).

VERTICAL VERSUS HORIZONTAL

Recent events have highlighted the differences between these two classic approaches to health care. In somewhat oversimplified terms, the "verticalists" favor categorically specific, hierarchically organized, discrete disease control programs, and the "integrationists" favor horizontal health care delivery systems as the basis of a mixed strategy of disease control/health-promoting activities. Not surprisingly, in practice these two ideal tendencies have often been brought together to a greater or lesser degree.

The verticalists are accused by the integrationists of being overly narrow, of not appreciating the social causation of most disease and hence essentially social nature of its prevention, of seeking only technological solutions to problems that are better approached through improved forms of human organization, of attempting to impose external technological hierarchies upon people rather than working through organized communities, and finally, of having failed too often in their past efforts (even their successes are said to have been mostly unique events, e.g., smallpox) and in their continuing zeal for the vertical campaign approach, to be blocking the pathways leading to improved, integrated health care systems. On the other hand, the integrationists are

accused by the verticalists of being woolly-minded and unscientific, of trying to impose vague concepts from the social sciences on very real disease vectors, of romanticism and lack of appreciation of hierarchical discipline, and finally, of failing to appreciate the progress that has already been made through specific disease control campaign-type activities.

The international conference on PHC held in the Soviet Union at Alma-Ata in September 1978 reflected within the health sector a potentially important underlying shift in thinking about the nature of third world underdevelopment. Although there is little doubt of the conference's conceptual importance for the industrialized countries, its more immediate impact has been felt in the less developed parts of the world. There are many reasons for this; two will be cited here. One is the obviously pressing need to narrow the wide gap in health status between the richer and poorer countries; the other, that the limited health resources available to third world countries appears to make the PHC approach not only more relevant, but perhaps also uniquely essential for them.

The late 1960s and early 1970s saw some changes in thinking about the nature of third world underdevelopment: away from growth of national product as the almost unique indicator of development and toward others such as employment creation, income redistribution, and the provision/creation of "basic needs." This discussion carried important implications for the health sector: the improvement of people's health need no longer be perceived as being a result primarily of overall growth of national product, nor need it wait upon that growth, but rather as something that could be accomplished even within the framework of existing material resource constraints. In fact, it is argued that a healthy, educated, socially involved population is a prerequisite for any true development. The lesson of "economic growth without development" had been learned by many development theorists, if not by all that many governments.

The decline of a narrowly "economistic" view of development, on the one hand, and the failure of the vertical malaria strategy to achieve its goal of eradication, on the other, created new possibilities for the health sector. Acceptance of the so-called basic needs strategy—the creation and/or provision for all of a decent standard of nutrition, full access to such services as education and health, full employment (wage or otherwise), and enhanced possibilities for people to take part in social and political processes—leads to a reexamination of thinking about the causes of health and disease, and the best ways of creating the former while limiting the latter.

The PHC approach came to represent the key health sector component of the basic needs strategy. The Alma-Ata conference represented a major international organizational effort intended to stimulate understanding and adherence on the part of governments to the ideas and practices of PHC. However, despite the almost universal rhetorical support given to the idea of PHC (although often basically different versions of PHC are being supported), many—perhaps most—governments and international agencies remain tied to more traditional views about the causes of ill-health and the best ways of organizing resources for existing and proposed disease control programs. These more traditional views are expressed in the context of continuing support for categorical disease control programs and opposition to more widely based PHC structures. In addition and not surprisingly, at least some of the apparent intellectual struggles between verticalists and integrationists are based more on considerations of group interest than anything else. In any event, a number of programs originally conceived in

more or less vertical terms did begin to explore new, PHC-related strategies for the accomplishment of their goals, usually against great odds; such is the case of the Ethiopian malaria control program.

THE ETHIOPIAN EXPERIENCE

The Ethiopian revolution of 1974 laid the political basis for the decision, in principle, to integrate the country's separately organized, vertical malaria control (formerly eradication) program with the nation's overall health system. However, the now revolutionary government was concerned about a possible lack of international support for this move. Thus an international group (the third such one) was assembled in 1977 to formally review the Ethiopian malaria effort and recommend on its future. The group comprised representatives of the Ethiopian government, WHO, and USAID. The basis of the invitation to USAID to take part in the review was that agency's long involvement with the Ethiopian malaria program. As the Ethiopian government wanted a properly objective and external evaluation of the country's malaria experience, it rejected some proposed WHO and USAID nominees to the team who had previously been involved in the Ethiopian malaria effort.¹

Background to the Campaign

Systematic study of malaria in Ethiopia began with Italian surveys conducted during the years 1936–1941. These surveys demonstrated that malaria was generally distributed in regions below 2,000 meters, although there were marked variations with place and season. Further surveys were conducted by the British during the 1940s and 1950s. In the 1950s, malaria-control pilot projects using DDT fumigation techniques were initiated under WHO, UNICEF, and/or USAID sponsorship. Within these pilot project areas malaria transmission was never totally interrupted, although insecticide application was demonstrated to be efficacious in reducing the parasite rate. The failure to achieve complete interruption of transmission was attributed to incomplete geographic coverage and fumigation, and frequent movements of population. It should be stressed that even under pilot conditions these projects failed to accomplish eradication within the demonstration areas. Despite this failure, plans for eradication of malaria in Ethiopia proceeded with the establishment of various centers and training programs and, in 1959, the creation of a National Malaria Eradication Service. It was not until 1967, however, that the plan of operation for malaria eradication was formally adopted by the Ethiopian government and the concerned external donors, USAID in particular. Under the plan, malaria was to be eradicated from Ethiopia by 1980. It is significant that this formal eradication effort was entered into in Ethiopia at a time when the rest of the world was on the verge of giving up eradication as a realistic goal, at least in the short or medium term.

In fact, Ethiopia is the only sub-Saharan African country that formally entered into a national malaria eradication effort. There were two basic reasons for this uniqueness.

¹ The author participated in this team on behalf of USAID.

One was that Ethiopia was then part of the Eastern Mediterranean Regional Office (EMRO) of WHO, rather than the African Regional Office (AFRO), and while EMRO entered into the international malaria eradication program, AFRO did not. The other factor was Ethiopia's extremely close political and technical relationships with the United States, from which country, as already noted, the international malaria effort had received its major conceptual, technical, and material support. A former WHO senior malariologist has written, "When Ethiopia was persuaded to embark on malaria eradication, by Dr. Pampana and Mr. Ray Fritz, Chief of USAID malaria . . ." (2, p. 14). It is clear that the goal of eradication did not originate with Ethiopians.

Although various types of pilot and pre-eradication projects were carried out between the mid-1950s and the 1960s, they were all conducted at relatively modest levels. It was only with the agreement reached in 1967 and signed in 1968 that substantial sums of money began to flow into the Ethiopian Malaria Eradication (and later control) Service (Table 1). All funding had been on a grant basis between 1952 and 1966, but from 1967 onward 94 percent had become loans and only 6 percent remained grants.

Overall, donor assistance for the support of terminal eradication schemes is always easier to find than funding for general health services, which are primarily dependent upon recurrent budgets. Most donors prefer to avoid becoming perpetually responsible for recurrent expenditures having no clear termination date. Just as a health facility construction project is easier to fund than its later running costs, eradication campaigns received funding partly because they promised only a short-term commitment, with a logical end to donor support in sight. In addition, donors favored eradication schemes because funds could be more easily monitored and results more effectively measured when compared with inputs to recurrent health budgets. Although these were not the basic reasons for the international malaria effort, they were contributing factors and played a role in the loss of international funding support when governments began integrating malaria control programs with the general health services.

*The Campaign*²

Two basic arguments had been put forward initially in support of the Ethiopian malaria eradication campaign. One was that the eradication of malaria would assist the opening up of new lands for development; the other, and more significant one was that an early major effort would interrupt transmission of the malaria parasite and lead eventually to its total disappearance. The strategy seemed quite simple; certain pesticides killed the mosquito vector, therefore the primary requirement was to fumigate sufficiently (and properly) so as to break the chain of transmission. But in April 1976, after many years of pilot studies and almost a decade of intensive attempts at eradication, it appeared to the EMRO/WHO Regional Malaria Advisor and the Regional Entomologist "that the antimalarial programme has not brought about a definite

² Parts of this section are based on: "Position Paper with Regard to the Integration of the Malaria Control Service into the Basic Health Services," Provisional Military Government of Socialist Ethiopia, April 1977. The paper was prepared by this author together with Dr. Mesfin Demissie, Ato Solomon Ayalew, and Ato Yamane Tekeste. Of course, these authors bear no responsibility for the way in which the material has been utilized here.

Table 1

Ethiopian Malaria Eradication and/or Control Program,
U.S. dollar grant and loan assistance, in millions of U.S. dollars^a

	F.Y. 1952-66	F.Y. 1967-75	Total
Grant	3.4 (100%)	1.5 (6%)	4.9 (17%)
Loan	0.0 (0%)	24.2 (94%)	24.2 (83%)
Total	3.4 (100%)	25.7 (100%)	29.1 (100%)

^aSource: Internal documents of the Ministry of Health, Ethiopia.

improvement in the pre-operational epidemiological situation" (7). In addition, although the data were subject to a number of reservations, the WHO Regional Advisors were able to state with certainty: "the fact remains that transmission has never been interrupted."

With regard to the other major claim for the special malaria effort, namely that it was necessary for the opening up of new lands, the same report concludes that "with due reservations, it is possible to observe . . . that little progress, if any, has been registered in the sectors under study during the period of observation despite regular spraying with DDT. The situation appears to have remained stationary in all the sectors from 1969-1973" (7). With regard to the Awash Valley, the country's most significant new development area, for the period at least from October/December 1974 to October/December 1975, "the situation has worsened; with the difference between percentages being highly significant, the parasite rate increased from 3.4% to 9.0% during that period" (7).

It appears to be beyond question that the malaria eradication effort in Ethiopia had been misdirected. The basic justifications for the campaign had not been fulfilled: interruption of transmission had not been accomplished, and there is little evidence that the campaign had successfully facilitated the opening of new lands. In any event, a separate national service was not required to lower the incidence of malaria sufficiently in any particular area so as to permit it to be settled and exploited. In fact, more concentrated activities in selected areas might even have been hindered as a result of the more generalized malaria efforts.

Three new and quite different arguments were then put forward in the EMRO/WHO report to justify the continuance of a separate malaria organization in Ethiopia. It was claimed that: (a) the periodic epidemics of malaria that formerly appeared in Ethiopia apparently had been controlled by the measures taken and there had been a significant decrease in the number of reported cases; (b) a well-organized service able to extend its scope within the existing health system had been created; and (c) the campaign had made the population aware of the malaria problem (7).

A closer look at each of these assertions is revealing. The third claim (c) does not require any special discussion except to note that reports and other documents concerned with malaria in Ethiopia have consistently stressed that a primary reason for highland populations' resistance to occupying lower-lying lands was their knowledge and fear of malaria. If this was indeed the case, it would seem to be at the very least

inappropriate to later claim that the population had been made aware of the problem as a result of the malaria campaign.

Although it may be true (see below) that the periodic epidemics of malaria that formerly appeared in Ethiopia had been controlled as a result of the eradication program, as in the first claim (a) above, it also should be noted that it was not necessary to mount an elaborate *eradication* campaign to achieve such a result. Effective *control* efforts, designed to lower the level of the disease to some acceptable level, would have sufficed. As argued earlier, an eradication campaign presupposes a massive initial effort justified on the basis of a particular disease being done away with once and for all time, as appears to be the case with smallpox. Although this was the original basis for the malaria campaign internationally, the argument was altered in the 1970s by the supporters of a continuing separate malaria organization in Ethiopia, who then claimed that even if eradication was not possible, at least the malaria epidemics that formerly appeared in the country seemed to have been brought under control. This argument was offered in particular in relation to the June/December 1958 malaria epidemic that occurred in the highlands of Ethiopia at elevations of 1,600 to 2,150 meters. During this epidemic there were an estimated 3 million cases of malaria, resulting in 150,000 deaths (based upon an estimated 5 percent mortality rate) (8). Although in some areas the epidemic has been made worse as a result of crop failures and resulting food shortages, the primary precipitating factor in the epidemic appears to have been the unusual weather conditions that prevailed in the highlands in 1958. Rainfall exceeded all previously recorded years, and abnormally high temperatures and relative humidity prevailed. This epidemic was later singled out as one of the major reasons for initiating a malaria eradication effort in Ethiopia, and the absence of a repetition of such an epidemic was claimed as one of the great successes of that effort. In fact, there is no evidence—and no research—that the unusual weather conditions that were responsible for the 1958 epidemic have ever been reproduced in those areas; thus, there is no evidence as to whether or not the operations of the malaria service have had any effect upon the so-called periodic epidemics. In any event, as suggested earlier, it would have been possible to control periodic flare-ups in other and far less expensive ways than through the continuous and costly support of an autonomous national malaria service.

It was also argued that even if special malaria operations had not interrupted the transmission of the disease and perhaps not even prevented further large-scale epidemics of the 1958 type, at the very least they had reduced the incidence of the disease. In practice, it is impossible to know whether this is the case as there were no pre-campaign base-line data for malaria-related morbidity and mortality, nor were such data developed later. In any event, over the years the methods for assessing malaria operations and their results had been changed a number of times, so that it is now impossible to obtain any statistically valid comparisons over time. Targets set in terms of reduced parasite rates had never been expressed in terms of expected declines in morbidity and mortality, or in relation to economic and social variables; that is, it is not known what a 5 percent parasite rate, as opposed to a rate of 7 percent, would mean in terms of malaria cases and deaths, or the operational costs of the program.

Although a well-organized malaria service had indeed been created in Ethiopia as in the second claim (b) above, it is necessary to examine the volume of resources required to accomplish this and the alternative uses to which they might have been put. It appears

that up to \$100 million had been spent for malaria eradication/control in the decade preceding 1977/78, and approximately \$50 million more over the succeeding five-year period. In comparison, expenditures during the pre-1977/78 decade for all modern health care averaged around \$25 to 30 million per annum (less than \$1 per capita). If the initial intention had been to create a well-organized malaria service able to extend its scope within the existing health structure, which is now claimed ex-post for the malaria service, a far cheaper and more efficient method could have been devised. The relatively large volume of resources and attention allotted to the malaria program has contributed significantly to the difficulties surrounding the balanced development of the country's health services.

The first formal malaria review conducted in Ethiopia (May 1970) raised serious doubts about the possibility of successfully eradicating malaria in even relatively limited parts of the country; nonetheless, the recommended strategy was essentially more of the same; continued eradication efforts. The recommendation was based at least partly on the perceived weakness of the basic health services, compared with the malaria service. In this respect, it is worth noting that the Malaria Eradication Service was then (1970) spending about \$5.8 million annually, while the whole of the rural health service (nonhospital) received an allocation of only \$2 million. At least part of the relative weakness of the basic health services can be explained by this pattern of resource allocation, although it is also the case that the external funds available to the Malaria Eradication/Control Service might not have been available for other health-related activities.

The commitment of this first review team to the ongoing malaria strategy can be seen from the following recommendation contained in their report: "It is not recommended that Ethiopia embark on a Smallpox Eradication Program at the present time, but intensive control measures should receive moderately high priority." In the light of later experience, i.e., the eradication of smallpox, this recommendation can only be considered as an attempt to prevent health sector resources from being diverted away from malaria. The composition of the review team—only those firmly committed to the malaria effort—helps to explain the reluctance of the Ethiopian government to accept as part of the 1977 review team similar members of the malaria establishment.

In 1972 a second malaria review team agreed with the 1970 group, in that "eradication of malaria from Ethiopia is not feasible under present circumstances even in the foreseeable future." The team recommended some limited unification of the Malaria Eradication Service (MES) with the basic health services in the delivery of multipurpose health services to the population "so long as the primary responsibility of the MES toward malaria is ensured by its strength." Between 1972 and the malaria review of 1977, some attempts at joint multipurpose activities between the MES and the basic health services were pursued, but the fundamental obstacle to integration remained—the existence of two organizations with separate budgets, staffs, and administrations.

The review team of 1977 clearly expressed the view that the MES, by then the Malaria Control Service (MCS), was initially created for purposes that had proven illusory and that, as such, it had no legitimate reason for a continued independent existence. It was also agreed that further discussions of integrated health activities and services would likely prove to be as fruitless as their predecessors in the absence of complete budgetary, staff, and administrative (but not necessarily technical) merger of the MCS with the

general services of the Ministry of Health. In any event, by 1977 it was clear that the overall policy direction of the Ministry of Health was to integrate all specialized programs into the general health services. Given the ministry's responsibility for organizing the whole of the national health effort, the financial, staff, and administrative integration of the MCS (and other such special bodies) with all levels of the ministry's services was perceived to have become a necessary step.

Although the MES had already changed its title and stated goal to that of a Malaria Control Service, in practice its overall use of resources, operational methodology, and means of evaluation had changed hardly at all. To some considerable degree this general critique can be extended to malaria programs around the world. However, if nothing else, changed funding patterns have been forcing reexamination of past approaches to malaria control in the more fundamental ways than are implied by mere changes of name. One important part of this ongoing reexamination concerns overall funding levels for malaria activities. Without in any way underestimating the obvious need for resources, it should be noted that the very way in which malaria hierarchies had been established tended to increase costs. The creation of autonomous malaria organizations, usually in the interest of more efficient management, has added considerably to the cost of malaria control. In most countries the bulk of funding for malaria work had always been drawn from national sources, primarily for the wages of personnel. Although sometimes such salaries were initially externally financed, often as a way of encouraging countries to enter into malaria eradication campaigns, they increasingly came to be born almost entirely by national budgets. External funds were utilized for the foreign exchange component of the programs, particularly pesticides and vehicles. Currently, little of even this type of support is available. As a result, new forms of national and community malaria control activities have become important, forms in which, among other things, it is not necessary to employ on a salaried basis great numbers of fumigators and related administrative and bureaucratic staff. Instead, specialized malaria personnel are intended to assist communities to "do for themselves"—with the full support of the health services—most of that which needs to be done for the control of malaria (as well as other similar vector-borne diseases).

CONCLUSION: NEW DIRECTIONS IN MALARIA CONTROL

The very techniques that supposedly required virtual armies of salaried employees are now being played down in the antimalaria effort. Residual spraying, with its large costs in pesticides and personnel, is being recommended only in selected areas. Mass chemoprophylaxis is being blamed for the widespread resistance of the malaria parasite to chloroquine, and as a result prophylaxis is being recommended only for selected groups such as pregnant women and migrant workers. At the same time, personal protection and disease management are being increasingly emphasized (9, p. 553). Interestingly, these approaches are those most compatible with a PHC structure; they are measures that can be implemented within communities by local people having only a minimum of training and some ongoing support. Sloof (9, p. 551), in analyzing global trends such as increasing urbanization, concludes that the increasing migration of pests and nonimmune people coupled with the growth of huge urban slums where breeding sites abound will require more attention to larvicidal techniques and source reduction,

while residual spraying, less acceptable in urban settings, will decline in importance. Again, these measures can be implemented by communities led by PHC workers with modest training, and certainly do not require the existence of independent malaria control services.

The trained personnel of the malaria control services will have an important, if not enhanced technical role to play in the new strategy. There is a demand for more participation by third world experts in the research that is needed to develop new pesticides and biologicals (5, p. 107; 10, p. 78). The search for an effective vaccine is continuing. Trainers are needed to instruct PHC workers in malaria control. Residual spraying teams will have a continuing role to play in responding to epidemics. However, the highly structured and segregated role of the traditional malaria control services will have to yield to one of supporting PHC structures. Such changes should strengthen the capacities of the basic PHC services as a result of the additional financial, personnel, and managerial resources they would gain. Increased efficiency in both the technical and economic sense can be expected from the integrated utilization of staff, vehicles, and other resources. The health services would be in a stronger position to support expanded preventive and curative primary care coverage as well as gaining an enhanced capacity for more effective sanitary and vector-control activities. However, part of the old malarial establishment does not agree: Cowper (11, p. 490), in describing the future role of USAID in world malaria control, still views malaria control programs as separate unto themselves, supporting their own unique personnel, and making "maximum use of existing . . . PHC systems," but seeing the establishment of those systems as secondary to, not necessary for, the success of a malaria control initiative.

