ISSN 0377-4910

ICMR BULLETIN

Vol.37, No.4-6 April-June, 2007

PREVENTION OF DISABILITY IN CHILDREN

Avoidable disability is a major socio-economic and public health problem in the developing countries. According to the National Sample Survey Organization (NSSO) Survey-2002[1], the prevalence of disability in India has been estimated as 1.8%. About 10.63 % of the disabled persons suffered from more than one type of disabilities and 8.4 and 6.1% of the total house holds in rural and urban India respectively have at least one disabled person. The prevalence of disability has been reported to be higher (1.85%) in rural compared to urban population (1.5%) according to the NSSO Survey. The census 2001[2] has estimated prevalence rate of disability in India as 2.2% of the total population.

As regards disability in children, surveys have been carried out in various other countries also. According to an ICMR Task Force study carried out at three centres (Delhi, Jaipur, Lucknow), the prevalence of disability among children below six years of age was found to be 8.8 per thousand in Delhi, 6.5 per thousand in Jaipur and 12.6 per thousand in Lucknow. The prevalence of disability among children aged 0-6 years has been reported as 1.36% in China[4]. A study on disabled children in rural community in southern Thailand has reported a prevalence of 1.2%[5]. A study in children under 16 years in Saudi Arabia found prevalence of handicap as 6.3%[6]. Another large scale prevalence study[7] of child disability among those under 15 years conducted in a representative Saudi population found prevalence rate of major impairment as 3.76 per thousand. Prevalence of disability in children in a cross sectional survey in Central Region, Ghana was found to be 1.8%[8]. Similarly a study carried out in children over 5 years of age in Northern Ethiopia reported prevalence of disability as 4.9%[9]. There is a growing recognition in all developing countries of the importance of early identification and intervention for disability in infants and young children and involvement of the family in the prevention of disability.

Prevention

Many physical, mental and sensory impairments can be prevented. Even if the impairments have occurred, their undesirable physical, psychological and social consequences can be minimized. A disability prevention programme needs several measures to make it effective, viz. improvements in the educational, economic and social status of the population, introduction of early detection and intervention programmes, improvement to health service delivery particularly primary health care systems that reach all segments of the population,

expansion of programmes of immunization, modification of lifestyles; control of environmental hazards, conduct of education and information campaigns related to disability prevention and rehabilitation for the public and professionals; and fostering of better informed and strengthened families and communities. Avoidable disability causes economic waste. Developmental programmes that result in better primary health care, nutrition, education and housing increase the likelihood of improved disability prevention and rehabilitation. The provisions of health care and related services for all people are important to eliminate or minimize the disabling consequence of impairment.

Scientific evidence suggest that investment during the early years of disadvantaged child's life can generate high pay offs for the individual and the community. There are numerous pathways linking cost-effective investments in child protection and development to improve health outcomes, increase productivity, and reduce crime and other social evils (AUDI-2004)[10]. Disability is considered the most important source of vulnerability among children, specially in developing countries due to shortage in health services, insufficient training of health services providers, lack of community education programmes and limited rehabilitation services.

Detection and diagnosis of impairment should be made as early as possible so that the necessary medical care and treatment can follow in time to prevent disability or at elast prevent it from escalating into more limiting secondary disabilities. In cases where prevention of disability is too late or impossible, rehabilitation services should include training in self-care activities and mobility; communication, for example sign language; social, psychological and other types of counseling and assistance. Rehabilitation should also involve provisions of technical aids, special education services, and vocational rehabilitation services. The provision of rehabilitation services is needed for persons with impairments to enable them to reach optimum physical, mental and social functional levels.

The traditional approach to rehabilitation is institution-based. Efforts are required to develop and strengthen community-based rehabilitation services as the mainstay of rehabilitation programmes. Community based rehabilitation would be more affordable, accessible and appropriate to local situations. With local government support, it could help communities and families to reinforce the efforts of their disabled members to overcome the disabling effects of impairment within their normal environment. All types and levels of services for disabled persons need to be provided, whenever possible within the existing health, social, educational and labour structures. The establishment of family support systems also has important role in minimizing the disabling consequences of impairment.

