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Special Article

Prospectives of Leprosy Research and Development in Thailand

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INTRODUCTION

Leprosy had declined rapidly in Thailand after the introduction of multidrug therapy in 1985. Leprosy control combine both the public health goal of eliminating the disease in the community for the near future, and the medical goal of eliminating the disease. Multidrug therapy (MDT) which is the only main intervention or tool available for interrupting transmission of disease, deserves a very high priority. This does not mean that patient care including appropriate case finding, case holding, clinical management, prevention of deformity; disability; handicap, together with social assistance and community based rehabilitation should be neglected. In fact, they are closely interlinked and complement each other in order to really achieve the goal of Elimination of leprosy as a public health problem.

Research and development in leprosy are still needed to improve and support the

remaining eliminating phase of leprosy control. In order to improve the application and impact of current technologies and research outcomes, or to adopt the use of new technologies, leprosy control staffs and researchers need better information and should exchange their experiences and ideas on how to improve the quality of relevant researches and the effectiveness of leprosy control interventions. Eventhough research is one of the corner stones for the development of effective leprosy control, however, equally important interlinkage and consequence should be the training and manpower development to carry out that research and implement its finding for the benefit of leprosy control. This paper is divided into the major topics of prospectives of leprosy research and development in Thailand with special emphasis on assessment of remaining problems, challenges and relevant leprosy control technologies together with research needs.

ASSESSMENT OF DEFECT IN CURRENT SYSTEMS OF LEPROSY RESEARCH IN THAILAND

In Thailand, although there is rather well established research infrastructure for leprosy and its relating fields both in the Leprosy Division; Ministry of Public Health; Universities and Non-Governmental organizations, acquisition and utilization of accurate and relevant knowledge have not satisfactorily progressed, due to many problems and constraints. The defect in current systems of leprosy research in Thailand could be holistically analyzed and revealed as follows:

1) Policy makers often do not pay adequate attention to leprosy research and also do not make use of research findings in decision making or policy formulation. There are poor linkage and relationship between research, action and policy.

2) Managers of any relating leprosy programmes do not always use research results, nor do they apply scientific methods on planning, monitoring, and evaluating services that they deliver or are responsible.

3) lack of national leprosy research policies, master plan and long term plan, effective research management and support, good quality research and relevant leprosy research utilization.

4) lack of an effective national mechanism to establish steady communication channels among all partners in leprosy research at various levels of Ministry of Public Health, NGOs and universities, and to motivate and sustain a dynamic relationship among

them.

5) Researchers and research activities in leprosy seem to be isolated, fragmented and individualized disciplinary approach rather than intrasectoral, intersectoral and multidisciplinary approach. This often might be due to a lack of effective communication within and across disciplines, lack of mutual interest and knowledge about the skills and resources involved in other science and by low regard of public health disciplines. Different disciplines use different tools, different scientific languages and different concepts, and have different applications. There seems to be also lack of respect for other disciplines, multidisciplinary setting and network that encourage cross-fertilization of ideas and collective thinking among the broad range of disciplines and fields contributing to leprosy research.

6) Researchers often do not address the leprosy problems and research questions or needs that are perceived as top priorities by policy makers, leprosy control and health care managers and the relating people.

7) Most of competent researchers prefer to launch research projects that serve the global or international specific leprosy research needs rather than country specific leprosy research needs.

8) Lack of necessary information required for researchers and donor agencies on unresolved, feasible, scientific, technical and operational questions as the basis for establishing their agendas.

9) The initial success of MDT programmes and the high expectation of elimination of leprosy may lead to complacency in the long term, resulting in leprosy research and leprosy control being neglected.

This situation is largely attributable to the fact that researchers, policy makers, leprosy control and health care providers tend to work in separate compartments, with out effectively communicating and interacting each other.

PROPOSALS FOR PROMOTION OF LEPROSY RESEARCH IN THAILAND.

1) Leprosy Division together with the Scientific Working Group on Leprosy Research should act as nucleus for further promotion and coordination of leprosy research with dynamic relationship between relating researchers, institutions and donor agencies.

