

# A Program for Leprosy Control in the Ryukyu Islands

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**T**HIS PAPER reports the current status of leprosy in the Ryukyu Islands and presents recommendations for a program of leprosy control there which might prove useful as a model for other countries with a significant leprosy problem. This report is not an epidemiologic study because the data on the Ryukyus are incomplete and considerably more investigation is needed.

Reports of previous studies provided the opportunity to observe trends as well as to compare changes in the leprosy control program since 1954.

## Prevalence

In 1954 the estimated prevalence rate of leprosy was slightly below 2.0 per 1,000 population based on the number of patients in the two government leprosariums (Airaku-en and Nansei-en), those awaiting admission, and those discharged or absconded (James A. Doull and Fred C. Kluth: *Leprosy in the Ryukyu Islands—1954*. Unpublished report). Present observations based on the total number of patients in both leprosariums, patients discharged in recent years, and persons known to be in home-care programs, and the estimated number of unknown cases indicate there has been little or no change in the prevalence rate since 1954.

## Trends

The average age of patients on admission to the two leprosy institutions has decreased steadily since 1935. In 1935 the average age was 38.1 years; in 1954, 36.0 years. During the years

1962–65 the average age of patients admitted to Airaku-en was 30 years, and to Nansei-en, 32 years. More significantly, those under age 20 hospitalized at Airaku-en and Nansei-en in these 4 years comprised 32.9 percent and 33.7 percent, respectively, of the patient population, compared to 11.5 percent in 1954 and 9.0 percent in 1935. This difference appears to be the result of greater awareness and thereby earlier diagnosis of leprosy rather than a trend of more children contracting the disease.

The relatively large percentage of new patients diagnosed in a clinic is illustrated by a report from Naha Skin Clinic. During 1962–65 the clinic staff examined 1,902 persons with skin conditions suggestive of leprosy. New cases of leprosy were diagnosed in 340 persons (18 percent) of those examined. Over half of these persons had less than 24-months' delay between onset of symptoms and diagnosis. Seventy-eight percent of the cases were diagnosed less than 3 years after the onset of symptoms (table 1). Such diagnostic activity, in conjunction with diligent followup of families of patients, should continue to uncover, relatively early, cases of leprosy among young persons.

## Medical Care

Diagnosis and typing of leprosy in the Ryukyus is based upon clinical evaluation, tests on bacteriological smears, and the lepromin skin

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test. Biopsy is not routinely done to confirm the clinical diagnosis or type the disease. The medical care provided for patients with leprosy in the Ryukyus follows generally that of other leprosy centers in the world.

Comprehensive medical care for leprosy patients should include preventive as well as restorative rehabilitation. The large number of patients with severe disability noted by Doull and Kluth still exists, indicating the need for greater preventive attention early in the course of the disease. Efforts of the staffs of both leprosariums to treat such effects as foot ulcers and trauma to the feet and hands are complemented by patient self-care. However, the large numbers of patients with disabilities (table 2) indicate that present efforts are inadequate in reducing the number and degree of deformities from leprosy. A study of the current status of the amount and degree of deformity of patients in the two leprosariums has been made by Dr. Carl D. Enna of the Public Health Service Hospital, Carville, La., and is soon to be reported.

### Public Health

In the past custom and law have required institutionalization of every patient with leprosy. This insistence was ameliorated to some degree by the Ryukyu Islands Hansen's Disease Prevention Act of 1961 which no longer required all persons with new cases of leprosy to be institutionalized. However, the traditional inclination to institutionalize all persons with leprosy still prevails throughout the islands. Because of this, many persons who suspect they have leprosy do not reveal themselves.

In spite of the problems created by public attitude toward outpatient care of leprosy patients, there is a trend toward not institutionalizing all leprosy patients, particularly not those with tuberculoid leprosy. A tuberculoid patient now in a leprosarium may leave and continue treatment under the home-care program. A significantly higher proportion of persons with tuberculoid leprosy are now diagnosed than are institutionalized at Airaku-en leprosarium (see chart). The number of patients discharged from both leprosariums in recent years is increasing, confirming a lessened insistence on institutionalization of patients after their illnesses have either become inactive or noninfectious.

