The Star

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(Photo by Tanya Thomassie)

Capt. Charles Stanley

Capt. Charles Stanley has been named to succeed Dr Jacobson as director of the US National Hansen's Disease Programs. **(see page 1)**

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Stanley Stein
Founder - Editor, 1941 - 1967

The purpose of **The Star** is to: 1) Promote an educated public opinion of Hansen's disease, 2.) Furnish vocational rehabilitation for interested patients.

Views expressed in **The Star** are those of patients of the Gillis W. Long Hansen's Disease Center at Carville, Louisiana, except in the case of direct quotations or signed articles.

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Editorial Policy On Terminology

The Star stands firm in its opposition to the use of the term "leprosy." We shall never abandon our campaign to secure general acceptance of "Hansen's disease." Nevertheless, the word "Leprosy" does appear in **The Star** under circumstances which we feel are unavoidable, namely: when signed articles are authored by someone who does not agree with us or when material discusses the disease prior to the introduction of the term "Hansen's disease." We dislike the word "leprosy" intensely, but we dislike the practice of censorship even more.

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Dr Robert R Jacobson to retire as Director of the National Hansen's Disease Programs.

Dr Jacobson joined the Carville medical staff in July 1966 as Chief of Medicine and later became Chief of the Clinical Branch and served in that capacity until his appointment as Director of the National Hansen's Disease Programs.

The new director is Capt. Charles Stanley, formerly Chief Executive Officer at Carville. The naming of Capt. Stanley to succeed Dr Jacobson has been applauded by both patients and staff.

A RETIREMENT MESSAGE FROM DR ROBERT R JACOBSON WHO RETIRES AS DIRECTOR OF THE NATIONAL HANSEN'S DISEASE PROGRAMS IN THE UNITED STATES ON JULY 1, 2000.

After 34 years as an employee of the U. S. National Hansen's Disease Programs - The last 8 as its director - I have decided to retire. I do hope to continue my involvement with Hansen's disease treatment and control in various ways, but without the bureaucratic responsibilities of being director of the program. Actually, of course, although I refer to our new title of National Hansen's Disease Programs, to me, our long-term employees at our various facilities and most of the world it is all simply known as "Carville". I am sure this will continue to be the case for many years to come.

This has certainly been an exciting time to be involved with Hansen's disease work as our knowledge of the disease has and continues to rapidly increase, treatment has markedly improved and patient access to care has increased dramatically. Carville has played an important role in all of this and I am sure will continue to do so in the future.

Looking ahead over the next ten to twenty years, if we are ever going to eradicate Hansen's disease it is likely we will need an effective, safe, inexpensive (to produce and administer) vaccine with long-term effectiveness. There have been a number of advances in this area in recent years and success here is a strong possibility. It is also likely that we will see the further development of tests to improve early diagnosis of the disease and better treatment for reactions and neuritis. Likewise, although the incidence and severity of disabilities seems to have diminished with widespread use of MDT and improved control programs as part of the effort to eliminate Hansen's disease as a public health problem worldwide, it is still a significant problem. Thus, I would also hope to see improved methods to correct disabilities that so many Hansen's disease patients are left with as a result of their disease, but this is probably going to be more difficult especially in developing countries.

In the final analysis, it seems to me that Hansen's disease could be eradicated or at least we should be well on our way to eradicating it within the next two decades. It will, however, require a strong commitment to the effort by the various non-governmental organizations involved, international agencies and the countries themselves. With so many other major health problems, such as tuberculosis and AIDS requiring similar efforts, it will be difficult but not necessarily impossible.

Finally I believe that **The STAR** and organizations such as **IDEA** have a significant role to play in all of this by giving a voice to Hansen's disease patients everywhere in support of continuing improvement in Hansen's disease treatment, control and rehabilitation, and the elimination of the stigma still associated with this disease. **The STAR** must also serve as a means of communicating the latest and best in Hansen's disease management information to Hansen's disease field workers and others worldwide with limited access to such information.

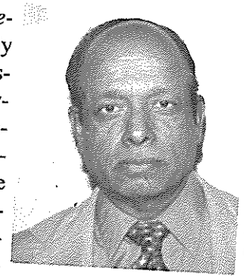
Clearly we all have a part to play in the Hansen's disease effort over the years ahead to see that the progress continues.

BACTERICIDAL ACTION OF AMPICILLIN/SULBACTAM AGAINST INTRACELLULAR MYCOBACTERIA *IN VITRO* AND *IN VIVO*

K Prabhakaran*, E B Harris, B Randhawa
US Public Health Service, GWL HD Center @ LSU

Dr Prabhakaran [sponsored by Pfizer] presented a paper at the Eleventh International Symposium on Infections in the immuno-Compromised Host, held in Halifax, Nova Scotia. An abbreviated Text of his paper is given below.

INTRODUCTION



Pathogenic mycobacteria like *Mycobacterium leprae* and *M. tuberculosis* usually multiply in phagocytic cells in specific tissues of the host. *M. leprae* was the first mycobacterium identified as the presumed causative agent of a human disease. It is an obligate intracellular parasite; no acceptable method is available as yet to culture the organism *in vitro*. It multiplies to a limited extent in the foot pads of mice, and causes generalized infection in the nine-banded armadillo (found in the warmer regions of North and South America). Recent sequencing of the **genome** of *M. leprae* reveals vast stretches of "junk" DNA, a genetic wasteland, containing hundreds of genes that no longer function. Although non-coding DNA makes up less than 15% of the genomes of most bacteria. It accounts for 50% of *M. leprae* genome. The finding probably explains the apparent inability of the bacterium for independent growth. The genome of *M. tuberculosis* is a third larger than that of *M. leprae*. However, the leprosy bacillus possesses some 100 genes that have no counterpart in *M. tuberculosis*. Some of these genes most likely code for enzymes unique to *M. leprae*, among mycobacteria. As early as 1967, we reported the presence of a highly active, unusual ***o*-diphenoloxidse** in the leprosy bacilli, that does not occur in tissue-derived *M. leparemurium*, *M. tuberculosis*, or other mycobacteria.

Multi-drug resistant strains (insensitive to two or more currently used drugs) of *M. leprae* and *M. tuberculosis* have already emerged, and the diseases caused by them are hard to control. These continue to be major public health problems, especially in the less-developed countries. About 15-20 years back, there were over 12 million leprosy patients in the world. As a result of intensive multi-drug therapy, now this has been brought down to less than 3 million. Still, incidence of the disease is about 750,000 a year. There are approximately 8 million people suffering from tuberculosis in the world today; over 2 million die of the disease every year. New bactericidal drugs against which the bacteria are unlikely to become resistant, would be of great help in the fight to eradicate these age-old scourges.

β-Lactam drugs are the most widely used antibacterial agents. Since most mycobacteria produce β-lactamase, the drugs are inactive against the bacilli. We discovered **de-repression** of β-lactamase in *M. leprae*. A new era in antimicrobial therapy began with the introduction of β-lactam drugs combined with inhibitors of β-lactamase. Three of these combinations generally available today are amoxicillin/clavulanate (**Augmentin**), ampicillin/sulbactam (**Unasyn**-injectable or **Sultamicillin**-orally active), and piperacillin/tazobactam (**Zocyn**). In our studies, these drug combinations were active against mycobacteria; the most effective was ampicillin/sulbactam and the least active Zocyn. Unasyn was bactericidal to *M. tuberculosis* and other mycobacteria in axenic cultures and to mycobacteria growing within macrophages. It killed drug-resistant as well as drug-susceptible *M. leprae* multiplying in mice; Sultamicillin was bactericidal to the bacilli in mouse foot pads.

RESULTS

I Intramuscular injection of **Unasyn** in mice experimentally-infected with *M. leprae* completely suppressed growth of the bacteria. Both drug-susceptible and drug resistant (to **dapsone** and **rifampin**) bacilli were killed.