IMPACT Project

In response to the need for concerted efforts to improve the quality of life of persons with disabilities world over, the UN had declared the period of 1983-1992 as the decade of disabled persons. During this decade various programmes were launched across the world including the IMPACT (Intervention Mondial Parvenix Aux Consequences Traumatisantes). The ICMR also conducted the IMPACT (Integrated Intervention for Disability Prevention) project[11] in collaboration with WHO during 1990-1992. The overall aim of the study was to prevent and control avoidable disabilities through an integrated approach using known cost effective technologies. The main objective was to develop mechanisms and methodologies for applying integrated measures using known technologies and interventions at the community level to prevent and control disabilities.

The specific objectives of the project was to test the operational feasibility of delivering a package of selected appropriate interventions aimed at disability prevention through existing or strengthened health care infrastructure and those of other development sectors, (i.e. rural development and education departments).

The work carried out in the study provided evidence about the technical and operational feasibility of delivering a package of selected appropriate interventions aimed at disability prevention through existing/strengthened channels of MCH and School Health Services. This was supported by following observations:

- Workers of the MCH and School Health Services were found to be trainable and reliable.
- They acquired the necessary knowledge and skills for carrying out project activities.
- They were motivated for the work related to prevention of disability among children.
- MCH workers were taking positive actions for the improvement of their services.
- At schools, teachers were identifying children with disabilities and common morbidities that could lead to disability.

- Referrals were being made by school teachers and health workers for those who need care at PHC and subsequently at the apex level hospital.
- Referrals were availed.
- Health education was taken on full scale. School teachers took active part in Health Education Programme. Community leaders were involved in a significant manner.
- Monitoring of project activities had been possible through process/service indicators.
- Perceptible and significant change in the knowledge, attiltude and practice (KAP) of community members regarding disability prevention was observed in the study area.

The project achievements demonstrate amply about the operational feasibility of delivering a package of interventions for disability prevention through existing and strengthened channels of health and related services. It was possible to enhance technical competence of MCH staff and school teachers regarding disability prevention, supportive care through referral, community involvement and intersectoral cooperation. School teachers and MCH staff had accepted their assigned roles in the IMPACT project. Also community wide education and creation of public awareness involving governmental and non-governmental sectors could be achieved in the study area.

Infants, preschool children and the school age children who were not attending schools, were not covered in this project.

Prevention of Disability Among Preschool Children

The ICMR study was aimed at understanding the epidemiology of disability, develop and evaluate strategies for prevention of disability in early childhood utilizing existing channels of health care, social development and principles of community participation.

The project was undertaken during 2001-2005. Specific obectives of the study were as follows:

- Study the prevalence of disability among pre-school children.
- Review, adapt and develop training material for disability prevention for use in training of health care providers and empowering of community in self care for disability prevention;
- Delivery of selected interventions;
- Retrospective study of cases of disability;
- Develop basic rehabilitative services in the study area; and
- Evaluate the impact of intervention.

Study population and prevalence of disability

The study was carried out at three centers - Delhi, Jaipur and Lucknow. The Delhi centre conducted the study in resettlement colonies while the Jaipur and Lucknow centres conducted the study in rural areas.

The Delhi study area comprised of two urban resettlement colonies in South Delhi namely Dakshin Puri and Madangir. These two resettlement colonies have 8830 house holds and a population of 52,398. The number of children below six years of age were 7171 forming 13.69% of the total population. The prevalence rates of disability among children below six years was found to be 8.8 per thousand at Delhi Centre. Nearly 70% of the disabled children had single disability while 30% had multiple disabilities. Of the disabled, 70% had locomotor disability, 30% hearing disability, 29% speech disability, 19% visual disability and 25% mental disability.

At Jaipur Centre, the project was undertaken in Sanganer Tehsil which covers a total of 8 PHCs. One PHC was selected at random for the study. The study area had a total population of 89,621. The total number of children below six years of age were 15419 forming 17.2% of total population. Prevalence of disability among children below six years was found to be 6.55 per thousand at Jaipur Centre. Majority (79%) of disabled children had single disability while 21% had multiple disabilities. Among the disabled children, 76% had locomotor disability, 20% hearing disability, 11% speech disability, 2% visual disability and 13% mental disability.

