ICMR-NIE

WHO Collaborating Centre for Leprosy Research and Epidemiology

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Annual Report 2017

National Institute of Epidemiology

(INDIAN COUNCIL OF MEDICAL RESEARCH)

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1. HIV SENTINEL SURVEILLANCE

Name of the Principal Investigator:	A. Elangovan
Name(s) of Co-Investigator(s):	B. Ganesh
Collaborating Institute(s):	State AIDS Control Societies (SACS)
Funding agency	NACO
Total budget	Rs, 18, 514,352/-

BACKGROUND AND RATIONALE

HIV sentinel surveillance undertaken by National AIDS Control Organization (NACO) is an ongoing systematic collection, analysis, and interpretation of data periodically, which helps to calculate HIV disease burden in the country and to take appropriate action within the stipulated time.
HIV sentinel surveillance centers are considered as the surrogate group for the general population in the age group of 15-49 years. NIE has been identified as the Regional Institute to conduct HIV surveillance for 8 southern states (Tamil Nadu, Andhra Pradesh, Telangana, Karnataka, Kerala, Orissa, Pondicherry, and Lakshadweep). The HIV sentinel surveillance is being implemented and supervised by NIE in South India since 2006.

OBJECTIVES

Estimate prevalence of HIV infection to improve the tracking of HIV trends as well as to understand the epidemic's characteristics and its level of proliferation across the geographical areas of India.

METHODS

In the current round of surveillance, a total of 99860 blood samples were collected from 250 sites across the states of Tamil Nadu, Andhra Pradesh, Telangana, Karnataka, Kerala, Orissa, and Pondicherry.

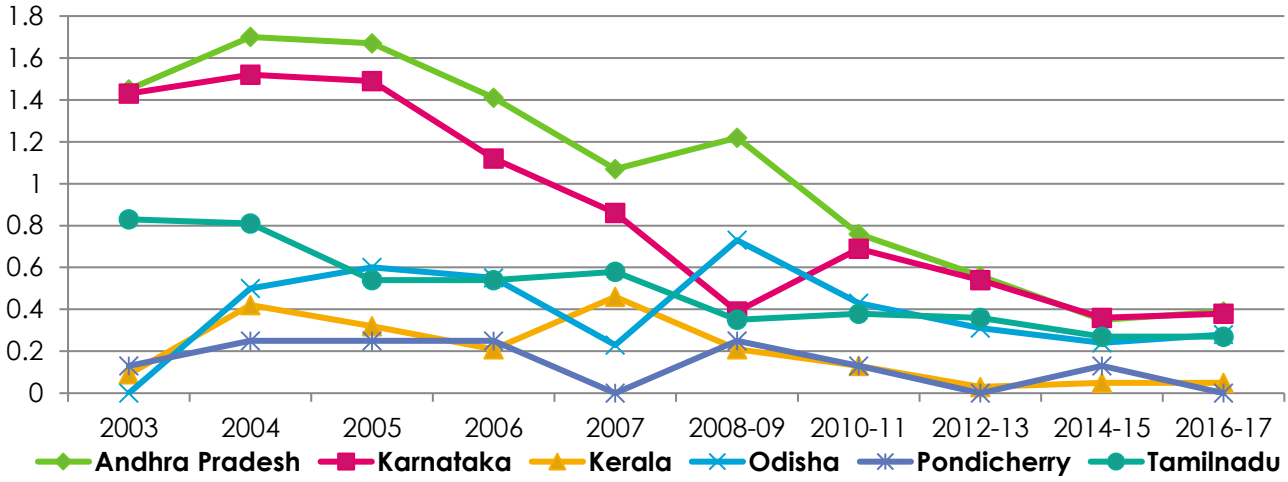
RESULTS

The data were entered into SIMS (Strategic Information Management System), an online data management package. The HIV positivity is calculated and the same is provided in table.1 and figure 1.

Table.1. Prevalence of HIV among ANC clinic attendees, 2016-17

S.No	State	No. of sites	Tested	No. of HIV Positives	%
1	Andhra Pradesh	39	15460	60	0.39
2	Karnataka	62	24800	94	0.38
3	Kerala	14	5600	3	0.05
4	Orissa	32	12800	36	0.28
5	Pondicherry	2	800	0	0
6	Tamil Nadu	71	28400	78	0.27
7	Telangana	30	12000	36	0.30
	Total	**250**	**99860**		

Figure.1. Prevalence of HIV among ANC(Ante-natal care) clinic attendees, 2003 – 2017



2. IN-COUNTRY DATA VERIFICATION FOR ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION OF HIV AND SYPHILIS IN 6 STATES IN INDIA, 2017

Name of the Principal Investigator:	Tarun Bhatnagar National AIDS Control Organization, New Delhi
Collaborating Institute(s):	
Funding agency	UNICEF, India
Total budget	Rs, 33, 33,000/-

BACKGROUND AND RATIONALE

NACO has adopted the global target of reaching 90-90-90 (90% of people who are HIV infected will be diagnosed, 90% of people who are diagnosed will be on antiretroviral treatment and 90% of those who receive antiretrovirals will be virally suppressed) by 2020 and plans to eliminate mother to child transmission (EMTCT) of HIV and syphilis by 2020. Considering the notable progress in scaling up PPTCT efforts especially in states in the southern region, one recommendation from the NACP IV Mid Term Appraisal (Oct 2016) was that state-specific data be more closely examined and analyzed in line with the impact and process validation indicators, as well as other programme indicators which are outlined in the global guidelines on the criteria and process of EMTCT validation. Wherever substantial progress is made in the programme, and where this can be sustained, initiation of a verification exercise can be considered for the select states as appropriate. As the next steps in the achievement of EMTCT goals, NACO has decided to conduct an in-country data verification for states where the PPTCT coverage and linkage to treatment is high.

OBJECTIVES

The project has two major objectives:

1. To Review the data quality for global EMTCT process indicators that are reported to NACO
2. To Review the process of data generation and compilation for reporting to NACO at the facility level

METHODS

Study setting:

Two districts in each of the 6 selected states - Andhra Pradesh (Vishakhapatnam, Guntur), Karnataka (Bengaluru urban, Shimoga), Maharashtra (Nagpur, Wardha), Mizoram (Mamit, Aizawl), Tamil Nadu (Villupuram, Chennai), Telangana (Hyderabad, Khammam) were identified.