In Ethiopia, the Ministry of Health had taken a number of the preliminary steps necessary for the integration of the malaria service with the general health services. The most important of those included: greater decentralization of services; a significant increase in the number of trained health workers; improved capacities within the Ministry of Health in planning, management, administration, budgeting, and accounting; and the formulation of a ten-year indicative plan. However, the most important long-term factor supporting the potential integration of malaria control into a viable PHC system in Ethiopia has been the reality of the Ethiopian revolution of 1974 in which political power was taken out of the hands of a small feudal minority. As part of this process, Ethiopians were involved for the first time in a dynamic political process that initially organized virtually the whole of the population in peasant, urban, and other civilian and military organizations. This organization of the Ethiopian population allowed a number of new forms of health activity to be undertaken, including the training and deployment of thousands of community health workers. Of course, the country's continuing political and military struggles, not to speak of the horrors of mass starvation, are currently making any progress in Ethiopia impossible in this or almost any other area.

Of particular importance to the control of malaria and other similar vector-borne diseases will be the implementation in Ethiopia and other low-income countries of a mass approach to the control of specific disease vectors, including mobilization of the population for such activities as the clearing and spraying of malarious areas. Without the active participation of the mass of the Ethiopian people—no matter under whose leadership, provided it has the genuine support of the population—it will not be possible

to move forward in any foreseeable future toward the control and ultimate elimination of malaria and the other communicable diseases that continue to cause such massive suffering among the people of the country.

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RESOLUTION

OF THE

WHO REGIONAL COMMITTEE FOR SOUTH-EAST ASIA

Dis-7-

SEA/RC52/R5

ROLL BACK MALARIA

The Regional Committee,

Recalling World Health Assembly resolution WHA52.11 relating to Roll Back Malaria,

Considering that malaria causes high morbidity and loss of productivity, particularly among the poor and vulnerable groups, such as pregnant women, children and migrant populations,

Recognizing the urgent need to accord high priority to malaria control,

Realizing the significant contribution of malaria to the burden of disease in the Region and its adverse economic consequences for the poor, and

Noting that Roll Back Malaria represents a new approach to improving equity in health,

1. URGES Member States:

- (a) to demonstrate national commitment towards the RBM initiative;
- (b) to promote and support the RBM initiative by integrating malaria control activities with the prevention and control programmes of other communicable diseases within existing PHC settings and district health systems;
- (c) to mobilize resources for sustaining evidence-based strategies to ensure concerted and sustainable efforts for RBM;
- (d) to collaborate with neighbouring countries regarding activities related to, among others, the monitoring of multi-drug resistance, vector resistance to insecticides, and enhancing epidemic preparedness and response, and
- (e) to promote multiple preventive measures to reduce malaria transmission by locally acceptable means and to ensure rational use of insecticides both in public health and in agriculture and strengthen policy frameworks and guidelines to meet the emerging requirements, and

2. REQUESTS the Regional Director:

- (a) to enhance the capacity of the programme for securing and mobilizing community participation, intersectoral collaboration and cooperation to roll back malaria;
- (b) to develop the technical capacity of the public health delivery system, including that of the private sector in the Member States, for prevention of malaria, early diagnosis and prompt treatment, and
- (c) to identify the available resources in the Member States and extend the required technical and financial support to help develop a network of experts and research institutions to substantially improve the quality of the programme.

NOTE

School Health Education on malaria in Goa

With an aim to make students in schools of Goa malaria literate, a systematic education programme was devised and initiated in Goa in 1992 by Malaria Research Centre, Goa in collaboration with Indian Red Cross Society, Goa. This programme was implemented in phases starting 1992 when 81 schools were enrolled targeting 16211 students from 8th to 10th Std. In 1994 this programme was extended to Higher Secondary classes up to 12th Std. and by 1998, 227 schools participated in the programme targeting 53462 students throughout Goa.

The aims and objectives of the programme were as under.

1. To introduce teaching on malaria in the entire state of Goa in school education through Junior Red Cross (JRC) and Youth Red Cross (YRC) components in Secondary and Higher Secondary Classes.
2. To train JRC and YRC counselors (Teachers) to impart malaria education to the students.
3. To prepare curriculum on malaria and seek its ratification from Goa Board of Secondary and Higher Secondary Education.
4. To reach community through these students and teachers so as to train and involve people in the vector and disease control process.
5. To undertake field projects on malaria with the help of Red Cross counsellors and volunteers (students) wherein the local community is exposed to the problem and its remedial measures.
6. To prepare a cohesive force over a period of time in the community who would practice the mosquito/vector control in their day to day life and also continue to disseminate the self action idea to others in future.

Training of Red Cross Counselors: Thirteen State Level workshops have so far been organised by the MRC and Red Cross for imparting Orientation training to 808 teachers with the understanding that organisational and technical responsibility will be shared by the red cross and MRC Goa Field Station respectively.

The technical aspects of training included lectures, preparing course material, hand outs, audio visual aids, and films and exhibitions on malaria. 61 exhibitions were organised for 24133 students in 232 schools.

The exhibitions on malaria included:

1. Immature and adults of Anopheles, Culex and Aedes mosquitoes explaining the life-cycle and their distinguishing features.
2. Models of domestic and peridomestic breeding habitats. These focussed upon man's negligence and indifference which may support the growth of mosquito populations.
3. The control aspects demonstrated, consisted of:
 - i) Larvivorous fish such as Aplocheilichthys blockii, Rasbora daniconius, Gambusia affinis and Poecilia reticulata devouring mosquito larvae and pupae.

- ii) *Bacillus thuringiensis* and *Bacillus sphaericus* samples.
- iii) Expanded polystyrene beads (EPS) forming a top layer on the water in the model of an unused well.
- iv) Models of air-tight overhead tanks and sumps, highlighting the mosquito-proof arrangements such as the lid assembly and the sieved overflow pipe opening.
- v) Models showing efficient drainage of water from terraces and water channels to avoid stagnations responsible for mosquito breeding.
- vi) Personal protection methods such as mosquito nets and window screens.
- vii) In addition, blood slides with *P. vivax* and *P. falciparum* parasites were shown under the compound microscope. Charts showing the life-cycle of a malaria parasite, the need for early detection and treatment of malaria cases and the importance of species-specific treatment of malaria were also displayed.
- viii) A set of panels highlighting various aspects of malaria in the urban and rural settings were also exhibited.
- ix) Handbills containing tips on self-action for the prevention and control of malaria were distributed.

Following syllabus was approved on malaria in Goa.

Standard VIII

Malaria Control: 30 marks

- 1. Life cycle of a mosquito
- 2. Breeding sites of mosquitoes
- 3. Symptoms of malaria.
- 4. Causes of malaria.

Standard IX

Malaria Control: 30 marks

- 1. Differentiation between a malaria and filaria mosquitoes.
- 2. Life cycle of malaria parasites.
- 3. Transmission of malaria parasites.
- 4. Bio-environmental control of malaria.

Standard X

Malaria Control: 50 marks

- 1. Bio-control of malaria.
- 2. Environmental management and source reduction in malaria control.
- 3. Treatment of malaria.

Projects and assignments:

Standard VIII: 20 marks

Standard IX: 20 marks

Standard XI 50 Marks

- 1. Causes of malaria
- 2. Breeding sites of mosquitoes
- 3. Life cycle of malaria parasites
- 4. Symptoms and diagnosis of malaria
- 5. Bio—environmental control of mosquitoes
- 6. Treatment of malaria
- 7. Projects and field survey

Standard XII 50 Marks

1. Community based malaria control programme
2. Engineering methods of malaria control

Table: Progressive increase in schools and students under JRC and YRC programmes in Goa from 1992 to 1998

YEAR	JRC		YRC		TOTAL	
	SCHOOLS	STUDENT S	SCHOOLS	STUDENT S	SCHOOLS	STUDENT S
1992-93	81	16211	NIL	NIL	81	16211
1993-94	98	19353	NIL	NIL	98	19353
1994-95	108	21018	5	1115	113	22133
1995-96	116	28712	25	7219	141	35931
1996-97	141	39395	35	11532	176	50937
1997-98	189	41235	38	12227	227	53462

Reference Text for the Training of Teachers

A book entitled 'Elementary Malariology' has been published by the Goa Board of Secondary and Higher Secondary Board authored by Dr. Ashwani Kumar

Epidemic Diseases : 'Whose baby is it' ?

Sunil Nandraj
January, 1998

In the recent past there has been a resurgence of various epidemic diseases such as Malaria, Gastro-enteritis, Tuberculosis, Kala Azar, Filariasis, Goiter among others in different parts of the country. The morbidity and mortality is increasing at a rapid pace with new areas being declared endemic. The resurgence is due to various factors chief among them being environmental factors, lack of basic health services, poor nutritional status of the people, lack of basic necessities, inadequate supply of drugs among others. The government on its part is shirking its responsibilities of providing adequate funds for public health care programs from its own resources and instead approaching bilateral and multilateral agencies for loans. The most recent being a loan of Rs. 8910 million from the World Bank to combat malaria. This loan is to cover the 100 most affected malaria districts in the states of Andhra Pradesh, Gujrat, aharashtra, Bihar, Rajasthan, Orissa, & Madhya Pradesh where it is most rampant. The loan is to be utilised in training technicians at the district level in the early detection of the malaria who will be known as link workers and providing basic equipment such as microscopes for malaria detection in the public health care delivery system.

The main focus of the policy makers, planners, administrators, politicians, media, international agencies, voluntary agencies and others in the control of epidemic diseases has been on the public health care system. The role of the private health sector has never been critically examined and the government has not made sufficient efforts to involve them in control of the diseases affecting majority of the population. Recent studies conducted have brought out that the private health sector is the dominant sector in health and is utilised by nearly 60% to 70% of the people for their illness. These providers are mainly in the form of practitioners practicing various systems of medicine, local healers, hospitals & nursing homes, laboratories, medical colleges, corporate hospitals, blood banks among a host of other providers.

The government has not been able to involve the private health services in combating the various diseases which should have been done on a priority as they are the major providers of care. It is quite shocking to note that the official figures provided by the government regarding the number of cases treated and deaths due to various diseases are available only from the public health care services. Furthermore the government right from the central government to the municipal / panchayat level do not have reliable & sufficient information in terms of their numbers practicing, functioning, type of care provided, number of cases treated, nature of practice, standards maintained to mention a few indicators. There is inadequate information from the private health services. This is basically due to the fact that the private health services in our country function in a most unregulated and unaccountable manner. Even 50 years after independence there are no legislation's, rules, acts etc. for monitoring private hospitals & nursing homes in India, except in the states of Maharashtra & Delhi. Where attempts are being made especially in the states of Tamil Nadu and Bihar to enact legislation there is opposition from the medical fraternity. In the states where there is legislation the implementation is found to wanting forcing consumer organisations to approach the judiciary for proper implementation. The same problem is with regard to the diagnostic laboratories, health clinics, nature cures, slimming centres, etc. etc. They do not come under any authority and operate freely without any accountability. Qualified practitioners practicing different systems of medicine are supposed to register themselves with their respective state medical councils, but the state of affairs in most of the medical council is utterly diseased, with registers not updated, elections not held, action against erring doctors being not taken, recognising sub-standard private medical colleges among a host of other problems. The problem with quacks practicing is more alarming with the concerned government departments such as police & health passing the buck to each other. The above clearly shows that the government does not have sufficient information on the private health services operating in the country and has not paid enough attention to monitoring them. Many developed economies which have a large private health sector such as USA have strong regulatory mechanism for the functioning of the health care services. In the absence of any such strong stringent regulations it has been totally left to the whims and fancies of the providers.

Due to its unregulated nature it has led to various kinds of unethical and irrational practices being carried out especially in times and areas of epidemics. Profiting from human misery especially when large sections

of population are affected due to disease it becomes a healthy business for the private providers. There are no restrictions or guidelines for the fees charged by private providers. The charging practices are more often exorbitant and irrational and without any basis. The treatment provided is based mainly on economic factors than medical reasons. Some of the irrational & ethical practices quite well known and many of the patients have faced are diagnosis not done properly, patients made to come back for more consultations, over prescribing, over investigations, unnecessary surgeries, making patients stay for longer period than necessary, administering saline drips routinely, pushing critical patients in the last stages to public hospitals among a whole lot of other practices. Many families have been pauperized due to the high cost in private health sector.

The private health care providers have never shared responsibility of involving themselves in the task of combatting various diseases afflicting the people other than for their own financial goals. More important, has the government envisaged a role and involvement of the private health sector in its diseases control program. The policies and programs formulated become applicable to the public health services without viewing health sector in its totality. Presently the government has resorted to taking loans for tinkering in the public health care services by 'retraining' a few workers, buying more jeeps, holding international seminars etc. The government should give up its ostrich like attitude and involve the private health care sector by making it more accountable and monitoring its functioning and activities.

Firstly the government should carry out a census of the all private health providers operating in an epidemic area. It is not difficult for the government to make private practitioners/hospitals/nursing homes/laboratories register with the local authority and insist on receiving periodic reports of diseases such as Malaria, TB, AIDS etc. All notifiable diseases should be reported to the local authority on a periodic basis. A random medical audit of the prescription prescribed by the doctors at the chemists shop would go a long way in making the private providers recommending the correct line of treatment. There is an compelling need to educate and create awareness among private health care providers (includes qualified doctors) on providing the correct line of treatment for various diseases. Periodic medical audit of treatment provided for inpatient care and investigations reports from the laboratories should be insisted upon. A platform should be provided for regular meetings and exchanges between the private health sector and public providers. There is a urgent need to draw up standards for clinics, hospitals, nursing homes, diagnostic laboratories in terms of qualification of human power, equipment used, infrastructure facilities, sanitary conditions among others. It is possible for the local authority to give recognition based on standards being met, records received, medical audit reports to give a certificate which should be prominently displayed and create awareness among people regarding the same.

Those not following the directives punitive action should be taken as health is a issue that deals with life and death. This measures would make the private health sector more involved in diseases control program and make it more accountable. Until the basic issue of involving the private health sector in combating the various epidemic diseases are addressed any amount of money pumped either as aid or loan from bilateral or multi lateral international agencies will not solve the problem. In the overall context there is an urgent need to have a comprehensive health care which involves close inter-linkages between the public and private health sectors that provides care to people which is accessible to the majority, of reasonable quality and affordable.

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Press Release

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FOUR INTERNATIONAL ORGANIZATIONS UNITE TO ROLL BACK MALARIA

The United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), the World Bank and the World Health Organization (WHO) have joined forces to launch a new campaign to fight malaria, which kills more than one million people a year.

The programme, "Roll Back Malaria", seeks to reduce substantially the human suffering and economic losses due one of to the worlds most costly diseases. Malaria causes an estimated 300 to 500 million acute cases per year, with most deaths occurring among children in Africa – nearly 3,000 die each day. It has been estimated that malaria accounts for about 10% of the disease burden in Africa.

"Malaria is the number one health priority of people and leaders in affected communities and countries, but their voices have not been heard," says Dr Gro Harlem Brundtland, WHO Director General. Roll Back Malaria was initiated when Dr Brundtland was elected WHO Director-General in May. "The human suffering is unacceptable and so is the economic burden and impediment to progress. Africa and other regions with malaria are responding and we must answer their call," she says.

Roll Back Malaria (RBM) is different from previous efforts to fight malaria. RBM will work not only through new tools for controlling malaria but also by strengthening the health services to affected populations. RBM will implement its activities through partnerships with international organizations, governments in endemic and non-endemic countries, academic institutions, the private sector and nongovernmental organizations. Above all, it will be a united effort by the four international agencies concerned with malaria and its effects on health and economic development.

Malaria is, above all, a disease of the young and of the poor, many of them children who live in remote areas with no easy access to health services. But the use of simple prevention and control methods has shown startling results: in trials conducted in The Gambia, Burkina Faso, Kenya and Ghana, the use of bednets – which are treated with biodegradable pyrethroid insecticide was shown to effectively protect sleeping children from malarial mosquitoes, resulting in dramatic reductions in deaths among children under five years of age. Deaths were reduced by average of one fourth in these mega trials.



Roll Back Malaria will seek to:

- strengthen health systems to ensure better delivery of health care, especially at district and community levels;
- ensure the proper and expanded use of insecticide-treated mosquito nets;
- ensure adequate access to basic healthcare and training of healthcare workers;
- encourage the development of simpler and more effective means of administering medicines; such as training of village health workers, mothers and drug peddlers on early and appropriate treatment of malaria, especially for children;
- encourage the development of more effective and new anti-malaria drugs and vaccines.

"While strengthening the health sector is essential to Roll Back Malaria," says UNICEF Executive Director Carol Bellamy, "the new strategy will be most effective when families, communities, local leaders and other groups, such as shopkeepers and schoolteachers, become fully committed and involved in the effort. In all of the countries seriously affected by malaria, communities have already demonstrated that rapid improvements in child health are possible when they are given the right kind of support and encouragement. We are confident that this new initiative will be able to provide this."

Unlike most other major diseases in the world, malaria is spreading. As roads are built, forests cut down, new mining areas opened up, habitats which favour the breeding of mosquitoes expand, and what starts out as economic development often unintentionally leads to an underperforming and sick workforce.

"The poor suffer the most from malaria," says James Gustave Speth, Administrator of the UNDP. "The international community must firmly commit itself to this new partnership and to developing integrated actions that take aim at both malaria and at its greatest breeding ground which is poverty. UNDP looks forward to working with its UN and other partners in this worldwide campaign against malaria."

"Making significant, sustained inroads in the battle against malaria urgently requires a coordinated, focused initiative. Governments, international organizations, the research community and the pharmaceutical industry must all play a major role. The World Bank is committed to playing its part in the mobilization of resources needed to spur such a coordinated response," says James D Wolfensohn, President of the World Bank Group.

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Malaria and economic development

Roll Back Malaria is being launched at a time of growing scientific interest and investment in malaria, which still remains grossly underfunded.

"We and other groups of economist researchers are trying to determine the consequences of malaria on economic development," says Jeffrey Sachs, Professor at Harvard. "Our findings are striking. They point to Malaria as a major impediment to economic development."

Poor health via disability from diseases such as malaria reduces incomes by as much as 12 percent in some studies, a particularly important factor in developing countries where a significant proportion of the workforce is involved in agriculture and other forms of manual labour.

The evidence also suggests that the effects of improved health are likely greatest for the most vulnerable – the poorest and those with the least amount of education.

New tools

Bednets: Large-scale field trials have conclusively demonstrated that the use of bednets treated with biodegradable pyrethroid insecticide can protect children from dying from malaria. Do-it-yourself approaches to insecticide treatment of nets are now available.

Mapping: Based on satellite mapping and climatic information, the distribution of malaria can now be determined at the community level.

For countries participating in RBM, national malaria information will be integrated with regional information to produce a comprehensive national malaria control map, as part of the international mapping of the disease.

The information will allow a better estimation of the burden of malaria and the population at risk, and hence a better assessment for RBM. It will also provide more reliable and area-specific information for national and international advocacy for malaria control. Where RBM operations have started, information on the availability and quality of health services and the results of monitoring and evaluation will be added to the data base.

Bringing treatments to the people: In Africa, the RBM will create a network of teams to go into villages and analyze treatment and prevention practices at the household and community level, the availability and quality of health care by the public and private sector, and potential local partners. The RBM will provide technical and financial support for each analysis through this network at the district level.

Treatment at home can be greatly facilitated by simple packaging of drugs; fast-acting rectal caps can rescue life-threatening disease in children.

Most victims of malaria die simply because they do not have access to health care, or their cases are not diagnosed as malaria. In addition, life saving drugs are often not available.

"These tools will greatly help in bringing the attack where it matters, says Dr. David Nabarro, newly appointed leader of the central team for Roll Back Malaria, headquartered at WHO in Geneva.

Research breakthroughs

Researchers are investigating a wide range of activities in malaria are severely underfunded, but investment is increasing thanks to a new Multilateral Initiative for Malaria research (MIM). The new techniques being investigated include ways of preventing the mosquito parasite from infecting the mosquito.

"A number of scientists are trying to make the mosquito resistant to the parasite," says Fotis Kafatos, Director-General of the European Molecular Biology Laboratories in Heidelberg, Germany. "Using the most sophisticated techniques in molecular genetics we are discovering an array of novel possibilities."

Several vaccine candidates using the latest breakthroughs in vaccine technology are undergoing field testing in Asia and Africa and in US volunteers, while the whole genome (a complete set of hereditary factors) of the malaria parasite is being sequenced.

"This will create completely new opportunities," says Dr. Harold Varmus, Director of United States National Institutes of Health (NIH), which is one of the leading drivers in the MIM. "Malaria is a global concern. We are gearing up our support for research both here and abroad."