At Lucknow Centre the study was carried out in Sarojini Nagar Block. The study area had a total population of 106650. The total number of children below six years of age were 16,566 forming 15.5% of total population. The prevalence of disability among children below 6 years of age was found to be 12.6 per thousand at Lucknow Centre. Of these, 71% children had single disability while 19% had multiple disabilities – 64% had locomotor disability, 26.5% hearing disability, 27% speech disability, 8.5% visual disability and 20% mental disability.

Risk factors

Risk factors of disability were studied during the community survey. Risk factors were also delineated

from a retrospective study of the disability cases identified in the survey. The following factors were found to be significantly associated with the disability: (1) a positive history of drug intake by the mother during ante natal period, (2) complications/illness during pregnancy or delivery, (3) complications in child after birth, (4) delayed cry at birth, (5) delayed milestones, (6)illiteracy of mother and father, and (7) birth order more than five.

The data from retrospective study of disabled children identified in the community survey further showed that (a) the significant risk factors related to prenatal history were fever, radiation exposure, medication, use of tobacco, (b) the important postnatal factors were jaundice, meningitis and other illnesses in child after birth, (c) the factors related to history of neuro-injury/ diseases included head injury in the child, seizures, and (d) the probable causative risk factors included muscular dystrophy, mental retardation and cerebral palsy. The above factors were significantly more in cases of disabled children compared to normal control group.

Intervention

Interventions for disability prevention were developed in the form of IEC material, training modules for doctors and paramedical staff, and basic rehabilitation service at Anganwadi/PHC and home based rehabilitation centres.

Types of IEC material developed in the project included posters, handbills, folders and stickers. The areas covered in the IEC material included general information regarding disability, general information about the care of ears, eyes and ways and means of prevention of disability related to eyes and ears; role of vitamin A in the prevention of night blindness, prevention of mental retardation, consequences of iodine deficiency, chart showing normal growth and development of child, risk factors of disability during pregnancy and care during pregnancy. The IEC material also focused on safe delivery by trained Dai, regular antenatal check up, role of nutritious food and cleanliness, timely and complete immunization, educating the child to avoid injury.

Handbills were distributed regularly in the community in conducted house-to-house visits in the project area during regular follow up of cases. Pamphlets prepared on different aspects of disability were provided to the health centers, anganwadies and NGOs working in the field of disability prevention and also to the community leaders on regular basis. Stickers showing important messages in the form of slogans for prevention of different types of disabilities were pasted in major public places like health centers, local markets, schools, public toilets, etc. Health talks were delivered in the health centers, schools and to anganwadies. The Delhi Centre organised street plays by students covering different aspects of disabilities.

Training manual was developed for anganwadi workers/paramedical workers which provided information on development of child - physical, mental and social, information on various types of disability, ailments, prevention and management of disability, and knowledge regarding diseases which can lead to disability. The manuals were provided to the anganwadi workers/ paramedical workers during their training programme conducted by the project staff. Training manual for doctors was also prepared which focused on neonatal resuscitation, care of asphyxiated baby, prevention and management of childhood trauma in primary set up, care of unconscious child, management of convulsive disorder, common paediatric eye problems, prevention of hearing disability, mental handicap, etc. Training for doctors was arranged by involving specialists in the fields of paediatrics, orthopaedics, ophthalmology and ENT.