Selection of facilities

Randomly selected facilities that act as NACO reporting units (except 1 non-FICTC PHC) within each of the identified districts - 1 Medical college ICTC, 1 District (Women & Child/HQ/Civil) Hospital ICTC, 2 co-located ARTc (medical college and District Hospital), 2 DSRC (medical college

and District Hospital), 1 PPP-ICTC health facility at district level, 5 or all CHCs – Standalone ICTC (whichever is lower; 1 CHC with PPP-ICTC), 1 PPP-ICTC at CHC level, 3 PHC FICTC – 1 per selected CHC, 1 PHC non-FICTC (PHC FICTC, if not available) – 1 per selected CHC

Indicators for data verification:

- New ANC registrations
- Registered pregnant women tested (screened/confirmed) for HIV
- Registered pregnant women detected positive for HIV *(new and known)*
- HIV positive pregnant women initiated on ART *(new and known)*
- Babies born to HIV positive women tested at 18 months
- HIV positive babies (at 18 months)
- Registered pregnant women tested for syphilis – RPR/VDRL/TPHA; Point-of-care
- Pregnant women tested positive for syphilis
- Syphilis positive registered pregnant women treated adequately
- Babies reported with congenital syphilis

Reference period: Reporting period of years 2015-16 and 2016-17

Operational definitions for the attributes of data quality:

Desk review of SIMS data

- Reporting status: Availability of relevant indicators in the reporting format
- Completeness: Number of months the report is completely filled for the relevant indicators
- Consistency: Absence of the outliers for each of the relevant indicators

Field review of facility data

- Correctness: Consistency between the registers and the reports as well as within the two registers for each relevant indicator in selected months
- Duplication of pregnant women tested for HIV: Repeat testing in the first and the last trimester/labor

Review of the process of data generation and compilation for reporting to NACO -Semi-structured interviews of ICTC/PPTCT and DSRC counselors, lab technicians, medical officers, nursing staff and data entry personnel at the selected facilities.

RESULTS

- Training workshop on data verification processes was held at NIE, Chennai on 31 July 2017
- Field visits by District Implementation Teams were completed in all 12 districts between 21 August and 8 September 2017.
- Data has been extracted from SIMS (ICTC/ART/DSRC) for eMTCT indicators for 2 years (2015-16, 2016-17) from all districts of 6 states– for state-level analysis.

3. STRENGTHENING TUBERCULOSIS AND HIV DETECTION AND MANAGEMENT THROUGH INTENSIFIED CASE FINDING IN CENTRAL JAIL, AIZAWL, MIZORAM

Name of the Principal Investigator:	Malsawmtluangi Ralte (Mizoram SACS)
Co-investigators	Tarun Bhatnagar, Lalhriatzuali Ralte (Medical Officer, Central Jail, Aizawl), Lily (DTO, Aizawl), Chawnglungmuana (SHALOM (NGO), Aizawl
Collaborating Institute(s):	Mizoram State AIDS Control Society, Aizawl, Mizoram
Funding agency	The Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM)
Total budget	Rs, 33, 40,050/-

BACKGROUND AND RATIONALE

Structural and individual level factors in prisons increase the risk of TB/HIV and create challenges to TB/HIV prevention, control, treatment, and care. TB and HIV are commonly reported from Indian prisons. Routine opt-out HIV testing can increase case detection. WHO and RNTCP recommend intensified case finding for tuberculosis in prisons. There is poor tuberculosis case detection coupled with high HIV prevalence in Mizoram, particularly among injecting drug users. Conditions in Central Jail, Aizawl are conducive to the spread of tuberculosis and HIV among inmates and the community. Low case detection rates point towards apparently poor infrastructure and ineffective implementation of existing tuberculosis/HIV control guidelines and strategies within the prison healthcare system in Central Jail, Aizawl. There is a strong need to strengthen existing surveillance system by initiating intensified case finding for tuberculosis and HIV.

OBJECTIVES:

The research project has three major objectives:

1. To identify the challenges in the implementation of routine tuberculosis/HIV case detection and management strategies in Central Jail, Aizawl.
2. To examine the programmatic feasibility and acceptability of inmates and officials in implementing intensified case finding a strategy for tuberculosis/HIV among inmates of Central Jail, Aizawl.
3. To determine the effectiveness of implementing the strategy of intensified case finding for tuberculosis/HIV case detection among inmates of Central Jail, Aizawl.

Figure 1: Study team in Aizawl

METHODS:

Study design – The present study adopted a **c**ross-sectional study design for objectives 1, 2 and a quasi-experimental (pre-post) study design for objective 3.

Study setting	Study participants
Central Jail, Aizawl	Under trials and convicted inmates, Jail Warden
DOTS Centre, Central Jail	Medical Officer (MO), Staff Nurses and Laboratory Technician (LT)
FICTC, Central Jail	MO, Nurse, LT
Civil Hospital, Aizawl	Physicians, Microbiologists, ICTC counselors, LT
ART Plus Centre, Civil Hospital	MO, ART Counsellors, Nurses
Kulikawn Tuberculosis Unit, Aizawl	MO, LT
District TB Centre, Referral Hospital, Falkawn	DTO, MO-DRTB, DRTB-HIV Supervisor, Senior TB Laboratory Supervisor, Senior Treatment Supervisor, PMDT Counsellor, ICTC Counsellor, LT

Intensified TB/HIV screening as per RNTCP and NACO guidelines–

- Mass screening - all inmates residing within the prison over the study period of 3 months
- Exit screening - all inmates released from the prison during the study period would not have undergone mass screening negative at the time of mass screening
- Entry screening - all new inmates entering the prison during the study period of 3 months

Data collection –

Method	Tool	Participant	Information
In-depth interview	Interview guide	Prison authorities, State RNTCP, and AIDS Control Society officials	opinions, perceptions, barriers, facilitators and mechanisms to initiate intensified case finding in Central Jail
Focus Group Discussion	FGD guide	RNTCP/SACS health workers Male/female prison inmates	
Documentation of TB/HIV screening	Case forms	Prison inmates	age, gender, education, marital status, past history of TB and anti-tuberculosis treatment, past history of HIV testing, HIV status, anti-retroviral treatment, history of drug abuse and other risk behaviors, prior history of incarceration

Data analysis plan: Content analysis of transcribed text from in-depth interviews/FGDs: Coding, themes with relevant quotes. The effectiveness of intensified case finding: TB/HIV proportions and 95% CI (bacteriologically confirmed/clinically diagnosed TB, HIV-TB co-infection)

RESULTS:

Current status

Data collection, entry and cleaning activities are completed. Qualitative and quantitative analysis is at the ongoing stage. Total of 747 inmates underwent screening, out of which 458 referred for HIV test, 145 sputum samples sent to DTC Falkawn, 27 sputum samples sent for CBNAAT, 447 X-ray films sent to a radiologist. All inmates who were TB suspects were isolated in a separate ward. Five inmates started ART treatment during the active screening period.

