

EXECUTIVE SUMMARY

Cardio-vascular diseases

Studies on prevalence of coronary heart disease (CHD) and hypertension in Mizoram showed mean systolic blood pressure (SBP) and diastolic blood pressure (DBP) among Mizos was 119.7 ± 16.7 and 77.3 ± 10.0 mm Hg respectively. Overall prevalence of hypertension was found 15.9% (males 18.2%, females 13.9%) and that of CHD 2.6% (urban 3.13%, rural 2.11%). Prevalence of CHD and hypertension among Assamese and Tea garden population showed large variation. Therefore, studies were initiated to study genetic markers *viz.* ACE polymorphism, SNPs in hypertensive families, and Angiotensin receptor polymorphism across these population along with another study entitled *Salt sensitivity and gene polymorphisms in essential hypertension in tribal population of Mizoram, tea garden community of Assam and indigenous Assamese population.*

Cancers

Population based North-east Cancer Registry Programme covering 43.6 lakh population in 4 states of Northeast India showed crude incidence rate from 37.1 per 100,000 in females in Dibrugarh district to 160.8 in males in Aizawl. Mizoram state showed stomach as the leading site of cancer in males and cancer of the lung in females. Cancer of the lung was the leading site of cancer in both males and females in the Manipur state. In Assam cancer oesophagus was the leading site of cancer in males and breast cancer in females. Comprehensive study addressing familial aggregation of carcinoma oesophagus in Assam using epidemiological and molecular approaches has been continued in collaboration with IOP and ICPO, New Delhi. Familial history of cancer was detected in 41.3% cases of oesophageal cancers. PCR-SSCP analysis of D13S894 and D17S1303 microsatellite loci showed LOH or MSI; polymorphism of GSTM1 and GSTT1 genes, and mutations in exon 5 and 7 of the p 53 gene in oesophageal cancer patients. A new collaborative study to understand the role of tobacco and pesticides in causing cancers in north-east India was initiated during the year in the same group adding NIOH as new partner.

Risk factors surveillance of non communicable diseases

STEP 3 of the WHO/ICMR multicentric study titled "*Development of sentinel health monitoring centres in India: Risk factor surveillance of non-communicable diseases*" was completed during the year. A total of 1,543 randomly selected individuals (males 772, females 771) in the age group of 15-64 years from the three study areas of Dibrugarh district (urban-502, peri-urban-504 and rural-537) were covered and data on four biochemical risk factors of non-communicable diseases *viz.* blood glucose, total cholesterol, triglycerides, and HDL cholesterol was collected. Overall, mean value of biochemical risk factors of non-communicable disease were found to be higher in the urban population, compared to rural and peri-urban populations.

Cause of death by verbal autopsy in Assam

This study covering four districts of Assam *viz.* Kamrup, Dibrugarh, Sonitpur & North Lakhimpur and using 6 months recall period was completed during the year. Altogether, 1,963 deaths (males 1,156, females 807) were encountered in the sampled districts in one year (rural 1,446, urban 517) in different categories *viz.* stillbirth 82,

neonatal 124, child 231 and adult including maternal deaths 1,526. The leading causes of death recorded was diarrhoea in 0-5 years category, diarrhoea & tuberculosis lung in 15-24 years gp, stroke in 45-60 years gp and 60+ age gp.

Study of health consequences of domestic violence with special reference to reproductive health

This multi centric Task Force study was completed during the year . The study was taken up in the 3 north-eastern states of Assam, Meghalaya and Sikkim to gather first hand information and analyse various pathways, outcome and their relationship with domestic violence and related issues. Of all types, psychological violence (rural 28.1%, urban 19.3%) was the major form of domestic violence followed by physical violence (rural 3.4%, urban 3.7%) and sexual violence (rural 2.3%, urban 2.5%). Among the three states, the magnitude of domestic violence was highest in Assam followed by Sikkim.