Emphasis in the project area was given to home based rehabilitation services which consisted of visiting the child in his home environment, assessment for need of any aid and appliances and parental counseling regarding disability. Initially, the identified cases of disability were referred to hospitals having rehabilitation services, but only few of them actually attended the OPD. The reasons given by the parents of children were : long waiting period in OPD, non-helping behaviour of class III and IV employees, over crowding of OPDs., etc. Special camps with various specialists were organised in the project area and regular follow ups were carried out by the project staff on monthly basis. The ANMs/ anganwadi workers of the concerned centers gave advance information regarding camps to the family members and brought them to the centre on the day of camp. During these sessions, not only treatment and rehabilitation services were provided but health education was also imparted for prevention of various disability causing diseases. During the follow up, the improvement was noted in a specialized proformae and the necessary action taken accordingly. Children with locomotor disability were given orthosis and referred

to special schools. They were regularly followed up and provided physical therapy and psychological counseling. Children with congenital hearing problems were provided hearing prosthesis, and were taught to use them regularly. The children with speech disability were provided speech therapy to improve speech and were guided to attend regular training at speech centre in nearby areas, run by government or non-government organizations. Special camps were organised for visually disabled children with the help of ophthalmology departments. Free drugs, local ointments and eye drops were distributed as per need of the children. Those with strabismus were taught eye exercises to improve eye muscles. Children with cerebral palsy were advised physical therapy in order to enable them to attain developmental milestones appropriately. The IQ level of mentaly disabled children was assessed and their families were given psychological counseling. They were also given information about existing special schools for mentally disabled children.

At Lucknow centre basic rehabilitation services were provided at anganwadi centers with minimal basic equipments such as:

i Locomotor : Tricycle, Reda, Ball & Hit me,

ii Mental : Kinder Block, Creative Block, Musical Ring Eaterna Riddle, Potty Chair, Numero Board

iii Hearing/Speech : Rocking Chair and Rattle

iv Visual : Creative Block and Musical Ring

KAP and re-KAP

The impact of IEC intervention was evaluated through KAP surveys carried out before intervention and re-KAP surveys done after the intervention. Statistically significant improvement was noted regarding knowledge in the following :

- Perceived relationship between illness and disability
- Manifestation of disability
- Causes of congenital disability
- Prevention of congenital disability
- Pregnancy related illnesses adversely affected foetus
- Prolonged labour and postnatal complications as cause of disability
- Timely vaccination, nutritional care of baby
- Regular antenatal check ups, baby's regular health check ups, doctor's advice can help prevent disability
- Various causes of disability and measures for prevention of disability

Recommendations

The following recommendations were made by the Task Force:

- DSS proforma was found to be very sensitive as it was able to detect all the disability cases. It was also able to detect cases at risk for disability. This proforma can serve as a simple tool for screening of disability in the field.
- Specialist Proformae (4 in number) developed and used in the project were found to be effective in diagnosing disability in the project area.
- Project has been able to provide IEC material, training manual for paramedical workers and a module for training of doctors (government and private sector) which can be useful for prevention of disability in the community.
- Involvement of available government infrastructure for delivery of IEC activities with the IEC material developed in the project was found to be an efficient way for IEC intervention and can prove cost effective. It is suggested that, available government infrastructure should be utilized wherever possible for IEC interventions.
- There is a need for reinforcement of existing health services specially for antenatal, natal and postnatal care as revealed by KAP and re-KAP surveys.
- Interventions for disability prevention and delivery of rehabilitation services including exercises, aids and appliances prescribed by rehabilitation specialists were provided in the project area. These rehabiliation services can be provided by a person of the level of Multi RehabilitationWorker (MRW), who can take the place of project staff at community level. This manpower has also been advocated by the WHO for implementation of Community Based Rehabilitation Services.
- It has been suggested that there should be availability of at least one established Rehabilitation Centre at medical college level hospital, large hospital in each state, which can be used as referral centre as it is a known fact that majority of medical colleges are lacking in this aspect.

- It is also suggested that there should be at least one rehabilitation unit equipped for various disabilities, in each Community Health Centre (CHC) which can act as first level referral center.

The project has demonstrated that with minimal additional inputs, adequate support and basic rehabilitative services can be provided to children with disabilities at the community and home settings through existing health infracture. Such activities would be useful as part of a national level programme such as the National Rural Health Mission.

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This write-up based on the ICMR Task Force Study on Prevention of Disability among Preschool Children (0-6 years) has been contributed by Dr. Bela Shah, Senior Dy. Director General and Dr. Narender Kumar, Dy. Director General (Sr.Grade), Indian Council of Medical Research, New Delhi.