4. PROCESS EVALUATION OF INTEGRATED MANAGEMENT OF NEONATAL AND CHILDHOOD ILLNESS (IMNCI) PROGRAM

Name of the Principal Investigator:	P. Ganesh Kumar
Funding agency	Department of Health Research (DHR), Government of India
Total budget	2.9 crores

BACKGROUND OF THE STUDY

The IMNCI program is modeled on the WHO's Integrated Management of Childhood Illness (IMCI) strategy, which has been implemented in over 100 countries worldwide. The IMNCI program facilitates the implementation of interventions for the early identification and management of major childhood illnesses at appropriate levels. The main objectives of the IMNCI strategy are to reduce mortality rates and the frequency and severity of illness and improve growth and development during the first 5 years of children's lives. It adopts an evidence-based, syndromic approach to case management, which includes the rational, effective, and affordable use of drugs and diagnostic tools. It also promotes the adjustment of interventions to match the capacity of health systems and encourages the active involvement of family members and the community in the healthcare process. We conducted a process evaluation of IMNCI in eight Indian States.

OBJECTIVES

The study has the following four objectives:

1. To describe the IMNCI program in the states selected for process evaluation
2. To measure the extent of training and level of awareness about the IMNCI program among the relevant health care workers
3. To estimate the health care workers' perceptions in discharging essential skills of the various components of the IMNCI program
4. To measure awareness among beneficiaries regarding IMNCI program and perceptions about services received

METHODS

Selected States: Assam, Gujarat, Himachal Pradesh, Karnataka, Maharashtra, Odisha, Tamil Nadu, and Uttar Pradesh

Study Participants: Program managers, service providers and beneficiaries of the IMNCI program in the eight selected states, 16 districts, 64 blocks, and 297 Primary Healthcare Centres.

RESULTS

Training:

- The proportion of trained frontline health workers (AWW, ANM and ASHA) was higher, relative to that of trained service providers in each of the selected states.
- All eight states had designated training centres for IMNCI/F-IMNCI/HBNC training
- The proportion of F-IMNCI trained medical officers was highest in tertiary facilities.

Improvement to the Health System

- The majority of mothers of neonates in all eight states reported they have received home visits from ASHAs as mandated.
- Availability of essential drugs across various levels in all selected states was perceived to be satisfactory
- Equipment was available in accordance with F-IMNCI guidelines in most of the facilities in the eight states

Improvement in Family and Community Practices

- Levels of awareness of exclusive breastfeeding were high in beneficiaries from eight states
- More of the 75% of mothers in five of the eight states reported that they had received counseling at facilities
- More than 90% of mothers in all selected states were aware of their child's immunization schedules

Collaboration/ Coordination

- Program coordination involving the establishment of a coordination group was lacking in most districts.

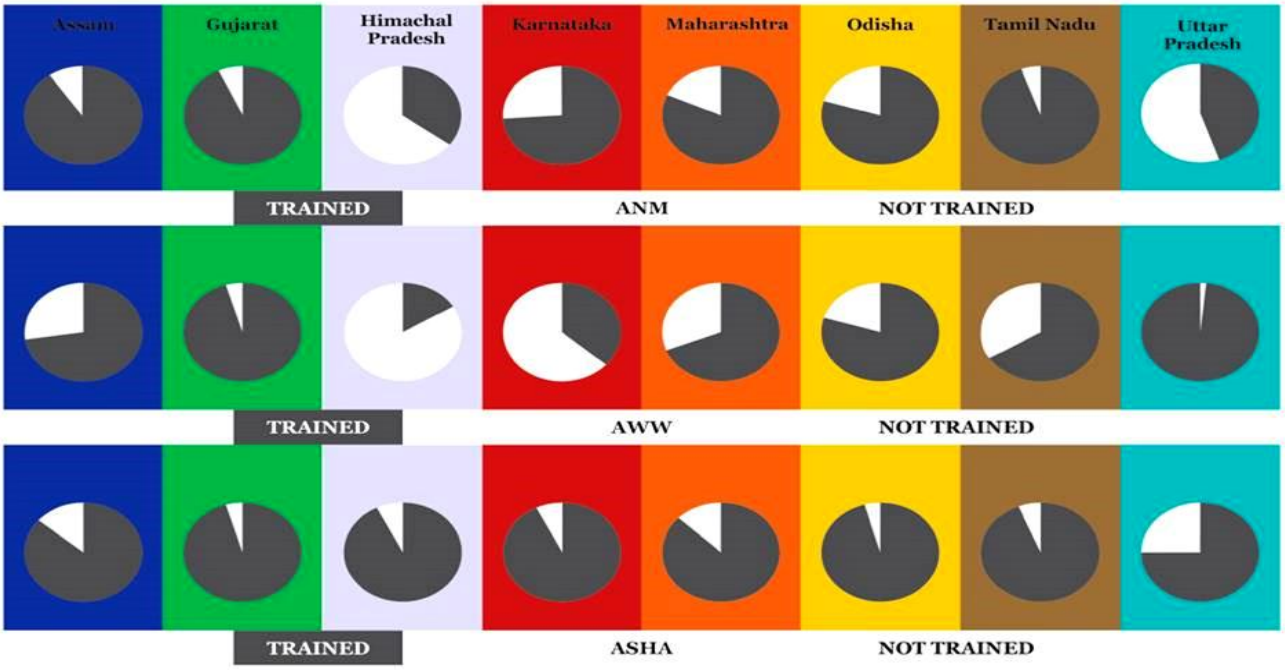


Figure 1: Proportion of ANMs, AWWs, and ASHAs trained in IMNCI in different Indian states

5. PREVALENCE OF LEPTOSPIRAL INFECTION AMONG FEVER-CASE-PATIENTS SEEKING REFERRAL PUBLIC HEALTH FACILITIES IN THE PERI-URBAN AREAS OF CHENNAI AND DISTRIBUTION OF LEPTOSPIRAL GENOTYPES AND SEROVARS.

Name of the Principal Investigator:	B. Ganesh
Co-investigators	AP Sugunan (ICMR-RMRC-Port Blair), CP Girish Kumar, P. Manickam
Funding agency	ICMR-Intramural

BACKGROUND OF THE STUDY

Leptospirosis has emerged as a major public health problem in India particularly in the Southern States and in the Western Coastal regions. Unseasonal rains, probably because of the global climate change, result in an unusual epidemiologic pattern of the disease. Majority of leptospiral infections are either subclinical or mild. However, a small proportion develops various complications due to the involvement of multiple organ systems. Once the complications set in, the case fatality ratio could be as high as 50%. We conducted a study to estimate the proportion of leptospirosis cases among febrile patients attending peripheral health facilities in Tamil Nadu.