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II A **rifampin**-resistant strain of *M. tuberculosis* H37 **Rv** (ATCC 35838) was grown in 7H9 medium with added ADC and Tween 80, at 37°C in a CO_2 incubator. The inoculum contained 10^7 bacteria. Different concentrations of **Unasyn**, ampicillin, sulbactam, or **Augmentin** were added to the cultures. No drug was incorporated into the controls. Good growth was visible in 4 weeks, as indicated by increased turbidity. Although Augmentin (60 or 20 ug/ml) showed inhibition of growth at 2 weeks, this effect was completely overcome at 4 weeks, because of the labile nature of the drug. Unasyn (60 or 20 ug/ml) was relatively stable and prevented growth of the bacilli. [Six other strains of pathogenic or nonpathogenic mycobacteria , drug-susceptible or resistant to **INH** or **Streptomycin,** showed similar results].

III The effect of the drugs on growth index of *M. tuberculosis* H37 **Rv** (ATCC: 27294) was determined by the **BACTEC** radiometric method. [Collaborative study with L B Adams]. The inoculum contained of $4x10^4$ organisms per vial. The gas phase consisted of 10.2% CO_2 in air. The drugs equivalent to 0.2 to 25 ug of the antibiotic) were added to the experimental samples and the vials incubated at 37°C. The growing bacteria released 14-CO_2 from the palmitic acid contained in the medium. Radioactivity of the 14-CO_2 was determined quantitatively on a scale from 0-999; the results were recorded as **growth index (GI)**. A GI of 100 was equivalent to 0.025 uCi of 14-CO_2. **Unasyn** showed complete suppression in the **GI** of *M. tuberculosis*, while the other drugs were less effective.

IV The **MBC** and **MIC** of β-lactam/β-lactamase-inhibitor combinations, determined by the **BACTEC** method showed that the MIC of UNASYN was about 1/4 of that of AUGMENTIN. No MIC or MBC was detectable for Zocyn at the concentrations used.

V The effect of UNASYN on four species of pathogenic mycobacteria (to humans or to animals) phagocytosed by mouse macrophages: *M simiae, M haemophilum, M avium, M microti.* The bacteria were exposed to monolayers of peritoneal macrophages harvested from BALB/c mice. Unphagacytosed bacilli were removed and three concentrations of UNASYN were tested. Optimum activity was observed at 100 mg/l which killed 58-97% of the intracellular mycobacteria, as determined by CFU.

VI BALB/c mice were inoculated in the hind foot pads with *M. leprae*. At two months, when the bacteria are in the logarithmic phase of growth, the mice were injected i.m. in the thigh region with UNASYN 5 days a week; 12.5 mg in 0.1ml, equivalent to 500 mg/kg. The treatment was continued for 3 months when it was stopped. The control animals were injected with distilled water. Three animals in each group were killed every month for the next 8 months, and the bacteria in the foot pads of individual mice were enumerated. *M. leprae* multiplied normally in the untreated mice and those treated with water. There was no multiplication of the bacteria in the mice treated with UNASYN indicating that the drug was bactericidal to *M. leprae*.

VII Mice infected in the foot pads were given different concentrations of SUTAMICILLIN, mixed with the feed, continuously for six months. Untreated mice served as controls. At six months, the mice were killed and the bacteria in the foot pads counted; 0.01% of the drug inhibited growth of *M. leprae* by 54%, 0.1% by 74%, and 0.20 by 93%.

VIII To test the activity of an orally-active ampicillin/sulbactam, SULTAMICILLIN, mice infected in the foot pads with *M. leprae*, were administered 0.50% of the drug mixed with the feed. The treatment was started at 2 months and continued for 3 months when it was stopped. Growth of the bacteria in the treated and untreated mice was monitored for the next 8 months. There was normal multiplication of the bacilli in the control group; in the treated mice the drug suppressed growth of *M. leprae*, indicating a bactericidal effect.

DISCUSSION

The sequencing of the genomes of *M. tuberculosis* and *M. leprae* has brought promises of new vaccines and modes of treatment against tuberculosis and leprosy. One is reminded of the great excitement and extravagant expectations that accompanied discovery of **monoclonal antibodies.** Only the future can tell whether the high hopes will be fulfilled.

Immuno-compromised subjects are particularly susceptible to mycobacterial infections which are difficult to manage. Tuberculosis and leprosy bacteria have evolved strains resistant to currently-used drugs. It has been said that "resistance is an inevitable consequence of bacterial evolution and human nature". Multi-drug resistant *M. tuberculosis* strains may contain as many as four or five different mutations.

Only 21% of TB patients now receive **DOT** (directly observed therapy) which is proven to be the most effective form of treatment; but it can cost up to $25,000.00 per person --- beyond the reach of the vast majority of cases that occur in the third world nations.

Use of β-lactam/β-lactamase-inhibitor combinations to treat mycobacterial infections would be an effective alternative method. DD-Traspeptidases (that cross-link peptidogycan chains in the synthesis of bacterial cell walls) are the killing targets of β-lactams. AUGMENTIN (amoxicillin/clavulanate) has been experimentally used to treat tuberculosis patients. However, clavulanate is relatively more active towards plasmid-mediated β-lactamases; asparagine to aspartic acid substitution in certain β-lactamases results in resistance to the enzymes. On the other hand, sulbactam is more active toward chromosomally-encoded β-lactamases.

In our studies, MIC of UNASYN was about 1/4 of that of AUGMENTIN. Ampicillin/sulbactam has been reported to be far more stable than amoxicillin/clavulanate. At 37°C, in aqueous solutions, 95% of the activity of sulbactam and 80% of the activity of ampicillin remained, after 24 h, where as only 2% of the activity of clavulanate and 36% of that of amoxicillin remained. Zn 2+-containing β-lactamases [Class B] are more resistant to inhibitors; but metallo-enzymes are not present in mycobacteria. [Class A or C β-lactamases contain active site serine residue]. Moreover, inhibitor-resistant β-lactamases have not been reported in mycobacteria.

Compared to Gram-negative organisms, the level of β-lactamase is, in general, rather low in mycobacteria, and efforts to induce synthesis of more of the enzyme in the bacteria have not succeeded; as such, smaller concentrations of the drug would only be required to kill the bacilli.

CONCLUSION

Considering the greater stability and higher activity of ampicillin/sulbactam, compared to amoxicillin/clavulanate, UNASYN or SULTAMICILLIN should be of great use for treating drug-resistant mycobacterial diseases.

Acknowledgment

This study was supported by the Non-Clinical Program for Anti-Infectives, Pfizer Pharmaceuticals Group, **Pfizer Inc,** New York, NY. ★

Abstract:

12th Mediterranean Congress of Chemotherapy

Title: KILLING OF MYCOBACTERIA BY AMPICILLIN/SULBACTAM
K Prabhakaran, EB Harris, B Randhawa
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The development of resistance by pathogenic bacteria to currently available drugs has turned into a critical problem in recent years. No new classes of antibacterial agents have been introduced since the 1960s. β-Lactam antibiotics are the most widely used drugs against bacterial infections. β-Lactamases synthresized by infectious organisms, including mycobacteria, degrade these drugs, rendering them inactive. A new era in chemotherapy of bacterial diseases began with the introduction of β-lactam antibiotics combined with β-lactamase inhibitors. Amoxicillin/clavulanate (AUGMENTIN), ampicillin/sulbactam (UNASYN) and piperacillin/tazobactam (ZOCYN) are now in use against infections caused by Gram-negative bacteria. We found that these drugs are active against mycobacteria, ampicillin/sulbactam being by far the most effective. UNASYN suppressed the growth of mycobacteria in axenic cultures and those multiplying in macrophages. The drug killed drug-resistant *Mycobacterium tuberculosis* and *M. leprae*. Both the injectable form of ampicillin/ sulbactam (UNASYN) and the oral form (SULTAMICILLIN) were effective. In immunocompromised hosts, infections caused by saprophytic mycobacteria and by drug-resistant *M. tuberculosis* are difficult to control. Our studies offer a rational method for effective treatment of mycobacterial diseases resistant to conventional drugs.