Leprosy was discovered in many patients who were examined on their own volition, coincidental to whether or not anybody suspected that they had leprosy. One district health center routinely holds a Saturday skin clinic in which patients with leprosy are diagnosed and treated. This center's staff also looks for leprosy in the routine examination of school children, food handlers, pregnant women, and persons examined for other medical problems. However, the aggressive attempt on the part of public health staff to find and examine contacts of persons known to have leprosy, essential in a comprehensive control program, was missing.

### Recommendations

A satisfactory leprosy control program is based on early diagnosis of illness and treatment of the patient and diligent contact surveillance. Under such a program, disease can be cured early, disability prevented, and infectiousness reduced. A screening survey may be helpful in determining more accurately the prevalence of leprosy, but may coincidentally aggravate the problem by sending into hiding some persons with cases that might otherwise have been discovered. When a leprosy survey is planned, therefore, its effectiveness can be enhanced by including the reward of treatment as an inducement for patients to participate.

Isolation of the leprosy patient has not proved to be the most effective measure in reducing the spread of the disease even in those countries where facilities for isolation have been available. The leprosy patient is reluctant to part from his family for an unknown length of time, and

**Table 1. Interval between time of onset and diagnosis of leprosy, Naha Skin Clinic, 1962-65**

| Interval (years)  | Number of cases | Percent |
|-------------------|-----------------|---------|
| Less than 1.....  | 139             | 41      |
| 1 to 2.....       | 79              | 23      |
| 2 to 3.....       | 47              | 14      |
| 3 to 5.....       | 34              | 10      |
| 5 to 10.....      | 23              | 7       |
| More than 10..... | 18              | 5       |
| Total.....        | 340             | 100     |

there is extreme social stigma in being sent to a leprosy institution. These personal factors have influenced the person who suspects, or knows, that he has leprosy to conceal the fact for as long as he can, usually until the disease becomes far advanced. During this period persons with leprous leprosy continue to expose family members and the disease may progress to cause irreversible disability. In order to offset this tendency to conceal leprosy, it should become public knowledge that most cases of leprosy do not necessitate long-term hospitalization and that some may not require hospitalization at all.

A seven-phase leprosy control program was recommended by the authors to the Ryukyuan Government.

*Phase 1.* Marshall and co-workers conducted a limited survey in October 1966 on existing attitudes toward leprosy. The purpose was to gain information on what content and methodology might prove most effective in a mass communication effort to modify public attitude toward leprosy.

*Phase 2.* Seminars on leprosy for professional people, intended to create a climate of understanding and concern among practicing physicians and public health staff, were held in November 1966. This phase was timed to create awareness among professional persons sympathetic to the needs of a leprosy program

before the start of the information campaign. In their day-to-day contacts with the public, professional people were thereby in a better position to support the program.

*Phase 3.* To make a sufficiently strong impact on existing attitudes toward persons with leprosy, all methods of mass communication should be used. Initial targets for such a campaign should be the communities where patients once lived and to which they must return and communities where patients on home care live.

*Phase 4.* Development of a program of school health education concerning leprosy was recommended as a step in ending ostracism of children of leprosy patients. Graded teaching materials on leprosy and teacher orientation should be provided.

*Phase 5.* Staff of the six primary health centers should actively participate in the program of leprosy control, particularly the health officer and the public health nurses. The establishment of outpatient clinics in all health centers and an increasing practice of permitting patients with newly diagnosed cases of leprosy to remain on home-care treatment when appropriate would reduce the number of patients requiring hospitalization, many of whom become long-term patients in leprosariums. The integration of leprosy casefinding, family followup, and home-care treatment fits logically into the present tuberculosis control activities carried out by the public health staff.

*Phase 6.* Implementation of the first five phases would lead to the development of comprehensive medical care for leprosy patients. The patient with a newly diagnosed case, regardless of the stage of his disease, would receive the maximum benefits of curative, restorative, and rehabilitative services as well as care to prevent further damage by the disease. The elements of comprehensive medical care should be available and evident to those patients needing them. If the leprosy patient needing treatment understood the benefits to be derived from comprehensive medical care, as contrasted with the common concept of indefinite isolation, his cooperation could be expected to be easily gained.