New discoveries have led to many different approaches to a malaria vaccine, with many of the possibilities already undergoing human trials. However, scientists estimate that it will take 7-15 years before an effective malaria vaccine is ready.

Vaccines taking advantage of DNA research may provide one of the best hopes. One possibility is being developed by the US. Naval Medical Research Institute, the US Agency for International Development and partners in Ghana, Australia, France and the US private sector.

"Our work in relationship to WHO objectives is focused on producing multi-gene DNA vaccines designed to reduce morbidity and mortality of malaria in young children in sub-Saharan Africa," says Dr. Stephen Hoffman, of the Naval Medical Research Institute. The major project is entitled MuStDO 15.1 (multi-Stage DNA vaccine operation), which is a 15-gene malaria DNA vaccine.

Researchers hope to initiate clinical trials of this new vaccine within 18 months. Dr. Hoffman has just published the first proof of the principle that DNA vaccines are immunogenic in normal, healthy humans.

Another promising vaccine candidate has just begun field trials in the African nation of the Gambia. This new recombinant protein vaccine, RTS,S, developed by SmithKline Biologicals, would prevent the malaria parasite infectious stage from entering or developing within liver cells of human beings. Such vaccines would prevent the severe and life-threatening consequences of malaria in non-immune individuals.

Another approach is to develop a vaccine that prevents transmission of the malaria parasite from one infected person to another person. This type of vaccine would block the development of the parasite in the mosquito, thus preventing the parasite from infecting someone else. This transmission blocking vaccine is under development by scientists at the US NIH, in collaboration with WHO/TDR. The NIH has recently initiated a major Malaria Vaccine Development Programme aimed at ensuring the production of clinical grade materials for use in clinical trials.

A different asexual blood stage vaccine type is based on a cocktail of antigens. One such synthetic peptide vaccine, SPf66, developed by Manuel Pattaroyo working at the Instituto de Inmunología in Bogota, Colombia, has been tested in field trials in South America, Africa and Southeast Asia. It has only been partially effective to date. Dr. Pattaroyo is using sophisticated biochemical methods to improve its potency.

The leading scientific journal Nature published this week research from Kenya, Thailand and Malawi which shows that pregnant women living in malarious areas develop a unique immunity which protects them from malarial infection. Professor Bernard Brabin of the Liverpool School of Tropical medicine, who is a co-author of the paper, and has worked for 20 years on the subject of malaria in pregnancy, says that it is the most exciting scientific development in this field for decades and could open the way for developing a vaccine to protect pregnant women from malaria.

Public private sector collaboration

Because malaria is largely found among poor people in poor countries, the private sector can not engage fully in research and development. A public-private sector initiative is being set up to circumvent the problem. The New Medicines for Malaria Venture will be financed by public sector and philanthropic bodies. The private sector will primarily provide facilities and staff. Industry is committed to making this work, says Harvey Bale, Executive Director of the International Federation of Pharmaceutical Manufacturers Associations.

The four UN-System organizations contribute unique expertise

UNDP has committed to the following actions.

At country level, **UNDP** will:

1. Create capacity for integration of malaria-related action into national poverty eradication policies, strategies and programs.
2. Strengthen, through Sustainable Human Development activities, the balance of action among state, private sector, civil society and communities themselves, to ensure that people have access to basic social services and productive assets.
3. Work through the UN Resident Coordinator system to encourage collaborative programming in support of intersectoral action and resource mobilization.

At regional/sub-regional levels, **UNDP** will:

1. Support links between Sub-regional Resource Facilities (SURFs), providing technical referral services to country offices and the Roll Back Malaria resource support networks.
2. Collaborate with WHO Regional Offices to strengthen capacity of relevant regional inter-governmental organizations (ISO) in support of Roll Back Malaria.

At global level, **UNDP** is providing continuing support for the UNDP/World Bank/WHO Special Programme for Research & Training in Tropical Diseases (TDR), which has as a

major focus the development of drugs and tools for malaria control and adapting research in local settings.

UNICEF will:

1. Provide support to intensified malaria control efforts via its country programs.
2. Work with Government & NGO partners to:
 - give special attention to reducing the terrible toll of malaria on young children and pregnant women;
 - further strengthen support for community-based and local action to improve health and nutrition;
 - focus on making insecticide treated mosquito nets available to all families that need them and on ensuring that every child with malaria has access to early and effective treatment;
 - mobilize leaders (community, district and national) to make effective malaria control a priority.
3. At international level, raise additional funds for country activities, and focus support on 10 of the most severely affected countries in the next two years.
4. Take lead responsibility for developing an impregnated bednet resource network.

The World Bank Group strongly supports the Roll Back Malaria global partnership. Malaria has a major impact on social and economic development. Consequently, the Bank has committed to:

1. Increase World Bank investments in malaria control and research;
2. Facilitate resource mobilization to support RBM;
3. Enhance a more effective involvement of Departments of Finance, Economics, Infrastructure, Agriculture and others to become full partners in reducing malaria as an economic factor;
4. Explore innovative finance mechanisms to deliver support;
5. Support research on the economic aspects of malaria;
6. Help establish private-public partnerships with industry on new malaria products.

Together with Roll Back Malaria partners, the Bank will actively pursue these activities through its country programs and research agendas. Malaria must be reduced as a negative factor on macro-economic growth.

WHO will be coordinating the Roll Back Malaria project. Project Countries and affected populations have identified malaria as a priority health issue. Activities will cut across WHO programs & regions to:

1. Support governments & partners:
 - strengthen the health sector to better tackle malaria;
 - monitor the geographic spread of malaria;
 - measure results and outcomes of action;
2. Improve technical efficiency & capacity:
 - build & support technical support networks, regional and local;
 - invest in the development of new methods, tools and capacity strengthening through research networks and programs;
3. To improve resource allocation, utilization and mobilization:
 - local/national: promote concerted action by stakeholders
 - regional: establish resource networks;

- global: supporting partners for common action and sharing information on malaria, programs and resources.

Global Malaria Rates*

REGION	CLINICAL CASES
AFRICA (South of the Sahara)	270-480 million estimated**
AMERICAS (Including Brazil) (Brazil alone)	2.2-5.6 million estimated 1.1-2.8 million reported
MIDDLE SOUTH ASIA (Including India) (India alone)	2.6 million reported 2.1 million reported
ASIA WEST OF INDIA (Including Afghanistan) (Afghanistan alone)	0.5 million reported 0.3 million reported
EASTERN ASIA & OCEANIA (Including Thailand, Vietnam and The Solomon Islands) (Thailand, Vietnam and The Solomon Islands alone)	1.0 million reported 0.5 million reported
EUROPE (Including Turkey and the former USSR)	12 000 reported

* Estimates of global malaria mortality are 1 million deaths a year, and occur primarily in African children under five years of age.

** Included in this total, there are 140-280 million estimated cases of malaria in children under the age of five.

Source: WHO, 1998

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WORLD HEALTH
ORGANIZATION



REGIONAL OFFICE FOR
SOUTH-EAST ASIA

REGIONAL COMMITTEE

Fifty-second session

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**ROLL BACK MALARIA AND MAINSTREAMING OF
ANTI-MALARIA ACTIVITIES IN
HEALTH SECTOR DEVELOPMENT**

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Executive Summary

Roll Back Malaria is a global initiative against malaria implemented through health sector development that could foster broad-based support for effective anti-malaria intervention to achieve sustainable reduction in malaria cases, especially among the poor who have little access to health services.

As different from previous approaches to malaria control, RBM, as a social movement for better health, draws its strength through improved health sector development. This would facilitate the mainstreaming of malaria control activities into the health system, integrate its implementation through the provision of health care to the poor in a package delivering care, combined with other common diseases and linked with other health programmes.

Under the Ten Guiding Principles, RBM utilizes the existing infrastructure and available resources for malaria control to implement *the Six Strategies of RBM* in the SEA Region:

- Enhanced diagnosis and treatment of malaria (e.g. new diagnostic test, universal access to treatment, combination drugs)
- Disease transmission control (cost-effective integration of vector control tools, e.g., insecticide treated nets, selective vector control, bio-environmental methods)
- Enhanced surveillance (rapid response, policy making, border malaria, and monitoring progress)
- Health sector development (e.g., decentralization, health equity, package delivering care, changing role from implementers of malaria control to leadership, regulation and coordination).
- Community mobilization (empowerment of communities, evidence-based planning and ownership).
- Advocacy (forum for advocacy, strategic investments e.g., mapping, new drugs and vaccines, regional support networks e.g. drug policy, rapid response, etc., health impact assessment, research on reform in health system).

RBM Action Plan envisages political commitment at all levels starting at the highest level of governance. RBM functions through partnerships from the central to the local level and works in synergy based on an Action Plan developed and owned by all partners. The action plan for Roll Back Malaria is as follows:

- A preparatory phase of six months (ending 1999) for advocacy, establishment of partnerships and resource networks, mainstreaming RBM in the health system, and selection of endemic districts representing important malaria paradigms.
- A two-year (2000-01) period of piloting of RBM in selected districts and towns.
- Adoption of a countrywide RBM plan by all countries as a means of improving and reducing malaria-related mortality by half by 2010 and reducing it further in succeeding years.

1. INTRODUCTION

The fact that the poor and those with little access to health care are most affected, malaria is now seen as a developmental and poverty issue. Therefore, the RBM concept and partnership in malaria control as a social movement for better health should be addressed as an integral part of health sector development.

Further, the success of malaria control action will require a political commitment, establishment of a sound legislative foundation to control malaria, optimal use of available resources, establishment of intersectoral linkages, community empowerment, involvement of the private sector/NGO and other health-related programme. The district health system approach and decentralization of decision-making should form the strength of malaria control. Border malaria, multidrug-resistant malaria, population migration, urban malaria etc., are important issues that need to be addressed.

The Intercountry Meeting of National Malaria Programme Managers in Pattaya, Thailand, 22 – 27 February 1999, and the Meeting on Implementation of Collaborative Activities on Roll Back Malaria, held in New Delhi from 4-6 May 1999, concluded that mainstreaming of RBM into health sector development would enhance efforts in achieving the objectives of malaria control.

2. BACKGROUND

In the SEA Region, the overall malaria situation has remained almost static during the last decade with around 3 million confirmed cases annually. Distribution of malaria cases has been uneven and about 10% of the population is exposed to the risk of drug-resistant malaria. Malaria in Asia causes high morbidity, resulting in reduced productivity, loss of family income with impact on economy in general. Death rate is lower compared to Africa but it affects all age groups. In this Region, India contributes 80% of the cases while more than 65% of the deaths occur in Myanmar.

Appreciating the global concern about the deteriorating malaria situation, a Ministerial Conference on Malaria, held in Amsterdam in 1992, endorsed the WHO *Global Malaria Control Strategy* (GMCS). GMCS was subsequently endorsed by the Economic and Social Council (ECOSOC) of the United Nations in 1995, and adopted by the Member Countries.

Dr Gro Harlem Brundtland, Director-General of WHO, initiated a new effort in May 1998 to *Roll Back Malaria* (RBM). RBM envisages better access to malaria interventions to millions of women, children and men, who suffer from poor health equity. Further, RBM draws its strength from past experience with emphasis on partnership, research groups, evidence-based action, political support and civil society organizations. Mortality due to malaria is expected to be halved by 2010 with sustained reduction in the succeeding years and the resultant disease burden due to associated diseases. During 1999, this initiative has been endorsed by resolutions EB103.R9 and WHA52.11.

To make a difference for the prospects of poor people, the focus would be on interventions that could achieve the greatest health gain possible. It would mean that during the implementation process, RBM will be guided by the following principles:

Box 1: Ten Guiding Principles for RBM

- RBM is a social movement supported by many partners, to reduce poverty and promote development.
- RBM is owned by all the partners
- Decisions are made by consensus
- Country priorities drive RBM
- Partners function independently, but in concert
- Partners contribute where they have a comparative advantage - or interest
- Action plans are clear, evidence based, prioritized and adapted to local realities
- RBM is about broadening and strengthening the capacity of health sectors to fight all diseases
- RBM is not a new agency or funding institution
- Mainstreaming of RBM in the health system cannot be judged to be functioning unless they have an impact on malaria.

In recognition of the fact that malaria is still a major public health problem, the governments in the South East Asia Region spend large sums of money on malaria control. Member Countries managed to shift malaria control from autonomous disease control programme by integrating it into the general health services. There is still a need to ensure appropriate priority and effective action to address malaria, within the context of health sector development. With the new emphasis on health-led development, it will require new ways of working and changes in the way resources are used. Therefore, RBM is relevant to SEA countries.

3. OPERATIONALIZATION OF RBM

The operationalization of RBM would be based on the following six strategies: (1) enhanced diagnosis and treatment, (2) disease transmission control, (3) enhanced surveillance, (4) health sector development, (5) community mobilization, and (6) advocacy. The health sector and national partners assume the responsibility to carry out situation analysis and to prepare RBM joint action plans at district, provincial and national levels, as appropriate.

3.1 Enhanced Diagnosis and Treatment of Malaria

(1) Early Detection and Prompt Treatment (EDPT)

New techniques, such as rapid antigen diagnostic tests, should be introduced on an operational scale in certain epidemiological settings. RBM should ensure universal access of drugs to the populations at risk, which means appropriate and affordable first-line

anti-malarial drugs and effective second-line treatment at the periphery level. Access to health care should also mean access to other effective anti-malaria measures, particularly reduction of transmission. Development of new drugs and drug combinations are needed to combat resistant malaria so as to prolong the life of existing drugs.

(2) Improving access to health care

Because of the poor quality of public sector facilities and the lack of public confidence, *private sector* plays a dominant role in treatment. There is thus a need for an effective regulatory function to protect public health interest and secure the quality of service rendered by the private sector.

(3) Drug resistance

The epicentre of multidrug-resistant strains in Thai-Cambodian and Thai-Myanmar areas along the international borders are considered a threat to the world as a potential source of multidrug-resistant malaria.

Assessment of the changing patterns of drug resistance through monitoring of therapeutic efficacy of anti-malarial drugs by using the WHO protocol should be conducted at regular intervals, particularly when drug failures are reported by clinicians.

3.2 Disease Transmission Control

Under RBM, countries should adopt a truly integrated vector management (IVM) approach and apply the best practices (Box 2) for sustainable transmission reduction.

Box 2: Application of Best Practices

- Expanding the use of GIS (geographical information system) and RS (remote sensing) for the monitoring of critical environmental determinants of malaria transmission risk.
- Obtain government commitment for IVM as best practice in vector control, including malaria in health sector development and intersectoral action.
- Strengthening of local environmental health services, where applicable, to perform essential functions in support of integrated vector management.
- Give ministries of health the proper regulatory powers within an effective legal framework, to ensure that other sectors comply with their responsibilities in risk management.
- Pursue an active partnership with the District Development Officer to achieve intersectoral action at the district level.

The process of IVM intervention should use evidence-based decision-making criteria to arrive at the most cost-effective mix of vector management methods. Methods should include the use of ITN, biological control and environmental modification.

3.3 Enhanced Surveillance

(1) Malaria epidemics

Prediction of and early response to epidemics in unstable malarious areas should be a national priority. Early recognition of epidemics is important in mobilizing resources to prevent deaths. Box 3 gives the core indicators to assess morbidity and mortality due to malaria on a continuing basis.

(2) Monitoring of drug resistant malaria

Regular assessment of changing pattern of drug resistance should be the basis for drug policy to ensure effective treatment for malaria.

(3) Border malaria

Synchronized control strategies. Malaria along international borders is a serious problem. Malaria control along the borders would greatly benefit from partnership under RBM through a dialogue with neighbouring countries to act jointly in a synchronized intercountry malaria control strategy.

(4) Monitoring progress

Box 3: Core Standard Indicators

Impact Indicators

(1) *Morbidity attributed to malaria*

- Number of cases of UM (clinical/confirmed) among target groups/unit population
- Number of cases of SM (clinical/confirmed) among target groups/unit population
- Number of MTF/per No. of treated patients. Reported according to each drug used

(2) *Mortality attributed to malaria*

- Number of malaria deaths (clinical/confirmed) among target groups/unit population
- Proportion of clinical/confirmed deaths due to malaria among patients with SM admitted to a health facility

Outcome and Output Indicators/Operational Indicators

- (1) Management of antimalarial drugs (percentage of health facilities reporting no rupture of stock of antimalarial drugs during the past three months)
- (2) Reporting coverage (percentage of districts regularly reporting the above to the national programme on a monthly basis for the past 12 months)
- (3) Universal access to effective treatment (percentage of priority areas having access to treatment and referral system)
- (4) Target population under personal protection (percentage of population in priority areas under personal protection)
- (5) Rapid response team (percentage of priority districts having early warning system and trained rapid response teams)

3.4 Health Sector Development

(1) RBM is a social movement for better health

RBM, as a social movement for better health, should focus on providing access to the poor who suffer from malaria the most. Therefore, RBM should be a part of poverty alleviation action. The community and the private sector would have the opportunity to play important roles in the delivery of effective anti-malaria interventions, particularly in primary prevention and treatment of malaria. As a consequence, RBM should also be part of the changing role of malaria control programme – from being a delivery agent to leadership, coordination and regulatory function. Quality control and standard setting should remain the responsibility of the government.

(2) Mainstreaming RBM

The RBM initiative has recognized the need to adhere to principles of decentralization and local ownership of health programmes as basic principles in health sector development.

RBM should be an integral part of health sector development and work through the primary health care (PHC) system for effective action against malaria. This will involve transfer of resources, delegation of authority to district or sub-district levels and empowerment of local authorities and communities to identify needs and priorities. Strengthening of health sector development would facilitate mainstreaming of RBM and benefit other health programmes.

(3) Strengthening district health system

RBM's managerial capacity should be the lead in developing district action plan in line with the package concept of health care. Information, education and communication (IEC) activities should be intensified for both the people and providers at all levels, and decentralized planning based on partnerships should lead to proactive action and optimal utilization of resources.

3.5 Community Mobilization

The programmes should address health issues arising through enhanced community awareness and knowledge about disease prevention, diagnosis and treatment, as well as through local operational research activities. Bottom-up planning should be the core principle where decision-making and planning capacity will be based at the level where the problem occurs i.e. local-level planning, disease surveillance, monitoring of programme activities, resource allocation, IEC, training, vector control etc. Epidemiological information would be analysed at the local level for proactive action in developing evidence-based planning. However, national-level competence and coordinating functions should be retained or developed at the central level during the process of decentralization and thereafter.

3.6 Advocacy

Creation of a forum for joint advocacy and resource mobilization as a common ground to bring malaria to the forefront in health sector development. The forum would institutionalize a mechanism for maintaining partnerships aimed at agreed joint action plan and implemented in a concerted effort, exploring the possibility of redirecting some resources and giving access to those who need them.

4. REGIONAL SUPPORT NETWORKS

4.1 The Assets

The SEA Region has a strong infrastructure available for the implementation of RBM, as for example:

- indigenous production of insecticides, drugs, mosquito nets, equipment, transport;
- training facilities for all categories of health staff and other functionaries;
- experienced technical personnel in malaria control and related areas;
- well-developed grassroots health infrastructure
- advanced centres of basic, applied and field research;
- a network of educational and research institutions, colleges, universities;
- W H O collaborating centres;
- indigenous resources to sustain the RBM initiative.

4.2 Support Networks

(1) Technical support

To countries to address core issues, review, monitor and act as channel of information on priority issues such as:

- drug policy and monitoring drug efficacy;
- monitoring and evaluation of surveillance systems and epidemic preparedness and response;
- disease transmission control, and
- advocacy through media communication and country partnerships.

(2) Regional network for rapid responses

In case of emergencies/epidemics, regional support network provides assistance with emphasis on surveillance system, reviews of epidemics, dissemination of information, and provision of emergency supplies.

(3) Strategic investments

New areas of strategic investment should be closely linked with partnership initiative as to ensure concerted and sustainable efforts for RBM. The areas identified include the following:

- Regional networks that will support multi-centre studies and fund-raising advocacy to facilitate vaccines and new drugs development research and operational research. Health policy research, such as socioeconomic research on malaria integrated intervention and sustainable strategies; health indicators (incorporating malaria) for situation analysis and rapid response incorporating information technology; GIS (and possibly remote sensing) for analysis of the epidemiological and ecological situation, including mapping of drug resistance based on monitoring therapeutic efficacy.
- Utilization of health impact assessment in projects and mitigating strategies in the improvement of health and research on reforms in health systems for planning and implementation of RBM.
- There is an urgent need for more coordinated work in search of new drug with partners e.g., the industry, UN Agencies (WHO, UNICEF) World Bank, research organizations, etc. WHO should take the lead in negotiation with RBM partners in the industry to convince them to make available the techniques at an affordable price for developing countries.