OBJECTIVES

1. To estimate the proportion of leptospirosis cases among new fever cases attending the government health care facilities under Poonamalle Health Unit District
2. To describe the distribution of case-patients by time, place and person,
3. To characterize the predominant genospecies and serogroups of leptospires that cause infection in Poonamalle Health Unit District,

METHODS

Study design

A cross-sectional sample survey of new fever cases attending identified health care facilities in Poonamalle Health Unit District, Tamil Nadu.

Target population

All cases of fever occurring among people aged 2 years and above, living in the area of jurisdiction of the selected hospital in Poonamalle Health Unit District.

Study population

The study population comprises of New fever cases aged 2 years and above, attending the government Taluk hospitals at Avadi and Poonamalle in the Poonamalle Health Unit District.

The primary statistics that will be estimated in the study will be the proportion of leptospirosis cases among all cases of new fever among people aged 2 years and above. Therefore, no selection of cases

based on any case-definition will be employed; rather all fever cases will be eligible to be included in the study based on the existing guidelines given under the Integrated Diseases Surveillance Programme for public health facilities.

Inclusion criteria

Any patient with fever (self-assessed) who does not have any etiological diagnosis, attending the selected Public Health Facility for the first time for that episode of febrile illness will be eligible to be included in the study.

Sample size

The prevalence of leptospirosis cases among suspected cases ranged between 4% and 56.7%. No data 9999932222222was available on the proportion leptospirosis cases among all fever cases. A prevalence 25% lower than the lowest reported prevalence among suspected cases (in private clinics) will be assumed, which will be 3%. To estimate this prevalence with an absolute precision of 1% and a 95% confidence level, the sample size required will be 1117, which will be rounded off to 1,200. This sample size will be achieved in each of the selected hospitals *viz.* Avadi and Poonamallee *Taluk* hospitals.

RESULTS

Current status: Ongoing

(Overall the report can be a maximum of 1-2 pages inclusive of tables and figures)

A total of 918 blood samples were collected, tested and analyses showed that Leptospirosis (9.2%) as a leading cause followed by Dengue (8.7%); *O. tsutsugamushi* (4.3%); *S. enterica* serovars *Typhi* & *Paratyphi* (2.7%) and malaria (0.3%). A univariate analysis of partial data showed that body ache, headache, tiredness, epistaxis, anorexia, bleeding gums, palpitation, and joint pain were positively associated with leptospirosis. Further analysis of the data may help to improve the predictive value of an etiological diagnosis for more targeted treatment and control.

Table 1: Demographic characteristics of the study participants for Leptospirosis by IgM ELISA [Positives = 84 (n = 918)]

Demography		Positives	Total tested	Percentage
Area	Avadi TH	30	431	7.0
	Poonamalle TH	54	487	11.1
Age (years)	< 5	3	63	4.8
	5-14	17	304	5.6
	15-29	18	230	7.8
	30-59	39	279	14.0
	≥ 60	7	42	16.7
Sex	Male	40	449	8.9
	Female	44	469	9.4
Education	Illiterate	12	110	10.9
	Literate	72	808	8.9

6. ROAD TRAFFIC INJURY SURVEILLANCE SYSTEM (IRIS) CHENNAI, TAMIL NADU

Name of the Principal Investigator:	P. Manickam
Co-investigators	P. Ganeshkumar, T.Jeromie Wesley Vivian, Jasmine, GitakrishnanRamadurai, T Daniel Rajasekar, Kanagasabai K, Saravana Kumar V.
Collaborating institute(s)	Indian Institute of Technology-IIT Madras and Tamil Nadu Dr. MGR Medical University.
Funding agency	Indian Council of Medical Research
Total budget	23,88,500

BACKGROUND OF THE STUDY

Globally, injuries are the leading cause of hospitalizations, causing more than five million deaths annually. According to the 2015 Global Burden of Disease, RTAs moved up in the ranking as a major cause of death from 1990 to 2015 in India. According to India's National Crime Records Bureau, RTAs accounted for 39% among deaths due to unnatural causes in 2014. Tamil Nadu accounted for 10% of total accidental deaths in India in 2014. RTAs (n=79,801) accounted for 98% of the total traffic accidents reported from 53 mega cities during 2014. Chennai, the capital city of Tamil Nadu, topped 53 megacities with 12% and ranked second in terms of the proportion of all the reported fatal accidents.

Evidence suggests that hospital-based injury surveillance for Road Traffic accidents is useful in the International [Canadian Hospitals Injury Reporting and Prevention Program] and in the Indian context [Bengaluru Road traffic injury/injury surveillance programme, involving mostly private hospitals]. However, such surveillance has not been established in Chennai city. Such a system may be useful to characterize epidemiological and clinical patterns along with the management and clinical outcomes. It will help in calculating better estimates of the magnitude of RTIs and will facilitate the identification of priorities for intervention, clinical management and facilitate developing appropriate guidelines and strategies. The proposed surveillance system may contribute to the development of a unified digital surveillance information system and potential expansion to DHR supported multidisciplinary research units located in medical colleges in Tamil Nadu.

OBJECTIVES

The present study has the following objectives:

- Characterize nature, types, distribution & pattern of Road Traffic Injuries (RTIs)
- Describe clinical management and outcomes of RTIs
- Describe epidemiological characteristics of RTIs
- Document injuries using Haddon's matrix
- Describe factors associated with RTIs of serious nature

METHODS

(1) We propose to do a cross-sectional study of RTI data sources, systems and quality. (2) We propose a cohort study of patients hospitalized for RTIs in the public (GKMC) and private sector (SMF) hospitals. Data of RTI patients will be collected/ abstracted from the hospital (emergency room and other medical wards for outcomes) electronically by a digital surveillance tool and records on daily basis. Descriptive statistics and exploratory analysis for risk factors will be done based on clinical outcomes (Fatal/Non-fatal). (3) We propose to conduct surveys among key informants to document RTIs at the community level that will supplement to the hospital-based information generated above (though in a limited way).

