EPIDEMIOLOGY

OE 1

A PROSPECTIVE (SERO-)EPIDEMIOLOGICAL STUDY ON CONTACT TRANSMISSION AND CHEMOPROPHYLAXIS IN LEPROSY (COLEP)

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It has become increasingly apparent that treatment of leprosy patients alone will not lead to a decline in the incidence of leprosy. Previous studies indicated that chemoprophylaxis, especially of contacts of known leprosy patients, may make a major contribution in the prevention of leprosy. It was also shown that, by broadening the definition of "close contacts" from household contacts alone to a wider circle including neighbours and social contacts as well, sources of infection for new leprosy cases could be described more accurately.

The COLEP research project will investigate the efficacy and cost-effectiveness of a single dose of rifampicin to prevent leprosy in close contacts of newly detected leprosy patients. The study design is that of a single centre, randomised, double-blind placebo-controlled trial in which 20,000 contacts from 1,000 consecutive leprosy patients will receive one single dose of either rifampicin or placebo and will be followed-up for 4 years to study and compare the incidence of leprosy in the 2 study groups. In addition, the prevalence and incidence of leprosy in the general population by means of a referent group of 20,000 individuals will be studied. In the same framework, the application of serology on finger prick blood for the prediction of the development of leprosy and for the monitoring of the effectiveness of chemoprophylactic interventions will also be studied.

OE 2

A RETROSPECTIVE STUDY OF 3,062 MB CASES IN 12 YEARS FROM THE PROJECT AREAS OF ALERT INDIA

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About 3062 MB cases in the project areas of ALERT-INDIA in Bombay and New Bombay between the years 1990 to 2001 (inclusive) have been studied here considering the following parameters: age, sex, duration of residence in Mumbai, province of origin in INDIA, mode of detection, bacteriology, deformity status, reactions, response to chemotherapy, and presence of other cases in the family. From the results and trends, recommendations for further control work are discussed.

OE 3

A STUDY OF RISK FACTORS OF LEPROSY TRANSMISSION IN AGRA DISTRICT

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Background: Leprosy continues to be one of the major public health problems in some countries. Recent figures suggest that there are over 750,000 leprosy cases reported in the world and major portion of this comes from India. This is inspite the fact that MDT was introduced in India almost 2 decades ago. It is believed that apart from hidden cases there are other factors responsible for the continued transmission in the community. It is therefore important to study the factors that may help in transmission of leprosy.

Material and Methods: A total 92305 persons were examined during July 1999 – June 2001 from the 25 blocks in Agra district and about 300 sub units (localities) are surveyed in house to house examination. Rural population constitutes 32126 (35%). A team consisting of trained Paramedical workers and Medical doctors carried out the survey. The household details on housing and surroundings, personal detail like age/sex, work type and leprosy classification etc were recorded during the survey. Data has been analyzed using SPSS software and Logistic regression has been used to assess the risk.

Results: The prevalence of leprosy/10,000 in rural area was 47.9 (154/32126) which is significantly higher than 33.9 in Urban areas. Over 50% of the subunits were found to have atleast one active case of leprosy needing treatment. Univariate analysis suggested that leprosy prevalence was significantly high among persons living in rural areas, living in kuccha and dirty housing, houses without toilet facil-

ity and engaged in blue collar works mostly engaged in agriculture/leather and other manual jobs. Adult Males had preponderance of disease.

Conclusion: Important risk factors for leprosy are related to housing and work type. If these are taken care off along with the good coverage and regularity of treatment, leprosy eradication may be achieved faster in India.

OE 4

AÇÕES DO CONTROLE DOS COMUNICANTES DE HANSENÍASE NO BRASIL (1889 A 2001).

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Dentre os vários problemas de saúde pública que coexistem no Brasil, destaca-se a endemia hansênica, cuja prevalência é de 4,6 casos/ 10 mil habitantes. A distribuição da endemia é irregular e vários são os fatores que contribuem para a manutenção da mesma, entre eles, o baixo controle dos comunicantes, os quais apesar de apresentarem um risco maior de adquirir a doença, especialmente os contatos de doentes multibacilares, tem sido pouco valorizados pelos serviços e profissionais de saúde. Este estudo descritivo, realizado por meio de uma revisão da literatura buscou identificar as medidas de controle dos comunicantes de hanseníase no Brasil, de acordo com o estabelecimento de três periodizações a partir de 1889 à atualidade: o período do uso do óleo de Chaulmoogra até 1940, depois, do uso das sulfonas até 1990, e, por último, do uso da MDT. Nesses períodos os serviços e profissionais de saúde parecem ter privilegiado o espaço para o controle da doença e do doente, não valorizando o controle dos comunicantes e o cumprimento das legislações pertinentes a cada um desses períodos. Acreditamos que, com "doente tratado e comunicante controlado", os serviços de saúde podem contribuir para a eliminação da hanseníase como problema de saúde pública até o ano de 2005.

OE 5

ANÁLISE DA TENDÊNCIA SECULAR DA HANSENÍASE NO BRASIL E MACRORREGIÕES NO PERÍODO 1985 – 2001

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A hanseníase ainda é considerada um problema de saúde pública no Brasil. O país tem como compromisso internacional, a eliminação da doença como problema de saúde pública até o final do ano de 2005 (taxa de prevalência de < 1 doente a cada 10.000 hab.). Nas últimas duas décadas as ações do programa tem sido intensificadas, aumentando o diagnóstico da doença (mais de 300%) em todo país, enquanto a prevalência foi reduzida em mais de 80%.