ICMR NEWS

The following meetings of various technical groups/ committees of the Council were held:

Meetings of Task Forces (TFs)/Advisory Committees (ACs)/Expert Groups (EGs) and Other Meetings

Task Force on Epidemiology of Asthma and Atopy	March 3, 2007
TF on a Multicentric Randmoized Controlled Clinical Trial of Lamivudine	March 6, 2007
AC on MIC Gas Victims	March 9, 2007
EG on Task Force Project on Mental Health Service Needs and Service Delivery Model in the Disaster Affected Population in Gujarat	March 23, 2007
EG on Non-Communicable Disease Risk Factor Surveillance Under the Integrated Disease Surveillance Project	March 28-29, May 1 and May 24, 2007
Core Committee of TF Project on Neurosciences	April 17, 2007
AC on Development of a Feasibility Module for Road Traffic Injuries	April 18, 2007
PAC on Indo-US Project Proposals	April 30, 2007
TF on Prevalence of Diabetic Retinopathy	May 5, 2007

Meetings of Project Review Committees (PRCs)/ Project Review Groups (PRGs)

PRC on Oncology	March 6, 2007
Special PRC on North-East Projects	March 13, 2007
PRG on Nutrition	March 17, 2007
PRC on Ophthalmology	March 26, 2007
PRC on Urology	April 13, 2007

Participation of ICMR Scientists in Scientific Events:

Dr. Neena Valecha, Deputy Director (Senior Grade), National Institute of Malaria Research (NIMR), Delhi, participated in the ASAQ Launch and FACT Implementation Expert Group Meeting at Paris (March 1-2, 2007).

Dr. T. Longvah, Deputy Director, National Institute of Nutrition (NIN), Hyderabad, participated in the XXVIII Session of Codex Committee on Method of Analysis and Sampling at Budapest (March 5-9, 2007).

Dr. Sajid Husain, Deputy Director, National JALMA Institute for Leprosy and Other Mycobacterial Diseases (NJIL & OMD), Agra, participated in the X IFSSH (International Federation of Socities for Surgery of the Hand) Congress at Sydney (March 11-15, 2007).

Dr. A.P. Dash, Director, NIMR, Delhi and Dr. R.S. Yadav, Deputy Director (Senior Grade), NIMR Field Station, Kheda, Gujarat, participated in the WHO/SEARO Intercountry Meeting on Revised Malaria Control Strategy and its Implementation at Chiangmai (March 12-24, 2007). Dr. Dash also participated in the Workshop for Launching of the Malaria Evaluation Programme at Cape Town (April 30 - May 4, 2007).

Dr. R.S. Yadav also participated in the I Meeting of WHO Technical Expert Group on Insecticide Treated Nets at Geneva (March 22-23, 2007).

Dr. A. Roy Choudhury, Deputy Director (Senior Grade), National Institute of Occupational Health (NIOH), Ahmedabad, participated in the International Conference on Water and Food Management at Dhaka (March 12-14, 2007).

Dr. R.R. Gangakhedkar, Deputy Director, National AIDS Research Institute (NARI), Pune, participated in the IX Meeting of the WHO Regional Advisory Panel for Asia and the Pacific at Yangoon (March 12-16, 2007).

Dr. N.S. Wairagkar, Deputy Director, National Institute of Virology (NIV), Pune, and Dr. Mamta Chawla Sarkar, National Institute of Cholera & Enteric Diseases (NICED), Kolkata, participated in the Paediatric Dengue Vaccine Initiative Field Site Consortium Investigators Meeting at Bangkok (March 19-21, 2007).

Dr.P.R. Narayanan, Director,Tuberculosis Research Centre (TRC), Chennai, participated in the Keystone Symposium on Tuberculosis: From Lab Research to Field Trials at Vancouver (March 20-25, 2007).