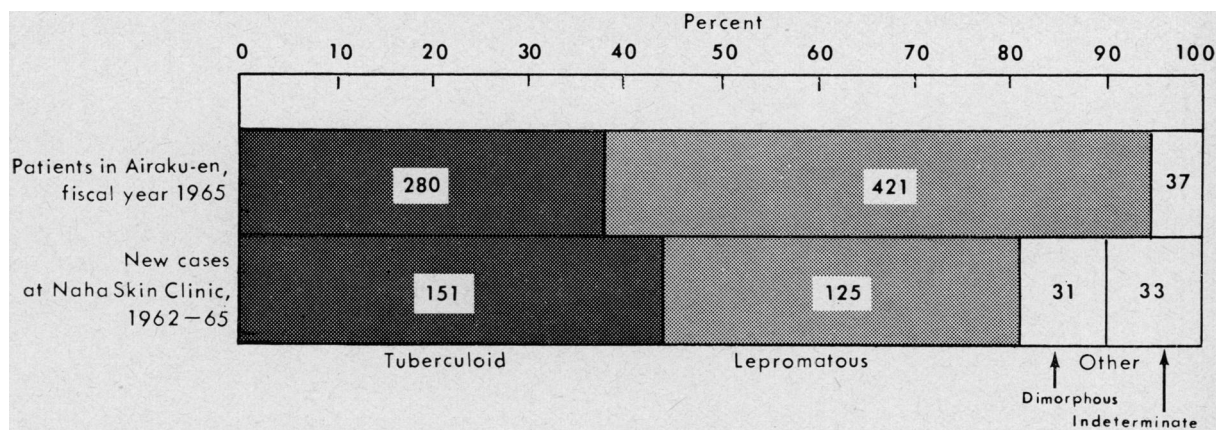
*Phase 7.* The functions of diagnosis, evaluative treatment, and rehabilitation should be reallocated among health and medical facilities

**Table 2. Disabilities in leprosy patients in Airaku-en leprosarium, Okinawa, June 30, 1965**

| Degree of disability                              | Male | Female | Total |
|---|------|--------|-------|
| Seriously handicapped; difficult to rehabilitate: |      |        |       |
| First.....  | 40   | 28     | 68    |
| Second.....                                       | 45   | 38     | 83    |
| Third.....  | 66   | 38     | 104   |
| Fourth.....                                       | 55   | 30     | 85    |
| Special case <sup>1</sup> .....                   | 25   | 16     | 41    |
| Rehabilitation possible:                          |      |        |       |
| Fifth.....  | 47   | 24     | 71    |
| Sixth.....  | 40   | 22     | 62    |
| Seventh.....                                      | 28   | 22     | 50    |
| Extra degree (no deformities in extremities)..... | 90   | 64     | 154   |
| Total.....  | 436  | 282    | 718   |

<sup>1</sup> No deformities in extremities, but serious complications such as epilepsy and mental disease.

## New cases of leprosy compared with hospitalized patients, by type of illness



NOTE: Figures in bars=number of cases.

in the islands. Currently the care of patients with all types of leprosy is provided almost entirely by the two leprosariums. Such a reallocation could greatly enhance services and would produce far less disruption of patients' families and occupations.

An effective national leprosy control program must include not only adequate diagnostic facilities, comprehensive medical care, and diligent casefinding, but must have administrative direction which transcends institutional boundaries. The public health division of the department of welfare should administer the program rather than the hospitals section of the medical affairs division of this department.

Functional reallocation of diagnostic, treatment, and rehabilitation facilities might include the following changes.

1. Patients initially diagnosed or suspected of having leprosy should be referred to the Naha Skin Clinic or similar facility developed for this purpose for confirmation of the diagnosis, evaluation, and recommendations.