O presente estudo tem como objetivo analisar os dados de detecção das macrorregiões e Brasil entre os anos de 1985 a 2001, utilizando, análise de variância. Após o desenho das curvas de tendências fazer a projeção dos casos para os anos subseqüentes e prever as taxas de detecção da doença para o país até o ano de 2005 e contribuir para verificar a possibilidade do alcance da meta de eliminação da doença até a data estabelecida.

OE 6

ANALYSIS OF THE CASES OF LEPROSY NEWLY DETECTED IN ZHEJIANG PROVINCE FROM 1989 TO 1998

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Objective: To discuss epidemiology character and control of leprosy in low epidemic.

Methods: A retrospective study was used for 271 cases of leprosy newly detected in Zhejiang province from 1989 to 1998.

Results: The mean of detection rate was 0.063/ 100,000. The main character of epidemiology: the age of attack increased; the ambiguity of source of infection manifold and the proportion of MB increased year after year. The most cases of leprosy newly detected have been infected outside the household. The disease duration shortened and the II level of disability rate decreased, assumed the connection of parallel.

Conclusion: Mostly control of leprosy: the health education should develop actively and the initiative outpatients increase, so that the forepart of patient detected cure in time.

[**Key words**] leprosy; the cases of leprosy newly detected; control

OE 7

ANALYSIS ON CORRELATIVE FACTORS RELATED TO SUBCLINICAL INFECTION IN CONSANGUINEOUS CONTACTS OF LEPROSY

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Objective: To approach the status of subclinical infection in consanguineous contacts of leprosy and Analysis of correlative factors on subclinical infection.

Methods: Using ND-IgM-ELISA method to examine the sub-clinical infections. Single and multi-factor non-conditional logistic regression analysis were used to analysis.

Results: The results of single factor X^2 analysis revealed that: sex, age,the relationship with the patient, leprosy type of patienta, the length of contact were the risk factors related to the subclinical infection in consanguineous contacts of leprosy. But only sex, age, the relationship with the patient, leprosy type of patienta were significantly correlated with subclinical infection in multi-factors logistic equation analysis.

Conclusion: Sex, age,the relationship with the patient and leprosy type can significantly effect the subclinical infection of consanguineous contacts of leprosy.

[**Key words**] Leprosy subclinical infection, non-conditional, logistic, regression, analysis

OE 8

ASSESSMENT ON THE EPIDEMIOLOGICAL TREADS IN LEPROSY-ENDEMIC VILLAGES

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How to assess the magnitude of leprosy problem, or to estimate whether the transmission of leprosy exists or not is a difficulty facing leprosy control at present. It was reported that three and 5 leprosy patients were detected newly in Tonghong and Nanqiou, Yunnan Province, during LEC in 1997. The epidemiological investigation was conducted in the two leprosy-endemic villages and the combination PGL-ELISA and PCR with nasal swabs is intended to estimate the intensity exposure to *M. leprae*. The investigative results showed:

1) Nine patients and 23 had been cured respectively since implementation of MDT in Nanqiou and Tonghong village. Two and 4 cases detected newly during of LEC were confirmed respectively by clinical, pathological and serological in Nanqiou and Tonghong village and most of them are under 25 years old.

2) The prevalence and detective rate in Tonghong village are higher than those in Nanqiou village. But no significant difference can be found in the PGL-IgM positivities in general villagers between the two villages (18.7%, 76/406 & 20.86, 104/457; X^2 =2.12, P= 0.145). However, in the <20 years age groups, PGL-IgM positivity in Tonghong village is much higher than in Nanqiou village (55.1%, 70/127 & 40.8%, 51/125 X^2 =? ? ?). Therefore, the positive correlation may exist between positivity of PGL-IgM in younger people and the number of leprosy patient in the population.

3) In household contacts, PGL-IgM positivity and *M. leprae* nasal carriage with PCR are 30.4 % (17/56) and 23.1 % (9/39) respectively. Although PGL-IgM positivity in household contact was higher than one in general villagers (20.86 %, 180/863), no significant difference of PGL positivity can be found between household contacts and general villagers (X^2=2.82, ?=0.093).

4) Whether Tonghong or Nanqiou village, the peaks of PGL-IgM positivity rate are in the <20 years age group and the positivities of PGL-IgM are decreased with increasing of age. In addition, PGL-IgM positivity in female is higher than in male.

The cases detected newly during LEC were distributed mainly in younger group and it parallels with the peak of PGL-IgM positivity in younger group. The relationship between the prevalence of leprosy and the PGL-IgM positivity is not yet quite clear but the phenomenon seems to support that the youth is susceptible to infection with *M. leprae*. PGL-IgM seropositivity can reflected the intensity of exposure to *M. leprae* in population of high endemic -leprosy village. It is necessary to monitor epidemiological trend in the two villages with serology based on PGL-1 or other more specific tests in order to demonstrate whether the transmission of leprosy is controlled in the two villages.

There is no significant difference in positive rates of PGL-IgM between household contacts 30.4% (17/56) and the general population 20.86% (180/863) (X^2=2.82, P=0.093).

OE 9

CAPTURE-RECAPTURE METHOD TO ASSESS THE PREVALENCE OF DISABLED LEPROSY PATIENTS

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A two-sample capture-recapture method can easily be applied,

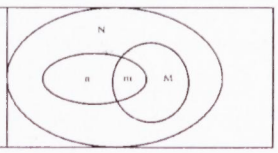
- using data from hospital admissions, and
- data from a sample survey on leprosy patients with impairments in the field.

Limitations: the completeness of reporting after invitation in the field, as well as the probable biased sample of leprosy patients admitted to hospital.

Conclusion: relying on the initiative of patients to report to the clinics for prevention of disabilities and rehabilitation interventions to the clinics, causes the real size of the problem to be underestimated by a factor of 3 to 4.

Recommendation: the use of a special "care" register for disabled leprosy patients so that their needs for prevention of impairments and disabilities and for rehabilitation are better addressed.