2) The scientific working group on leprosy research should establish national advisory expert committee on leprosy and relevant subcommittees on leprosy specific research of field i.e. biomedical research, clinical research, epidemiological and health system research, social research and rehabilitation research, etc, in order to not only to overcome the isolation and fragmentation of research efforts and to ensure appropriate coordination and input from various disciplines, but also should promote multidisciplinary and intersectoral research. In addition, it should establish mechanism to close the gap between research and application, ensure that the results of research are effectively translated to effective technology development and action etc.

3) As for any global and country

specific leprosy research projects, specific technical advisory group (TAG) can also be established, to help initiate and sustain effective consultations among researchers and relating partners.

4) The step or process to implement the promotion of further leprosy research in Thailand includes :-

- a. policy formulation, promotion and advocacy
- b. mechanism
- c. priority setting
- d. networking
- e. capacity building and strengthening
- f. financing
- g. follow-up and evaluation

5) The above step should result from an initial process that includes:

- a. preliminary consultation and workshops to sensitize the various relevant groups of researchers, leprosy control and health care providers and policy makers etc; and
- b. review and synthesis of background documents containing data on country's leprosy problems or research needs and assessment of research capacity, of information system, and of past and present leprosy research;

6) As for networking, regional reference centre or coordinating centre should be established as a focal point ie, using regional university, regional leprosy centre and or regional communicable disease centre;

7) Leprosy journal or at least newsletter should be made as communicating tool for promoting mutual understanding and ex-

changing of information. Other relevant existing Thai journals such as Journal of Communicable Disease, Rajprachasamasai Leprosy Bulletin and Journal of Health Science should be a good forum for such promotion.

HOLISTIC ASSESSMENT OF LEPROSY CONTROL TECHNOLOGIES, CHALLENGES AND RESEARCH NEEDS IN THAILAND

1. Evolution of leprosy situation and research needs.

In the last decade leprosy had benefited very much from the advancement of the immunology of leprosy and the successful application of efficacious multidrug therapy (MDT). It might be of interested for relating researchers to inform policy makers and other disciplines whether leprosy as a result of MDT, has any changes with regards to its microbe, its patients, its epidemiology, its communicables and its health services. One of the example is the phenomena that highly advanced lepromatous patients with severe complication are less common and the proportion of lepromatous cases, severe disabled patients and young age group of new cases is on downward trend in Thailand indicating some good sign of natural decline of leprosy. Apart from that, with the effective treatment in leprosy control programme, it might be good value for social research scientists to evaluate whether there are any better changes in terms of knowledge, attitude, belief and behaviour of people and the community toward leprosy.

As far as clinical and biomedical researches are concerned, since the residual number of newly untreated cases of leprosy and freshly viable *M. leprae* will be less in the near future. It is, therefore, necessary and urgent that any biomedical research targets

which need new leprosy cases and viable leprosy bacilli in Thailand should urgently develop their long term plan of research project to accelerate their implementation of relevant studies. For example, the research project on the follow-up and evaluating study of the efficacy and impact of WHO-MDT regimen and or any new MDT regimens for leprosy control should be formulated. In this project, any concerning clinicians, leprosy control staffs and relating scientists from different disciplines can join in by selecting their jointly interlinked sub-projects and indicators such as clinical, laboratory (smears, mouse foot-pad, histopathology, polymerase chain reaction, PGL1, etc.), indicators together with epidemiological, social and operational indicators etc, in order to reveal any specific and correlating findings according to clinical changes from untreated stage, early nerve damage, reaction, clinical activity during and after completion of MDT and relapse etc. In addition, the socio-economic, behavioural, epidemiological and operational consequence and impact can be subsequently evaluated.

With regard to the health services, policy makers might be interested to ask researchers whether after efficacious MDT implementation, leprosy is no longer the sole preserve of the vertical leprosy workers and there are more programmes i.e. self care clinics, prevention of deformity and community based rehabilitation where leprosy is dealt with together with other health care services and community or primary health care services.

2. The Clinical Issues

Eventhough MDT is extremely effective in killing *M. leprae* (and this had been very well demonstrated through testing for

viability of *M. leprae* among treated patients), it had very little influence on the elimination of the dead organisms which is essentially carried out through the slow host defense mechanism. Thus BI at best is a late marker of the effectiveness of chemotherapy. This brings out the need to develop better immunological methods to detect remaining or residual dead bacilli after completion of MDT. In addition, immunotherapeutic and chemotherapeutic methods are also needed to accelerate elimination of dead organism, as the antigens from the dead organisms are capable of causing considerable problem such as ENL for the patients.

