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RESEARCH NEEDS

IN THE EPIDEMIOLOGY OF LEPROSY

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INTRODUCTION TO RESEARCH NEEDS IN THE EPIDEMIOLOGY OF LEPROSY

Progress in the understanding of epidemiology of leprosy has been slow and limited. Two major contributing factors for this are:

- (i) the lack of clear and comparable terminology to make geographical comparisons meaningful; and
- (ii) the lack of tools to identify subclinical infection.

So far, most epidemiological studies in leprosy have been based on clinical leprosy as identified with varying degrees of sensitivity and specificity. The recent progress in the immunology of leprosy through development of serological tests and possibly more dependable skin tests have been promising, although large-scale field studies to test them have not yet been undertaken pending refinements of the tests. In the absence of information on infection in leprosy, the knowledge on the epidemiology of leprosy has been quite incomplete.

Apart from the above, the very fact that field studies in leprosy involves very long periods of observation, makes it unattractive both to the scientist and to the sponsors expected to support such studies. However, one should admit that even with all the limitations, scientific and operational, considerably more progress is possible in the understanding of the disease.

Leprosy has a very uneven distribution both in time and space. There has not been much documentation on the secular trends of the disease, and the understanding of the factors associated with them rather limited. Even studies on short term changes on the incidence of leprosy are few and far between. At present, study of incidence is the only available method of evaluating transmission of the disease in the recent past, particularly when such incidence information is available according to age groups, and by type of leprosy. The uneven geographic distribution and family clustering

associated with them.

More information than what is already available is required with regard to risk of infection in leprosy under varying conditions. Although the relative risk of getting leprosy is greater for household contacts of lepromatous leprosy as compared with household contacts of non-lepromatous leprosy, and the latter in turn being at a higher risk than individuals not living with any case of leprosy, the various factors that moderate these risks (e.g. the prevalence of leprosy and of lepromatous leprosy in the community as a whole) are not well understood. Whereas the introduction of a single case reportedly produced an epidemic of leprosy in almost one third of the population in the Island of Nauru early this century, practically no secondary cases occur in Europe and North America among contacts of immigrant cases that return after acquiring the disease from an endemic country. Further, the occurrence of leprosy among contacts of non-lepromatous cases in areas where there are no identified lepromatous cases require more detailed studies covering long periods of time. Rate of spontaneous healing of non-lepromatous leprosy and increased mortality risks for patients of different types of leprosy are other areas that could provide a greater understanding of the relationship between prevalence and incidence in leprosy in different areas.

The transmission of leprosy, particularly with regard to its exact mode is not well understood. The present evidence suggesting that M. leprae does not come out of the skin in spite of their enormous presence in the skin in lepromatous leprosy needs more careful confirmation, particularly in situations where patients suffer from other skin diseases and breaks in skins are possible. Similarly, evidence on discharge of bacilli from nasal secretions warrants further quantitative studies, both with regard to concentrations of the organisms in the discharges and the amount of discharges under varying conditions. Practically no work has been done

multibacillary cases of leprosy, although identification of small numbers of AFB poses problems. Lastly, definition of the portal of entry under natural conditions poses the most difficult problem. Although some experimental evidence from a recent study suggests that M. leprae could gain entry through the respiratory route, other routes of entry cannot be ruled out. The evidence about the site of first lesion in the skin as the portal of entry, although suggestive, is not convincing. So far there is no definite evidence that insects play any significant role in the transmission of leprosy, in spite of a number of studies.

Host factors in the occurrence of leprosy and in the development of lepromatous leprosy are not fully understood. The significance of lepromin reaction in identifying host immunity, among persons not affected with leprosy, is not clear. The development of more specific immunological tools is critical to a better understanding of the situation. The role of nutrition in influencing immune response to M. leprae infection also needs to be carefully looked into with studies utilizing quantitative methods. Lastly, the role of genetic susceptibility to leprosy continues to be another area with inconclusive evidence needing further probe.

In conclusion, it is to be admitted that well-planned studies in the epidemiology of leprosy have been few and far between, and the scope, in spite of deficiencies of the tools available, is indeed immense.