Relationship between
- captured (n) and
- recaptured (M) populations,
- their overlap (m), and
- estimated total population (N).



The equation

Peterson estimator	Variance	95% confidence intervals
$N = \frac{M * n}{m}$	$Var\ (N) = \frac{(M+1)(n+1)(M-m)(n-m)}{(m+1)^2(m+2)}$	$N \pm 1.96\sqrt{Var\ (N)}$

Data from Nigeria.

Presence of patients with impairments		Field data yes	no	total
Hospital data	yes	**47 (m)**	104	**151 (M)**
	no	346	765	1,111
	total	**393 (n)**	869	**1,262 (N)**

Estimated value, 95% conf. int. 991 - 1,533

OE 10

CLOSE CONTACTS IN LEPROSY IN A HIGH AND LOW ENDEMIC AREA: COMPARISON BETWEEN BANGLADESH AND THAILAND

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Background: As part of a larger study of the role of close contacts in leprosy transmission, it was investigated whether the proportion of newly detected cases with known close contacts with leprosy differs with different incidence rates of leprosy in a population.

Methods: Retrospective analysis of close contacts of all new leprosy patients diagnosed during a 10-year period in well-established leprosy control programmes in Thailand and Bangladesh. Contacts are defined as relatives and in-laws with contact to the new case, who were once themselves diagnosed with leprosy. Contacts were differentiated into three levels. In Bangladesh these levels were defined as 'kitchen contact'; 'house contact'; and 'non-house contact'. In Thailand comparable levels were defined as 'house contact'; 'compound contact'; and 'neighbour contact'.

Results: In Bangladesh 1,333 new patients, and in Thailand 129 were included. The average new case detection rate over 10 years was 50 per 100,000 general population per year in Bangladesh, and 1.3 per 100,000 in Thailand. In the high-endemic area approximately 25% of newly detected cases had a known close contact, whereas in the low-endemic area this was 75%. The distribution of patients with known contacts over the three contact levels was comparable in both areas. Around half of the contacts were found within the immediate family unit. In both areas children aged 0 – 14 years had the highest level of known contacts, primarily within the immediate family unit.

Conclusion: Different contact levels and their relative risks to contract leprosy need to be established more precisely. In high endemic situations the circle of contacts to survey may need to be wider than currently practised.

OE 11

COMPARAÇÃO DE MÉTODOS DE ESTIMATIVA DE PREVALÊNCIA DE HANSENÍASE EM DIFERENTES REGIÕES DO ESTADO DE MATO GROSSO.

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O Objetivo deste estudo é comparar três métodos de estimativa de prevalência de hanseníase entre municípios das regiões do Baixo Araguaia e Baixada Cuiabana do estado de Mato Grosso no período de 1996 a 2001. Tendo em vista a intervenção da SES–MT no ano de 2001, para a eliminação da hanseníase, denominada: "Projeto prioritário Tolerância Zero: Mato Grosso sem hanseníase", fez-se necessário o cálculo da prevalência estimada para todos os municípios do estado. O planejamento das ações, assim como dos incentivos financeiros vinculados ao referido projeto dependem diretamente do aumento do coeficiente de detecção e altas por cura. A SES-MT agrupou os municípios em quatro estratos de prioridade, tendo por parâmetro a prevalência e o número de habitantes. Entretanto, estudos anteriores apontam para a necessidade de informações referentes ao grau de incapacidade dos doentes (FERREIRA et al, 2000) somada à coorte de casos novos registrados nos 5 anos anteriores à estimativa (GIL & LOMBARDI, 1997) para o cálculo da estimativa real por meio da prevalência oculta. Os autores discutem as deficiências de todos os métodos, tendo em vista a homogeneidade com que foram tratados os municípios na perspectiva do estado e as deficiências das informações quanto ao grau de incapacidade e coortes históricas, imprescindíveis na aplicação dos outros dois métodos.

OE 12

DOES THE CURRENT GLOBAL LEPROSY ELIMINATION STRATEGY REDUCE THE INCIDENCE OF LEPROSY?

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We investigate the impact of the current global strategy to eliminate leprosy as a public health problem on leprosy transmission, and the consequences of relaxing this strategy after 2005. Calculations are made using SIMLEP, a computer simulation programme for modelling the transmission and control of leprosy which can be used to predict epidemiological trends.

In many major endemic countries, the new case detection of leprosy did not decline in the 1990s. Using different epidemiological assumptions, we show that the underlying incidence may have been decreasing, but also that it may have remained static. Due to shortened detection delays, the incidence rate declines between 2000 and 2020 in all scenarios. The simulated annual rates of decline vary widely, depending on when and how fast leprosy transmission is assumed to occur. Relaxing control after 2005 leads to a fall in new case detection rates, and to a slowing down in the decline in the incidence rate of leprosy. Some simulations even show small temporarily increases in the incidence. The incidence rate decreases faster when policies of BCG vaccination of infants are adopted. The acceleration in the decline depends on the protective efficacy of BCG which may wane over time, and on the population coverage that can be achieved.

This study predicts that the current elimination strategy reduces leprosy transmission, but that the decline in incidence may be slow. Sustainability of early case detection and treatment after 2005 is critical for maintaining the decreases in incidence. Further research on transmission is essential for narrowing down the uncertainty regarding future leprosy trends and for long term planning of leprosy control.