The second clinical issue is that the skin and nerve manifestation in paucibacillary leprosy (PBL) and borderline leprosy in particular, is much more the result of immunological response to bacterial products rather than local multiplication of *M. leprae*. It is most likely that once the small number of *M. leprae* in PB leprosy is killed by chemotherapy, the clearance of the bacterial products, if any and the healing of the skin and nerve lesions will depend essentially upon host mechanisms which are rather slow to act. Thus it is unrealistic to measure the effectiveness of chemotherapy by changes in skin manifestations soon after instituting chemotherapy. This again brings out the need to develop better immunotherapeutic methods to accelerate healing of skin and nerve lesions in PB and borderline leprosy.

As early detection of leprosy is a vital key factor in leprosy control. In eliminating phase where active case findings is not an option, operational or health system research is needed to improve the coverage of passive case-finding and shorten the interval between onset of symptoms and diagnosis. Further

studies are also needed to identify and utilize the symptom complex i.e. presence of anaesthetic and anhydrotic macular lesions or nonitching erythematous patches without good response to any topical medicines or of anaesthetic hands or feet with either claw hands or fingers or facial paralysis etc. that are useful in detecting leprosy. Self-screening and self-reporting or observation and referral made by village health volunteers, housewives and school children volunteers etc as a result from symptomatic diagnosis in various settings are also needed to be quantified regarding their sensitivity and specificity.

The detection of subclinical infection and early clinical manifestation of leprosy are essentially needed during eliminating phase where number or new cases of leprosy will be less for training and practice by either integrated health workers or vertical leprosy workers. Lack of rapid, sensitive and inexpensive methods for early diagnosis of leprosy currently represents a significant impediment to the effectiveness of eliminating phase of leprosy control. Motivation study and reward system for new cases detection might be of great value, particularly during eliminating leprosy control-programme. Currently available advances in the development of techniques for early diagnosis of leprosy such as FLA-ABS-Test, Phenolic-glyco-lipid ELISA, passive haemagglutination (PHA) based on synthetic antigens, serum antibody competition test (SACT), recent advances in recombinant DNA technology and new DNA amplification technology popularly known as polymerase chain reaction (PCR) etc are still very time consuming, expensive of labor or materials costs and poor sensitive. Some of these newly proven technologies should be evaluated and

applied for field testing and compared with routine feled diagnostic examination. However, new technologies should be reliable, feasible, safe and attractive to both health-care staff and patients. The field criteria required for a new diagnostic test include, 1) cost, 2) speed, 3) sensitivity and specificity, 4) simplicity, 5) reliability and, 6) reproducibility and safety and 7) acceptability to both users and providers

One of the clinical issue wthich has great value relevance to the welfare of the leprosy patient is early diagnosis of nerve damage and appropriate interventions to prevent consequences. In this connection, clinical and immunological research are essentially needed for the recognition of quiet nerve paralysis, often referred to as silent neuritis, together with appropriate steroid treatment under field condition, This intervention is of great significance from the point of view of preventing disabilities, since MDT are still not able to be said of prevention and management of disabilities. Development and incorporation of disability components is vital to the credibility of leprosy control programmes.

3. MDT and Medical care in leprosy control.

Some references have been already made to MDT and its implications. So far the frequency of relapse as found by Who questionalre survey has indicated a relapse rate of 1.2 and 0.2 per 1,000 patient per year in PB and MB patients respectively. Similar evaluating study is also needed in Thailand. However, MDT, which can rapidly kill leprosy bacilli, can do very little to eliminate the dead organisms from the human host which might take a long time for the host mecha-

nisms to be eliminated. During this phase when a patient harbours only dead organisms, a proportion of patients develop clinical problems such as reactions, nerve damage, etc and need regular follow-up and evaluating study as already mentioned. Specific immunological tests to detect and access early nerve damage and reaction should be more emphasized.

It is also of good value to develop and evaluate appropriate model to incorporate MDT with facilities for patient care in leprosy control programme i.e. self care clinic and its interlinkage with adequate referral system for temporary haspitalization. Such facilities should include the self assessment, self care and self reporting for early diagnosis of complications and their management at the peripheral level, referral mechanisms for severe complications, education and motivation of the patients on simple care for prevention of disabilities (including provision of footwear), and community based rehabilitation for those already disabled. Such patient care activity greatly complements MDT in terms of greater acceptance of and compliance to treatment.