2. Those patients requiring short-term care during evaluation and initiation of treatment should be admitted to a general hospital. Those who need only a periodic checkup should be referred to their district health center for home-care followup.

3. Patients who develop complications should be sent to a facility caring for acute disorders. These patients are candidates for a relatively early discharge to a home-care regimen or to

a facility for vocational rehabilitation. One leprosarium should be designated as treatment facility for acute complications of leprosy, and the other as a chronic leprosy facility primarily affording custodial care. In evaluating the two leprosariums it seems that Airaku-en would best serve as the facility for care of acute disorders.

4. Patients who are in a late stage of the disease, are severely crippled, or both, are not likely to be rehabilitated to the point of independence from institutionalization and should be referred to the long-term facility which primarily affords domiciliary care.

5. Use of the two existing leprosariums, the general hospitals, and district hospitals and health centers on a basis dictated by patients' needs could be done within the framework of the Hansen's Disease Prevention Act of 1961.

### Conclusions

Traditionally in the Ryukyu Islands, as elsewhere in the world, leprosy control is attempted by isolation of most cases. The practice of isolation makes early casefinding more difficult because persons try to conceal their disease as long as possible. Family members are generally uncooperative because of their own fears of being put in an institution. To have an effective control program, cases of leprosy need to be diagnosed early in the course of the disease, at a time when spread may be minimal and the development of deformity and disability most preventable. A public health staff trained to do

leprosy casefinding in their routine field activities should be responsible for an aggressive program of seeking leprosy early.

Geographic factors of an island population, coupled with a sophisticated level of professional personnel, make the Ryukyu Islands

nearly ideal for control and possible eradication of leprosy. A change in professional patient, and public attitudes about leprosy, through a well-developed and coordinated control program, is the key to achieving eradication.

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## Education Notes

**Applied Epidemiology for Physicians.** A course in applied epidemiology for physicians will be offered by the Training Program of the National Communicable Disease Center, Public Health Service, November 13-17, 1967.

This course, part of the continuing education program, is directed to physicians who serve as investigators of disease outbreaks or have administrative responsibility for such investigations. It serves both as a refresher for experienced health administrators and as an introductory medium for persons new to public health. The course is designed to show how epidemiologic techniques can be used in disease prevention.

Although the course will include lecture-discussion sessions, emphasis is placed on group participation obtained through the use of group solution of epidemiologic problems, seminar-type presentations, and panel discussions. Audiovisual aids are used in the presentations.

Registrants will be expected to attend all sessions. Additional information and application forms may be obtained from the National Communicable Disease Center, Atlanta, Ga. 30333. Attention: Chief, Health Professions Training Section, Training Program.

**Principles of Epidemiology.** The Training Branch of the National Communicable Disease Center, Public Health Service, will conduct a multidisciplinary course in epidemiology, January 15-19, 1968, as part of the continuing education program.

The course is designed to provide public health workers with a basic understanding of the use of

epidemiologic techniques in disease prevention. It is offered for physicians, dentists, veterinarians, nurses, laboratory workers, environmental health personnel, and other members of the public health team.

Participants will be admitted on the basis of professional education and experience and current responsibility in public health programs at all levels of government. Preference will be given to applicants whose professional tasks involve application of epidemiologic procedures.

Further information and application forms may be obtained from the National Communicable Disease Center, Atlanta, Ga. 30333, Attention: Chief, Health Professions Training Section, Training Program.

**Doctoral Program in Social Work and Social Science.** The University of Michigan is offering a program which combines social work with economics, political science, psychology, social psychology, or sociology and leads to a doctor of philosophy degree. Candidates are prepared for careers in research, teaching, policy development, and administrative positions in the social welfare field.

Students in a master's degree program in social work, experienced social workers, holders of master's degrees in social science, or those with bachelor's degrees only may apply.

Financial support is available from several sources, and stipends range from \$1,800 to \$3,600 plus tuition.

Fellowship applications must be received by February 1, 1968, and applications for admission only will be received until May 1, 1968.

For detailed information and application forms write to Doctoral Program, School of Social Work, University of Michigan, 1065 Frieze Building, Ann Arbor 48104.