OE 13

EPIDEMIOLOGICAL STUDY ON DISABILITIES IN 24128 NEWLY DETECTED LEPROSY PATIENTS IN CHINA

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To approach the status of leprosy disabilities in newly detected cases in recent 11 years in China and provide the scientific basis for formulating the preventive strategies. Based upon the records from the National Leprosy Recording and Reporting System in National Center for STD and Leprosy Control, 24 128 leprosy cases detected during 1989–1999 in China were analyzed in terms of leprosy disbility. The proportion of disabilies in newly detected leprosy cases in 1989 in whole country was 46.49% and decreased to 32.7% in 1999, and the proportions of cases with grade II disabilities were 25.55% (1989) and 22.06% (1999). There were 19 provinces where disability rate was more than 40%. Out of patients with disabilities, those with grades I and II disabilities and with deformities (loss of eyebrow, facial paralysis or saddle nose) accounted for 37.54%, 61.03% and 1.42%, respectively. There were 20 provinces where grade II disabilities accounted for more than 50% of all patients with disabilities. The disability rates in patients aged under 15 years, 15–65 years and over 65 years were 24.74%, 39.3% and 53.33%. The patients with a delay in detection of 2 years had a disability rate of 28.95%, and those with a delay of more than 2 years and 5 years had the rates of 48.06% and 60.95%, respectively. The disability rate was 53.76% in patients with leprosy reactions. The grade II disability rate in paucibacillary patients (28.53%) was significantly higher than that in multibacillary ones (22.03%). Disability rate of leprosy in newly detected cases is still high although it has decreased in the recent 11 years. The rate is associated with delay in detection, leprosy reaction and leprosy type. It suggests that early detection of leprosy patients, regular treatment with multidrug therapy, and management of leprosy reactions will be the effective measures to prevent disabilities of leprosy.

OE 14

EPIDEMIOLOGY OF LEPROSY ON FIVE ISOLATED ISLANDS IN INDONESIA

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On 5 small islands in Indonesia a population-based survey was carried out to collect baseline data previous to an intervention study. Here we present the epidemiology of the present leprosy situation on these geographically isolated islands.

Of the 4,774 inhabitants living in the study area 4,140 (87%) were screened for leprosy. A total of 96 leprosy patients (85 new and 11 previously diagnosed patients) was found, representing a new case detection rate of 205/10,000. Of the new patients, 33

(39%) were classified as multibacillary, 16 (19%) as paucibacillary (PB) 2-5 lesions and 36 (42%) as PB single lesion.

Multiple logistic regression was used to determine which risk factors were independently associated with leprosy. Living on the island Kembanglemari was associated with leprosy (odds ratio (OR): 3.4) compared to Sapuka. Overall, no statistically significant difference in OR was observed between men and women. However, within age groups differences were seen: 20-29 year old men had a higher risk of developing leprosy (OR: 2.7) compared to women in this age group. Within the group of new patients men had a higher risk to be classified as MB compared to women (OR: 2.5). Age and island were not related to classification.

A spatial scan statistic was used to test for clusters of leprosy patients (both new and old) on each island. In this high leprosy endemic area leprosy patients were clustered: they were not equally distributed among the islands and within the islands among the houses.

OE 15

EVALUATION OF MLEC IN BIHAR STATE – INDIA

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Damien Foundation India Trust

Modified Leprosy Elimination Campaign carried out in Bihar State with an intention to detect as many hidden cases as possible through publicity, active search and voluntary reporting in December 2001. Evaluation of MLEC was done in January 2002, to know the extent of coverage (Population), to assess the quality of case diagnosis in terms of accuracy and to assess the impact on awareness level in community. 38 blocks (average population of block is 1,50,000) in 22 districts were randomly selected and one team (One MO and 1 NMS) with vehicle for each block identified and briefed. Evaluators obtained lists of suspects and confirmed patients, identified village wise from the concerned PHC. They took the help of MO PHC and NMS/MPHW in preparing visit schedules and in identifying suspects and patients in villages. Totally 17,126 suspects were identified, 8876 (51.8%) were screened by programme. Of the screened 3331(37.5%) were cases, 1106 (12.5%) old cases and 4439 (50%) not cases. 80% of cases confirmed by programme are screened by evaluators. The result was that 74.6% (1996) were real cases, 12.5% (334) were old cases and 12.9% were not cases. Of the 4439 suspects declared as not cases by programme, 3501 were examined by team. 103 (3%) were found to be new cases. Sensitivity for diagnosis was 87.3%. Specificity was 90.4%. Only 8.2% of suspects not screened are new cases. During evaluation 821 additional new cases were detected. Awareness about disease among patients was good and awareness about programme among the community was also good.

OE 16

HANSENÍASE E EMIGRAÇÃO EM UMA ÁREA INDUSTRIAL.

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Introdução: Na região do Grande ABC, houve uma grande migração principalmente do Nordeste do país, com repercussões no número de doentes de hanseníase na região. Com isso, o número de casos novos incidentes ano a ano, permaneceu estável, apesar do serviço de Hansenologia local é de ótima qualidade, sendo feito somente por médicos especialistas e com todo o amparo do serviço público. Analisaremos o presente fato frente ao objetivo do Ministério da Saúde ter resolvido erradicar a hanseníase em 2003.

Casuística: Foram analisados as fichas de notificação compulsória e prontuários médicos de pacientes com hanseníase no período de 1991 a 1999, considerando como doentes emigrados os pacientes que residiam na região há menos de 07 anos e como da região, os autóctones e os emigrados há mais de 07 anos com residência estabelecida.

Resultados e discussão: Num total de 558 pacientes, 237 eram da região e 321 emigrados, mostrando a influência da emigração, sendo isso analisado em comparação com a emigração normal de não doentes. Foram analisadas ainda as causas de tal emigração.

OE 17

INCIDENCE RATES OF ACUTE NERVE FUNCTION IMPAIRMENT (NFI) IN LEPROSY: A PROSPECTIVE COHORT ANALYSIS AFTER 60 MONTHS (THE BANDS STUDY)

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Background: NFI is the key outcome of the pathological processes of an infection with *M.leprae*, which can continue after completion of multidrug therapy (MDT) and lead to disability after leprosy patients are released from treatment.