World Health Organization

THE FINAL PUSH TOWARDS ELIMINATION OF LEPROSY

STRATEGIC PLAN 2000 - 2005

PREFACE

One of the important developments in public health in recent years has been the tremendous progress made in conquering leprosy through the widespread implementation of multidrug therapy (MDT) to cure all patients and to reduce the disease burden in leprosy-endemic countries. This progress is essentially the results of a resolution of the World Health Assembly in 1991 that committed all leprosy-endemic countries to a global target of reducing the prevalence of leprosy to less than one case per 10,000 population. This effort was described as the elimination of leprosy as a public health problem, setting a target date for the year 2000. These targets were extremely useful in generating political commitment to push ahead and achieve the results that would otherwise not have been possible. This is well demonstrated by the fact that, since 1985, the prevalence of leprosy has been reduced globally by 85% by curing nearly 10 million leprosy patients. A large part of the credit for this should go to the determination and commitment of leprosy-endemic countries to eliminate leprosy, under the overall leadership of WHO, the consistent efficacy of MDT in curing leprosy, and the all-around support provided by various partner agencies, in particular international donor nongovernmental organizations (NGOs). The epidemiological situation in leprosy was also very favorable in many countries, especially in Africa. The progress made so far is more than just in numbers and statistics alone. Advancements made in relation to reduced physical, psychological and social suffering, as well as an improved health image for countries, are truly immeasurable.

As we approach the end of the millennium leprosy is no longer the dreaded disease that it used to be and leprosy patients face a far better future than ever before. This does not mean that all leprosy problems have been resolved, nor does it mean that we can afford to slacken our efforts towards the elimination of the disease as a public health problem. In spite of the fact that the profile of the disease is much milder, and that disability among new patients is quite low, the social image of leprosy has not changed greatly in many parts of the world. This is all- too-well reflected in the attitude of the community, particularly towards individuals disabled or disfigured owing to the disease.

Today we can be confident that elimination -- the reduction in prevalence to less than one case per 10,000 population at the national level -- is within reach in all countries by the end of 2005. There must be no complacency, for there are still countries where very special efforts will be needed to reach that goal. And there are even areas within countries where, long after the country has attained elimination at the national level, sustained efforts will be required to reach the target at provincial and district level.

1. Introduction and Overview

Leprosy is considered to be a special public health problem, owing to the permanent disabilities it causes as well as its social consequences such as discrimination and stigma. It currently affects over 1 million people in Africa, Asia, South America and the Pacific, and WHO estimates that between 2 and 3 million individuals are permanently disabled as a result of it. Although all the registered cases are on treatment, it is estimated that during the period 2000-2005, about 2.5 million people affected by leprosy need to be detected and treated.

Multidrug (MDT) is the cornerstone of the leprosy elimination strategy as it cures patients, reduces the reservoir of infection and thereby interrupts its transmission. MDT also prevents disabilities through early cure. The 1991 World Health Assembly resolution to eliminate leprosy as a public health problem by the year 2000 (defined as a prevalence rate of less than one case per 10,000 population) gave substantial impetus to global leprosy control efforts.

Significant progress has been made towards this goal: over the past 15 years 9.8 million leprosy patients have been cured, the prevalence rate has dropped by 85%, and the number of countries where leprosy is a public health problem has dropped from 122 to 24. However, according to WHO estimates, about 10 countries -- representing 92% of the global leprosy burden (820,000 cases) -- will not reach the target on time, even at national level. Every year about 700,000 new cases are detected. But there is a risk that these significant achievements will be undermined unless efforts are intensified to eliminate leprosy in the remaining endemic countries.

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Overall strategy

The strategy for the elimination of leprosy as a public health problem is quite clear in having a definite target that is not only aspirational but also managerial. The strategy focuses on:

- MDT, which together with early case-finding, is the best way of dealing with the problem of leprosy and its consequences;
- preventing the occurrence of disabilities by early diagnosis and treatment and improved management of cases;
- changing the negative image of leprosy;
- working closely with governments and every agency interested in leprosy elimination in a spirit of true partnership;

The elimination strategy is a highly relevant and sound approach to deal effectively with the leprosy problem. The key elements of the strategy require further innovative approaches, better adaptation to local realities, and greater attention to the implementation process itself.

It is expected that a global coalition will sustain enthusiasm for leprosy elimination at all levels in countries as well as respond to demands for guidance, support, MDT drugs and materials in a timely and effective manner. In particular this will mean improved logistics, data collection and analysis, developing a network of focal points at national and subnational levels, constant communication and check-backs with national task forces, and rapid response for providing promotional material and drugs

Scope for the future

- Implementation of the intensified strategy has already renewed the interest for leprosy elimination.
- WHO and other partners are fully committed and will continue to sustain the political commitment, especially in countries that will require additional efforts.
- New opportunities have been created to advocate globally and locally the elimination of leprosy. This should help in creating a new image for leprosy and promote its elimination.
- Broader partnership will help in mobilizing new expertise and additional resources for implementing innovative strategies at local level. Leprosy program managers, at all levels, will be further motivated by being part of a global initiative and will share experiences with other public health managers. This will be particularly important for activities related to logistics, program management and disease surveillance.
- Clear approaches will be worked out to ensure the true integration of leprosy control activities, phasing out of specialized programs, including giving new opportunities both to specialized and general health workers, will be built into the intensified strategy.
- Ownership of leprosy elimination will be actively given to national programs, essentially at the local level.

1.1 Leprosy: a disease that can be eliminated

Over the last 15 years there have been significant advances in reducing leprosy prevalence, thereby reducing the grossly disfiguring consequences, pain and suffering, and social stigma it causes.

The program to eliminate leprosy will help in:

- alleviating and preventing the suffering of the affected individuals;
- reducing the transmission of the disease;
- supporting and strengthening activities of local health services;
- reducing the social stigma and ultimately changing the image of leprosy.

1.2 Leprosy: a disease of poverty

Leprosy is a leading cause of permanent disability in the world. Although leprosy is not fatal, the chronic symptoms often afflict individuals in their most productive stage of life and therefore impose a significant social and economic burden on society.

In addition to its economic impact, leprosy imposes a heavy social burden upon affected individuals and their families. Patients are often shunned and become isolated within their communities. Mocking and social stigmatization are frequent behaviors toward affected individuals. Because persons with chronic manifestations of the disease are often unable to work or to marry, they become dependent for care and financial support leading to further insecurity, shame, isolation and consequent economic loss.

1.3 The goal

Elimination of leprosy as a public health problem in all countries by the year 2005[1].

1.4 Rationale and approach

Technology and strategic development

First put into widespread use in the mid-1980s, achievements with MDT implementation during the first 10 years were so impressive that it became possible to envisage eliminating leprosy as a public health problem. It was felt that a strategy based on MDT could reduce the prevalence to such a level that transmission of infection would be interrupted; that level was set at less than one case per 10,000 population. This apparent breakthrough emboldened the Forty-fourth World Health Assembly, May 1991, to adopt resolution WHA44.9 which committed Member States to promote the use of all control measures, including multidrug therapy together with case-finding, in order to attain the global elimination of leprosy as a public health problem by the year 2000.

Achievements

The strategy based on MDT and its intensive implementation has so far resulted in the following achievements:

- by the beginning of 1999 about 10 million cases had been cured;
- currently almost all of registered cases are receiving MDT;
- the number of relapses remain low, at about 0.1% per year;
- drug resistance following MDT has not been reported;
- the number of countries showing prevalence rates above 1 per 10,000 population has been reduced from 122, in 1991, to 24 at the beginning of 1999.

The reduction in prevalence will lead in the course of time to a reduction in the transmission of infection and of disease incidence. The implementation of MDT by itself has helped in updating registers and improving case management in such a way that the impressive reduction in prevalence has been achieved in all leprosy-endemic countries. The fact that detection of leprosy is on the increase in a number of endemic countries is largely due to the wider implementation of MDT services, greater emphasis on early case detection and increased involvement of the affected communities in the elimination activities.