Malaria

Therapeutic efficacy of sulfadoxine-pyrimethamine (SP) alone and in combination with artesunate for the treatment of uncomplicated falciparum malaria in Indo-Myanmar border of Lohit district of Arunachal Pradesh was evaluated. Adequate clinical and parasitological response was found in 78% cases in SP group and 94% cases in SP plus artesunate group. After successful control of malaria in forest camp of Oil India Limited a project entitled *A pilot study on malaria control in a forest fringe village of Assam* was carried out to test the module. After implementing different strategies in the earmarked areas regular entomological and parasitological monitoring was carried out during the year. The vector densities and the slide positivity could be brought down drastically. Antilarval activity of 5 select plants against 3 vector species was quantified through laboratory bio-assays in the project titled "*Anti-mosquito and anti-malarial activities of some select plants of north-east India*". Crude petroleum extract of the plant RMRC/MAL/02 exhibited the highest larvicidal activity. Work was continued to investigate the Incidence and molecular characterization of G-6-PD deficiency in north-east India during the year. In Assam the G-6-PD deficiency was found 5.5% in males and 1.2% in females.

Japanese encephalitis

In an attempt to predict JE outbreak with the help of GIS and RS a study was initiated in collaboration with Northeast Space Application Centre. Based on the model the prediction for JE disease intensity as well as outbreak before 3 months at the PHC level in Dibrugarh district for the year 2005 was found to match with the observed JE situation in these PHCs. The study on "*Epidemiological evaluation of the impact of insecticide treated mosquito nets on incidence of seroconversion of JE in selected endemic PHC areas of upper Assam, India*" was continued and during the year monitoring of epidemiological and entomological parameters was carried out in the intervention and control areas. Eleven species of mosquitoes were found positive for JE in IFT.

HIV/AIDS and Drug Abuse

A new study for the mapping, size estimation and integrated behavioural and biological assessment for HIV/AIDS in Manipur and Nagaland was initiated in this year

covering 5 districts in these 2 states among injecting drug users and female sex workers. During the year the study instruments for both the groups were developed and pre-tested for behavioural data collection. Simultaneously the Phase I of the ICMR Task Force project titled “*Studies on HIV/AIDS and Drug Abuse in Mizoram and Nagaland*” was continued. The prevalence of HIV, HCV and HBV was found 13.5, 56.1 and 5.7% in Mizoram and 6.7, 37.8 and 4.2% in Nagaland among current IDUs.

Trematode infections

The project titled “*Studies on paragonimiasis in hill tribes of Arunachal Pradesh*” was completed during the year. Prevalence of pulmonary paragonimiasis, based on sputum examination, in a cross sectional community based survey in Arunachal Pradesh was found 10.7%, the majority of the infected persons were below 15 years of age. Haemoptysis, present in 83.3% cases, was found significantly associated with pulmonary paragonimiasis (odds ratio 13.2, 95% CI 5.8 – 29.9, $p < 0.001$). Praziquantal therapy recorded 100% efficacy with minimal side effects in treating the cases of paragonimiasis. An Excretory-Secretary (ES) antigen based ELISA test for serodiagnosis of paragonimiasis was developed which was found 100% sensitive and 100% specific. Work on *Molecular characterization and infrapopulation differentiation of Paragonimus in NE India* was initiated during the year. Human focus of *P. westermani* along with *Paragonimus* infected crabs was detected in Meghalaya. Molecular identity of *Paragonimus* population from Meghalaya and Arunachal Pradesh states was confirmed through sequencing.

Other microbial infections

Molecular epidemiology for methicillin resistant Staphylococcus aureus was standardized. This investigation looked in to the antimicrobial susceptibility pattern of *S. aureus* isolates, prevalence of methicillin resistant *S. aureus* strains (MRSA) by detecting *mec-A* gene. *S. aureus* positivity was found 9.3% in Dibrugarh district. The nasal carriage rate was found 7.1% and the rate of isolation of *S. aureus* from infectious sites was 9.6%. 44.9% strains were found to be MSRA. Antibiograms revealed multi resistance in most of the strains to antimicrobials including oxacillin. Vancomycin was the only antimicrobial agent against which no resistant strain was found. The prevalence of *mecA* gene was 29.4%.

Establishment of facility for isolation, drug sensitivity, molecular epidemiology of tuberculosis in NE India was done during the year through a collaborative project with CJIL, Agra. Both RFLP and spoligotyping methods were standardized besides establishing facility for isolation and antitubercular drug testing.

An influenza surveillance centre was established in the centre as a part of overall network under the project “*Multi-site monitoring of human influenza virus in India*”. MDCK Tissue Culture was established and a total of 6 virus isolations (5 H1N1 and 1 Type B) were made during the year.