Methods: Prospective cohort study of 2,664 new leprosy patients in Bangladesh, with an observation period of 60 months in multibacillary (MB) patients, and 36 months in paucibacillary (PB) patients. Incidence rates (IR) were calculated with the number of patients developing NFI for the first time as the numerator, and cumulative person-years at risk (PYAR) as the denominator.

Results: The IR of first event of NFI amongst MB patients was 16.7 per 100 PYAR, with 121/357 (34%) developing NFI during the observation period. Of the 121 with a first event of NFI, 77 (64%) had this within a year after registration, and the remaining 44 (36%) after 1 year. The IR of first event of NFI amongst PB patients was 0.9 per 100 PYAR, with 53/2153 (2.5%) developing NFI during the observation period. Of the 53 with a first event of NFI, 32 (60%) had this within the first 6 months and 16 (30%) between 7 and 12 months. The remaining 5 (10%) PB cases had their first event of NFI after 1 year.

Conclusion: NFI in MB patients is a common phenomenon, and occurs in over a third of the patients after completing the current 1-year course of MDT. In PB patients, NFI occurs in only a limited proportion of patients, but in 40% of the cases after completion of the 6-month course of MDT. Systems to monitor nerve function need to be designed to take into account this high frequency of development of new NFI after completion of MDT.

OE 18

IMPACT OF MLECs IN NLEP BIHAR - A STUDY

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In addition to regular case detection activities by vertical NLEP in Bihar special MLEC's were conducted in 1998, 2000 and 2001 for seven days, visiting all the houses in rural and urban areas of all the districts by search team. Of course in 1998 Bihar included Jharkhand also. Idea behind these campaigns was to detect all the active cases of leprosy from the hidden pool and involvement of General Health staff. In 1998 total cases detected were 2,05,559, in 2000 – 80,710 and in 2001 – 42,770. In comparison to total new cases detected in the year Ist, IInd, and IIIrd MLEC contributed 72.88%, 58.7% and 40.5% respectively with deformity rates among new cases 4.6%, 2.2% and 2.3%.

Only one week activity involving all the general health staff has yielded a good percentage of newly detected cases and in capacity building of GH staff in leprosy work.

These figures show that consecutive MLECs have given a great additive impact on the NLEP in creating awareness, better understanding among the community and patients. Messages of leprosy disease, its cure by MDT, prevention of future or further worsening of deformities has reached the vast majority of the public and community. It is evident that there is decrease in PR, NCDR and deformity rates too.

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LEPROSY DISABILITY: A PUBLIC HEALTH PROBLEM FOR MANY YEARS TO COME

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It is disability that determines the burden of leprosy disease. Little is known about the prevalence of disability. The present study aims to estimate the present global prevalence of individuals with WHO grade 2 disability, and to give projections for this prevalence up to the year 2020.

We estimate the present global prevalence of grade 2 disability on the basis of assumptions on past incidence rates of disability, and on survival of individuals with disability using a lifetable approach. The estimates obtained will be compared with the only other available estimates which are supplied by WHO. These estimates of the prevalence of grade 2 disability range from in between 1 to 2 million (1994) to in between 2 to 3 million (2001). Projections up to 2020 will be obtained from the assessment for the current situation, scenarios for the future new case detection of leprosy as obtained with the leprosy simulation model SIMLEP and present percentages of new cases presenting with grade 2 disability. Starting from WHO's 2 million estimate for 1995 which is age-specific, we estimate the global prevalence of WHO grade 2 disability in 2020 to be at least 1.4 million. The uncertainty involved is considerable, and a range of scenarios will be presented. The main conclusion however remains unchanged: in terms of disability, leprosy will remain a public health problem for many years to come

OE 20

LEPROSY TRANSMISSION AND MUCOSAL IMMUNITY: *M. leprae* EXPOSURE AND HUMORAL MUCOSAL IMMUNE RESPONSE IN ENDEMIC POPULATION.

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Introduction: Widespread use of MDT in closely monitored programmes has not prevented transmission of leprosy. Exposure to *M. leprae* may lead to primary nasal infection, which can be transient in most individuals. Mucosal immune response to *M. leprae* may develop during resolution of this initial infection. Frequent exposure could lead to high levels of mucosal immunity.

AIM: To study *M. leprae* exposure and the development of mucosal immunity in leprosy endemic population in which MDT has been used for more than 10 years.

Setting: Three villages from South Maharashtra comparable in size, socio-economic status and prevalence of leprosy, and in which MDT had been in place for at least 10 years.

Methodology: Polymerase Chain Reaction and Peptide Nucleic Acid - ELISA was used for the amplification and detection of *M. leprae* DNA present on the nasal mucosa. An ELISA based technique was used to study the mucosal immune response.

Results: 3035 subjects were screened in the study. Mucosal immune response against *M. leprae* was observed in approximately 67% of the subjects tested throughout the study with almost 12% subjects showing very high response (ML-IgA++). PCR positivity in this group of subjects was 1.78%. Development of high mucosal immunity and the PCR positivity changed in different follow-ups. 73-77% of the subjects with high immunity show indication of the mucosal immunity in the prior follow-up (6 months before). Similarly more than 60% of the Ml-IgA++ subjects show *M. leprae* reactive antibodies in the subsequent follow-up.

Conclusion: Mucosal immunity against *M. leprae* appears to be widespread in the endemic population. As the *M. leprae* exposure seems to be a transient phenomenon, shorter duration follow-ups can shed more light on the correlation of the immunity and its role in protection.