1.5 Critical operational issues

- Improving community participation in early detection and drug treatment.
- Improving access to high quality MDT drugs.
- Implementation of best practice for case management, including prevention and management of disabilities.
- Mechanisms of surveillance and monitoring of interventions at the local level.

Such issues can be addressed only by implementing program activities together with monitoring mechanisms and the modification of strategies adapted to local realities.

1.6 Partnership

Success will depend on strong public-private coalitions built on wide ownership, equality of stakeholders, transparency of governance, shared credit, and recognition of respective roles and responsibilities.

2. The plan

Each of the sub-sections below represents one of the four major spheres of activity in the leprosy elimination program: (i) reducing the reservoir of infection by improving access to MDT services; (ii) curing patients and preventing suffering and disabilities; (iii) essential technical support; and (iv) phasing out.

2.1 Reducing the reservoir of infection by improving access to MDT services

2.1.1 The principles underlying the strategy

The global strategy is based on detecting patients as soon as possible and curing them with the MDT regimens recommended by WHO. Over the years, the leprosy elimination strategy has been working extremely well, as evidenced by the fact that about 10 million patients have been cured by MDT with a very low relapse rate. The main elements of the current strategy are; (a) capacity building within integrated program, including simplified procedures for diagnosis and treatment: (b) free-of-charge MDT treatment; (c) reaching neglected population groups; and (d) monitoring progress towards elimination.

2.1.2 Country planning, preparation and activities

The first step in developing a program to accelerate leprosy elimination is to adapt the national plan of action with the Ministry of Health (and other ministries) and to provide support in terms of advice, supervision and assistance to run the national program. This should be done by joining the appropriate national task force (or equivalent where necessary) to develop and implement tailor-made solutions to local realities. The national plan of action records the background, objectives, strategy, administration, management and proposed budget for the national program. It will also serve as a descriptive document for presentation to potential donors interested in becoming partners in the program.

Based on the national plan of action, applications with detailed implementation plans will be prepared by the Ministry of Health for free-of-charge supplies of donated MDT (for all national programs and NGOs). These applications, which should include detailed proposals for implementation, are reviewed for program feasibility, integrity and sustainability by independent groups with these responsibilities. Review groups will encourage the earliest and widest possible initiation of revised national plans of action.

[1] In this document, elimination of leprosy as a public health problem is defined as reduction of the leprosy prevalence at a given point in time to a level below one per 10,000 population at the national level

2.1.2.1 Status (country activities) 1999

- By mid-1999, 24 countries in all the Regions of WHO except Europe had not reached the elimination target. These are: in Africa (Angola, Cameroon, Central Africa Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of Congo, Ethiopia, Gabon, Gambia, Guinea, Guinea Bissau, Madagascar, Mali, Mozambique, Niger and Sierra Leone), in the Americas (Brazil and Paraguay), in South-East Asia (India, Indonesia, Myanmar and Nepal), and in the Western Pacific (Papua New Guinea).

- By mid-1999, 80 countries had submitted requests for the MDT donated to WHO.

2.1.2.2 Targets (country activities)

By the end of 1999:

- Detailed review of the situation in the 24 remaining endemic countries.
- Development of workplans for implementing intensified activities in 12 major endemic countries.

By 2000:

- Elimination at national level will be achieved in all but about 10 of the remaining countries.
- Intensified activities will be implemented in all endemic countries.
- National task forces will be operating in all major endemic countries.

2.1.2.3 Activities

- For planning purpose, and based on existing information, countries may be classified as follows[2]:

- *Countries that need special efforts to intensify elimination strategy.* In these countries, epidemiological trends over the last 10 to 15 years show high and often increasing detection rates, and geographic coverage with MDT is not complete or has been completed only recently. Some of these countries are close to the elimination level nationally. However, lack of information does not allow trend analysis and it is felt that intensive activities should be sustained to ensure that the geographic coverage is optimal.
- *Countries where the elimination strategy should be accelerated.* These countries are close to the elimination level nationally and are likely to reach the target by the end of 2000.
- *Countries where the elimination strategy should be sustained.* These countries have a long history of high endemicity and it is important to make sure that leprosy control activities are fully integrated and that epidemiological surveillance is maintained for a number of years.

Group 1: Countries that need special efforts to intensify the elimination strategy.

Angola, Brazil, Central African Republic, Democratic Republic of Congo, Guinea, India, Indonesia, Madagascar, Mozambique, Myanmar, Nepal, and Niger.

The following activities will be intensively implemented:

- enabling all health facilities in endemic districts to diagnose and treat leprosy;
- ensuring easy and uninterrupted access to free MDT drugs;
- ensuring high cure rates through flexible and patient-friendly drug delivery systems;
- promotion of case-finding by informing the public about the disease and encouraging individuals with suspicious skin lesions to come forward for treatment;
- sustaining high geographic coverage with MDT services over 3-5 years;
- sustaining interventions for the prevention and management of disabilities;
- closely monitoring progress towards elimination at the district level;
- changing the community image of leprosy through information, education and advocacy.

Group 2: Countries where the elimination strategy should be accelerated

Cameroon, Chad, Congo, Côte d'Ivoire, Ethiopia, Gabon, Gambia, Guinea Bissau, Mali, Papua New Guinea, Paraguay, and Sierra Leone.

The following activities are to be accelerated to ensure elimination is achieved as planned:

- ensuring easy and uninterrupted access to free MDT drugs;
- ensuring high cure rates through flexible and patient-friendly drug delivery systems;
- sustaining high geographic coverage with MDT services;
- sustaining interventions for the prevention and management of disabilities;
- closely monitoring progress towards elimination at the district level.

Group 3: Countries where the elimination strategy should be sustained

Argentina, Bangladesh, Benin, Burkina Faso, Cambodia, Colombia, Cuba, Egypt, Ghana, Haiti, Laos, Liberia, Maldives, Malaysia, Nigeria, Pakistan, Philippines, Senegal, Sri Lanka, Sudan, Tanzania, Thailand, Uganda, Venezuela, Viet Nam and Yemen.

[2] *Grouping of countries is subject to changes.*

The following activities should be implemented:

- providing simplified guidelines and materials for diagnosing and treating leprosy at the health level;
- providing easy access to MDT by supplying adequate stocks of MDT free of charge;
- identifying geographical areas where the disease is more prevalent and to implement the core activities of the intensified strategy;
- sustaining interventions for the prevention and management of disabilities;
- putting into place simple and integrated surveillance system as well as referral systems.

2.2 Curing patients and preventing suffering and disability

2.2.1 MDT *in all health facilities*

2.2.1.1 Principles

While treating all registered patients with MDT is a dramatic achievement in the fight against leprosy, it has to be recognized that the geographic coverage of health facilities capable of providing MDT services is far from satisfactory. This is mainly because leprosy has always been considered as an exceptional disease requiring special systems for dealing with it As a result, procedures and norms for diagnosing and treating the disease have hitherto been seen as beyond the capabilities of the majority of general health services.

To overcome these difficulties and to accelerate progress towards elimination, WHO and its advisory bodies have simplified technical procedures for diagnosis, classification and treatment, including shortening treatment duration.

Ensuring that MDT is available and readily accessible to patients at the community level is one of the essential elements in the elimination strategy, without which all the efforts of case-finding, diagnosis, classification and drug supply are rendered meaningless. The strategy aims at focusing on the district level in major endemic countries. In each endemic district, core activities related to diagnosis and treatment of leprosy will be vigorously implemented in all existing health facilities.

2.2.1.2 Targets

By end of 1999:

- a list of endemic district in all endemic countries;
- a list of all health facilities and their capability with regard to providing MDT services.

By 2000 and beyond:

- MDT services in all health facilities in endemic areas;
- close monitoring of MDT utilization;
- monitoring of the reduction of prevalence and detection at district level.