Type	Site specifications as discussed	IRIS Chennai sites
Public	Tertiary care facility (District hospital/Trauma care center/medical college hospital)	Govt. Kilpauk Medical College (GKMC)
Private	Private hospital offering RTI services	Sundaram Medical Foundation Dr.Rangarajan Memorial Hospital (SMFH)
Community	10,000 population attached to a health facility	We propose to explore: • Identify Urban (peri-urban) Health post • Use ongoing Event-Based Surveillance (EBS) for capturing RTIs

RESULTS:

1. **Surveillance tool development:** ICMR-NIE Study Tools for situational analysis was developed by NIE and as decided in the Taskforce meeting the stools were shared to other sites. The situational analysis tools developed include:

- A step-by-step guide to interview stakeholders for situational analysis
- Checklist for assessing the surveillance system
- Interview guide for stakeholder from the transport department
- Interview guide for stakeholder from the highways department
- Interview guide for stakeholder from the police department
- Interview guide for stakeholder from hospital department
- Stakeholder interview recording format

2. **Android application development:** Android application is developed by FHTS and desk review is done.
3. **Meetings and workshops:** We conducted a meeting of the collaborators to finalize the tools (including data abstraction) and plans. We attended ICMR Taskforce meeting on "Establishment of Comprehensive Surveillance Systems for Road Traffic Injuries", Jaipur. We attended two workshops conducted by our local collaborators- IIT madras viz. "Zonal workshop on new accident recording and reporting format" and " Workshop on Trauma care system".
4. **Surveillance site identification:** We identified/planned surveillance sites (for Chennai and Delhi)as per the discussions during the ICMR Task Force Meeting:
5. **Media surveillance:** Media screening of RTA has been initiated in Chennai site by NIE

7. HOSPITAL BASED SENTINEL SURVEILLANCE OF PNEUMONIA AND OTHER INVASIVE BACTERIAL DISEASES

Name of the Principal Investigator:	J. Yuvraj
Co-investigators	CP Girishkumar, V. Balaji (CMC, Vellore)
Collaborating institute(s)	Government Medical College, Trivandrum; All India Institute of Medical Sciences, Jodhpur; Lokmanya Tilak Municipal General Hospital, Sion, Mumbai; North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, Shillong; Institute of Medical Sciences, Banaras Hindu University, Varanasi; Indira Gandhi Institute of Medical Sciences, Shimla
Funding agency	Gavi, the Vaccine Alliance
Total budget	2.75 Cr.

BACKGROUND OF THE STUDY

Bacterial meningitis surveillance in India was initiated by the Ministry of Health and Family Welfare in December 2011 with the objective of establishment of 11 Hospital Based Sentinel Surveillance Sites which were earlier a part of IBIS study in India. The network of these sentinel surveillance sites generated data on disease burden of meningitis among children below 6 years of age attributable to *S. pneumoniae, N. meningitidis*, and *H. influenza*e type B [S pn, N me and HiB] etiology and also their trends over 3 years. Preliminary data indicate that *S. pneumoniae* contribute to a 72% of the confirmed meningitis cases in children below 6 years of age in comparison with H. influenza type B and N. meningitides put together (28%). This project aims at establishing a network for sentinel surveillance for Pneumonia caused by *S. pneumoniae* and also for invasive bacterial diseases caused not only by *S.pneumoniae* but also by *Haemophilus* influenza type B and *N. meningitidis* in India. The Government of India considers introducing PCV apart the recently phased introduction of a pentavalent vaccine (DPT-Hep.B-Hib) in selected states of the country as part of Universal Immunization Programme. An ongoing surveillance network is critical to facilitate data flow and monitor the changing trends in distribution and replacement of serotypes of S. pneumoniae and other invasive bacterial diseases (such as Haemophilus influenza type B and Neisseria meningitides) of these potentially lifesaving public health intervention.

OBJECTIVES

Primary Objectives:

- To assess the burden and distribution of *Streptococcus pneumoniae* in children aged 1 month to 59 months presenting with symptoms of pneumonia and invasive bacterial disease attending select hospital-based sentinel sites after the introduction of the Pneumococcal Conjugate Vaccine in the Universal Immunization Programme in India.

- To determine the serotype profile and subsequent replacement of serotypes of *S. pneumoniae* in children with pneumonia and invasive bacterial diseases.

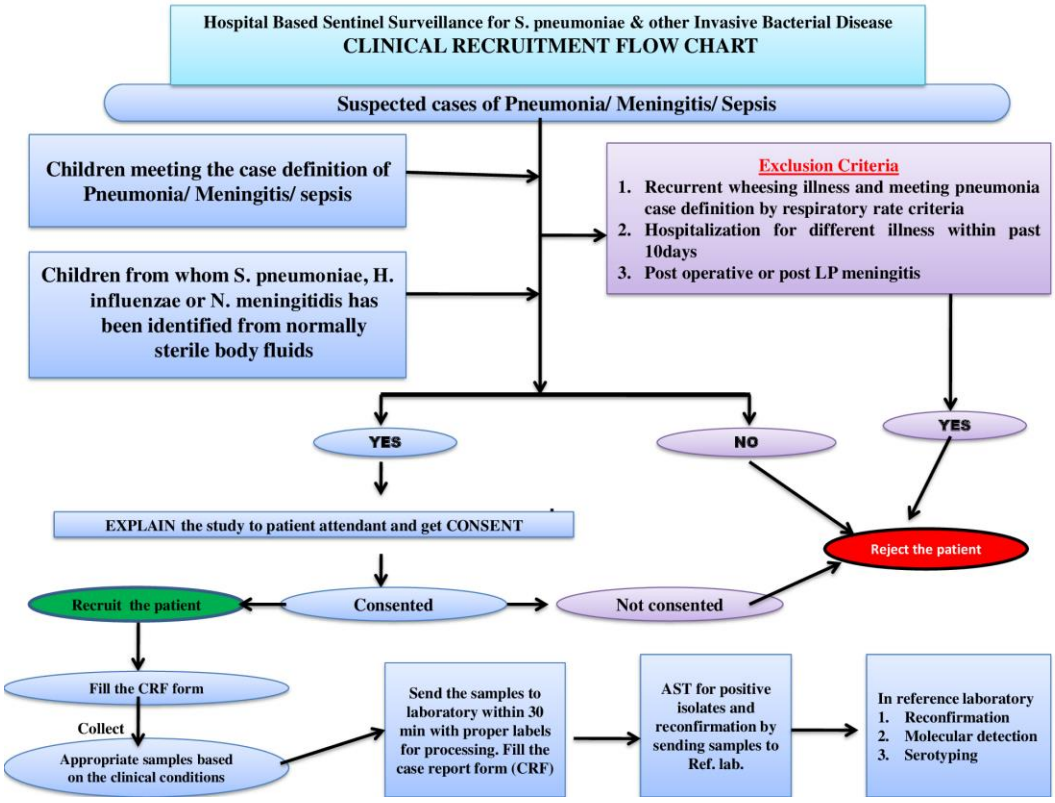
Secondary objective:

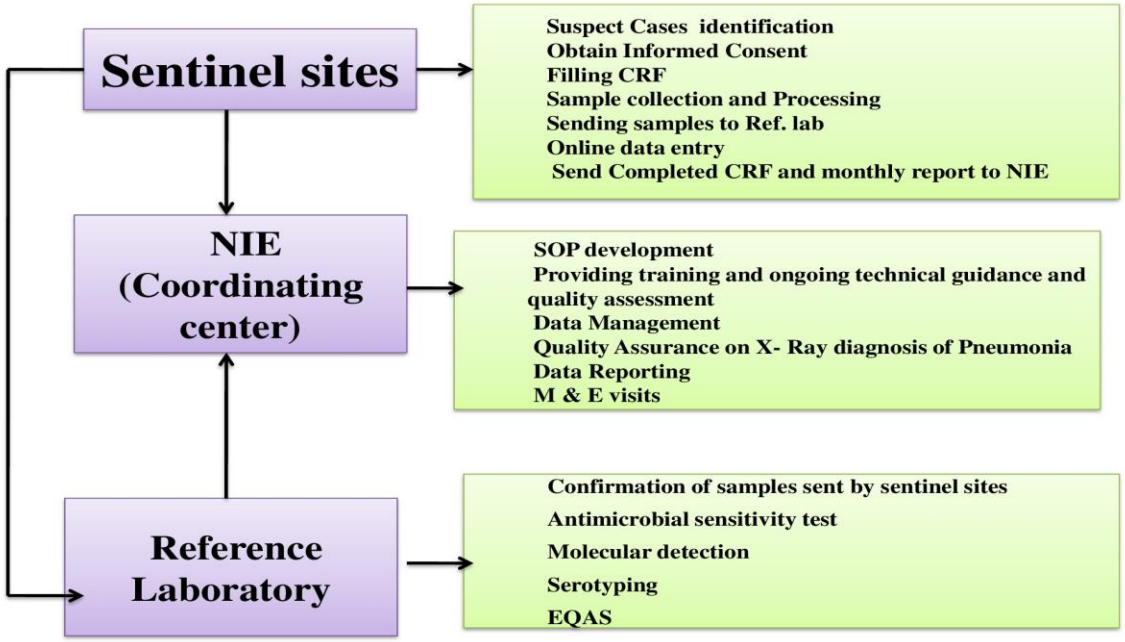
- To assess the burden and distribution *N. meningitidis* and *H influenzae* type B in children aged 1 month to 59 months presenting with symptoms of pneumonia and invasive bacterial disease.

METHODS

The surveillance has been established at the following six sentinel sites: (1) Govt Government Medical College, Trivandrum; (2) All India Institute of Medical Sciences, Jodhpur; (3) Lokmanya Tilak Municipal General Hospital, Sion, Mumbai; (4) North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, Shillong; (5) Institute of Medical Sciences, Banaras Hindu University, Varanasi; and (6) Indira Gandhi Institute of Medical Sciences, Shimla.

The clinical recruitment procedure is summarized in the following flow-charts:





RESULTS

- Between December 2016 to October 2017, 11920 cases were admitted in inpatient wards of six sentinel sites. Among them, 5422 patients were enrolled for fever and out of which 2175 were suspected for pneumonia, 750 were suspected for bacterial meningitis and 384 cases were suspected for sepsis.
- All the suspected samples have been processed for culture and sensitivity test for detection of *S. pneumoniae* in blood agar, agar plates showing alpha hemolysis, fine colonies with pitting appearance were considered positive and further processed for biochemical confirmation includes optochin susceptibility test and bile solubility test. and Latex agglutination test (only for CSF) for *S.pneumoniae.*

Table 1: Details findings and report during the study period

Suspected for	No. of suspected cases	Samples collected	Samples positive for *S. pneumoniae*
Pneumonia	2175	Blood – 596	6 (by culture)
		Other specimens – 43	4 (by culture)
Meningitis	740	CSF - 465	6 (by culture) 3 (by LAT)
Sepsis	384	Blood - 171	1 (by culture)

- All the confirmed isolates were sent to reference laboratory for reconfirmation and serotyping.
- From all sentinel sites, 349 CSF and 192 blood samples (in EDTA) were sent to Reference Laboratory for molecular diagnosis (Direct PCR) for detection of S. pneumoniae by targeting "lyt

A" gene. Among the 349 samples, 150 samples have been processed for PCR, of which one sample was found to be positive for S. pneumoniae.

- Molecular Serotyping of remaining samples will be completed this month.
- Fourteen isolates from sentinel sites were sent for serotyping to reference laboratory.
- The results were as follows:
  - 11 were confirmed as S. pneumoniae
  - 9 different serotypes were identified viz.1 (2 nos), 20, 5, 14, 7B, 6B, 15C, 6A, 19F.

Table 2: Details of the report from the cites

S.No	Centre name	Serotype	Total
1	GMC, Trivandrum, Kerala	ND	
2	LTMGH, Sion, Mumbai	1(2),20,5,NT,14	6
3	NEIGRIHMS, Shillong	7B	1
4	AIIMS, Jodhpur	6B,15C, 6A	3
5	IGMC,Shimla	19F	1

- All the suspected samples have been simultaneously screened for H influenzae type b (in chocolate agar – Translucent colony) and N. meningitidis (in blood agar – Nonhemolytic grey colonies).
- At sentinel site: One sample has been positive for H influenzae type b and 3 CSF samples positive for N. meningitidis by Latex agglutination test.
- At reference laboratory: One sample has been positive for H influenzae type b by PCR targeting 'hpd' gene.
- EQAS panel has been sent to all centers on 31st August 2017.