5. INITIATING RBM ACTION AT COUNTRY LEVEL

National commitment for action against malaria would indicate RBM is instrumental in reducing inequity and promoting human development through mobilization of all resources.

Policy-making. National governments determine the goals, strategy, organization and operating procedures for RBM. RBM involves a situation analysis and strategy development, a process led by national authorities and involving partners. Action against malaria mainstreams into the health system with partners in RBM providing support within the context of sectorwide approach to health development. RBM should now be seen as a social movement for better health. Instead of being sole implementers, the National Malaria Control Programme should *assume a new role* of leadership, regulation and coordination.

Working with partners. Working in partnership for common objectives, using agreed strategies in a transparent manner with emphasis on local solutions to local problems. Within the context of these principles, attempts are made to ensure that partners have sufficient flexibility and autonomy to make the fullest possible contribution in a concerted effort to RBM. WHO will establish a functioning partnership with a range of organizations at global, regional and country levels. This will result in the development of a sustained capacity to address malaria (and other priority health problems). WHO's partnership in RBM will include malaria endemic countries, UNDP, UNICEF, World Bank, bilateral development agencies, nongovernmental organizations (NGOs) and the private sector.

Improve access to health care. Wider distribution of anti-malarial (first-line) drugs through public and private sectors would reduce morbidity and mortality due to malaria. Efforts to educate communities and individuals in the home treatment of malaria and on strengthening support and supervision of treatment services, collaboration with professional associations for quality assurance would prove rewarding and should be encouraged under

RBM. Realizing that malaria is the disease of the poor who have little access to health services, RBM should be considered as one of the priority areas in providing health care to the poor. In this case, provision of health services should be a package delivering care to other common diseases affecting local communities, such as anaemia, acute respiratory infection, diarrhoea and intestinal worms, and it should be linked with other health programmes such as MCH, IMCI, school health, health education, etc.

Selective vector control. Working with partners in implementing selective vector control towards an integrated approach should replace traditional routine residual spraying operations. Chemical control remains, nevertheless, the mainstay in this concept.

Forum for advocacy. RBM advocacy for change in the organizational set-up should address the new role of district health managers. Emphasis should be on multi-sectoral involvement and partnership development, community participation, local leadership for participatory planning and supervision, political support e.g. Panchayat, Union Parishad, other local government bodies, village development committees, etc., coordination of NGOs and other social organizations, including the private sector. The forum represents all possible leaders, e.g. political, administrative, technical, traditional, corporate, private sector; interested groups, e.g. trade unions, environmentalists etc., and partners, e.g. international, national, regional, provincial, district and local levels. At the district level, this forum may be called District Malaria Society or District Health Forum etc., while at the national level, it may be called Inter-ministerial Coordinating Committee or RBM Core Group for Partnerships.

6. ROLL BACK MALARIA ACTION PLAN

The strategic action plan for the SEA Region would comprise three phases:

(1) Preparatory phase (Till the end of December 1999)

- Development of guidelines for implementation of the strategies
- Political commitment at all levels
- Formulation of national strategies and development of partnerships plan
- Situation analysis leading to the selection of districts for the piloting of RBM
- Establishment of resource networks to address the core issues in malaria.

(2) Piloting phase (1999-2001)

- Situation analysis of the districts and identification of problems at the local level
- Time-bound action plan for RBM
- Advocacy for RBM, identification of partners, assignment of responsibilities and resource mobilization
- Integrated malaria control in synergy with health development
- Assessment and lessons learnt.

(3) Operational phase (2001-2006)

- A five-year RBM action plan to be developed by countries involving all partners, vital inputs to come from the pilot phase and resource networks.

7. POINTS FOR CONSIDERATION

(1) National commitment to support the new role of malaria control programme

In the context of RBM, the malaria control programme will assume a new role of leadership, regulation and coordination instead of being the sole implementer and delivery agent. To meet these objectives, Member Countries need to develop sustainable broad-based partnership with the private sector, health-related industries, medical associations, teachers' associations, local governments and other related civil societies as well as other potential partners, including donors.

What new policies are needed to sustain effective partnerships for RBM?

(2) A social movement for better health

RBM should draw its strength by mainstreaming malaria control activities as part of health sector development. RBM should facilitate the provision of health care to the poor and those who have little access to health care. Priority will be on the delivery of the package of health care to malaria and other common diseases and linked with other health programmes. The way in which the health system tackles malaria – particularly among poor people – is the key element of the assessment of that system's overall performance.

What changes may be needed in policies and mechanisms within the ministry of health to facilitate mainstreaming of RBM in health sector development?

(3) Capacity building

Capacity building needs to be accorded the utmost priority. The RBM approach to capacity development should ensure that malaria expertise should be available, wherever it is needed, throughout the health sector. WHO's assistance can be explored to support training activities to create a core of motivated individuals with upgraded skills who would, in turn, impart training to health personnel at different levels of health care.

How can the required human and other resources be mobilized?

(4) Strategic investment

The development of appropriate technology would strengthen RBM implementation. New areas of strategic investment should be evidence-based and closely linked with partnership initiative to ensure concerted and sustainable efforts in RBM.

How can partnerships in strategic investment be initiated?

(5) Regional support network

The available resources and expertise in the Region should be fully utilized. In order to promote regional exchange of experience and information, there must be ways to create a network of expertise among Member Countries to address priority issues, such as drug policy and monitoring surveillance systems, epidemic preparedness and response, disease transmission control and advocacy through media communication and country partnerships.

Under what mechanism could WHO foster regional support?



世界衛生組織執行委員會決議

قرار المجلس التنفيذي لمنظمة الصحة العالمية

RESOLUTION OF THE EXECUTIVE BOARD OF THE WHO
RÉSOLUTION DU CONSEIL EXÉCUTIF DE L'OMS
РЕЗОЛЮЦИЯ ИСПОЛНИТЕЛЬНОГО КОМИТЕТА ВОЗ
RESOLUCION DEL CONSEJO EJECUTIVO DE LA OMS

103rd Session

EB103.R9

Agenda item 3

29 January 1999

Dis-7.

Roll Back Malaria

The Executive Board,

Reaffirming the impact of malaria in constraining human development, and appreciating the innovative concepts and operational mechanisms in the Director-General's report on Roll Back Malaria,¹

RECOMMENDS to the Fifty-second World Health Assembly the adoption of the following resolution:

The Fifty-second World Health Assembly,

Having considered the report of the Director-General on Roll Back Malaria;

Concerned that the global burden of malaria is a challenge to human development and a significant cause of poverty and human suffering, particularly in the poorest nations of the world;

Mindful of the efficacious tools currently available to reduce this burden, and the potential for their more effective use within malaria-affected communities;

Welcoming the decision by the Director-General to establish a Cabinet project to support rolling back malaria which works across the Organization;

Noting that Roll Back Malaria represents a new approach promoted by WHO, in which all concerned parties are encouraged to work in a coordinated partnership, united by common goals, consistent strategies and agreed methods of working, and that Roll Back Malaria is serving as a pathfinder in bringing these concepts into operation in relation to other international health issues;

Commending the key features of the new approach, namely, increased focus on the needs of people at risk, better response to those needs with evidence-based action, greater use of existing tools, their full integration into the health sector as a horizontal programme, and innovative public-private partnerships to develop cost-effective products and tools in view of the emergence of drug and insecticide resistance;

Appreciating the strong commitment to Roll Back Malaria from several heads of State, the Administrator of UNDP, the President of the World Bank, the Executive Director of UNICEF, and

¹ Document EB103/6.

directors of other development banks, foundations and bilateral assistance agencies, expressed when the global partnership was established in December 1998,

1. ENCOURAGES Member States to reduce malaria-related suffering and promote national development in a sustained way, by rolling back malaria and preventing its resurgence or reintroduction, by:

- (1) engaging a wide range of personnel and institutions involved in health systems, disease control, and research, with representatives of civil society, the private sector, development agencies and other sectors;

and, where relevant, by:

- (2) ensuring that sufficient resources are available to meet the challenge of rolling back malaria;
- (3) establishing and sustaining country-level partnerships to roll back malaria within the context of health sector and human development;
- (4) utilizing relevant technical expertise that exists within countries and regions in an effective manner;

2. REQUESTS the Director-General to draw on the whole Organization in supporting Member States by:

- (1) promoting harmonized strategies and encouraging consistent technical guidance for efforts to roll back malaria;
- (2) working with them as they establish criteria for success in rolling back malaria, and monitoring progress of country and global efforts within the context of health sector and human development;
- (3) promoting international investment in cost-effective new approaches and products through focused support for research and for strategic public and private initiatives;
- (4) brokering the technical and financial assistance that is required for success;

3. REQUESTS the Director-General:

- (1) to report regularly on progress of the global Roll Back Malaria partnership to the Executive Board and the Health Assembly, stressing the contribution that Roll Back Malaria makes to the reduction of poverty, and reviewing the extent to which the partnership serves as a pathfinder for effective joint action on other international health issues;
- (2) to promote the aims and outcomes of the Roll Back Malaria partnership in relevant intergovernmental bodies, organizations of the United Nations system, and - when appropriate - other bodies committed to equitable human development.

Ninth meeting, 29 January 1999
EB103/SR/9



RBM/World Bank

The World Bank Group strongly supports the *Roll Back Malaria* global partnership. Malaria has a major impact on social and economic development. Consequently, the Bank has committed to:

- ▶ Increase World Bank investments in malaria control and research
- ▶ Facilitate resource mobilization to support RBM
- ▶ Enhance a more effective involvement of Departments of Finance, Economics, Infrastructure, Agriculture and others to become full partners in reducing malaria as an economic factor
- ▶ Explore innovative finance mechanisms to deliver support
- ▶ Support research on the economic aspects of malaria
- ▶ Help establish private-public partnerships with industry on new malaria products.

Together with *Roll Back Malaria* partners, the Bank will actively pursue these activities through its country programmes and research agendas. Malaria must be reduced as a negative factor on macro-economic growth.



RBM/WHO Project

Countries and affected populations have identified malaria as a priority health issue. Activities will cut across WHO programmes and regions to:

1. *Support governments & partners*
 - ▶ Strengthen the health sector to better tackle malaria
 - ▶ Monitor the geographic spread of malaria
 - ▶ Measure results and outcomes of action
2. *Improve technical efficiency & capacity*
 - ▶ Build & support technical networks in affected countries
 - ▶ Invest in the development of new methods, tools and capacity strengthening through research networks and programmes.
3. *Collaborate and coordinate in order to improve resource allocation and utilization*
 - ▶ Local/national: promote concerted action by stakeholders
 - ▶ Regional: establish resource networks
 - ▶ Global: support partners for common action
 - ▶ Share information on malaria, programmes and resources.



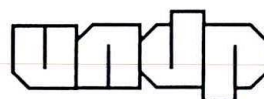
A worldwide partnership
to fight malaria, one of
the world's most
devastating diseases



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RBM/UNDP

Malaria has important implications for health and poverty. Effective responses will require broad-based support across sectors and the involvement of a range of development partners.

UNDP has committed to the following actions:

At country level

1. Create capacity for integration of malaria-related action into national poverty eradication policies, strategies and programmes.
2. Strengthen, through Sustainable Human Development activities, the balance of action among state, private sector, civil society and communities themselves, to ensure that people have access to basic social services and productive assets.
3. Work through the UN Resident Coordinator system to encourage collaborative programming in support of intersectoral action and resource mobilization.

At regional/sub-regional levels

1. Support links between Sub-regional Resource Facilities (SURFs), providing technical referral services to country offices and the *Roll Back Malaria* resource support networks.
2. Collaborate with WHO Regional Offices to strengthen capacity of relevant regional inter-governmental organisations (ISO) in support of *Roll Back Malaria*.

At global level

UNDP is providing continuing support for the UNDP/World Bank/WHO Special Programme for Research & Training in Tropical Diseases (TDR), which has as a major focus the development of drugs and tools for malaria control and adapting research in local settings.



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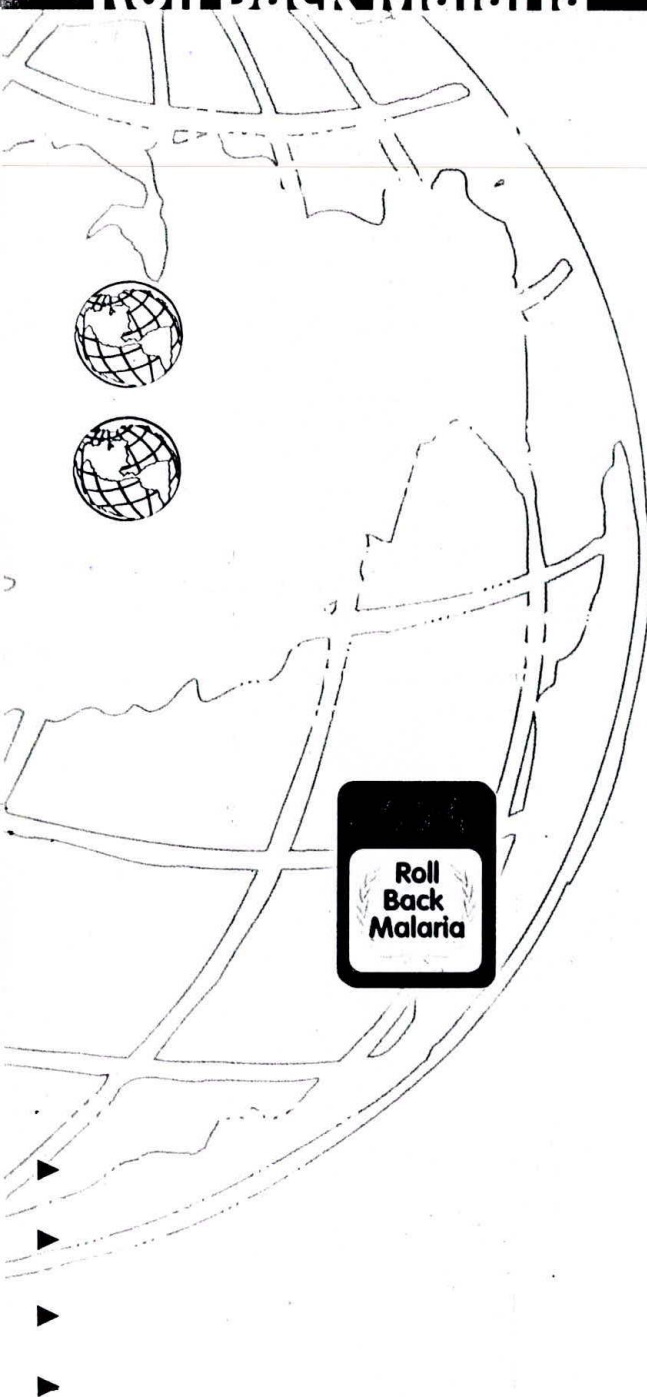
RBM/UNICEF

UNICEF will:

1. Provide support to intensified malaria control efforts via its country programmes.
2. Work with Government & NGO partners to:
 - Give special attention to reducing the terrible toll of malaria on young children and pregnant women
 - Further strengthen support for community-based and local action to improve health and nutrition
 - Focus on making insecticide treated mosquito nets available to all families that need them and on ensuring that every child with malaria has access to early and effective treatment
 - Mobilize leaders (community, district and national) to make effective malaria control a priority.
3. At international level, raise additional funds for country activities, and focus support on 10 of the most severely affected countries in the next two years.
4. Take lead responsibility for developing an impregnated bednet resource network.



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Guidelines on Community Mobilisation, Advocacy and Related Issues

Roll Back Malaria Initiative (WHO - SEARO)

Leadership

Rights approach to malaria control

- Rights to malaria free environment
- Rights to information on malaria
- Rights to early diagnosis and treatment
- Rights to low cost preventive strategies

Introduce malaria to CMs in meeting addressed by PM

Introduce malaria to SHMs in meeting addressed by CHM

Introduce malaria to SCS in meeting addressed by CCS/CHS

Introduce malaria to SHS in meeting addressed by CHM/CHS

Introduce malaria to Collectors in meeting addressed by CM/SHM

Introduce malaria in IAS training curriculum

Introduce malaria in State Training Centre programmes

Ensure area specific state plans in uniform format.

10th plan to focus on malaria.

Organise National Conference on malaria each year

Organise state workshops on malaria each year

Identify pool of experts/consultants/implementers

Strengthen District Malaria Societies/leadership of Collectors

HRD on malaria leadership

In priority areas/states to have special officer for malaria under CM

Broad based national, state district malaria committees.

Define time bound goals/objectives in a participatory manner

Develop National/State pool of trainers on malaria

Identify and develop WHO Collaborating Centres on malaria with segmentation

- Technology
- IEC
- Community mobilisation
- Research, Evaluation and Documentation

Develop web-site/malaria on line

Advocacy

Training in advocacy at different levels

Issues in advocacy

Practising national guidelines

Treatment of malaria

Insecticide use

Inter-sectoral participation

Engineers

- Dams
- House construction
- Environment pollution
- Stagnation
- Manufacturing air coolers

Agriculture

- farming

Scientific studies in traditional/herbal remedies

Local partners - District level and below

Participative process of malaria mapping of district

PHCs

Malaria workers

NGOs

BDOs

Panchayat leaders

MLAs and MPs

Plan of action for district under leadership of Collector/District Magistrate/Commissioner

Plan of action at Block level/municipal levels

Same as above

Health workers

Health inspectors

Opinion leaders

Develop simple qualitative/participatory methods of planning and monitoring

Define role of panchayats in malaria control

Define operational problems relating to malaria control

List all panchayats block-wise - malaria/No malaria

List of DDC/FTD/MLV

Criteria for DDC/FTD/MLV

Selection of DDC/FTD/MLV

Training of DDC/FTD/NLV

Support - procedure of providing travelling expenses

Clear agreement with panchayat - MLV

Volunteers

Not government staff

Special project

Time bound

Travel expenses based on slides/frequency of travel

Likely independent evaluation

Role of NGOs/VOLAGs

Diagnosis

- Those with microscope and trained technician
- Train microscopists for those with microscope and no lab technicians
- Train smear technician where no microscope.

Treatment

Establish DDC/FTD

Facilitate/support MLV

Training NGO personnel in malaria treatment

IEC/Education for health

- Participate in preparation/modifying messages.
- Educate community using appropriate strategies
- Promote personal protection measures.

Vector Control

Take up anti larval measures

- Avoid water accumulation
- Larvicides

Take up bio environment measures

- Larvivorous fishes

Educating farmers on methods that prevent growth of mosquito larvae.

Motivating people to accept spraying in areas where decided and supporting spray team.

Support spray team as appropriate either facilitating or helping in spraying.

Programme Implementation

To represent on district/block level committees

Capable NGOs to be involved in evaluation and monitoring

Capacity building of NGOs

Developing NGO resource centres for malaria control

Role of Private Practitioners

- GPs, RMPs and other unregistered practitioners to be utilised in malaria control
- CME programmes for allopathic doctors using uniform modules with minor local variation
- Communicate malaria treatment guidelines through professional journals, newsletters
- Pamphlets, booklets and handouts to be distributed to private practitioners

School Health Campaign

- Malaria month programmes
- Distribution of messages on malaria
- Anti malaria day in June
 - Specific activities
 - Fever camps in schools - children to promote in community
 - Environmental cleanliness
 - Avoiding collection of water around schools
 - Short anti malaria programme in schools
- Essay contests in schools
- Elocution contests in schools
 - Block level - 1st week
 - District levels - 2nd week
 - State level - 3rd week
 - Natural level - 4th week
 - (Prizes of good value)
- Building malaria knowledge into school good value text books
 - Biology, Science, Economics, Maths
- NSS camps on malaria
- Special strategies for highly endemic and inaccessible areas

RESOURCE NETWORKING

Network of funding agencies

Network of implementing agencies/Human resources

- Programme planners
- Community mobilisers/organisers
- Behaviour change agents
- Data management personnel

Network of Research Institutions

- Technology
- IEC
- Community mobilisation
- Development studies/malaria

Network of experts/consultants

Network of key/varied/Govt. officials

NGO malaria network

IEC

There is a need for change in IEC strategies and sequencing

- Preparation of Acceptable messages with area specific variations if necessary

- Awareness creation phase

- TV spots/News interval/DD - others
- Newspapers
- Malaria month programme
 - well planned
 - better co-ordinated
 - theme each year
- Wall messages
- Political support

- Knowledge creation phase

- Posters
 - with all messages
 - with key individual messages
- Pamphlets
- Flash cards
- Booklets
- Video for TOT - Master copy - encourage free copying

- Attitude change phase

- Video dramas - DD
- Video films - Cable TV
- Private TV producers
- Street theatre
- Through religious heads

- Practice change phase
 - Support by PHC - with proper logistics/personnel
 - Support by NGOs
 - Support by private practitioners
- Increase budgets for IEC commensurate with plans
- Tendulkar, Kapil Dev - to give short talk/message on malaria

Short news write up for all professional journals.