2.2.2 Leprosy elimination campaigns and special initiatives for reaching out

Leprosy elimination campaigns (LEC) aim at accelerating elimination activities in the major endemic countries through detecting and treating patients who for various reasons have not yet been detected. This initiative is a combination of three elements, namely: (i) promoting community awareness and participation in leprosy elimination activities; (ii) capacity building measures for local health workers to improve MDT services; and (iii) case finding and curing patients with MDT. LEC is designed as a campaign in that all the efforts are carried out within a relatively short period of time. They cover a fairly large population and involve the maximum possible number of health workers.

Special action projects for the elimination of leprosy (SAPEL) were introduced with the objective of reaching patients living in difficult-to-access areas or among neglected population groups, and thus to provide leprosy services, specifically MDT, to those who are geographically inaccessibly, politically neglected groups, ethnic minorities and certain population groups like nomads and refugees.

The main elements of the special action projects are: (i) innovative actions, adapted to the local culture and resources to find cases and cure them; (ii) capacity building for local health workers or volunteers (i.e. local leaders, priests, imams, teachers, etc.) with the aim of establishing sustainable MDT services; and (iii) promotion of community awareness and mobilization of their participation in case-finding and treatment activities.

These projects serve an important role in bringing services to neglected population groups and to those patients who would not otherwise be reached. Linkages with other partners in the planning and implementation of activities should be sought with a view to expanding to more underserved populations.

2.2.3 Prevention of disabilities and rehabilitation

The current situation with regard to leprosy and people with leprosy-related disabilities warrants a clearly-focused strategy in order to reach all those in need. It has been estimated that, at present, there may be between 2 and 3 million persons with leprosy-related impairments and disabilities in the world. The strategy should be elaborated at country level with full participation of the health sector, as well as other sectors, nongovern-

mental organizations and community leaders. Rehabilitation of disabled people is only one aspect of the more general issue of communities sharing the responsibility of providing a meaningful life to all its members. Access to all the existing programs for disabled, social and economic welfare, including community-based rehabilitation, should be made available to leprosy- affected persons.

2.3 Essential technical support

2.3.1 Community ownership and information

The participation of the community in leprosy elimination activities needs to be increased, especially in order to change the negative image of leprosy and the stigma attached to the disease towards a positive end. This will require identifying obstacles to community participation and developing strategies for promoting community action. The main difficulties are the lack of political will, and ignorance about the symptoms and signs of the disease. The elimination strategy cannot depend on the health services alone and therefore the involvement of other sectors in the community is crucial to achieving the goal.

The local community and its leaders should play a key role in improving public awareness of the disease and the availability of free and effective treatment. They may also be crucial in supporting MDT services, case-finding, and ensuring that patients complete their treatment, particularly in areas where routine general health services either are not available or do not function properly. Indeed, they may be the only possibility for delivering MDT drugs, supervising the monthly drug administration and retrieving defaulters.

There is an important need to improve communication and collaboration for advocacy between the elimination program and the media on how to make leprosy elimination attractive to the public and on how to generate support for the activities. As a disease affecting mainly underserved people and generating intense emotions linked with the age-old stigma attached to those affected by it, leprosy has always had certain very special features. As a result, the fight against leprosy has traditionally been undertaken by a relatively small group of people, highly dedicated but often reluctant to share the responsibility for the disease and its control with a wider audience. This explains to some extent why the tremendous achievements in leprosy control during the last half of the 20th century are not well known or are even under-played. Today we know leprosy is curable, but making it interesting to the public, the scientific community, decision-makers, and politicians is not easy. The major approaches to creating awareness and support in the community are through information, education and communication. The mass media can be very helpful in improving community awareness but may also have a negative impact through biased stories.

2.3.2 Capacity building at local level

The key to intensifying and sustaining elimination activities at local level is to build the capacity of general health workers and community health volunteers in suspecting and diagnosing the disease, in counselling patients and in providing appropriate MDT services. WHO and its advisory bodies have already simplified the technology for these activities, including providing standard blister calender packing for easy delivery of drugs and adequate training and teaching materials. The clinical signs of early leprosy are easily visible and the cardinal diagnostic sign, i.e. loss of sensation in the affected skin, is unique to the disease. All health workers can be educated in simple procedures for diagnosis and prescribing the appropriate MDT blister pack.. Similarly community volunteers can be motivated to inform the community to report to the nearest health centre and can assist patients in getting their treatment.

Capacity building for undertaking elimination activities will be done through simple, task-oriented, self-learning and user-friendly materials made available at the local level. National training centres, educational institutions and local NGOs will play a key role in disseminating appropriate information on leprosy elimination.

2.3.3 Drug supply and logistics

While the supply of high quality MDT remains the cornerstone of the intensified elimination strategy, greater emphasis needs to be given to ensuring that all communities have free and unfettered access to treatment, even in the most peripheral areas. Endemic countries naturally exhibit regional differences in terms of the prevalence of the disease and the capacity to effectively manage the control program. There are many reasons for this, including the availability of trained health staff, difficult terrain or poor security, lack of storage capacity for MDT drugs, and shortage of vehicles with which to distribute the drugs.

For similar reasons, there can also be wide disparities *within* individual regions of endemic countries. In order to fully interpret and manage both these inter-regional and intra-regional disparities, countries where leprosy is still endemic and their partners should strengthen management at a more micro-level than is generally done at present.

Governments of countries, WHO and its partners will be directly involved in logistics planning by:

- estimating MDT requirements at district level, and planning and coordinating delivery schedules of MDT from central stores;
- monitoring MDT flow at state/province, district and sub-district levels to ensure that it is adequate, and that remote or isolated communities are not missed out of the delivery network;
- empowering communities by raising awareness of the disease and its treatment, and ensuring that drugs are available at the local level;
- applying a simplified information and reporting system in the field, wherever possible computerized, and using existing geographic information systems to identify areas of high endemicity that require special attention or additional targeted resources.

2.3.4 Surveillance and programme monitoring

Most endemic countries are currently using well-standardized leprosy information systems. The essential indicators used for monitoring progress towards the elimination of leprosy are prevalence, case detection, coverage with MDT, patients cured with MDT, relapses and newly-detected cases with grade 2 disabilities and impairments. These indicators should be analyzed at the district level through the development of a district-level database. Geographical information systems can be a valuable management tool in strengthening the district-level capacities for surveillance and monitoring. The internal validity of the indicators should be continuously assessed by independent monitors in collaboration with the national programme. The main objective of such monitoring will be to collect indicators that reflect the performance of MDT services, especially the availability of drugs and the quality of patient care at the district level.

2.4 Phasing out

2.4.1 Validation of leprosy elimination

A weak spot in many countries is the collection and analysis of information on leprosy. Several attempts have been made to standardize definitions and reporting systems, but in general these are still too complex and have had limited acceptance. There is an urgent need to identify, through independent (and rapid) assessment, geographic areas where the transmission of leprosy is high. On the other hand, very sophisticated routine information collection on leprosy at health centre level should be stopped. In a significant number of endemic countries, it is still virtually impossible to get a clear picture of what the situation is, what has been achieved, and what remains to be done.

Certification or validation is linked with the concept of elimination, and it is therefore likely that an increasing number of countries and donor agencies will ask for it in the near future. However, there are no tools at the moment to carry out such an exercise, and existing epidemiological surveillance systems are not yet sufficiently effective. The only alternative to certification would be to strengthen and maintain surveillance systems with a high degree of coverage over a number of years, and this is feasible only if adequate resources are made available.

2.4.2 Handing over

To achieve elimination, it is important that MDT services should be available and accessible at the most peripheral level so that patients can get treatment at their nearest health centre. The integration of MDT services within the general health services is regarded as the key to achieving elimination. The rationale behind this approach is that the general health services are relatively more widely distributed, and have close and frequent contact with the local community. Involving the general health services will also improve case-finding and case-holding activities. In addition, such integration will help to demystify the disease and increase awareness about the disease in the community.