Dr. S.M. Mehendale and Dr.A.R. Risbud, Deputy Directors (Senior Grade); Dr. Seema Sahay, Assistant Director and Dr. Smita Joshi and Dr. Sheela Godbole, Senior Research Officers, NARI, Pune, participated in the Annual NIH Research Network Meeting at Washington D.C. (March 26-29, 2007).

Dr. S.D. Chitambar, Deputy Director, NIV, Pune, participated in the XVII Conference of the Asia Pacific Association of the Study of Liver at Kyoto (March 27-30, 2007).

Dr.A.C. Misra, Director, NIV, Pune, participated in the High Level Meeting on Responsible Practices for Sharing Avian Influenza Viruses and Resulting Benefit and Mission with Indonesia for Assessment of Laboratory Capacity to Undertake Avian Influenza Diagnosis at Zakarta (March 27 - April 3, 2007).

Dr. Mishra participated in the WHO Assessment of Laboratory Capacity for Undertaking Avian Influenza Diagnosis at Zakarta (April 22-26, 2007). He also participated in the meeting of National Influenza Centres in the Western Pacific and Southeast Asian Regions at Melbourne (May 1-4, 2007).

Dr. Damaodar Sahu, Assistant Director, National Institute of Medical Statistics,(NIMS), New Delhi and Dr. K. B. Saha, Senior Research Officer, Regional Medical Research Centre (RMRC) for Tribals, Jabalpur, participated in the 2007 Annual Meeting of the Population Association of Orlando, America at New York (March 29-31, 2007).

Dr. A. R. Rajavel, Senior Research Officer, Vector Control Research Centre (VCRC), Pondicherry, participated in the LXXIII Annual Meeting of the American Mosquito Control Association at Florida (April 1-5, 2007).

Dr. R.S. Paranjape, Director, NARI, Pune, participated in the Research Programme Workshop on Policy and Research Translating into Action at London (April 2-4, 2007).

Dr. Dipika Sur, Deputy Director, NICED, Kolkata, participated in the meeting on Typhoid Fever - A Neglected Disease : Towards Vaccine Introduction Policy at Paris (April 2-4, 2007).

Dr. Manisha Ghata, Assistant Director, NARI, Pune, participated in the Conference on HIV Infection and Central Nervous System: Developed and Resource Limited Seting and Evolving Mechanism of HIV Europathogenesis in the HARRT Era: Domestic and Global Issues at San Servolo Island, Venice (April 14-16, 2007).

Dr. K.D. Ramaiah, Deputy Director, VCRC, Pondicherry, participated in the Workshop on Defining the Optimal Role and Optimal Strategies for Use of Vector Control in Lymphatic Filariasis Elemination Programme at London (April 16-17, 2007).

Dr. V. Sudershan Rao, Senior Research Officer, NIN Hyderabad, participated in the I Session of the Codex Committee on Contaminants in Foods and XXXIX Session of Codex Committee on Food Additives at Beijing (April 16-20 and 24-28, 2007 respectively).

Dr. D.T. Maurya, Deputy Director (Senior Grade), NIV, Pune and Dr. Aparup Das, Assistant Director, NIMR, Delhi, participated in the Asian Conference on Laboratory Biosecurity and Biosafety at Bangkok (April 17-19, 2007).

Dr. Jyotsna Gokral, Assistant Director, National Institute for Research in Reproductive Health, Mumbai, participated in the XXXII Annual Meeting of the American Society of Andrology at Tampa, Florida (April 21-24, 2007).

Dr. M. Thomas and Dr. Damodar Sahu, Assistant Directors, NIMS, New Delhi, and Mr. A. Elangovan, Assistant Director, National Institute of Epidemiology (NIE), Chennai, participated in the Expert Group Meeting on HIV/AIDS Estimation and Projection Methods at Bangkok (April 23-25, 2007).

Dr. Kamalesh Sarker, Assistant Director, NICED, Kolkata, participated in the International Workshop on Injecting Drug Users and Hepatitis C at Stockholm (April 27 - May 1, 2007).

Dr.V.D. Ramanathan, Deputy Director (Senior Grade), TRC, Chennai, participated in the X Annual Conference of Vaccine Research at Boltimore (April 29 - May 2, 2007).