District level malaria programme with press conference - Collectors

Elimination of Breeding Places/through community action

- Incorporation into
- Agriculture department
 - Irrigation department
 - Water/sanitation department
 - Fisheries
 - Architects - water tank design
 - Engineers/construction - Air cooler construction

Social marketing

Determine

Product - ITMN

Price

Process

Purchase

Treatment

Re-treatment

Storage

Washing

Promotion - IEC

Decide Acceptable

Incidence or level of adoption - how many

Spread of adoption - how fast

Duration of adoption - how long

Logistics

Ensure availability of product

Promote purchasing environment

Packaging

Neatness
Attractiveness

Confirm target audience - who should buy
Provide correct information on treatment/re-treatment
Clear myths and misconceptions
- What about safety for children - ?
- If children chew net - ?

IEC

- Knowledge
- Practice changes - use nets
- Value changes - Treated > Untreated

Marketing

Market segmentation
Free
Subsidised
Full charge
Marketing strategies - channels
Influencing channel members

Research and Development

- Malaria forecasting based on known weather patterns
- Mosquito patterns - entomology
- Effectiveness of Malaria Link Volunteers
- Simplified community based reporting and monitoring systems
- MIS - malaria specific
- Rapid Assessment Procedures in malaria
- Simple research/study designs for implementation by grass root level institutions
 - PHC/NGO
- Identifying more grass root level Health institutions/NGOs to conduct research -
in addition to larger institutions
- Organise meeting of research institutions

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ROLL BACK MALARIA

13 August 1999

This is the first in a series of notes prepared for members of the Global Partnership to Roll Back Malaria by the Roll Back Malaria Project in the World Health Organisation.

RBM Action at Country Level: the inception process

Founding partners:



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1. Introduction

Malaria is increasingly recognised as a serious development issue.

There is evidence of a worsening global malaria situation. Malaria mortality rates in Africa are rising. The malaria parasite is increasingly resistant to commonly used antimalarial drugs. New epidemics are reported – some of them in countries that have, until recently, been free of the disease. In many countries, the resources of malaria control programmes are stretched to the limit. Malaria contributes to widespread human suffering, particularly among the poorest billion people in the world. It is a major constraint to economic and social development.

The global initiative to Roll Back Malaria was launched in May 1998.

It offers a great opportunity for joint action to tackle the threat of malaria for human development. It is vital that we seize this opportunity now and work for the global goal of the initiative - to halve the global malaria burden by the year 2010.

Roll Back Malaria builds on past experiences.

The foundation of Roll Back Malaria is a succession of national and international initiatives which have heightened the profile of malaria as a development issue. Roll Back Malaria provides a new opportunity for the thousands of malaria control personnel who have worked hard, often under very difficult circumstances, and without recognition, to tackle malaria and its consequences in recent years. It draws on the results of painstaking research in the last decade.

Roll Back Malaria belongs in a wide health sector and development context.

The initiative to Roll Back Malaria will benefit from opportunities offered by the reform of health sectors so that they better tackle priority health issues. It benefits from development partnerships that are committed to seeing an absolute reduction in poverty over the next few decades. It recognises that communities are the key actors in rolling back malaria, and that national authorities – and their political leaders – are in the lead in deciding, and following through, actions to roll back malaria. It recognises the need for continued investment to develop new interventions and products for more effective action to roll back malaria.

A group of partners is taking forward the Roll Back Malaria initiative.

The President of the World Bank, the Executive Director of UNICEF, and the Administrator of UNDP agreed to join the WHO's Director General in October 1998 to found the **global partnership to roll back malaria**. Each organization agreed to contribute to the global goal within the context of its mandate. A broader group of partners came together in December 1998 and consolidated the roll back malaria global partnership. Among the participants were governments of countries affected by the disease, other donor agencies, non-governmental organizations, international private sector representatives and research groups. Since then alliances between partners – particularly UNICEF, WHO, the World Bank and UNDP - have become strong and effective, at country, as well as headquarters levels.

WHO's participation in the initiative involves its country, regional and headquarters staff, co-ordinated by a Roll Back Malaria "Cabinet Project".

A time-limited special project has been set up under the direction of the WHO's Headquarters Cabinet to encourage a coherent WHO involvement in the partnership. A strategy and workplan for WHO's contribution have been developed, covering the activities of groups within WHO Headquarters, regional and country offices. The preparatory phase for the cabinet project will last until December 1999, with implementation between 2000 and 2004.

Roll Back Malaria in Africa:

The WHO Director General and the Regional Directors of WHO's African and Eastern Mediterranean regional offices have proposed the spearhead for efforts to Roll Back Malaria should be in Africa. Existing WHO initiatives for malaria control in Africa will be taken forward as *Roll Back Malaria in Africa*.

2. Critical Concepts of Roll Back Malaria

2.1 New opportunities to Roll Back Malaria

Recent applied research has demonstrated that a range of available interventions, when properly used, are highly cost-effective in reducing the malaria burden within poor communities. These include

- early diagnosis and prompt treatment of malarial illness, with antimalaria drug combinations in some situations;
- the use of insecticide treated materials – including bed-nets – in the home;
- routine malaria prophylaxis or intermittent treatment during pregnancy;
- surveillance, prediction of, and rapid response to epidemics;
- widespread public awareness about malaria, its consequences, and ways in which they can be avoided.

Up to now, many of these interventions have not been used to their full potential. A more intensive effort to make them widely available to all – including poor communities – would yield extra-ordinary benefits. This will involve effective partnerships between all concerned to promote better health and reduce the burden of malaria.

2.2 The six key elements of the strategy to Roll Back Malaria

The six elements of a strategy to Roll Back Malaria have received widespread support. These build on the WHO global malaria control strategy, endorsed in Amsterdam in 1992, with its emphasis on 1) effective management of malaria including malaria outbreaks ; 2) rapid diagnosis and treatment of those who are ill; 3) multiple and cost-effective means of preventing infection; and 4) focused research to develop and test, and introduce new products. It includes two additional elements: 5) a well co-ordinated movement through stronger capacity to health sector and community-level effort, and 6) a dynamic global partnership supported by a coalition of partners working within a common approach. These elements need to be taken forward within an enabling environment of strong in-country institutions and cross-sectoral collaboration.

The Roll Back Malaria Strategy in detail

Element 1: Effective Management	<ul style="list-style-type: none"> <input type="checkbox"/> Information about the malaria situation, and people's needs, is used by public health authorities to design and manage responses. <input type="checkbox"/> Regions and populations at risk of malaria epidemics are identified, and responses are prepared, with the help of climate forecast and other data. <input type="checkbox"/> Families and community members are able to understand the malaria disease and take appropriate and timely action to manage it.
Element 2: Rapid Diagnosis and Treatment	<ul style="list-style-type: none"> <input type="checkbox"/> New, rapid, easy-to-use diagnostic tests are used in situations where malaria is endemic and effective microscopy cannot be made available. <input type="checkbox"/> Pre-packaged effective drugs are accessible to parents and caretakers to enable a quick response to malaria in children. <input type="checkbox"/> Quality health care services are accessible enough for those who need professional care. <input type="checkbox"/> People with severe malaria are referred to centers offering effective case management. <input type="checkbox"/> Anti-malarial drug resistance is monitored and action taken to ensure that health workers treat patients with effective drugs (including short course combinations when relevant).
Element 3: Multiple Prevention	<ul style="list-style-type: none"> <input type="checkbox"/> People at risk of malaria infection access and use insecticide-treated mosquito nets, and other means of personal protection. <input type="checkbox"/> Mosquito densities are reduced through the right mixes of environmental, biological and/or chemical methods for specific local situation. <input type="checkbox"/> Mosquito resistance to insecticides is monitored to guide the choice of insecticides and the best strategies for their use. <input type="checkbox"/> Pregnant women at high risk of malaria infection take anti-malarial medication to improve the safety of their pregnancies
Element 4: Focused Research	<ul style="list-style-type: none"> <input type="checkbox"/> Health sector action to roll back malaria needs to be supported by operational research to investigate problems and adapt strategies. <input type="checkbox"/> Existing interventions – including care for people affected by malaria – become more effective through the application of new knowledge. <input type="checkbox"/> Private industry participates in developing new, effective products that will benefit poor people <input type="checkbox"/> A new, effective and affordable medicine to treat people with malaria is developed every five years through public-private partnership. <input type="checkbox"/> The development of an effective vaccine against malaria is accelerated through a co-ordinated international initiative <input type="checkbox"/> New, ecologically safe insecticides – that protect households without causing long-term harm – are discovered, tested and used.
Element 5: Well Co-ordinated Movement	<ul style="list-style-type: none"> <input type="checkbox"/> Efforts to roll back malaria are implemented in a way which contributes to sustainable and effective health care systems <input type="checkbox"/> Health systems take account of local situation when responding to the threats people as a result of malaria <input type="checkbox"/> National health services, private practitioners and local healers work together to respond effectively to malaria and other diseases. <input type="checkbox"/> Many organizations join in a synchronized effort to roll back malaria (including schools, community groups, local business, government departments and NGOs)
Element 6: Dynamic Global Partnership	<ul style="list-style-type: none"> <input type="checkbox"/> Decision-makers in governments of malaria-affected countries adopt health policies, strategies and plans that allocate sufficient financial, human and inter-sectoral resources to roll back malaria. <input type="checkbox"/> Groups active at the community level work together – as a movement for improved health and reduced malaria among people at risk. <input type="checkbox"/> National and community-level actions to roll back malaria are backed by a range of partnerships in which the government, the private sector, foundations, research and academic institutions, bilateral and multilateral agencies, NGOs and the media, have a stake. <input type="checkbox"/> Movements and partnerships are catalyzed by global advocacy efforts and adapted to local realities: they are based on best available evidence

2.3 Principles of Roll Back Malaria

- The Roll Back Malaria partnership is not a project or programme. It is a social movement that is part of broader societal action for health and human development.
- The RBM strategy builds on past experience, is evidence-based, and focuses on outcomes.
- Community and country priorities should drive actions to Roll Back Malaria.
- The interests of the people, particularly people in poor communities – and especially their children and women – are at the centre of the RBM movement.
- The RBM movement is supported by partners, who function independently but in concert: the partners contribute where they have a comparative advantage or interest.
- The RBM movement is about building and strengthening the capacity of health services to help communities tackle all illnesses that undermine their well-being.

RBM will involve a range of sectors – such as education, agriculture and water (irrigation).

3. Progress of the Preparatory Phase

The preparatory phase started during July 1998 and will be completed in December 1999. Some of the major achievements include:

- Launch of the Roll Back Malaria initiative jointly by the UNDP, UNICEF, the World Bank and WHO in October, 1998;
- Consolidation of the global partnership at a global partners meeting held December 1998;
- Regional meetings with countries of West, East and North, Central and Southern Africa, the Mekong, Central and South Asia;
- Consensus on the RBM concept and principles among all countries in these regions.

4. Essential Actions of the RBM Partnership

The essential next stage is for the Roll Back Malaria partnership to be effective within malaria-affected countries. A range of actions - at global and regional levels - will support the partnerships.

1. Initiate carefully planned processes to support consensus, establish partnerships and support effective action within malaria-affected countries;
2. Ensure that country and regional offices of different partner agencies (including WHO) have the capacity to support these processes;
3. Arrange for countries receive technical support, when they want and need it, in order to help develop in-country capacity to build on successes of the past and undertake appropriate action to Roll Back Malaria;
4. Mobilize commitment and resources from the global partnership to help countries prepare their RBM strategies and to finance them as they move from conventional malaria control programmes to Roll Back Malaria;
5. Implement a global advocacy strategy for roll back malaria;
6. Implement systems to monitor progress – at country, regional and global level;
7. Further develop the global partnership at annual meetings and other events;
8. Make strategic investments in research and other initiatives to develop effective new products for diagnosis, treatment and prevention of malaria.

5. Helping Communities to Roll Back Malaria

Many communities are already taking action to reduce malaria-related suffering. They are helped to do this by government, community-based organisations, research groups and private enterprises.

The Roll Back Malaria movement should **build** on what is working well, **increasing its impact** so that many more people benefit. Many Heads of State have already agreed to take forward action to Roll Back Malaria: national officials are involved in an inception process. The following steps – which are not always undertaken in a clear sequence – are likely to be needed.

The Ministry of Health will usually take the lead, looking for a wide range of other groups – inside and outside government – to help. If there is a National Malaria Control Program, it will be fully involved, working with other parts of the Ministry of Health. Other government departments, such as finance, local government and education will also be involved.

All partners that are active at country level should be encouraged to become involved in the inception process from the start - in particular UNICEF, WHO, WB,

UNDP, bilateral development agencies, regional banks (eg the African Development Bank), non-governmental agencies, research groups, private entities and media groups. The headquarters personnel of many of these organisations have already agreed to work in partnership at country level. Coordinating mechanisms for their health work may already exist in-country. Where possible, country representatives of partner agencies should work through these mechanisms to ensure that each agency – whether multilateral or bilateral, public, NGO or private - contributes to RBM according to its in-country comparative advantages.

The WHO country offices have critical roles in supporting the RBM implementation process. They have the potential of effectively functioning as a **catalytic hub** for the RBM country level partnership. However, for this to happen, the WHO Representatives need to be **adequately engaged** in the process and their offices **strengthened, managerially and technically**. This will require in-depth needs assessment of the Country Offices with a view of developing **an efficient decentralised management system** in such priority areas as human resources management, budget and financial management, logistics management, amongst others. Based on the results of these assessments, the regional Offices will be better poised to provide effective support to Country Offices on technical issues, partnerships, programme implementation and management.

There is frequently scope for **inter-country actions** to roll back malaria, particularly when malaria transmission is intense in border areas, and other health issues are being addressed by countries working together (eg. as in the Mekong Region and other situations).

It may be useful for partners to distinguish **political, institutional and programmatic** dimensions of the inception process:

- The political dimension is crucial because each country will drive its own movement to roll back malaria. This calls for building awareness, generating political support in country and encouraging commitment among key stakeholders, including donors
- The institutional dimension is important because different levels of government (national, regional and local) each have a role; stakeholders (NGOs, media and researchers) have important parts to play, and need to be able to work together effectively; public-private partnerships will be established or revitalized; transparent systems are needed to handle decentralised action and resources use
- The programmatic dimension starts from an appreciation of health sector and malaria control activities; it includes the planning and implementation of action to expand access to, and improve the quality of, health care delivery (including malaria activities), and defining a system to follow them up.

During the inception process, a clear statement about how different groups will work together to address these dimensions, and so help reduce the malaria burden, should be produced. This is referred to as the **intention statement** for action to Roll Back Malaria. The following sections outline a framework for action during the inception process.

Programmatic Dimensions of the Inception Process

- 5.1 Undertake a quick, but accurate, **analysis of malaria issues** within the context of wider health and development policies. The analysis should review the situation on health sector development and actions to roll back malaria. Involve people with malaria expertise in the analysis.
- Start with a clear appreciation of what is already happening – how malaria is affecting poor people, especially their women and children?
 - What is the strength of the information system? Can it adequately inform decision-making about malaria and other health issues? How can malaria risk maps be developed? Is an environmental assessment available?
 - Can people at risk of malaria access and implement relevant preventive measures? Can they access effective treatment promptly? What are the levels of drug resistance?
 - Are there systems for predicting and reacting to malaria epidemics? How well are they working?
 - How are people, civil society and government responding to the current health situation? (Consider access to and quality of health care delivery, including availability of medicines, community participation, private sector, and management issues). Is the response affected by civil disorder, conflict or natural disaster (floods, storm damage etc)?

In some cases this situation analysis may require systematic collection of relevant information. The WHO RBM project has developed guidance for situation analysis and for rolling back malaria in complex emergencies: this can be made available on request.

- 5.2 Look for **examples of sustained success** - from within the country, as well as from outside; use WHO and other agencies' experiences to help identify best practices.
- 5.3 Consider **options for action – for doing much more** - to help communities Roll Back Malaria successfully, through wider health sector action and inter-sectoral development. Define the basic health interventions needed by poor people: this will include interventions for the integrated management of childhood illness, safer pregnancy, malaria prevention and treatment, etc. Consider medium and short term plans for expanding access to, and quality of, health care, and for rolling back malaria. Identify short (2 year) and medium term (5 year) targets for action.
- 5.4 At the same time, **identify the people (and organisations)** who will be most involved in the effort to Roll Back Malaria. Include civil society and providers outside the public sector. Engage them in the analysis and planning work; **establish a consensus** about what needs to be done.
- 5.5 Identify the **resources** that can be used to Roll Back Malaria – from within the country, as well as from outside, recognising that these are not just resources earmarked for malaria: they will be provided for health sector development. Find out the existing human and financial resources available for rolling back malaria within the country. Consider how they are being used. Might

additional resources be available – from within or outside the country? How could they be mobilised? One way forward is to prepare an inventory of potential existing resources at country level, and ways to mobilize them more effectively. Consider the possibility of redirecting resources; consider ways in which current resources might be used more efficiently. Ensure that there are adequate skilled personnel available to use resources optimally

- 5.6 Establish a **broad partnership** of groups who are committed to joint action; encourage government to raise malaria issues during high level dialogue with donors and representatives of UN systems agencies; and establish how partners will work together effectively. Keep the partnership under the spotlight – ensure that the heads of delegations of development partner organisations are kept informed of progress
- 5.7 Produce a **statement of intent** for the partnership, indicating what will be achieved within five years, and milestones to be reached after two years; develop a **plan** for a two year period which shows how different groups will use the resources available to them to support community-level action to Roll Back Malaria, and what will be achieved with them.
- 5.8 **Mobilise** resources from partners, use them to **support** community-level action through health systems and efforts in other sectors, and **monitor** what is achieved against the milestones in the plan
- 5.9 **Establish and implement a system for monitoring and evaluation**; define indicators and mechanisms for monitoring and evaluation during the inception process, ensure that resistance to drugs and insecticides is monitored.

Political dimensions of the Inception Process

- 5.10 Build a **constituency for political support**:
 - engage all prominent figures (Head of State, entire government, senior political, religious and cultural figures);
 - stimulate debates in the national assembly;
 - encourage activities to mobilize societies around health issues and rolling back malaria at community level;
 - encourage politicians to demand information and commit themselves to getting results.
- 5.11 All this time, undertake high-level **advocacy**, with strong and accurate messages, to catalyse a national movement to Roll Back Malaria, ensuring that these messages are relevant to, and understood by, community-level groups. A strong and visible publicity campaign to launch RBM at country level may be needed early on. This will set the stage for people from all sections of the community to participate in the RBM process from the beginning. The WHO RBM project, and other partners, can help with materials – particularly with examples of what it being undertaken elsewhere.