The process of integration should be simple and practical. The tasks assigned to the workers from the general health services should be clear and in line with their daily routine activities, including the information systems. With integration, more health centres are expected to be providing treatment, and the caseload in each centre will be relatively low in comparison to the attendance at monthly or weekly leprosy clinics opened by the specialized/vertical programmes. Some countries with larger vertical programmes will require assistance in carrying out these structural adjustments.

Integration will help in maintaining MDT services at the peripheral level, especially in areas where prevalence is declining. Several national programs, even in countries with very high prevalence, have integrated leprosy services, mainly because of the urgent need to expand MDT coverage. However, it is important to have an element of a specialized program in all endemic countries, either at the central level or -- in some larger countries -- at intermediate level. This specialized element for leprosy will be needed for providing technical guidance, for monitoring and evaluating the progress of elimination, for training and for research purposes. Referral centres will also support the general health services in diagnosing difficult cases and in providing certain specialized care to patients with complications.

3. Timing

year 2000:

- Advocacy for leprosy elimination in all countries.
- Detailed review of the situation in the most endemic countries.
- Strategic development in collaboration with countries and partners.
- Development of materials for capacity building, advocacy, and public information.
- Creation of national task forces (or equivalent) (government, WHO and partners) in the most endemic countries.

(contd on page 15)

SISTER HILARY ROSS AND CARVILLE

Her Thirty-Seven Year Struggle Against Hansen's Disese

PART II

Gems from past issues May-June,1991

Cynthia M Gould

Prior to his assignment at Carville as Medical Officer in Charge, Dr Faget focused on tuberculosis research from which he found many similarities with Hansen's disease. He hypothesized that chemotherapeutic drugs which produced clinical improvements when treating tuberculosis could also prove beneficial in the treatment of Hansen's disease. Late in 1940, Dr Faget wrote Dr E A Sharp, Director of the Department of Clinical Investigation at Parke-Davis Company, requesting information on the work done at the Mayo Clinic with anti-tuberculosis agents. Although the drug Promin produced favorable results in guinea pigs infected with the tuberculosis bacterium, Dr Faget sought additional information about toxic reactions and research in progress elsewhere to evaluate the drug thoroughly.

Dr Sharp informed Dr Faget that a Mayo Clinic publication by Drs William H Feldman and Horton C Hinshaw cited similar results with this drug. Meanwhile, Dr Edmund V Cowdry of Washington University in St Louis experimented with Promin in the treatment of rat leprosy, a condition which closely duplicated Hansen's disease in the human body. Dr Cowdry communicated favorable results to Dr Faget. The size of the lesions in rats decreased when treated with Promin; moreover, those rats treated with the drug exhibited an improved physical condition when compared with those left untreated and showed no debilitating effects during prolonged drug administration. Dr Faget and Dr Sharp continued to correspond and cooperated closely as the possibility of beginning Promin on patients at Carville drew near.

Promin treatment began at the United States Public Health Service Hospital in Carville on March 10, 1941 when Dr Frank McCreary injected six volunteer patients with the experimental drug. Adequate dosages by the oral route could not be tolerated, thus necessitating the administration by intravenous route instead. Sister Hilary helped with IV theapy when nursing shortages prevailed. Improvements were slow but dramatic as early cases recovered in six months; older cases required a two - to three-year treatment regime. After the intravenous administration of Promin for two weeks, experience proved that a one week discontinuance of the drug diminished the occurrence and severity of toxii reactions. During this brief interim, the body replaced the cells destroyed by the blood-lyzing action of the drug so that adjunct therapy for anemia was not needed.

Other pharmaceutical laboratories introduced new sulfones for oral administration. Abbott laboratories developed Diasone in July, 1943; Promizole entered the pharmaceutical market in March, 1945. All the sulfone drugs required periodic urinalysis and blood counts to detect toxic effects on the body's blood components and kidney functions. Sister Hilary played a crucial role in the lab, working overtime to complete these routine lab procedures, and also performed experiments evaluating the absorption and excretion of the sulfone drugs in the blood and urine.

She worked closely with physicians and medical technicians who provided both scientific expertise and technical assistance during her laboratory research. Ultimately this research culminated in forty-six scientific journal articles which she wrote or co-authored. Dr A C Bratton, Director of Pharmaceutical Research, Parke-Davis Company, provided information for the determination of some of the sulfones in the blood and urine of patients. Carville's laboratory physician, Dr George Fite, reviewed selected manuscripts prior to publication, and medical technicians Odom A Amedee and Percy Cambre provided technical assistance, probably to obtain blood, urine, and tissue specimens. All research data required the rigid scheduling of specimen collection to eliminate unwanted variables that could falsify results.

In her review of blood and urine concentrations during the administration of Promin, Diasone, and Promizole to 187 patients over six months, Sister Hilary obtained various results. Based upon her findings, she speculated that Promin was stored in the kidneys and liver up to nine days after the last dose; kidney-impaired patients taking Diasone continued to excrete the drug, thus decreasing the chance of causing additional kidney damage. Promizole urine concentrations also remained higher than Promin and Diasone without the formation of kidney stones. Research proved invaluable for determining correct dosages, especially in patients with kidney disease and with those who exhibited frequent toxic reactions such as skin rashes, fever, psychosis, and gastrointestinal complaints. Because of the sulfone drugs and Sister Hilary's research in determining correct dosages, patients' chances of receiving toxic drug dosages were reduced while the hope of their discharge from Carville became a reality.

As a means of evaluating clinical improvement of patients on the sulfone drugs, Sister Hilary initiated a photography project which brought her national recognition. First she used black and white photos, but later progressed to 35mm prints which were invaluable in documenting the results of treatment over a span of months and years. In October 1946, the Second Pan-American Leprosy Congress met in Rio de Janiero and reviewed her "before and after" photographs. In spite of the dramatic improvements exhibited in her work, the Congress concluded that until the sulfones underwent additional testing and the drugs were available for the general patient population, chaulmoogra oil would remain the treatment of choice.

The Carville **Star** stirred up resentment and hostility in other countries by publicizing information about the sulfone drugs not yet available to such underdeveloped parts of the world as South America and the Far East. Some countries censored **The Star** by cutting out mention of Promin and other sulfones before allowing patients to read the magazine. The patients' behavior in Brazil bordered on revolt because they were still receiving the useless chaulmoogra oil. In spite of the opposition to **The Star**'s account of the sulfone, Sister Hilary and the other professionals at Carville resumed their activities with unrelenting zeal.

Sister Hilary applied her skills in photography both in and out of the laboratory. Stanley Stein recalled that she even climbed ladders to achieve just the right angle and view to shoot a picture. But experts in medical photography wanted to develop standardized methods and equipment for the graphic measurement of results in the new treatment of Hansen's disease. William Taylor, Director of Photography at the Temple University Medical School, visited Carville to work with Sister Hilary on this problem. He was impressed with the work at Carville and with Sister Hilary's photographs, which he judged as "dramatic".

In addition to these domestic contributions, Sister Hilary attended international congresses to discuss developments made in leprology. At the Sixth International Leprosy Congress (1953) in Madrid Dr Rolla Wolcott and Sister Hilary presented a paper entitled "Exacerbation of Leprosy During Present-Day Treatment," which examined four Carville patients who showed recurring lesions and bacteria while undergoing sulfone therapy. Sister Hilary included graphic photographs of skin lesions and hand contractures to illustrate the clinical appearance of the disease. The authors concluded that, apart from the emotional strain, most patients witnessed a quiescent stage before new lesions erupted and that no consistent factor precipitated the new outbreaks. Later, in a panel discussion on immunology, Sister Hilary discussed the possibility of using a vaccine as a preventative measure for children born in Hansen's disease households or in endemic areas. The panel decided, however, that further investigative and testing measures were needed before drawing conclusions about the vaccine's effectiveness.