OE 21

LONG TERM FOLLOW-UP OF THE KARONGA PREVENTION TRIAL: 15 YEAR TRENDS IN PROTECTION AGAINST LEPROSY AND TUBERCULOSIS BY BCG, REPEAT BCG, OR BCG COMBINED WITH KILLED *M. leprae* IN NORTHERN MALAWI.

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BCG has been found to provide greater protection against leprosy than against tuberculosis in several populations, including in northern Malawi. A large randomized controlled trial of single BCG, repeat BCG, and BCG combined with killed *M. leprae* was undertaken in Karonga District starting in 1986. Data published in 1996 showed that a second BCG provided approximately 50 % protection against leprosy over and above a single BCG, for 5 – 8 years after vaccination, thus indicating that two BCG vaccinations provided approximately 75 % protection compared to nil vaccine. No protection against pulmonary tuberculosis was observed. Data are now available reflecting incidence 12 – 15 years after vaccination. Analyses have not been completed in time for this abstract, but will be presented and discussed at the Congress.

OE 22

MICRO-MONITORING– A KEY MANAGEMENT TOOL FOR PLANNING STRATEGIC INTERVENTIONS AND FACILITATING LEPROSY ELIMINATION GOAL

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Introduction: Monitoring is an integral part of any project or program. Unless properly monitored, it can't be measured hence cannot managed. So the ultimate objectives are adversely affected and sometimes defeated. This holds good for leprosy elimination goal reset at 2005(WHO). Earlier monitoring was more focused at the macro level- Global and National level. Subsequently it was decentralized and focused at sub national/ state level and district level. This was logical according to the then prevailing situation. But the situation is very different now. In Orissa PR has come down from 121.3/10000 in 1983 to 9.7/10000 at present with nearly 95% fall. But if we analyze the situation at sub district and sub health center level it is generally observed that caseload is not uniformly same all over. It varies from districts to districts and with in the districts.

Objective: To focus monitoring at sub district and sub health center level

Strategy: Analyze the leprosy elimination parameters such as PR, NCDR, DR, Cure rate, Coverage rate, Relapse rate, MB rate, Child rate and SSL rate. Analysis of the trends on the same process.

Purpose: To motivate the decision makers and program managers to take suitable decisions. To prioritize the focused areas and make interventions.

Micro monitoring: Process

	District	Total blocks	Urban	Rural blocks	Tribal blocks	Bordering blocks
PR.	6.9/10000	6.9/10000	13.7/10000	7.1/10000	5.1/10000	-
PR>10	6	58	52	44	14	19
PR 5-9.99	10	109	30	68	41	20
PR 1-4.99	14	142	14	84	58	32
PR<1	X	5	2	x	5	x
Total units	30	314	98	196	118	71 (included in tribal and rural)

Conclusions: Based on the findings of the above table problem areas were identified.

Special strategy for urban, tribal, rural and border areas are implemented.

Interventions like SAPEL/LEC/GS are implemented

Replication is possible.

OE 23

PERIPHERAL NEUROPATHY IN HD; A PROBLEM FOR HOSPITAL OR EPIDEMIOLOGIC STUDY?

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Peripheral neuropathy in Hansen's disease (HD) is often considered a problem for hospital treatment, not one for disease surveillance, or epidemiologic study. Dermatologic manifestations of the disease are readily treatable today. But the peripheral nerve complications that frequently accompany the disease are not as readily treatable. A patient may have nerve complications that lead to nerve impairment and disability either before being diagnosed, during the course of treatment, or even later. Many patients who are "effectively" treated with antileprosy medications today will not have disabling neuropathy or progression of neuropathy. If disease surveillance could easily detect those who do, then the overall success of pharmacologic treatment could potentially be improved. Focusing on patients who have evidence of continued peripheral nerve neuropathy as a group is more likely to identify those with persistent and resistant disease. Searching for factors that they have in common could improve treatment resolution and thereby increase the number of patients "cured". Were peripheral neuropathy simply arrested with chemotherapy against the *M. leprae* bacillus, resolution of the nerve complications and prevention of disability would be simple and straight-forward. But, it is known that some patients considered "effectively" treated for the infection per se, still develop disabling neuropathy. Hand and foot screen monitors have been developed and well tuned over many years, and can be used for surveillance as well as for case detection of those needing further treatment. This paper/report will review 25 years of peripheral nerve monitoring in HD, what we have learned, and implications for future directions and treatment.

OE 24

PERSPECTIVAS DE ELIMINAÇÃO DA HANSENÍASE ATÉ O ANO DE 2005

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Em 1994 Bechelli analisou a resolução da Assembléia da Organização Mundial de Saúde (maio de 1991), que aprovou a eliminação global da hanseníase, como problema de saúde pública, até o ano 2000, definida como a redução da prevalência a 1 caso ou menos por 10 mil habitantes, concluindo que não parecia possível conseguir a eliminação global da hanseníase como problema de saúde pública, até o ano de 2000; a não ser que uma nova droga ou vacina fosse utilizada. Sansarricq e Daumerie (2001) preconizam a eliminação até 2005 destacando: "Todavia, em alguns países, a eliminação da prevalência em nível subnacional não seria conseguida". Bechelli, ligado ao problema da hanseníase desde 1934, reconhece a complexidade do problema e augura pleno sucesso ao plano. No entanto, parece que a eliminação dificilmente poderá ser atingida no prazo de 5 anos. Os esforços para combater a pobreza e outros fatores epidemiológicos de áreas endêmicas dificilmente terão o sucesso desejado nesse curto prazo. "A miséria deve favorecer a propagação da moléstia, como conseqüência do desasseio, promiscuidade nas habitações (aumentando a 'exposição') e depauperamento orgânico, favorecendo a baixa da resistência" (Bechelli e Rotberg 1956). A eliminação exige a erradicação da pobreza, responsável também pela presença de várias enfermidades (tuberculose, aids e outras). Na Índia (Maharashtra) Bansod Baliran (2001) julga que condições sócio-econômicas; sócio-culturais, habitats pessoais têm grande influência na propagação da moléstia. Não existe droga ideal, como a penicilina na sífilis, nem uma vacina como a antivariólica. Ademais, são desfavoráveis as condições sócio-econômicas nas áreas endêmicas, inclusive com o aumento de desemprego. Por isto não parece possível conseguir a eliminação global da hanseníase como problema de saúde pública até o ano de 2005.