Table 3: Summary findings (December 2016 –October 2017)

S.No	Variables	Total
1	Admitted as In patients (1 month to 59 months)	1192 0
2	Admitted as In patients for fever (1 month to 59 months)	5422
3	***Pneumonia***	
3.1	Admitted as In Patients for suspected pneumonia	2175
3.2	No. of X-Ray taken for diagnosis	1687
3.3	No. of X-Ray Confirmed Pneumonia cases	1299
3.4	No. of blood samples collected from suspected pneumonia cases	596
3.5	Total number of culture positives from Pneumonia cases	6
3.5.1	*S.pneumoniae*	6
3.5.2	*H. influenza*	0
3.5.3	*N. meningitides*	0
3.6	Total number of other specimens collected from pneumonia suspected cases	43

3.7	Total number of other specimens positive from pneumonia cases	4
3.7.1	*S.pneumoniae*	4
3.7.2	*H. influenza*	0
3.7.3	*N. meningitides*	0
4	***Meningitis***	
4.1	Admitted as In Patients for suspected meningitis	750
4.2	Admission with suspected meningitis for whom LP was done	468
4.3	Total no. of CSF samples collected from suspected meningitis cases	465
4.3.1	Total No. of CSF samples collected before antibiotic administration	315
4.4	Total No of samples with WBC ≥ 100	43
4.5	Total No. of CSF samples with WBC 10-99 with one or more of the following (Protein ≥ 100 mg % and/or ≥ 100 mg % and/or Neutrophils ≥ 80%)	24
4.6	Total number of culture positives from meningitis cases	6
4.6.1	*S.pneumoniae*	6
4.6.2	*H. influenza*	0
4.6.3	*N. meningitides*	0
4.7	**Total number of CSF samples tested for LAT**	196
4.8	Total number of tested CSF positives by LAT	8
4.8.1	*S.pneumoniae*	3
4.8.2	*H. influenza*	1
4.8.3	*N. meningitides*	4
5	***Sepsis***	
5.1	Admitted as In Patients for suspected sepsis	384
5.2	No.of blood samples collected from suspected sepsis cases	171
5.3	Total number of culture positives from sepsis cases	1
5.3.1	*S.pneumoniae*	1
5.3.2	*H. influenza*	0
5.3.3	*N. meningitides*	0
6	No. of vaccination history details collected along with photocopy for all cases to the study.	412
7	Number of blood samples sent to Reference laboratory	192
8	Number of blood isolates sent to reference laboratory	17
9	Number of CSF samples sent to reference laboratory	349
10	Number of CSF isolates sent to reference laboratory	4

8. HEALTH-NEEDS ASSESSMENT (HNA) OF SELECTED HILL TRIBES (PALLIYAR AND MUTHUVAN) IN WESTERN GHATS OF TAMIL NADU

Nodal Officer:	Yuvraj J.
Funding agency	Indian Council of Medical Research, New Delhi
Total budget	Rs 16 lakh per year

BACKGROUND OF THE STUDY

In Tamil Nadu, Tribal health research is limited only to Uthagamandalam District of Tamil Nadu and there are very few published literature on the Tribes living in the rest of the Western Ghats. Also, a seldom ROL on ethnobotanical studies is done in a specific area. The present study aims to explore the socio-cultural and health needs of the tribal communities and provide suitable measures for their well-being.

OBJECTIVES

The objectives of the present study are:

- To assess the health and needs status among the Tribal population.
- To describe the disease burden in the study population.
- To describe the socio-cultural practices of the study population.

METHODS

Quantitative and Qualitative Methods (FGD, IDI, Case History)

RESULTS

Findings of quantitative study:

- 1097 Palliyar's enumerated from 17 clusters or settlements between October and November 2015.
- 552 (50.5%) and 545 (49.5%) were males and females respectively; 118 children (10.8%) were less than 5 years, and there were only 77 adults (49 males and 28 females) with more than 60 years.
- 77% of the children and 85% of adults were illiterate. Only 19%, 16% and 5% of adult males, females, and children had schooling till primary or middle school level.
- Anthropometry data was collected among 287 people.
- Nearly 11% of Adults were found pre-diabetic.
- Nearly 17% and 19% of the adult males had systolic and diastolic hypertension; 20% and 17% of the adult female's had systolic and diastolic hypertension. The percentage of females who were hypertensive was 12%.

- 31% (11/34) of children in the age class of 0-5 years were suffering from severe protein-energy malnutrition and it was higher in boys (8/15). 11% (4/36) were underweight and 1 boy was over-weight among the Children between 6 – 17 years. 52% (112/217) of the adults were under weight and 7% more females were suffering malnutrition more than that of the males

Qualitative Findings – (FGD and IDI Interpretations)

- Communal living: a) individual family, b) clusters and c)Village/settlements
- Palliyars who forage in the forests trek for kilometers deep into forests and such visits last from 2 to 3 weeks in a single stretch.
- Observed of high salt intake. Add a fist full of salt to the boiling (cooking) rice. On an average, they purchased as sack salt (40 kilos) which lasts for 40 days per family.
- Trek long distances to collect free rations in some settlements /villages.
- Income: work as farm hands, plantation workers (daily wages) and foraging in forests
- Discontinued schooling by School aged children.
- Palliyars have changed from being a nomadic to settled settlements and losing their hereditary traits.
- Frequent inter-caste marriages with girls of the backward caste and non-tribal girls marrying the tribal boys and vice-versa was observed in the village and settlements.
- Changes in food habit, culture, inter-caste marriages. Most of the younger generations are not familiar with traditional knowledge of herbs and their medicinal use.
- Apart from the ration supplies, also consume their traditional food consisting of Honey, tubers, millets, and greens; they occasionally eat meat, but they avoid beef.
- Home delivery was common among these tribe five years back in most of the villages. But still in some settlements/villages which are far from access, home delivery is common.
- In one of the settlements, a girl delivered in a cave inside the forest and returned to foothills ten days after delivery.
- Mothers participated in IDI and women in FGD don't know regarding maternity Benefit schemes.
- 4/10 Women who had hospital delivery have stated that they didn't avail Dr. Muthulakshmi Reddy benefit scheme. Due to non-availability of bank accounts, tribal certificate, Proof of residence etc.,

Traditional Birth Attendant's (TBAs)

- They preferred home delivery and avoided hospital was due to fear of death, fear of taking internal organs, fear of family members, and out of respect towards elders.
- Some of the family clusters believe that babies born in the hospital will not be healthy like those born in the home.
- TBAs learned regarding delivery practices from their grandmother, mother-in-law, and mother. Women were only TBAs among Palliyar tribes.
- There hasn't been a single stillbirth or neonatal deaths in their practice.
- 5/9 TBAs' stated inaccessible pathway as a situation for preferring home deliveries.

- Training to TBA's by PHC and VHN's is required to identify danger signs and complications.