Institutional dimensions of the Inception Process

- 5.12** National efforts to RBM should contribute to a reduced malaria burden AND benefits for the health sector as a whole. They should build on existing good malaria practice, and good practice in institutional development. **A wide selection of stakeholders needs to be involved** in analysis, strategy development and action so that these institutional issues can be properly examined.
- 5.13** Establish teams (or task forces, or committees) to take the work forward. Consider at least two teams.
- The first would be political, and involve the Head of State, government, political representatives, civil society; it would be heavily involved in advocacy work and catalysing the movement to roll back malaria.
 - The second would be technical, chaired by the Minister for Health or her/his nominee, with representatives from service providers, those who generate resources, other sectors, with a remit to plan health sector development activities, oversee their implementation and monitor their results.
 - A subcommittee of the technical body – the malaria control committee, including the national malaria control programme and malaria experts in the country, might be given responsibility for tracking the progress of actions to roll back malaria, and advising on any changes that may be needed.
- 5.14** Where possible, **build on teams that already exist** if they are able to take on the challenge of RBM action. They may be working on other aspects of health development (eg health sector reform, or the sector-wide approach). They may be able to prepare the national RBM effort; indeed RBM may provide an opportunity to energize these mechanisms. They may need additional capacity (in terms of time and skills) to plan and implement the inception process effectively.
- 5.15** **Identify the people who will get RBM action rolling.** A critical mass of “movers” is essential. These will be persons from within and outside government, from capital cities and local communities, and from different professional and business groups. They will be people with enough energy, skills, influence and ability to get people involved. They will maintain a focus on results. They will usually be busy people who will need to be persuaded that Roll Back Malaria is a good issue for them to take on. The “movers” should include representatives of development agencies wherever possible.
- 5.16** **Build Consensus through meetings of interested partners.** The building of consensus among key stakeholders is a critical part of the inception process at country level. An important step in the inception process is a meeting of interested persons and groups at country level convened by the Ministry of Health. This is usually described as the consensus building and inception meeting. It could involve representatives of Government departments, civil society, private sector and development partners. The purpose of the meeting would be, among others, to, build consensus and start establishing intentions for the national RBM effort.

5.17 Consider the institutional issues in Roll Back Malaria:

- What contribution does the national malaria control programme make? Is it integrated within wider communicable disease and public health services? How does the national malaria programme contribute to malaria-related action within **decentralized** health services?
- How are programmes such as the integrated management of childhood illness, safe motherhood, programmes for displaced people contributing to a reduced malaria burden?
- What contributions do existing community development and primary health care activities make to rolling back malaria?

In each case, how effective are these contributions? What are the gaps? To what extent are they influenced - in some districts or regions - by external factors, such as civil strife and conflict?

What is the potential for intensifying the impact of these efforts given current levels of human and financial resources?

How could funds be made available for an increased effort in malaria control within the context of wider health sector development?

5.18 Consider how to involve a wide range of groups in Roll Back Malaria action:

Involve groups beyond the public-funded national health service.

- Can private providers, traditional practitioners and NGOs do more?
- How well are research groups involved?
- Is there a place for more social marketing of preventive and treatment measures? How could it be supported?
- Is there a need to make more use of commercial channels to support RBM action?
- Are communities taking action to reduce the malaria threat within the context of other social movements for health?

Seek ways to build partnerships with groups that are ready to come on board. New kinds of incentives and contracting mechanisms may be necessary to work with these groups in enabling poor people to access the health care they need.

5.19 Consider practical ways in which the Roll Back Malaria effort can contribute to national health sector development

How could national efforts to Roll Back Malaria be designed so as to contribute to strengthening health sectors? What might this mean in practice?

- The malaria burden experienced by the people of a country is unlikely to be reduced in a significant and lasting way without a well-functioning health system. The Roll Back Malaria movement is not – in itself - taking responsibility for strengthening the health system. However RBM action should contribute to, and not undermine, this process.
- In malaria affected countries, health systems cannot be judged to be functioning well unless they have an impact on malaria. The way in which the health system tackles malaria – particularly among poor people - is a key element of the assessment of that system's overall performance
- RBM action should make a major contribution to health sector development through focusing on outcomes (enabling poor people to reduce their malaria burden) without reverting to vertically managed systems. Guidance on this issue is available from the WHO Roll Back Malaria project.

5.20 Consider the human resource capacity needs within the health sector for effective action to roll back malaria

Many countries report that they are not easily able to address Roll Back Malaria issues – particularly when the administration of health care is decentralised. The main reason for this is that they lack the people with skills, and time, to provide necessary inputs to technical and operational decisions about malaria action. Where the capacity is available, it is not always used to best effect.

In practice this may be reflected in the need for extra human capacity to ensure

- the proper prioritisation of Roll Back Malaria outcomes within Health Sector Development efforts,
- the definition of these outcomes, and desirable actions to achieve these outcomes, within the context of the malaria situation, resources available for health sector action, reviews and evaluations of what has previously been achieved through health sector action;
- a transparent and justifiable process for the allocation of human and financial resources for the achievement of these outcomes within the context of public health, curative care, health education or related efforts within the health sector,
- reviews of the effectiveness with which these resources are used,
- plans and actions for human resource development in relation to communicable diseases in general and roll back malaria in particular.

Capacities have to be available at national level, but also – in decentralised systems – at other levels where resources are allocated. In general, malaria

expertise has tended to be located within malaria control programmes, and not made available more widely. For effective action to roll back malaria, capacity should be available where it is needed - throughout the health sector.

WHO will work with partners to explore how Roll Back Malaria action can best be incorporated within sector wide approaches to health development.

6. Financial and Technical Support for the Inception Process

WHO, through the Roll Back Malaria project, can offer limited technical and financial resources to help countries conduct productive consensus building and inception processes, and seed-corn funding for action to Roll Back Malaria. It can also offer technical support with specific actions that are critical to the success of efforts to roll back malaria, as part of the wider effort to build capacity for RBM action. This is best provided when a country-level partnership exists, and partners are able to agree on the most appropriate inputs required of different partner agencies. Hence it is desirable that all partners – under the leadership of the national authorities – are fully involved in the inception process to the best of their ability. They should do their best to work together in response both to health sector development issues – including the roll back malaria effort – and acute worsening of the malaria situation difficulties associated with epidemics, population movements, instability and conflict, and/or climate variation.

7. Communication with the WHO RBM Project

The WHO RBM project operates to provide support to national RBM partnerships. WHO staff – whether at headquarters, regional or country levels, work as one team on Roll Back Malaria and similar health issues. Mechanisms to ensure efficient communication between the WHO country office, the regional office and the project HQ in Geneva, and with partners, are being worked out. At this time, all correspondence should be communicated by e-mail, fax or normal mail and pouch to the relevant regional office of WHO (Division of Disease Control, or equivalent). The RBM project works closely with other global health initiatives (Stop TB, Tobacco free, etc.) and there is value in exchanging experiences. It would be useful if the RBM Project headquarters in Geneva can be kept informed of progress in the country partnerships: of highlights as well as difficulties. Information will be fed back to partners regularly.

8. Request for Feedback

Many recipients commented on the first draft: we have attempted to take these comments into account. Please continue to comment on content, style, and subjects for future notes. We anticipate that notes will be issued every 4 months.

Dr David Nabarro, Manager, World Health Organisation Roll Back Malaria Cabinet Project e-mail: rhm@who.int

wr2907c

DISASTER INFORMATION

Dear friend,

You, your family and community have recently experienced the most distressing disaster, i.e., the earthquake. The horrific effect of this earthquake will be still fresh in your mind as well as in that of other affected like you. Help has been coming in from different quarters, to as many people as possible. The painful experience and its consequences are personal. The people around you would be reacting to this unexpected event in different ways. Many a time you will find yourself alone, not even able to talk about the disaster to others, especially since several of them too are not in a position to either help or comfort. We feel it is imperative and vital for you to recognise these feelings and personally make an attempt to recover in a healthy and positive manner.

Immediate (at the time disaster)

It is necessary to be aware of the various reactions during and after the earthquake. This will help you understand your emotions, your behaviour and the recovery methods adopted by yourself. The main aim of this understanding is to help you and others recover in a healthy and positive manner. During the earthquake each one of you have experienced the massive loss of either human lives or property or shelter or cattle, or all. The emotional reactions to the earthquake and the loss are often not recognised and understood by many as being natural and expected. Let us examine the immediate reactions of people to the earthquake.

• *Shock and or Disbelief*

Gujarat has often faced natural calamities like drought, cyclone, earthquake and floods. But this earthquake struck at the most unexpected hour. You would have been caught unawares - totally unprepared. But, in spite of this, you have worked hard to save your life as well as that of others. Similarly, there would certainly be other in your community who have gone through the same experience. However, some persons in the community would have reacted with shock and shown decreased activity. Another common emotional reaction is to feel that the whole event was not real but a bad dream, i.e. one of total disbelief.

• *Panic*

Panic at the time of undergoing very severe stress is common and normal. Hence for people to panic at the time of a earthquake is normal. Just as an example, imagine a large number of people entrapped in the rubble with a small space. It would only be natural that all of them will panic and try to get out at the same time causing a stampede.

After the Earthquake

• *Shock*

You find it difficult to believe that disaster has actually happened - that the earthquake has ripped through leaving behind so much death and destruction. All routine activities have come to a standstill due to the earthquake and this adds to feeling lost. The all round confusion further intensifies this.

RECOVERY MECHNISMS

Symptoms start decreasing in most people in a few weeks when they initiate some actions to reorganise and rebuild themselves. After a few weeks/ months, even though the memories of the disaster remain, they do not stop you from going ahead with your life.

HOW CAN YOU RECOVER?

To promote recover we suggest the following to be done:

At a Personal Level:

- ✓ **Listen** to authentic information about the earthquake.
- ✗ **Do not** believe in rumours that go around during such times.
- ✓ **Be together** with family members.
- ✗ **Do not** send women, children and the aged to far off places for the sake of safety as this separation can cause a lot of anxiety to them and you.
- ✓ **Be with** people from the same village, i.e. people you are familiar with, even if you are in temporary dwellings.
- ✓ **Get back** to a daily routine as soon as possible to make you feel that you are in control of the situation.
- ✓ **Make it a point to talk about the earthquake share your experience and feelings with** your family, your parents, friends, spouse, siblings, acquaintances. This will help ventilate/release your emotions.
- ✓ **Restart** activities that are special to your family like having meals together, praying, playing games, singing, etc.
- ✓ **Keep touching and comforting** your parents, children, spouse and the aged in your family. This will not only make you feel good but also make the other person feel the same.
- ✓ **Initiate and participate** in rituals like collective, grieving, prayer meetings or group mournings if you have lost a near and dear one. This will help you come to terms with the loss of the person.
- ✓ **Take part in rescue, relief and rehabilitation operations**, if you are not hurt or only slightly injured. **Work is a good tonic for healing.**
- ✓ **Keep in constant TOUCH** in case of a member of the family having to be shifted to a far off hospital or residence. Update him/her about yourself as well as find out about him/her. This gives a feeling of being cared for.
- ✓ **Take time everyday to relax and have a good time** by gathering together at a central place/point, playing kabbadi, reading, listening to music, visiting shrines, singing hymns, chanting prayers, reading scriptures.
- ✓ **Make time for yourself** and acknowledge and admit that you will not be always functioning at your usual level of efficiency for a few weeks/months.

At the Community level:

Immediate

- ✓ **Disseminate authentic information** about the disaster and the help available either by going around personally or using loudspeakers or posters/placards.
- ✓ **Organise groups for rescue operations.** **Help** to remove debris, shift people to safe place, help the disabled, and share food, water and medicines. **Identify** groups for each activity and a leader for each group. The whole village should be involved in planning rescue, relief and rehabilitation operations.
- ✓ **Listen to and encourage** other people talking about the disaster, etc.
- ✓ **Encourage** the group to focus on the special groups like the children, women, disabled and elderly.
- ✓ **Organise** people to present their needs and difficulties to the administrators in a collective manner.
- ✓ **Bring together** people of the community for **sharing of grief/community mourning.**
- ✓ **Organise self help groups** to procure aid and to discuss emotions associated with the disaster. Self-help groups should have people with similar needs. For example, people who have lost family members could join together to grieve and later work on it.
- ✓ **Organise weekly meetings to share information** and sing together.
- ✓ **Prepare yourself** for delays and difficulties.

In Future

- ✓ **Seek information** about help extended and organise groups to represent your village to seek help/aid.
- ✓ **Actively mobilise action** for reconstruction and rehabilitation work. Take care that this includes all aspects of a community to be disaster proof, where agriculture, electricity, health care, education, etc. are concerned.
- ✓ **Continue dialoguing** with government officials and NGOs for a persistent effort on relief and rehabilitation.

PSYCHO SOCIAL CARE BY COMMUNITY LEVEL HELPERS

INTRODUCTION

The recent disaster in Gujarat was brought about by a devastating earthquake. This is unexpected and unanticipated at this time. Thousands have either died or are reported missing and several lakhs have been rendered homeless. In addition, there has been extensive damage to all other property. **Along with relief, rehabilitation and the care of physical health and injuries, mental health issues need to be given importance.** As in other major disasters, the magnitude of mental health problems is enormous. Apart from material and logistic help, the suffering human being will require human interventions.

CARE OF PSYCHOLOGICAL PROBLEMS

Who is a Community Level Helper?

Any community when faced with a disaster of whatever magnitude, responds in its own way to the situation. One such response is the reaction of several local people or groups of people who immediately come forward to help in one way or the other in order to alleviate the situation. They are the Community Level Helpers (CLH). They are a vital link between the affected population and the helping agencies (individuals, Non-Governmental Organisations, Governmental Organisations).

At the early stages following disaster, most survivors are psychologically open and willing to talk about their experiences. This may change later into a defensive, non-cooperative attitude if time passes without attempts at providing help. Therefore, it is of utmost importance that survivors are encouraged to seek help and talk about their psychological problems as early as possible. This intervention will prevent the persistence of problems and development of further complications. **Remember, people do however talk about themselves when given an opportunity to do so.**

Psychological intervention can be provided to the family in the daily visits by monitoring and noting down information – all by the CLHs. Such visits are to be utilised for talking about the survivor's feelings and experiences, imparting health education, discussion of health problems, motivating individuals to hold group meetings, and organising educational activities.

- **No one who experiences the event or witnesses the event is untouched by it.**

Disaster, depending on the nature and magnitude can cause enormous loss to life, property and the environment of the area. Grief, sadness, anxiety, anger are common in such situations. Individuals find comfort and reassurance when told that their reactions are normal and understandable in every way. **Therefore, CLHs help to educate the survivors about common disaster stress reactions, ways to cope with stressors and available resources to respond to their needs.**

- **Disaster results in two types of trauma**

Disaster – affected population have **individual** and **collective trauma**. Individual trauma manifests itself in stress and grief reactions, while collective trauma can sever the social ties of survivors with each other.

- **Most people pull together and function during and after a disaster but their effectiveness is diminished**

A disaster survivor is confronted with multiple stressors. In the initial phases there is much energy, optimism and altruism. There is often a high level of activity with low level of efficiency. As the reality of losses becomes more clear, frustrations and disillusionment set in, leading to more stress symptoms. **This can impair the survivor's ability to make sound decisions and take necessary steps towards recovery and reconstruction.**

- **Disaster stress and grief reactions are normal responses to an abnormal situation**

Stress reactions and grief responses are common in disaster survivors. **Public information about normal reactions, education about way to handle them, and early attention to symptoms that are problematic has hasten recovery and prevent long-term problems.**

- **Many emotional reactions of disaster survivors stem from problems of living caused by the disaster**

Disaster disrupts all aspects of daily life resulting in practical problems like finding temporary housing, food, clothing etc. **Timely and appropriate relief and support measures are very vital to help survivors handle the disruption.**

- **Survivors respond to active interest and concern**

Survivors will usually be eager to talk about what happened to them when approached with warmth and genuine interest. Workers should not hold back from talking with survivors out of fear of intruding or invading their privacy.

- **Support systems are crucial for recovery**

The most important support group for individuals is the family. Workers should attempt to keep the family together and the members encouraged to be involved in each other's recovery. For those who are orphaned or have become single, support from other groups can be helpful.

Helping people help themselves

Listening

- ◆ **Look at the person while he/she is talking :** This indicates being interested in what is being said.
- ◆ **Respond occasionally while listening :** This makes the person speaking feel what he/she is saying is being understood and taken seriously.
- ◆ **Avoid interruptions :** Let the other person finish his/her thoughts. Do not interrupt unless there is confusion and the details are jumbled.
- ◆ **Be tolerant :** Do not prejudge or moralise or condemn.
- ◆ **Empathise :** Share the experiences of the other person as if they are your own. It is based on the sensitivity and ability to recognise when the other person is going through certain feelings or emotional experiences.

Ventilation : This process involves release of emotions and feelings. It is very important intervention and should be used as soon as possible after the earthquake.

WHAT SHOULD YOU DO?

- ◆ Listen carefully and attentively.
- ◆ Maintain eye contact.
- ◆ Acknowledge distress.
- ◆ Do not interrupt.
- ◆ Support by patting on the shoulders/hold the hand as they cry.
- ◆ Do not ask them to stop crying.

◆ Relaxation Exercises

Encourage survivors to undertake relaxation/breathing exercises regularly several times a day. This helps them gain control over their agitation and anxiety.

Instructions: The person should sit in a squatting posture and place his/her hands on the knees. Then take a deep breath, hold it for a few seconds and slowly exhale. Encourage him/her to do it for 5-10 minutes steadily and slowly. Repeat this at least twice a day.

FAMILY LEVEL

- ◆ the Family as a group to share the losses
- ◆ **Encourage** family members to contact relatives. This will help mobilise support and facilitate recovery
- ◆ **Rituals** like prayers, keeping the dead persons photographs, preserving the belongings of the dead person or persons
- ◆ **Encourage** the survivors to engage in meaningful activity as a family
- ◆ **Recreation** like listening to Radio, TV or visiting melas
- ◆ **Resume normal activities** of the pre-earthquake days with the family

- ◆ **Support each other at home.** Emphasise that the family should regularly undertake activities together at home

COMMUNITY LEVEL

- **Group mourning:** Grief resolution should occur at the personal, family and the community levels. Group Mourning is a process of mass grieving. It expresses solidarity of the grief-stricken community and facilitates unity and collective action. Such activities should be initially organised on a weekly basis, gradually on a monthly basis, and later annually.
- **Group meetings:** Group meetings are important activities where the community as a whole participates. This stimulates the people to think, and brainstorm about various themes for rebuilding the community.
- **Folk songs:** Singing of folk songs about the earthquake tragedy, its impact and them mourning. This helps people gather in a common place and share their grief.
- **Devotional songs:** Singing devotional songs like hymns/bhajans, etc. is helpful.

Consider referral to a mental health agency if the client:

- ◆ is depressed and shows agitation, restlessness, and paces up and down
- ◆ is a pathetic, immobile, unable to move around
- ◆ discontent
- ◆ mutilates him/herself
- ◆ uses alcohol or drugs excessively
- ◆ is unable to care for him/herself, e.g., does not eat, drink, bathe, change into fresh clothes
- ◆ repeats ritualistic acts

Consider referral to a mental health agency if the client:

- ◆ hallucinates – hears voices, sees visions, or has unverified bodily sensations
- ◆ states the body feels unreal and fears he/she is losing his/her mind
- ◆ is excessively preoccupied with one idea or thought
- ◆ has the delusion that someone or something is out to get him/her and the family
- ◆ is afraid he/she will kill him/herself or another
- ◆ is unable to make simple decisions or carry out everyday functions
- ◆ shows extreme pressure of speech – talk overflows

Tips to make you an effective community level helper

Dos:

- ✓ Visit families regularly
- ✓ Accept food or drinks like coffee or tea if offered
- ✓ Help survivors to get medical care or other help if needed
- ✓ Provide clear guidance about compensation or ways of getting it
- ✓ Provide practical help whenever necessary
- ✓ Facilitate networking among survivors
- ✓ Contact relatives (e.g., writing letter) and appeal to them to meet and support survivors

DON'Ts:

- ✗ Do not promise things you cannot do or things beyond your control
- ✗ Do not take decisions for them for e.g., marriage or money handling, etc
- ✗ Do not get upset with the behaviour of survivors. Sometimes they are unreasonably angry/blame you for causing trouble to them by your frequent visits, or at times they might be very demanding
- ✗ Do not miss appointments
- ✗ Do not overburden yourself with lot of work
- ✗ Do not take sides in family conflicts

PSYCHOSOCIAL ASPECTS OF DISASTER MANAGEMENT

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To
RRP
For Disaster File
RN
s/s

PSYCHOSOCIAL ASPECTS OF DISASTER MANAGEMENT

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Appendix I - Resources available for psychosocial interventions in disasters

Appendix II - Institutions which can provide inputs in training and research in the area of Disaster Mental Health

Appendix III – Information Manual on Psychosocial Care for Individuals

Appendix IV – Information Manual on Psychosocial Care for Community Level Helpers.