OE 25

RISK FACTORS FOR NERVE FUNCTION IMPAIRMENT, FIVE YEAR FOLLOW-UP OF THE BANDS COHORT.

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Nerve-function impairment (NFI) commonly occurs during or after chemotherapy in leprosy. From the completed follow-up of the Bangladesh Acute Nerve Damage Study (BANDS) we describe the development of NFI and present a simple clinical prediction rule identifying the risk of NFI during follow-up.

BANDS was a five year prospective cohort study of new leprosy cases in northern Bangladesh. Data from regular field assessments were recorded on computer. We used Cox's proportional hazards regression to identify predictive variables for first events of NFI during follow-up.

Amongst 2510 patients not requiring steroid treatment at registrration 175 developed new or further NFI during follow-up. Our analysis identified a simple predictive rule with three levels of risk for new NFI:

Low risk: PB leprosy with no history of nerve-function loss at registration

Medium risk: MB leprosy with no history or PB leprosy with a history of NFI.

High risk: MB leprosy with a history of NFI.

We will also describe our findings in relation to recurrent, chronic and late events and to risk factors for silent neuritis and for reversal reaction. We consider the implications for surveillance of new leprosy patients.

OE 26

STEPWISE REGRESSION ANALYSIS OF RISK FACTORS ON THE DEGREE OF DISABILITIES OF LEPROSY

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Objective: Analysis of factors impacting on the degree of disability of leprosy.

Methods: Based upon the individual records from 485 leprosy cases with disability in liaoning province, The arithmetic disability index(ADI) and weighted disability index(WDI) were used as the quantity index of the disability and eleven factors were analysed on SPSS10.0.

Results: the results showed that the significant factors affecting disability were the same by these two indices,the factors are: the pstient`s age, leprosy reaction, leprosy type, standard of living.

Conclusion: the pstient`s age, leprosy reaction, leprosy type and standard of living can significantly effect the degree disability of leprosy. It is very effective to prevent the degree disability of leprosy through the early case-finding and immediate treatment, controlling the reaction, and increasing the standard of living.

[**Key words**] Leprosy, Disability, stepwise, regression, analysis

OE 27

TENDENCIA DE LA DETECCIÓN DE CASOS NUEVOS DE LEPRA EN PARAGUAY (1970-2001)

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En base a los datos que se procesan en el Archivo Central de casos nuevos de lepra detectados cada año en Paraguay, se hace un estudio de la tendencia temporal de la endemia en el país.

El estudio abarca el período 1970-2001 analizándose las formas clínicas de la enfermedad y los grupos de edad a través de las tasas brutas y específicas, así como las proporciones de las formas clínicas.

El período evaluado corresponde al marco de una política de control operacional uniforme para todo el país, elaborado por el Departamento de Lepra del Ministerio de Salud Pública y Bienestar Social de Paraguay.

La tendencia global de las tasas de detección de casos nuevos muestra una declinación muy lenta que se hace más evidente desde 1992, manteniéndose casi estable, desde entonces hasta el año 2001.

Se nota además la mayor incidencia de casos en el grupo de "45 y más años de edad" a lo largo del período analizado, así como también la ascendente preponderancia de las formas multibacilares (MB) sobre las paucibacilares (PB) a partir del año 1983. La incidencia en menores de 14 años ha sido siempre baja, con preponderancia de las formas PB.

La poliquimioterapia (PQT) se inició en octubre de 1980, aunque la cobertura de la PQT recién alcanzó al 100 % de la prevalencia en 1996.

OE 28

THE ANALYSIS OF SPATIAL PATTERNS OF SEROPOSITIVITY OF LEPROSY WITH GEOGRAPHIC INFORMATION SYSTEMS (GIS)

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Apart from individual and temporal factors, spatial factors may be important as well in infectious diseases. For leprosy this is the location of persons/patients in relation to each other: the role of proximity. Possible aims of analysing spatial patterns of seropositive persons and leprosy patients are to uncover mechanisms of disease transmission, to identify high risk groups, to identify locations of high prevalence (clusters) and to monitor intervention and control programs. For the analysis of spatial patterns of infectious diseases Geographic Information Systems (GIS) are more and more used. To describe spatial patterns with GIS, maps are needed.

During a cross sectional study on five small islands in Indonesia 3271 serum samples were collected (69% of the inhabitants) and analysed with ELISA to measure the presence of IgM antibodies to phenolic glycolipid I. 16 patients and 96 other individuals were seropositive, representing a seropositivity prevalence in the population of 3.4% (95% confidence interval: 2.8-4.0). Detailed maps of these islands, indicating the locations of all the houses were prepared.

Different methods will be presented which were used to describe the spatial pattern of seropositivity. A spatial scan statistic was used to test for clusters of seropositive persons on each island. Buffers were created around patients to measure the risk of close contact separate for MB and PB patients.

OE 29

THE IMPACT OF LEPROSY ELIMINATION CAMPAIGNS ON LEPROSY INCIDENCE TRENDS

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The effect that Leprosy Elimination Campaigns (LECs) may have on trends in the incidence of leprosy is evaluated using SIMLEP. SIMLEP is a computer simulation programme for modelling the transmission and control of leprosy which can be used to predict epidemiological trends.