In 1958 Sister Hilary, after devoting more than thirty years of her life to the treatment of Hansen's disease, met with her relatives and their families after a lapse of forty-two years. The large family delegation met Sister Hilary in San Francisco where she also made one television appearance addressing her work at Carville and participated in five speaking engagements. One need not speculate why so many decades passed before Sister Hilary visited her family again. Her career and God filled her life so completely that her family remained on the periphery, or perhaps close contact with them made her recall the disapproval her Mother and siblings expressed when she first went to work with "the lepers".

After her family visit, the sixty-five-year-old Sister Hilary continued to Tokyo where she attended the Seventh International Congress and participated in a discussion of the role of the Marianun Antigen in the treatment of Hansen's disease at Carville. Sister Marie-Suzanne, a French nun who had served twenty-five years in a leprosarium in the Fiji Islands, had succeeded in growing this antigen from which she made an antiserum in 1951. The French nun claimed a 73% success rate with the drug administered to the patients in the French Cameroon. Yet when Sister Marie Suzanne visited Carville in 1954 and tried the antigen, the results proved negligible.

In addition to attending the Tokyo congress, Sister Hilary visited her fellow Daughters of Charity in Wakayama. She deeply admired the Japanese people and the work that the resident Sisters were doing there. The planning of a Rehabilitation Center for Crippled Children was similar to that of the Carville population. Subsequently, Sister Hilary volunteered for the Japan mission in September 1960 as her own retirement from Carville was growing near. But the world would not allow Sister Hilary to depart unrecognized after rendering such devoted service for over three decades.

Sister Hilary's career reached its zenith in 1958 when her work on Hansen's disease received distinguished awards which were coveted by leaders in the medical community. Sister Hilary journeyed to St John's University in Brooklyn, New York, where she accepted recognition for her work with Hansen's disease during the university's commencement exercises.

The President of the University, Rev. Father John Flynn, had advised Sister Hilary that she had been selected by the Board of Governors to receive the President's Medal, an award given to a woman for the first time in eighty-eight years.

Before a crowd of 7,000 people, Sister Hilary waited on stage as the graduates received their diplomas before the award ceremony began. As Bishop McEnteary of Brooklyn called her name, photographers flashed their cameras, and Sister Hilary kissed the Bishop's ring, departing the stage without giving an acceptance speech. After a brief social gathering with the host Sisters, she returned to New Orleans.

This remarkable nun's most prestigious credit, however, came early in 1958 and ranked her among the leaders of leprology. In February Howard E Crouch, Chairman of the Board, Damien-Dutton Society, notified Sister Hilary that the Board had selected her as the 1958 Damien-Dutton Award recipient and offered his personal congratulations. This award recognize individuals who had contributed assistance through education, science, or humanitarian aid to those afflicted with Hansen's disease throughout the world.

Upon arriving at the Damien-Dutton Society Office in New Brunswick, Sister Hilary attended a conference and proceeded to the Roger Smith Hotel where a luncheon in her honor had been planned. Monsignor Jeffrey presented the award plaque which read: "Presented to SISTER HILARY ROSS, April 26, 1958, for outstanding scientific contribution as well as a lifetime of personal service and devotion on behalf of the victims of Hansen's disease". She received congratulatory telegrams from such renowned political figures as President Eisenhower, Marion B Folsom, Secretary of Health, Education, and Welfare, and L E Burney, U S Surgeon General. Many of these telegrams and letters were read aloud, embarrassing the nun who recalled that "I was ready to crawl under the table.

In spite of the adulation, Sister Hilary maintained a sense of humility and felt that her mission was guided by Divine Providence. Toward the end of her life Rev. Kevin Flinn, Columban, conducted an interview with the eighty-year-old scientist. When Rev. Flinn called Sister Hilary an "international figure", the nun avoided the compliment and remarked that other people had served the patients with greater zeal and conviction; serving God was her ultimate goal, of the importance of that work there is little doubt.

In conclusion, the victims of Hansen's disease knew little hope before the advent of the sulfone drugs discovered in the 1940s. Although many religious and professional individuals labored to eradicate the disease, Sister Hilary Ross deserved recognition for her humanitarian and scientific achievements in the pharmacy and laboratory where she served at Carville for thirty-seven years. She experimented with chaulmoogra oil to make it more palatable for patient consumption. The combination of humanism and professionalism which she exhibited had both immediate and long-term consequences on the Carville population. Patients valued her kindness and willingness to teach them about their disease; her milestone laboratory research in determining correct dosages for the sulfone drugs helped physicians to manage patients already debilitated by concurrent disease processes. With safe dosages administered to patients, treatment could begin on an out-patient basis, and for the first time, patients could be legally treated beyond the confines of the barbed wire fence which guarded the institution.

All of her work brought applause and awards from both the scientific and lay community during a time when men dominated science and medicine. In 1958 she received the Damien-Dutton Award and the President's Medal from St John's University, Brooklyn in recognition of her contributions to the eradication of Hansen's disease. For a woman and a nun to achieve such recognition was truly a remarkable feat. Although she was not a physician, her efforts, combined with concurrent medical research, showed the world that the ancient scourge was not insurmountable and provided its victims with hope. In the words of her friend, Dr Rolla C Wolcott; "Sister was a Great Lady. She enriched many along the way. The world was much better for her having passed this way".

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WHO-The final push.... contd from page 11

Years 2000 - 2002:

Intensive implementation at the district level, including integration, together with close monitoring of the progress and adaptations at the local level.

Years 2003 - 2004:

Phasing out and validation of elimination at national and possibly subnational levels.

Year 2005:

Detailed validation of leprosy elimination.

And beyond:

Although the intensified and focused implementation of the strategy will reduce the leprosy burden to very low levels, and therefor liberate resources to address other health priorities in the community, new cases of leprosy will continue to occur after 2005. In addition, a significant number of individuals disabled because of past leprosy will need attention. The national programs, in partnership with all relevant agencies working in the field, through integrated health systems at the most peripheral levels, will continue to provide the best possible care.

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. . PREDICTIONS AND PROMISES KEPT . .

The National Hansen's Disease Programs Information On-line.

NHDP web page addresses:

http://bphc.hrsa.gov/nhdp
http://bphc.hrsa.gov/programs/nhdp

The Star Magazine Information web page address:

http://www.fortyandeight.org/theStar/

The Star Magazine Information On-line! Yes, it is also a reality in 2000.

The time and persistence belongs, once again, to the 40/8 volunteers; under the dutiful leadership of Bob Low, David Rabius, Fred Fishel and the California President Pete Keller, who's untiring, dedicated effort made this dream a reality with Emanuel Faria, Star Editor, and helmsman of this digital world access project.

Thanks and Congratulations!

Knowledge of the past is essential to future progress. Access to **The Star** worldwide is one step closer to a united world effort to lessen the medical and social problems associated to living with Hansen's disease.

Confronted with many adversities, a united fight against prejudices and fears, while promoting compassion, and understanding, to a world health problem, could significantly change the pain and suffering known today by many Hansen's disease patients worldwide.

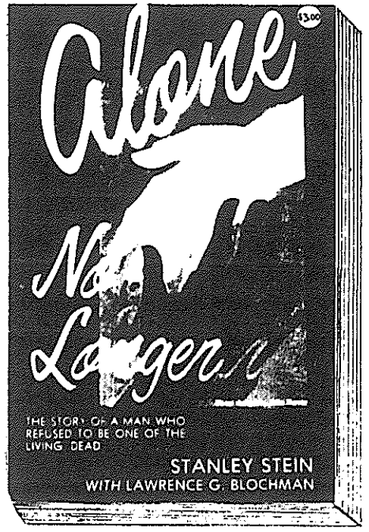
The purpose of **The Star** in print or on the web remains the same:

1.) Promote an educated public opinion of Hansen's disease,

2.) Furnish vocational rehabilitation for interested patients.