PSYCHOSOCIAL ASPECTS OF DISASTER MANAGEMENT

1. INTRODUCTION:

1.1 Disasters are of common occurrence. A simple definition of disaster is a "crisis situation in which demands far exceed capabilities" (Quarantelli 1985). Disasters cause severe ecological economic and/or psychosocial disruption and result in widespread damage and suffering. Occurrence of disaster, both natural and manmade have been steadily on the increase all over the world. It is estimated that one in four people will experience a traumatic event such as a natural disaster, internal conflict, war or violent abuse at some time in their lives (Larkin 1999).

1.2 The United Nations Disaster Relief Organization (UNDRO) recognizes that "the smallest and poorest countries are affected most severely by both natural and man-made disasters and the poorest and most disadvantaged members of a disaster affected community are likely to experience the most serious consequences" (UNDRO 1985).

1.3 The United States Agency for International Development estimates that in this century, from 1900 to 1986, there have been 2392 major disasters worldwide excluding the United States. Of these 86% (i.e. 2036) occurred in the developing countries, causing 42 million deaths and affecting 1.4 billion individuals. 78% of all deaths occurred in developing countries and 97.5% of all affected individuals were located in developing countries. The observed ratio between the number of affected individuals and the number of killed was only 2.9 for the developed countries while it was more than ten times greater (32.9) for the developing countries (US AID-1986). Therefore, disasters occur more frequently, kill disproportionately higher proportion of people and leave behind higher proportions of affected individuals in developing countries.

1.4 Psychosocial aspects of any disaster are in general poorly understood. They are often unrecognized and un-cared for. This is particularly true for India. A national workshop on psychosocial consequences of disasters held in Bangalore in 1997 noted with concern: "The current situation is characterized by lack of awareness among the public, high stigma among the population affected by disasters in seeking mental health care, lack of mental health professionals and infrastructure, lack of professional leadership and political unwillingness. In most situations the response has been ad hoc and short term. There are rarely any long term studies or interventions" (NIMHANS – 1997).

1.5 It is now generally well accepted that psychosocial consequences are widely prevalent among populations affected by various types of disasters. However, the psychosocial needs are generally seen as something too secondary to attract the attention of relief agencies, relief workers and governmental organizations (Jaswal 2000).

1.6 Even when mental health interventions are undertaken to deal with the psychosocial consequences of disasters, they are "unplanned, uncoordinated, sporadic and often a one time activity. Poor coordination, lack of transparency and hesitancy to commit to long-term endeavors hinders the adoption of mental health component into the developmental process during the rehabilitation phase" (Gandevia 2000).

1.7 There is an urgent need to recognize the importance of psychosocial consequences of disaster and develop a policy as well as a specific plan of action for psychosocial care of disaster affected population which can be integrated into the overall disaster management strategy.

2. PSYCHOSOCIAL REACTIONS TO DISASTERS

2.1 Historical aspects:

Both acute and long-term mental health and psychosocial consequences of intensely traumatic events have been recognized for nearly 100 years. Trauma related mental syndromes were first documented following wars. Although observations of "battle fatigue and "shell-shock" were made following the two world wars, it was the identification of trauma-related mental health consequences in Vietnam war veterans in the United States which helped in the clearer understanding of "reactions to severe stress". Documentation of mental reactions to the Holocaust and to a series of various types of natural disasters contributed to the growing recognition of trauma related mental syndromes. One of the earliest systematic civilian studies on the psychological reactions to disasters was carried out by Erich Lindemann during the early 1940s. He conducted his classic study on the survivors of a tragic night club fire in Boston in November 1942 which killed 491 persons (Coconut Groove night club fire disaster, Boston, Lindemann 1944). Much of the mental health interventions for disaster survivors carried out today, particularly for dealing with bereavement and grief are based on observation of Lindemann. During the past 2 to 3 decades, there have been a growing number of systematic research studies on the mental health consequences of disasters. The disasters whose consequences have been studied include floods, earthquakes, cyclones, ship wreck, nuclear disaster, terrorist bombing, ice storm, bush fires etc.

2.2.2 Different phases of psychosocial consequences following disasters:

The psychosocial reactions as well as the symptoms of distress and their intensity are different at different points in time after the disaster. Three discernible phases can be identified following a disaster as far as the psychosocial consequences are concerned. The first is during and immediately after the event. The intense emotional reactions which occur during this period may go on in the same manner for a period of 4 weeks or more. This 'acute stress reaction' is sometimes also referred to as 'disaster syndrome'. "The immediate reactions reflect the most horrifying dimensions of disaster and is related to severe physical injury, exposure to extreme danger, witnessing death of close ones or mass deaths and injuries, traumatic experiences of helplessness, hopelessness, separations and

the need to choose between helping others or fighting for ones own survival" (WHO 1982). The second phase is the period after the first month to about 6 months after the disaster. The third phase is the period after 6 months during which time some of the delayed manifestations of post-disaster stress may occur.

2.3 Frequency of psychosocial problem following a disaster:

A number of studies have been carried out in different parts of the world and following different types of disasters to assess the frequency and magnitude of mental health problems which follow disasters. Immediate as well as long term effects, and consequences on special groups of population such as children have also been studied. While various studies have suggested significant consequences, others have suggested either little or no major negative effects (Lima et al 1988). The variations in the magnitude of the problem reported by different authors may be related to a variety of factors such as the research methodology and sampling procedures adopted, criteria as well as method adopted for case identification, assessment and classification, timing of the study, characteristics of the disaster, social preparedness as well as other demographic background of the population etc. Workers in the field of disaster mental health hold different views about the nature and extent of mental health consequences. While many authorities believe that disasters represent catastrophic events which produce adverse psychological reaction to almost entire affected population, others suggest that the extent of the problem may be overestimated and that psychological problems due to the stressful event may appear only among people with a pre-existing vulnerability (WHO 1992). Some critics argue that reactions to disasters are normative and adaptive social responses which would undergo natural remission over time and so should not be medicalized. However, for disasters in developing countries, clinical observations, empirical evidence and research data indicate that psychosocial consequences are usually significant and hence should be handled promptly and effectively (Lima 1988, Jaswal and Gandevia 2000).

A 'disaster syndrome' represented by the immediate post-disaster reaction may be present in upto 75% of victims during the first hours or days after the event (Duffy 1988). During this period anxiety and anxiety related reactions may be extremely common. Levels of anxiety remain high in the early weeks. However, by about 10 weeks, there is usually a significant drop. Overall psychological morbidity tends to affect some 30 to 40% of the disaster population within the first year following the disaster (Raphael 1986). By the second year, the morbidity levels are lower but for some individuals exposed to certain type of disasters the symptoms may remain chronic. A review of 52 studies which analyzed the relationship between disasters and subsequent psychopathology showed that 7 to 40% of all subjects who were exposed to the disaster showed some form of psychopathology such as generalized anxiety, phobic symptoms, psychosomatic symptoms, depression and alcohol/drug abuse (Rubonis and Bickman 1991). Meta analysis of these studies showed a positive relationship between disaster occurrence and psychopathology. An increase of approximately 17% in the prevalence rate of psychopathology was noticed in the disaster population as compared with the prevalence rates in a pre disaster or control population (Rubonis and Bickman 1991).

2.4 Determinants of psychosocial reactions :

World disaster report (1996) states that "many factors may affect how an individual reacts to a traumatic event. The most important individual factor is the level of personal loss and the meaning of that loss. Death of a spouse or child will have a significantly greater meaning than loss of a home, career or personal possessions". Prior history of trauma, such as having survived the loss of another relative, previous disaster losses, job loss, or unresolved grief from other events may have an impact on disaster consequences as well as recovery from these consequences. Premorbid vulnerability as well as past history of mental illness/treatment are also important predictors of psycho pathology following disaster (McFarlane 1990). It is also known from several studies that in addition to background characteristics of the population, several disaster-exposure related as well as post-disaster variables could be significant predictors of various psychosocial consequences. Strong sense of self esteem, personal belief system which enhances one's ability to cope with stresses, perceived family support and a strong social support system, and religious affiliation are all factors known to modulate the incidence, pattern, course and outcome of psychosocial consequences of disasters.

2.5 Specific psychiatric disorders that may occur following disasters :

2.5.1 Acute stress disorder :

Immediately after a disaster, large number of people may experience symptoms such as shock, disbelief and numbness, sleeplessness, intense anxiety and fear, anger, various bodily complaints, anticipatory anxiety, frightening 'flashbacks' of the traumatic experience, nightmares, vivid memories of the terrifying moment of trauma, despair and grief. In some people, these symptoms may be more intense and significantly disabling. The syndrome is then referred to as 'Acute stress disorder'. According to the Diagnostic and Statistical Manual of the American Psychiatric Association (4th edition DSM IV), some of the important criteria for acute stress disorder are :- "The person should have been exposed to a traumatic event in which he/she experienced, witnessed or was confronted with an event or events that involved actual or threatened death or serious injury or a threat to the physical integrity of self or others resulting in intense fear, helplessness or horror". "Persons also suffer from symptoms such as subjective sense of numbing, detachment or absence of emotional responsiveness, reduction in awareness of the surroundings, persistent re-experience of the traumatic event by recurrent images, thoughts, dreams etc. flashback episodes, sense of reliving the experience, marked avoidance of stimuli that arouse recollection of the trauma, and symptoms of increased arousal such as difficulty in sleeping, irritability, poor concentration, hyper vigilance, exaggerated startle response and motor restlessness". The disorder usually occurs within 4 weeks of the traumatic event and causes clinically significant distress or impairment in social, occupational or other important areas of functioning.

2.5.2 Post-traumatic stress disorder :

Post-traumatic stress disorder (PTSD) is characterized by symptoms similar to acute stress disorder but lasting for more than 1 month. PTSD may begin several weeks or months after the exposure to disaster and if untreated, may run a protracted course. The symptoms of PTSD usually occur in 3 dimension namely, (i) re-experiencing the trauma, (ii) avoiding stimuli associated with the trauma and (iii) experiencing symptoms of increased autonomic arousal such as difficulty in falling or staying asleep, irritability or outbursts of anger, difficulty in concentrating, hyper vigilance and exaggerated startle response. It is estimated that around 15% of those exposed to disasters will develop PTSD. Although until recently PTSD was considered to be a purely psychological consequence of disasters, accumulating evidence indicates that it may have a strong biological component (Larkin 19990).

2.5.3 Bereavement and grief :

Grief refers to "the feelings and behaviours such as sadness, distress, anger, crying etc accompanying the awareness of irrevocable loss (not necessarily but including loss through death)". The term bereavement is used when the loss is through death. Following disasters there may be grief for the loss of loved ones, home, valuable possessions, livelihood etc. Factors influencing the manifestations of grief include the individual's personality, previous life experiences, past history of psychological problems, the significance of the loss, the existing social network and presence of other stressors. Usually grief reactions diminish in their intensity, gradually over a period of several weeks after the disaster. But, for some persons, grief may become chronic and may lead to severe depression.

2.5.4 Anxiety, Depressive and Somatoform Disorders :

Various diagnosable psychiatric conditions may occur following exposure to disaster. These include anxiety disorders, depressive disorders and somatoform disorders.

2.5.5 Alcohol and drug abuse :

Some follow-up studies of disaster affected populations have shown increased use of alcohol and/or other psychoactive substances resulting in substance use related problems.

2.5.6 Pre-existing psychiatric disorders :

Persons who are suffering from established psychiatric illnesses, those who are in remission and those who have recovered from previous illness may have greater vulnerability to develop psychosocial consequences following disasters. They may have exacerbation of their existing condition, relapse of episode or recurrence of previous symptoms. Alternatively, spontaneous improvements may even be observed. Persons with more severe forms of psychiatric illnesses and mental handicap may be neglected exploited or abandoned following disasters.

2.6 Consequences of disasters on populations with higher risk :

There are certain sections of the disaster affected population who have higher risk of developing various psychosocial consequences. These higher risk population consist of children, women, the elderly, and the disabled. The nature of the psychosocial consequences are similar to what occurs in normal adults (described above).

2.7 Effects on rescue workers :

It is quite common for rescue workers involved in a disaster situation to develop various psychosocial consequences. Workers may develop high levels of stress, may be overwhelmed by the magnitude of the disaster and the enormity of needs, and may experience feelings of powerlessness, helplessness and hopelessness. Studies have shown that exposure to dead bodies can be particularly stressful.

3 PRINCIPLES OF PSYCHOSOCIAL INTERVENTIONS IN DISASTER AFFECTED POPULATION :

The following principles of mental health care of disaster affected populations should form the basis of disaster mental health intervention plans and programmes at national, state and district levels. These principles were identified by the Substance Abuse and Mental Health Services Administration of the United States Department of Health and Human Services (SAMHSA 1994). The principles are relevant for disaster mental health care planning anywhere in the world including India. The principles are follows :-

1. No one who sees a disaster is untouched by it.
2. There are two types of disaster trauma – individual and community.
3. Most people pull together and function during and after a disaster, but their effectiveness is diminished.
4. Disaster stress and grief reactions are normal responses to an abnormal situation.
5. Many emotional reactions of disaster survivors stem from problems of living brought about by the disaster.
6. Disaster relief assistance may be confusing to disaster survivors. They may experience frustration, anger, and feelings of helplessness related to Federal, State, and non-profit agencies' disaster assistance programmes.
7. Most people do not see themselves as needing mental health services following a disaster and will not seek such services.
8. Survivors may reject disaster assistance of all types.
9. Disaster mental health assistance is often more practical than psychological in nature.
10. Disaster mental health services must be uniquely tailored to the communities they serve.
11. Mental Health workers need to set aside traditional methods, avoid the use of mental health labels, and use an active outreach approach to intervene successfully in disaster.
12. Survivors respond to active, genuine interest, and concern

13. Interventions must be appropriate to the phase of disaster.
14. Social support systems are crucial to recovery.

4. CURRENT MENTAL HEALTH INFRASTRUCTURE IN INDIA

4.1 Services for the mentally ill

The mental health infrastructure currently available in the country is grossly inadequate to take care of the estimated mental morbidity. The number of trained mental health professionals is just about 6000 for a country with a population of one billion. The number of Psychiatrists in the country is only 3500. Mental health services are provided through about 40 mental hospitals situated in different parts of the country and general hospitals psychiatry units situated in most medical colleges and large general hospitals in cities and towns. The total number of mental health care beds in the country is only about 25,000. During the past few years a private sector in the field of mental health care has been steadily growing. A limited number of non-governmental organizations are also active in the field of mental health care. There are few apex institutions carrying out service, training and research in the field of mental health such as National Institute of Mental Health and Neuro Sciences, Bangalore, and Central Institute of Psychiatry, Ranchi. Most of the mental health services currently available in the country cater to the needs of the urban populations and the rural areas are largely un-served or under-served.

4.2 District Mental Health Programme

To take delivery of mental health care to the periphery, a district model of mental health care programme involving the primary health care personnel has been developed. This programme consists of training the PHC personnel in basic mental health care and providing care to the rural populations through primary health centres and district hospitals. This programme was pilot tested in Bellary district of Karnataka state by NIMHANS. Now the Government of India has adopted this decentralised and community based health care programme for implementation in all the states in the country. Currently there are 22 districts in 20 states and Union Territories where the district mental health programme is being implemented with support from Government of India.

4.3 Disaster Mental Health :

Till about a decade and half back there was no expertise available in the country on mental health and psycho social aspects of disasters. However, mental health professionals were involved in making efforts to integrate mental health with disaster care, most notably after the Bhopal gas leak tragedy, Marathwada earthquake and the Orissa super cyclone (Srinivasa Murthy 2000). The expertise developed during these disasters can be utilized for disaster mental health planning in the country.

5. PSYCHOSOCIAL INTERVENTIONS IN DISASTER

5.1 Full integration with overall relief and rehabilitation activity :

Psychosocial interventions should be fully integrated with the overall relief and rehabilitation activities right from the beginning following a disaster. The mental health needs of the total population should be taken into consideration and population and population-based interventions should be undertaken along with clinic based, one-to-one interventions only for those persons in greatest need.

5.2 Goal and focus of psychosocial intervention – strengthening local resources :

The goal of psychosocial interventions should be to restore the capacity of communities to reconstruct and help themselves. The focus of such interventions should be on strengthening family and kinship ties and re-establishing spiritual, religious, social and cultural institutions and practices, that restore a framework of cohesion and purpose for the whole community (Silore et al 2000). Indigenous healing methods should be promoted. Local leadership structures should be fostered and community participation in local level decision making should be facilitated. Community action is known to influence the mind of the population and represents an effective means of preventing and controlling reactions of disquiet and desperation.

5.3 Provision of information :

Providing accurate and easily understood information about the disaster itself, accessing resources, and instructions on what to do in a variety of situations arising out of the disaster will contribute to reduction of stress of the disaster affected population. Pamphlets and brochures could be specially prepared and widely distributed. The mass media particularly the local media could be actively involved. Information should be provided in a coordinated and unambiguous manner. Conflicting information from official authorities and diverse interpretations of events related to the disaster from experts can seriously confuse the public. Lack of adequate and accurate information from authoritative sources can contribute to spread of unnecessary rumors. Provision of information and instruction gives people a feeling that the situation is under control and in that way, helps to control fear.

5.4 Help people to help themselves :

People should also be provided information about common emotional responses to disasters and how to deal with them. It is necessary for members of a disaster affected population to clearly recognize their feelings and emotions. Information on not only how to recognize ones emotions but also how to make personal efforts to recover in a healthy and positive manner and rebuild their lives should also be provided. People should be enabled to effectively learn coping strategies and promote their own recovery as well as recovery of others in their community. Simple information booklet in the form of a manual on psychosocial care for individuals has been developed by mental health professionals of National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore jointly with Action Aid India (Bharat et al 2000). This manual which was developed

following the Orissa cyclone is currently available in English language and will have to be appropriately adapted and translated for use in different settings.

5.5 Establishment of Support / Information Centre :

A walk-in information/support centre should be established at a convenient location for providing crisis intervention and emotional support to affected individuals, families who have lost some of their members, volunteer helpers and rescue workers. Individual as well as group based early interventions can be initiated at the centre for more severely distressed individuals and bereaved families. The centre can act as a meeting place for all affected individuals and families. Centre can also act as a place from where people can obtain authentic information about the disaster. Self help groups can routinely meet at the centre. There is difference of opinion about the blanket application universally of methods such as 'critical incident stress debriefing' which may be very useful as an early intervention in certain cultural settings.

5.6 Training in mental health for primary health care personnel :

Mental health and psychosocial care components should be integrated with primary health care services and the primary care personnel should be provided training in these aspects. Most people with emotional problems will not attend any specially designated mental health care service. Many of them may not be aware of the fact that they may benefit from mental health and psychosocial inputs. Large number of people with psychological distress may consult the health care centre with multiple bodily complaints, vague aches and pains and symptoms such as weakness and tiredness. Primary health care personnel do not have the knowledge and skills to recognize and manage common psychological problems which occur to people following a disaster. Therefore mental health specialists should develop suitable training packages and programmes as well as training materials such as slides/transparencies, videos etc. on disaster mental health care suitable for different categories of primary health care personnel. Mental health specialists should also train all the primary health care personnel working in disaster affected areas and supervise and support them to carry out simple mental health and psychosocial interventions (Srinivasa Murthy 2000). Curricula for such training programmes have been developed (WHO 1992). In the Indian setting, a manual for medical officers on disaster mental health was developed and used for training medical officers following the Bhopal gas leak disaster (Srinivasa Murthy & Isaac 1987, Srinivasa Murthy et al 1987).

5.7 Information and Training for Community level workers :

Various types of community level workers (CLW) are an invaluable resource following a disaster. Such workers include grama sevaks, anganwadi workers, basic health workers, lay volunteers, National Social Service (NSS) volunteers, civil defense personnel and other similar groups. Simple psychological interventions can be provided by community level workers if they are adequately informed and trained. Since most of them are likely to be from the same area, they will know the population reasonably well and they can act as a vital link between the affected population and various governmental and non-governmental helping agencies. A simple information manual was developed for

CLWs by mental health professionals of NIMHANS jointly with Action Aid, India and is currently available in English (Kumar et al 2000). This manual helps the CLW to understand the consequences of disasters and teaches him/her to provide emotional support to the affected population. Practical guidelines for psychosocial interventions by the CLWs at the individual, family and community level are given in a simple and understandable manner. This manual can be translated and adapted for use in different states following different types of disasters.

5.8 Involvement of other sectors and NGOs :

Sectors other than health such as education and social welfare and non governmental organizations (NGOs) have a very important role in psychosocial management of disaster affected population. They should be involved not only during the immediate phase following a disaster but also for the long term relief and rehabilitation. Simple information manuals should be developed for each of these groups (for e.g. teachers, personnel of NGOs) to equip them to contribute to the psychosocial management of the disaster affected population.