In an earlier study, scenarios for future trends in the incidence of leprosy were explored using a baseline control programme with early case detection from 1998 onwards. Both this programme, and a less intensive programme with longer detection delays, are extended with LECs. It is assumed that each time a LEC is conducted, a fixed percentage of existing, undetected patients is detected and will start chemotherapy treatment. The simulations show that conducting only one LEC has a negligible impact on long term incidence trends for all scenarios considered. The additional impact of LECs which are repeated at regular intervals is much larger for less intensive control compared to baseline control which already detects patients early. The simulated additional impact of repeated LECs on trends in incidence increases with shorter intervals between LECs and when LECs detect more patients, and decreases with reverse assumptions. From the perspective of reducing leprosy transmission (and thus incidence), the main conclusion of the scenario analysis is that regularly repeated LECs which detect many patients can be an alternative for intensive leprosy control programmes.

OE 30

UNIVERSAL LIMITS, INTER-QUARTILE RANGES AND MEASUREMENT OF THE QUALITY OF LEPROSY CARE IN SUB-SAHARAN AFRICA

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Much effort has been made to set standards that define universally acceptable quality of care. Such standards should be measurable in a way that makes the observed quality care in different programmes comparable contextually. The annual ILEP statistical reports for year 2000 for leprosy control and hospital data were reviewed to measure the quality of leprosy care in 23 programmes assisted by The Leprosy Mission International located in 13 sub-Saharan African countries. Limits given by ILEP (WHO for prevalence) qualified the standard levels where universal indicators are known. Where not known, the lower and upper values of Inter-Quartile Ranges (IQR) were used as 'the approximate normal limits' of quality care. IQR is the middle half of any set of values arranged in order of magnitude. By year 2000, the mean prevalence rate was still above 1/104, but 7 in 10 programmes were already in the elimination phase, mainly in Southern Africa and Nigeria.

The respective ILEP 'accepted limits' and 'thresholds' revealed low case detection rates, low child proportions, high disability assessment proportions and high grade-2 disability proportions in most programmes. While the mean MDT completion rates for both PB and MB were above the limit of 70%, case holding was still below the threshold of 85% in 2/5 programmes for PB and 2/3 programmes for MB.

The IQR limits placed three hospitals in East and West Africa at the top extremes for caseload and bed occupancy rate but at the low extremes for % ulcers and mean hospital stay. Hospitals mainly in Central and Southern Africa were at low extreme of caseload but the top extreme of % ulcer cases and mean hospital stay. These hospitals also were low in their rate of ulcer surgery. The level of hospital utilization was directly correlated with the number of surgeries performed; and the higher the % ulcer cases among admissions, the longer the mean hospital stay of the hospital. Like universal limits, IQR is thus an effective tool to determine levels of quality care on reliable indicators for programme monitoring purposes.

OE 31

VACCINAL SCAR BY BCG AND PREVALENCE OF CLINICAL FORMS IN LEPROSY PATIENTS AND THE RESPONSE TO LEPROMINE IN CONTACTS.

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Brazil is signatory of WHO´s aim to eliminate leprosy as a public healthy problem until 2005 (to inferior levels of 1 sick person in every 10 thousand inhabitants). One of the preconized steps is the application of 2 BCG doses in contacts of leprosy patients. In spite of the signs that the BCG can confer resistance to the disease, results in the literature have been controversial.

The objectives were: to establish the correlation between vaccinal scar by BCG, the prevalence of clinical forms of leprosy and the standard response to leprosy forms and the standart response to lepromine in sick people and their domicile contacts.

A survey of promptuaries of the Hansenology Service – UFU and clinical visits to patients and contacts for verification of vaccinal scar by BCG and for Mitsuda tests. Were done, totalizing 36 patients and 104 contacts.

It was demonstrated that 80% of patients with 2 scars by BCG were Mitsuda positives, while 42.1% of patients without vaccinal scar responded positively to the lepromin test. In the paucibacillary patients, the average response raised from 8.2mm in the abscence of scar to 11mm in those with 2 scars. The average of multibacillary patients varied from 1.9mm with 0 scar to 4.5mm with 2 scars by BCG. Contacts of multibacillary patients, without vaccinal scar, showed an average of 7.3mm of the Mitsuda test, while those with 2 scars showed an average of 10.2mm. The average response to the lepromin test of contacts of paucibacillary patients varied from 6.7mm with 0 scar of BCG to 8.5mm in those with 2 scars by BCG.

Results of this work come to subsidize the application of 2 doses of BCG as a control step to the Leprosy Program of the Healthy Ministry, since BCG seems to confer protection against the disease, mainly to the multibacilary forms.

Support: FAPEMIG

HEALTH EDUCATION

OHE 1

A COMPARATIVE STUDY BETWEEN MLEC AND ACTIVE SURVEY.

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Physical examination of population through house – survey is a popular method in a vertical set up which has substantial contribution to detect early and new cases in an endemic country. It contributes directly to community awareness also. The weakness is that the population of a unit area needs more than 3 years to be examined. However, no vertical programme could continue forever and the ultimate is to integrate the vertical programme with the general health services. The mandatory condition of integration is to bring down the caseload to < 2/10,000, which will be manageable to a general health worker. With this aim, the Modified Leprosy Elimination Campaign (MLEC) has been designed to examine the total population of the state at a time. However, the result of last 3 MLECs shows that is has certain weakness and desired number of patients are not detected uniformly. In the same population, same year, it has been observed in the GRECALTES unit area in Calcutta that more than double number of cases have been detected through active survey and voluntary reporting.