Dr. P.K. Meherjee, Deputy Director (Senior Grade), participated in the XIX World Congress on Fertility and Sterility at Durban (April 29 - May 3, 2007).

Dr. P.K. Das, Director, VCRC, Pondicherry, participated in the WHO Meeting on Integrated Vector Management: Critical Review and Analysis of Needs to Support National Vector Control Programme Implementation at Geneva (May 1-4, 2007).

Shri R. Suresh Kumar, Research Officer, Institute of Cytology & Preventive Oncology, NOIDA, participated in the Meeting on Telomerse and Telomerase 2007 at New York (May 2-6, 2007).

Dr. G. Bhanuprakash Reddy, Assistant Director, NIN, Hyderabad, participated in the Annual Meeting of Association for Research in Vision and Ophthalmology at Florida (May 6-10, 2007).

Dr. R. Ramakrishnan, Deputy Director, NIE, Chennai, participated in the Scientific Writing for Supervisors of European Programme for Intervention Epidemiology Training at Madrid (May 6-12, 2007).

Dr. Rahul K. Gajbhiye, Research Officer, NIRRH, Mumbai, participated in the IV Indo-Australian Conference on Biotechnology at Herston,Queensland (May 7-9, 2007).

Dr. S.L. Chauhan, Deputy Director, NIRRH, Mumbai, participated in the Informal Consultation on A Framework for Linking Services for Prevention and Management of STI/HIV Infections with Reproductive, Maternal and Child Health at Guilin (May 9-11, 2007).

Dr. P Jambulingam, Deputy Director (Senior Grade), VCRC, Pondicherry, participated in the Publication of 3rd Edition of the Global Use of Insecticides for Vector-borne Disease Control at Geneva (May 14-18. 2007).

Dr. Abha Rani Agarwal, Assistant Director, NIMS, New Delhi participated in the Clinical Trials Annual Meeting at Montreal (May 20-23, 2007).

Dr. Poonam Salotra, Assistant Director, Institute of Pathology, New Delhi proceeded to Work in the Indo-US VAP Project on Discovery of Virulence related Genes in Leishmania donovani using a Genomic Micro Array at Bethesda (May 21 - June 14, 2007).

Dr. B.K.Tyagi, Deputy Director (Senior Grade), Centre for Research in Medical Entomology, Madurai, participated in the V European Congress on Tropical Medicine and International Health at Amsterdam (May 24-28, 2007).

Training Courses/Fellowships

1. Dr. Nafisa Balasor, Senior Research Officer, NIRRH, Mumbai, availed Training under the Indo-US Programme on Contraception and Reproductive Health Research at Washington, D.C. (April 23 - May 6,2007).
2. Dr. Priyanka Parte, Research Officer, NIRRH, Mumbai availed Training on Frontiers in Reproduction: Molecular and Cellular Concepts and Application at Massachusetts (May 5 - June 17, 2007).
3. Dr. Santasabuj Das, Research officer, NICED, Kolkata, participated in the VII International Advanced Course on Vaccinology in Asia Pacific Region at Seoul (May 7-12, 2007).
4. Dr. N.S. Wairagkar, Deputy Director, NIV,Pune, participated in the Advanced Vaccinology Course at Annecy (May 12-30, 2007).
5. Dr. Byomkesh Manna, Assistant Director and Shri K. Rajendran, Research Officer, NICED, Kolkata, participated in the Training Course on Introductory GIS, Disease Mapping and Spatial Analysis at Seoul (May 14-18, 2007).
6. Dr. Alok Kumar Deb, Senior Research Officer, NICED, Kolkata, participated in VIII Advanced Course on Vaccinology at Les Pensieres (May 14-25, 2007).
7. Dr. Madhuri Thakar, Senior Research officer, NARI, Pune, participated in the Train the Trainer Workshop at Nairobi (May 30-31, 2007).

Printed and Published by Shri J.N. Mathur for the Indian Council of Medical Research, New Delhi
at the ICMR Offset Press, New Delhi-110 029
R.N. 21813/71