5.9 Debriefing for rescue workers :

It is well known that rescue workers, helpers and volunteers involved in disaster relief work also develop various levels of stress and other emotional consequences. Therefore, it is necessary that all workers are given an opportunity for emotional debriefing during their work and at the end of their work. Debriefing involves going through, in detail, the sequence of events as experienced by the worker and helping the worker to cope with stress adaptively. Debriefing should emphasize the positive aspects of their work and help the workers to achieve a feeling of mastery over the unpleasant features of disaster work.

5.10 Help for bereaved families :

One of the groups that suffer the most severe stressful experiences and thus requiring support and preventive interventions is the group of bereaved families. The family should be helped to fully grasp the death of one or more of their loved ones and accept the loss. The family should be helped to identify the dead body, if possible, and be allowed to mourn for the dead appropriately.

5.11 Help for the physically injured and their families :

In most disasters, there will be varying proportion of survivors who are physically injured, ranging from minor physical injuries to severe injuries such as multiple fractures and crush injuries requiring procedures such as amputation. A mental health liaison person or team assisting the intensive care/surgical personnel can go a long way in mitigating the emotional suffering of the physically injured or ill and their family members.

5.12 Help for severely mentally disturbed persons :

Persons displaying grossly deviant behavior or other severe psychological reactions as identified by the family, rescue workers, other community level workers or health care personnel, should be referred to the mental health team for assessment and management.

5.13 Help for orphans / widows and others in special need :

Major disasters create several groups of people with various kinds of special needs. These include children who have lost both their parents, widows, widowers, elderly parents who have lost all their children (who could have supported them or looked after them), otherwise healthy persons who were made completely disabled following the disaster for e.g. persons whose limbs had to be amputated etc. The psychosocial and mental health needs of such groups are quantitatively and qualitatively different from others. Their psychosocial needs should be assessed and provisions should be made to address these needs.

5.14 Role of mental health sector / professionals :

It is generally accepted that the role of the specialized mental health sector and mental health professionals should not be of routine and direct service delivery in the disaster affected region. In all developing countries, since the mental health resources are limited and mental health care infrastructure is poorly developed, the demands on them are likely to be far greater than the resources available. Moreover, most people have great reluctance to seek or receive attention and care, which is designated as 'mental health' due to widespread stigma. Therefore, it is widely accepted that mental health care delivered through the primary health care level may be more appropriate to the disaster victims' needs. "The role of specialized mental health sector should relate to programme design implementation and evaluation, to the training and education of primary care worker, and to providing him or her continuing support through consultation and supervision" (Lima 1986).

5.15 Need for a National Disaster Mental Health Team :

Since disasters of varying magnitude strike India quite frequently, there is need to constitute a small National Disaster Mental Health Team. It would be the responsibility of such a team to develop a simple, standard, practical and well structured educational and training package which can be adjusted to the particular need of any state/region of the country as well as to suit the specific requirements of different types of disasters. Such educational and training packages should be developed for different categories of personnel such as lay volunteers, community level workers, multipurpose health workers, school and college teachers, medical officers, and other medical specialists etc. All support materials should also be developed. When any major disaster strikes, the National Disaster Mental Health team should be responsible for organizing and coordinating the state disaster mental health team and initiating psychosocial interventions to the affected community. Subsequently, it will be the task of the state/local mental health team to provide training and continuing support to the general health sector, the frontline grass root workers, other sectors of the disaster relief operation and the

community. The trained primary care team will provide routine mental health care to victims, families and affected communities. The mental health specialist will be available for assessment and management of difficult and referred patients.

5.16 Resource guide/manual :

The National Disaster Mental Health team should develop a 'Resource guide/manual' within a targeted period of time as part of the preparedness planning for dealing with the mental health and psychosocial consequences of disasters. Such a guide/manual should provide clear and comprehensive information and instructions on 'what to do' and 'how to go about' to deal with psychosocial consequences.

5.17 Research on psychosocial consequences of disasters in India :

Although more than three quarters of major disasters in the world occur in developing countries much of the research on the psychosocial effects of disasters has been carried out among Western populations. Trans-cultural validity of western diagnostic categories and classifications as well as usefulness of intervention methods developed in western countries in non-western settings have been questioned. Effectiveness of indigenous methods of intervention and moderating effect of cultural factors on psychosocial consequences of disasters need to be studied. Research can contribute to the understanding of "cross-cultural variations in frequency, symptomatology, temporal patterns and outcome of psychological disorders" (WHO 1992). Therefore, there is a need to plan and conduct research into various aspects of disaster mental health in India. Findings from such research can contribute to better and more relevant intervention strategies.

5.18 Resources available for psychosocial interventions in India :

There are already a number of resources developed by various mental health professionals, institutions and NGOs in the country available for wider use. They include videos, information manuals, manuals on mental health, research papers and reports. Appendix I gives details of such resources already available. Appendix II gives a list of major institutions in the country which can provide inputs to training and research in the area of disaster mental health. Two information manuals for psychosocial care following disasters, one for individuals and the second for community health workers, developed by faculty of NIMHANS jointly with Action Aid India after the Orissa Super cyclone are included as Appendix III and Appendix IV.

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RESOURCES AVAILABLE FOR PSYCHOSOCIAL INTERVENTIONS IN DISASTERS

1. VIDEO ON PSYCHOSOCIAL CONSEQUENCES OF DISASTERS:

(Prepared by OXFAM, INDIA and NIMHANS, Bangalore). This 20 minute video brings together the experiences of about two dozen experts and presents the information about the nature of mental health needs of the population, the variety of approaches, the role of different community resources, the need for professional involvement and the importance of the policy for disaster care. The video has visual footage along with interviews.

The video is useful as a resource for sensitising policy makers and managers of disaster programmes. Available from OXFAM INDIA, Bangalore.

2. INFORMATION BOOKLETS ON PSYCHOSOCIAL CARE:

Currently two booklets are available in ENGLISH. These were prepared in the setting of the Orissa cyclone by ACTION AID, India and NIMHANS, Bangalore in 2000. These address the needs of: (i) Individuals, (ii) Community level helpers

These are self-help type of booklets with pictures and practical measures to care for self and others. These need translation to various local languages.

Available from ACTION AID, INDIA, New Delhi.

3. ICMR, New Delhi Report on the HEALTH CONSEQUENCES OF MARATHWADA EARTHQUAKE DISASTER WITH SPECIAL REFERENCE TO MENTAL HEALTH.

This report provides information about the methodology of studying the morbidity as well as the interventions developed in the Marathwada earthquake. This was the joint effort of ICMR, New Delhi and the Maharashtra Institute of Mental Health, Pune. (Available from ICMR, New Delhi).

4. MENTAL HEALTH CONSEQUENCES OF DISASTERS – a Special Issue of Indian Journal of Social Work, October 2000 (pp 521-701)

This is a very valuable publication from the Tata Institute of Social Sciences, Mumbai. The issue has 12 articles on various aspects of the mental health needs of the disaster affected populations. It contains both theory and case studies of working with the different disasters in the country.

This is valuable for the use of professionals (Available from Tata Institute of Social Sciences, Mumbai).

DISASTER INFORMATION

Dear friend,

You, your family and community have recently experienced the most distressing disaster, i.e., the earthquake. The horrific effect of this earthquake will be still fresh in your mind as well as in that of other affected like you. Help has been coming in from different quarters, to as many people as possible. The painful experience and its consequences are personal. The people around you would be reacting to this unexpected event in different ways. Many a time you will find yourself alone, not even able to talk about the disaster to others, especially since several of them too are not in a position to either help or comfort. We feel it is imperative and vital for you to recognise these feelings and personally make an attempt to recover in a healthy and positive manner.

Immediate (at the time disaster)

It is necessary to be aware of the various reactions during and after the earthquake. This will help you understand your emotions, your behaviour and the recovery methods adopted by yourself. The main aim of this understanding is to help you and others recover in a healthy and positive manner. During the earthquake each one of you have experienced the massive loss of either human lives or property or shelter or cattle, or all. The emotional reactions to the earthquake and the loss are often not recognised and understood by many as being natural and expected. Let us examine the immediate reactions of people to the earthquake.

● *Shock and or Disbelief*

Gujarat has often faced natural calamities like drought, cyclone, earthquake and floods. But this earthquake struck at the most unexpected hour. You would have been caught unawares - totally unprepared. But, in spite of this, you have worked hard to save your life as well as that of others. Similarly, there would certainly be other in your community who have gone through the same experience. However, some persons in the community would have reacted with shock and shown decreased activity. Another common emotional reaction is to feel that the whole event was not real but a bad dream, i.e. one of total disbelief.

● *Panic*

Panic at the time of undergoing very severe stress is common and normal. Hence for people to panic at the time of a earthquake is normal. Just as an example, imagine a large number of people entrapped in the rubble with a small space. It would only be natural that all of them will panic and try to get out at the same time causing a stampede.

After the Earthquake

● *Shock*

You find it difficult to believe that disaster has actually happened - that the earthquake has ripped through leaving behind so much death and destruction. All routine activities have come to a standstill due to the earthquake and this adds to feeling lost. The all round confusion further intensifies this.

RECOVERY MECHNISMS

Symptoms start decreasing in most people in a few weeks when they initiate some actions to reorganise and rebuild themselves. After a few weeks/ months, even though the memories of the disaster remain, they do not stop you from going ahead with your life.

HOW CAN YOU RECOVER?

To promote recover we suggest the following to be done:

At a Personal Level:

- ✓ **Listen** to **authentic information** about the earthquake.
- ✗ **Do not** believe in rumours that go around during such times.
- ✓ **Be together** with family members.
- ✗ **Do not** send women, children and the aged to far off places for the sake of safety as this separation can cause a lot of anxiety to them and you.
- ✓ **Be with** people from the same village, i.e. people you are familiar with, even if you are in temporary dwellings.
- ✓ **Get back** to a daily routine as soon as possible to make you feel that you are in control of the situation.
- ✓ Make it a point to **talk about the earthquake share your experience and feelings** with your family, your parents, friends, spouse, siblings, acquaintances. This will help ventilate/release your emotions.
- ✓ **Restart** activities that are special to your family like having meals together, praying, playing games, singing, etc.
- ✓ **Keep touching and comforting** your parents, children, spouse and the aged in your family. This will not only make you feel good but also make the other person feel the same.
- ✓ **Initiate and participate** in rituals like collective, grieving, prayer meetings or group mournings if you have lost a near and dear one. This will help you come to terms with the loss of the person.
- ✓ **Take part in rescue, relief and rehabilitation operations**, if you are not hurt or only slightly injured. **Work is a good tonic for healing.**
- ✓ **Keep in constant TOUCH** in case of a member of the family having to be shifted to a far off hospital or residence. Update him/her about yourself as well as find out about him/her. This gives a feeling of being cared for.
- ✓ **Take time everyday to relax and have a good time** by gathering together at a central place/point, playing kabbadi, reading, listening to music, visiting shrines, singing hymns, chanting prayers, reading scriptures.
- ✓ **Make time for yourself** and acknowledge and admit that you will not be always functioning at your usual level of efficiency for a few weeks/months.

At the Community level:

Immediate

- ✓ **Disseminate authentic information** about the disaster and the help available either by going around personally or using loudspeakers or posters/placards.
- ✓ **Organise groups for rescue operations.** Help to remove debris, shift people to safe place, help the disabled, and share food, water and medicines. **Identify** groups for each activity and a leader for each group. The whole village should be involved in planning rescue, relief and rehabilitation operations.
- ✓ **Listen to and encourage** other people talking about the disaster, etc.
- ✓ **Encourage** the group to focus on the special groups like the children, women, disabled and elderly.
- ✓ **Organise** people to present their needs and difficulties to the administrators in a collective manner.
- ✓ **Bring together** people of the community for **sharing of grief/community mourning.**
- ✓ **Organise self help groups** to procure aid and to discuss emotions associated with the disaster. Self-help groups should have people with similar needs. For example, people who have lost family members could join together to grieve and later work on it.
- ✓ **Organise weekly meetings to share information** and sing together.
- ✓ **Prepare yourself** for delays and difficulties.

In Future

- ✓ **Seek information** about help extended and organise groups to represent your village to seek help/aid.
- ✓ **Actively mobilise action** for reconstruction and rehabilitation work. Take care that this includes all aspects of a community to be disaster proof, where agriculture, electricity, health care, education, etc. are concerned.
- ✓ **Continue dialoguing** with government officials and NGOs for a persistent effort on relief and rehabilitation.

PSYCHO SOCIAL CARE BY COMMUNITY LEVEL HELPERS

INTRODUCTION

The recent disaster in Gujarat was brought about by a devastating earthquake. This is unexpected and unanticipated at this time. Thousands have either died or are reported missing and several lakhs have been rendered homeless. In addition, there has been extensive damage to all other property. **Along with relief, rehabilitation and the care of physical health and injuries, mental health issues need to be given importance.** As in other major disasters, the magnitude of mental health problems is enormous. Apart from material and logistic help, the suffering human being will require human interventions.

CARE OF PSYCHOLOGICAL PROBLEMS

Who is a Community Level Helper?

Any community when faced with a disaster of whatever magnitude, responds in its own way to the situation. One such response is the reaction of several local people or groups of people who immediately come forward to help in one way or the other in order to alleviate the situation. They are the Community Level Helpers (CLH). They are a vital link between the affected population and the helping agencies (individuals, Non-Governmental Organisations, Governmental Organisations).

At the early stages following disaster, most survivors are psychologically open and willing to talk about their experiences. This may change later into a defensive, non-cooperative attitude if time passes without attempts at providing help. Therefore, it is of utmost importance that survivors are encouraged to seek help and talk about their psychological problems as early as possible. This intervention will prevent the persistence of problems and development of further complications. **Remember, people do however talk about themselves when given an opportunity to do so.**

Psychological intervention can be provided to the family in the daily visits by monitoring and noting down information – all by the CLHs. Such visits are to be utilised for talking about the survivor's feelings and experiences, imparting health education, discussion of health problems, motivating individuals to hold group meetings, and organising educational activities.

- **No one who experiences the event or witnesses the event is untouched by it.**

Disaster, depending on the nature and magnitude can cause enormous loss to life, property and the environment of the area. Grief, sadness, anxiety, anger are common in such situations. Individuals find comfort and reassurance when told that their reactions are normal and understandable in every way. **Therefore, CLHs help to educate the survivors about common disaster stress reactions, ways to cope with stressors and available resources to respond to their needs.**

- **Disaster results in two types of trauma**

Disaster – affected population have **individual** and **collective trauma**. Individual trauma manifests itself in stress and grief reactions, while collective trauma can sever the social ties of survivors with each other.

- **Most people pull together and function during and after a disaster but their effectiveness is diminished**

A disaster survivor is confronted with multiple stressors. In the initial phases there is much energy, optimism and altruism. There is often a high level of activity with low level of efficiency. As the reality of losses becomes more clear, frustrations and disillusionment set in, leading to more stress symptoms. **This can impair the survivor's ability to make sound decisions and take necessary steps towards recovery and reconstruction.**

- **Disaster stress and grief reactions are normal responses to an abnormal situation**

Stress reactions and grief responses are common in disaster survivors. **Public information about normal reactions, education about way to handle them, and early attention to symptoms that are problematic has hasten recovery and prevent long-term problems.**

- **Many emotional reactions of disaster survivors stem from problems of living caused by the disaster**

Disaster disrupts all aspects of daily life resulting in practical problems like finding temporary housing, food, clothing etc. **Timely and appropriate relief and support measures are very vital to help survivors handle the disruption.**

- **Survivors respond to active interest and concern**

Survivors will usually be eager to talk about what happened to them when approached with warmth and genuine interest. Workers should not hold back from talking with survivors out of fear of intruding or invading their privacy.

- **Support systems are crucial for recovery**

The most important support group for individuals is the family. Workers should attempt to keep the family together and the members encouraged to be involved in each other's recovery. For those who are orphaned or have become single, support from other groups can be helpful.

Helping people help themselves

Listening

- ◆ **Look at the person while he/she is talking :** This indicates being interested in what is being said.
- ◆ **Respond occasionally while listening :** This makes the person speaking feel what he/she is saying is being understood and taken seriously.
- ◆ **Avoid interruptions :** Let the other person finish his/her thoughts. Do not interrupt unless there is confusion and the details are jumbled.
- ◆ **Be tolerant :** Do not prejudge or moralise or condemn.
- ◆ **Empathise :** Share the experiences of the other person as if they are your own. It is based on the sensitivity and ability to recognise when the other person is going through certain feelings or emotional experiences.

Ventilation : This process involves release of emotions and feelings. It is very important intervention and should be used as soon as possible after the earthquake.

WHAT SHOULD YOU DO?

- ◆ Listen carefully and attentively.
- ◆ Maintain eye contact.
- ◆ Acknowledge distress.
- ◆ Do not interrupt.
- ◆ Support by patting on the shoulders/hold the hand as they cry.
- ◆ Do not ask them to stop crying.

◆ Relaxation Exercises

Encourage survivors to undertake relaxation/breathing exercises regularly several times a day. This helps them gain control over their agitation and anxiety.

***Instructions:** The person should sit in a squatting posture and place his/her hands on the knees. Then take a deep breath, hold it for a few seconds and slowly exhale. Encourage him/her to do it for 5-10 minutes steadily and slowly. Repeat this at least twice a day.*

FAMILY LEVEL

- ◆ the Family as a group to share the losses
- ◆ **Encourage** family members to contact relatives. This will help mobilise support and facilitate recovery
- ◆ **Rituals** like prayers, keeping the dead persons photographs, preserving the belongings of the dead person or persons
- ◆ **Encourage** the survivors to engage in meaningful activity as a family
- ◆ **Recreation** like listening to Radio, TV or visiting melas
- ◆ **Resume normal activities** of the pre-earthquake days with the family

- ◆ **Support each other at home.** Emphasise that the family should regularly undertake activities together at home

COMMUNITY LEVEL

- **Group mourning:** Grief resolution should occur at the personal, family and the community levels. Group Mourning is a process of mass grieving. It expresses solidarity of the grief-stricken community and facilitates unity and collective action. Such activities should be initially organised on a weekly basis, gradually on a monthly basis, and later annually.
- **Group meetings:** Group meetings are important activities where the community as a whole participates. This stimulates the people to think, and brainstorm about various themes for rebuilding the community.
- **Folk songs:** Singing of folk songs about the earthquake tragedy, its impact and them mourning. This helps people gather in a common place and share their grief.
- **Devotional songs:** Singing devotional songs like hymns/bhajans, etc. is helpful.

Consider referral to a mental health agency if the client:

- ◆ is depressed and shows agitation, restlessness, and paces up and down
- ◆ is a pathetic, immobile, unable to move around
- ◆ discontent
- ◆ mutilates him/herself
- ◆ uses alcohol or drugs excessively
- ◆ is unable to care for him/herself, e.g., does not eat, drink, bathe, change into fresh clothes
- ◆ repeats ritualistic acts

Consider referral to a mental health agency if the client:

- ◆ hallucinates – hears voices, sees visions, or has unverified bodily sensations
- ◆ states the body feels unreal and fears he/she is losing his/her mind
- ◆ is excessively preoccupied with one idea or thought
- ◆ has the delusion that someone or something is out to get him/her and the family
- ◆ is afraid he/she will kill him/herself or another
- ◆ is unable to make simple decisions or carry out everyday functions
- ◆ shows extreme pressure of speech – talk overflows

Tips to make you an effective community level helper

Dos:

- ✓ Visit families regularly
- ✓ Accept food or drinks like coffee or tea if offered
- ✓ Help survivors to get medical care or other help if needed
- ✓ Provide clear guidance about compensation or ways of getting it
- ✓ Provide practical help whenever necessary
- ✓ Facilitate networking among survivors
- ✓ Contact relatives (e.g., writing letter) and appeal to them to meet and support survivors

DON'Ts:

- ✗ Do not promise things you cannot do or things beyond your control
- ✗ Do not take decisions for them for e.g., marriage or money handling, etc
- ✗ Do not get upset with the behaviour of survivors. Sometimes they are unreasonably angry/blame you for causing trouble to them by your frequent visits, or at times they might be very demanding
- ✗ Do not miss appointments
- ✗ Do not overburden yourself with lot of work
- ✗ Do not take sides in family conflicts

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