Tanya Thomassie
NDHP Media/Public Relations

Stanley Stein's "Alone No Longer"



"I certainly wanted The Star to be a friend to the friendless. But I dared not hope then that it could ever become the voice of the voiceless, a cry of despair from those without the camp, an appeal for justice." (Stein)

Shortly after his arrival at Carville, March, 1931, Stanley Stein (an alias chosen to protect his family from society's ostracism) founded a newspaper dedicated to the fight for human rights for each of his fellow patients. Total blindness six years later only interrupted his crusade briefly and **"Alone No Longer"** is the story of that crusade. Stein's style so accurately describes the problems of the world's Hansen's disease victims, particularly those at Carville, the only hospital in the continental United States devoted exclusively to the treatment and research of the disease.

" ....a great human document with startling evidence of the power of the human spirit to overcome adversity." -Norman Vincent Peale, author of **The Power of Positive Thinking.**

The price per copy of "Alone No Longer," by Stanley Stein and Lawrence Blockman, is $3.00 plus $1.00 postage in the USA., $1.50 outside the USA., or $8.00 airmail.

Make checks, money orders or international money orders payable to The Star and mail to: The Star, Point Clair Branch, Box 325, Carville, LA 70721. Foreign currency and stamps are not acceptable.

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ALERT Training Calendar 2001

January 24 - February 28
Prevention and management of disabilities

Target group: physiotherapists, occupational therapists, podiatrists as well as experienced Hansen's Disease workers involved in POD. Emphasis on both patient care (early detection of nerve deterioration, health promotion, problem solving) and program management (POD management, home based care and rehabilitation).

February 12 - March 2
Clinical Hansen's Disease and tropical dermatology for physicians

Highly recommended for the participants in the following "Management of Combined Programs" course who need to refresh their knowledge of clinical Hansen's Disease and tropical dermatology. The course can also be taken on its own by physicians responsible for diagnosis, treatment and care of patients with Hansen's Disease in either a hospital or a control program setting.

March 5 - March 23
Management of combined Hansen's Disease and tuberculosis control programs for physicians

Target group: experienced physicians responsible for managing a Hansen's Disease and TB control program at the regional level or above. Emphasis on program management: needs analysis, action plan, implementation of activities, supervision, evaluation, management of POD. Participants without Hansen's Disease experience should also take the preceding "Clinical Hansen's Disease" course.

May 7 - May 25
Essentials of Hansen's Disease and tuberculosis for administrative and program support staff

Target group: administrative and managerial staff without a medical background, working in Hansen's Disease and TB programs and donor agencies. Objectives: to gain a better understanding of the two diseases, to communicate more effectively with the medical staff, and to contribute more efficiently in decision making and priority setting.

October 1 - October 12
Introduction to Hansen's Disease

Course specifically aimed at the participants in the following "TB Program Manager Course" who want to profit from their visit to ALERT to learn about Hansen's Disease. The course can also be taken on its own.

October 15 - November 2
Tuberculosis Program Managers Course

This course is organised jointly with the Nuffield Institute for Health, Leeds University, UK. Target audience: health managers responsible for TB control activities at the national or intermediate level. Course objectives: to present the concepts on which TB control strategies are based and to identify key program elements. The course modules are organised around the stages of the program management cycle.

November 12 - November 23
Clinical Hansen's Disease for senior field staff

Highly recommended for the participants in the following "Management of Combined Programs" course who need to refresh their knowledge of clinical Hansen's Disease. The course can also be taken on its own.

November 26 - December 14
Management of combined Hansen's Disease and tuberculosis control programs for senior field staff

Target group: experienced nurses, paramedical workers or supervisors responsible for Hansen's Disease and TB control at the district (or equivalent) level. Emphasis on planning, implementation, supervision and evaluation of control activities, with special attention for POD, health promotion and support functions. Participants without Hansen's Disease experience should also take the preceding "Clinical Hansen's Disease" course.

In-Service Training

In-service training, tailor made to the individual trainee's needs and interest, can be arranged in surgery, physiotherapy, dermatology, ophthalmology, laboratory etc.

For further information, please contact:

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FACTS ABOUT HANSEN'S DISEASE

What is (HD)?

Hansen's disease, erroneously associated with biblical leprosy, is a complex infectious disease which, although recognized for more than two thousand years and found to be caused by a bacterium over a century ago, is not completely understood. Dr Gerhard Armauer Hansen, Norwegian scientist, first discovered the HD bacillus in 1873. Considerable progress has been made during the last 40 years, so that today we can treat the majority of cases without undue difficulty and counteract most of the fears generated by the folklore surrounding this disease.

HD is essentially a disease of the peripheral nerves, but it also affects the skin and sometimes other tissues, notably the eye, the mucosa of the upper respiratory tract, muscles, bones and testes.

There are both localized and disseminated forms of HD. If left untreated, HD causes nerve damage, which can result in loss of muscle control and crippling of hands and feet. Eye involvement can result in blindness.

Where is HD Found

In 1994 the World Health Organization estimated that there were 2.4 million cases of HD worldwide with 1.7 million cases registered on treatment. The estimates for 1985 were 10 – 12 million and 5.4 million respectively. According to these estimates, in 1994, 70% of those who should be on treatment are now being treated. In 1992 there were 690,000 new cases reported and in 1993, 591,000 cases. There are also an estimated 2 – 3 million cases who have completed treatment but who still have residual disabilities who are not included in the above 1994 totals. The largest numbers of Hansen's disease patients continue to be in Southeast Asia and Central Africa with smaller numbers in South and Central America. The largest number of patients in the Western Hemisphere are in Brazil.

In the United States there are approximately 6,500 cases on the registry which includes all cases reported since the registry began and still living. The number of cases with active disease and requiring drug treatment is approximately 600. There are 200 – 250 new cases reported to the registry annually with about 175 of these being new cases diagnosed for the first time. The largest number of cases in the US are in California, Texas, Hawaii, Louisiana, Florida, New York, and Puerto Rico. There are still approximately 150 cases at the Gillis W Long Hansen's Disease Center at Carville, LA, the only institution in the US exclusively devoted to Hansen's disease. The center functions as a referral and consulting center with related research and training activities. Most patients in the US are treated under US Public Health Service grants at clinics in major cities or by private physicians. (See inside back page for listing of clinics.)

How Does HD Spread?

While this aspect of the disease remains a medical mystery, the most commonly accepted theory is that it is transmitted by way of the respiratory tract, and abraded skin. The degree of susceptibility of the person, the extent of exposure, and environmental conditions are among factors probably of great importance in transmission. Most specialists agree that 90% or more of the world's population have a natural immunity to the disease. Persons working with HD contract the disease only rarely. Cases of HD which respond satisfactorily to treatment become noninfectious within a short time.

How is HD Treated?

Although the sulfone drugs, introduced at Carville in 1941, continue to be an important weapon against the Hansen bacillus the rising incidence of sulfone resistant disease necessitates treating all patients with more than one drug. Usually rifampin and sometimes clofazimine or ethionamide are given in addition to dapsone. Treatment rapidly renders the disease noncommunicable by killing nearly all the bacilli and these dead bacilli are then cleared from the body within a variable number of years.

Gillis W Long
Hansen's Disease Center

Guided Tours Daily
10:00 AM and 1:00 PM

GET TO KNOW THE FORTY & EIGHT

The Forty & Eight, an honor society of legionnaires created in 1920 and *The Star's* primary funding organization, draws its origin from World Ward I. Millions of American soldiers in France were transported to the front in narrow French box-cars, called "Voitures," which would only hold 40 men or 8 horses. Remembering the close brotherhood of those box-car days, La Societe des Quarante Hommes et Huit Chevaux (The Society of 40 men and 8 Horses) was formed and local Voitures began organizing as outstanding Legionnaires were invited into membership. Membership is still by invitation only.

Dedicated to the needs of their fellowman, the Forty & Eight raises funds and support not only ***The Star,*** but funds a national nursing scholarship program, various child welfare programs, provides aid to veterans and continues to promote Americanism at both local and national levels.