Intervention study to improve compliance to a nearly 100 percent patient adherence with the intensive phase of short course chemotherapy is also essential i.e. by patient education, increasing community and family participation, supervised and intermittent therapy, providing incentives, using pill calender pack and participation by the private sectors etc.

As for minor projects of clinical research study in order to make use of residual patients during eliminating phases, the retrospective study of carcinoma in plantar ulcers of leprosy patients and the study of

AIDS and leprosy should be conducted.

As mentioned before that social study on the impact of MDT on increasing self-reporting to clinics by new patients, increased compliance to treatment and decreased social stigma are of great value. It is also in this regard that one should look at the patient-care component as a major contributor to better case-detection and case holding, apart from solving the problems of the patients themselves. During eliminating phase, as number of patients will be less, relating undergraduated and postgraduated medical and public health students and peripheral paramedical and health workers needs to be regularly well-trained in leprosy at least to discriminate between problems that needs to be referred to a higher level and those that could be dealt with locally. The referral centres either from university, regional, provincial, district hospitals and leprosy hospitals should be able to maintain close coordination with the peripheral levels and primary health care volunteers so that self-reliance and sustainability of integrated and specialized leprosy control services could be properly and effectively maintained aimed at the future success of the elimination programme.

4. Disability prevention and rehabilitation

In spite of many effort toward early detection and treatment, a proportion of patient will develop deformities and the situation cannot be ignored because there will be resulted in disability, handicap, displacement, debilitation and destitution problems. Leprosy control programmes are as much medical care programmes as they are programmes for disease prevention, and the

evaluating study on appropriate model for the prevention deformity and community based rehabilitation (CBR) therefore, should be promoted. The main emphasis should be based primarily on the involvement of the community where the focus will be on the participation of the individual and the family in the rehabilitation efforts. Cost-effectiveness study of any trial models such as self care clinic and community based rehabilitation (CBR) should also be promoted. Social and evaluating study of CBR approach are also essential in order to assess whether CBR could promote awareness, self-reliance and responsibility for rehabilitation in the community; builds on manpower resources in the community, including the disabled themselves, their families and other community members. As the disabled and their family members are called on to take an active part in the training efforts; the study on appropriate intervention development such as the use of simple methods and technique which are acceptable, affordable, effective and appropriate to the local setting and the use of the existing local organization and infrastructure to deliver services, especially primary health care services, ETC.

5. Community participation

The participation of the community is highly crucial in several of the activities of leprosy control particularly during the eliminating phase. The social study required is to develop intervention to mobilize and strengthen societies, family and community support for leprosy patients through community action. The previous efforts of partial integration of leprosy control into somewhat well developed primary health care services in Thailand should also be studied for the

most appropriate and effective intervention to be added in order to come up with actually affordable and universally accessible methods with full community participation.

Lastly, as mentioned earlier that the rapid decline of prevalence resulted from MDT implementation and the expected goal of elimination of leprosy may cause complacency and lowering of priority for efforts and supports to leprosy work. In this connection, policy study research should be conducted in order to apply the right priorities so that effort at prevention of deformity, rehabilitation or social welfare are made at appropriate expense. Meanwhile essential control activities such as case finding, case holding and medical care are still well maintained under high priorities.

CONCLUSIONS.

Obviously, too many social and health system research issues have been mentioned here, since the other papers on specific researches and developments in chemotherapy and immunology will be well described in

the other presentations during this meeting. Research questions, needs and a range of clinical, social and health system research approaches, tools and techniques that can contribute to the improvement of the eliminating programme operations have been described in this paper. Since the focus of the leprosy programme activities (1992-1996) will shift to strategy development to the accelerated implementation of new leprosy control and elimination strategies. This should probable be done in the most effective manner of dual-action research approach. The key activities in operation support component must be identified, some of which may be properly derived from outcomes of researches, and then these activities must be vigorously persued. For research and development component, shorply focused research activities which are likely to quickly produce new knowledge and technologies to overcome the identified crucial constrains of the current control technologies and strategies must be persued.