TBA Practices

- TBAs' initiate the labor pain by doing massage with castor oil and deliver the baby.
- TBA's wash their hands with soap only after delivery, especially after washing the baby with hot water and wiping the baby and covering the baby with a new cloth.
- TBAs' preferred New Blade for cutting the Umbilical cord and remaining cut the cord with a sickle.
- TBAs' clamp or tie the umbilical cord using a new white cloth or thread leaving an inch gap.
- Palliyars have a belief that the use of supplemental feed will result in an unhealthy baby and hence TBA's advice the mothers to feed for more than a year and initiate Weaning practice only after 6 months.
- TBAs' have said they use "Palluvi- Keerai" a Palliyar Traditional Herb, given to mothers after delivery In-order to avoid maternal complication such as cyst formation, postpartum hemorrhage and expel conception contents.

9. STATUS OF LABELING, DRUG INFORMATION AND BRANDING IN MARKETED ANTI-DIABETIC SIDDHA FORMULATIONS: CROSS-SECTIONAL STUDY: CHENNAI, TAMIL NADU

Name of the Principal Investigator	P. Manickam
Co-investigators	M. Kannan (SCRI, Chennai), P. Sathiyarajeswaran (SCRI, Chennai), Nutan Nabar (KHS, Mumbai), Rama Vaidya (KHS, Mumbai), P. Jayasree, T Daniel Rajasekar, Kanagasabai K.
Collaborating institutes	Siddha Central Research Institute (SCRI), Medical Research Centre (MRC)-Kasturba Health Society (KHS), Mumbai
Funding agency	Central Council for Research in Siddha
Budget	Rs. 956,000

BACKGROUND OF THE STUDY

The prevalence of type 2 diabetes (T2D) is on the rise. The diabetic patients have multiple treatment options and hospital-based studies in India indicate that a substantial proportion of them seek treatment from traditional medicines including Ayurveda, Siddha, Unani and Homeopathy medications. Many of these traditional medicines are available as over-the-counter as well. These drugs/formulations may have important implications for drug-drug interactions, side effects and for treatment costs of the patients.

In Tamil Nadu and Tamil-speaking populations in the South East Asian region, Siddha system of medicine is popular and widely practiced. Similar to Ayurveda, the Siddha system has a lot of anti-diabetic formulations widely mentioned in the classical text. Many trials are either underway or proposed for anti-diabetic formulations in Siddha system. However, in the published literature, no information is available on the status of labeling, drug information, and branding for marketed anti-diabetic Siddha formulations. In addition, it may be useful to review the constituents in the marketed formulations as to their conformity to the principles mentioned in the Siddha classical texts as well as that of information available in the biomedical literature.

OBJECTIVES

The study has two major objectives:

- Primary objective: Estimate proportion of marketed anti-diabetic Siddha formulations complying to Indian specifications for pharmaceutical preparations
- Secondary objectives: (1) Review stated constituents, indications and actions mentioned in these formulations as compared with that indicated in Siddha texts / bio-medical literature (2) Describe the cost of formulations by selected characteristics

METHODS

We created a sampling frame of anti-diabetic Siddha formulations. These were defined as formulation of any kind and any type (capsule; tablet; liquid; granules; powder or any other pharmaceutical form) marketed as anti-diabetic Siddha medication. We purchased the drugs directly from pharmacies.

RESULTS

- Listing of products for sampling/survey: We could list 207 marketed anti-diabetic Siddha formulations from 32 manufacturing units. We identified that few pharmaceutical units were producing more than 10 anti-diabetic Siddha formulations in a single category (i.e., Classical Medicine or Proprietary medicine).
- Pilot-testing for fine-tuning of the abstraction tool: From the above list, we selected 3 marketed anti-diabetic Siddha formulations for data abstraction. We identified practical difficulties during data abstraction process. We discussed these points with collaborators and revised the data abstraction tool based on the same. We analyzed the list of pharmaceutical units and classified based on ASU (domain/system).
- Meeting of collaborators: We had a meeting of the collaborators to finalize the tools (including data abstraction) and plans (including methods of collecting anti-diabetic formulations other than the identified 32 pharmaceutical units)
- We completed the purchase of 142 drugs from 26 companies. Data abstraction is ongoing.

Figure 1: Collaborators' meeting, July 2017

10. HEALTH SYSTEMS PREPAREDNESS FOR INTERVENTIONS FOR DIABETES, HYPERTENSION, CHRONIC RESPIRATORY DISEASES, CARDIOVASCULAR DISEASE AND CANCERS AND DEATHS DUE TO NON-COMMUNICABLE DISEASES AMONG THE TRIBAL POPULATION IN INDIA

Name of the Principal Investigator	Prabhdeep Kaur, PK Borah (ICMR-RMRC NE Dibrugarh)
Co-investigators	P. Vijayachari (ICMR-RMRC, Port Blair); S. Sahu (VCRC Field station, Koraput); Tapas Chakma, (ICMR-NIRTH, Jabalpur); Karma Jigme Tobgay (Govt of Sikkim); PKB Patnaik (Govt of Odisha); Zorinsangi, (Govt of Mizoram); Gautam Majumdar (Govet of Tripura); Bibha Marak (Govt of Meghalaya); Rakesh Bhardwaj (Govt of Himachal Pradesh), Nungdok Tushi (Government of Nagaland)
Collaborating institutes	ICMR-Regional Medical Research Centre for North East, Dibrugarh, ICMR- ICMR-Regional Medical Research Centre, Port Blair, ICMR-National Institute of Research in Tribal Health, Jabalpur, Vector Control Research Centre, Field Station, Koraput
Funding agency	Indian Council of Medical Research, New Delhi

BACKGROUND AND OBJECTIVES

Non-communicable diseases (NCDs) are the leading cause of death globally and in India. NCD pose a huge challenge for health systems. Tribal population in India are going through the transition leading to the increasing burden of non-communicable disease (NCD) risk factors that may increase the burden of NCD morbidity and mortality. The current study has two components. One component aims to understand the level of health systems preparedness in terms of health facility infrastructure, human resources, drugs, training and blood pressure control among patients. The second component is to describe the cause of death among tribal populations and estimate the proportion of deaths due to non-communicable diseases. The study will be conducted in one district each (> 50% tribal) in 12 states that have districts with >50% tribal population.

METHOD

The study was has been completed in 2 pilot (Sikkim and Koraput, Odisha) and 5 phase I sites namely Nicobar, Kinnaur (Himachal Pradesh), Dhalai (Tripura), Lunglei(Mizoram), East Garo Hills (Meghalaya). Data collection is ongoing in 5 phase 2 sites namely Dhimaji (Assam), Mokokchung(Nagaland), Senapati (Manipur), East Kemang (Arunachal Pradesh) and Mandla (Madhya Pradesh).

RESULTS:

The findings of the survey are summarized in the following graphs:

Figure 1: Lack of regular treatment and poor blood pressure control among hypertension patients

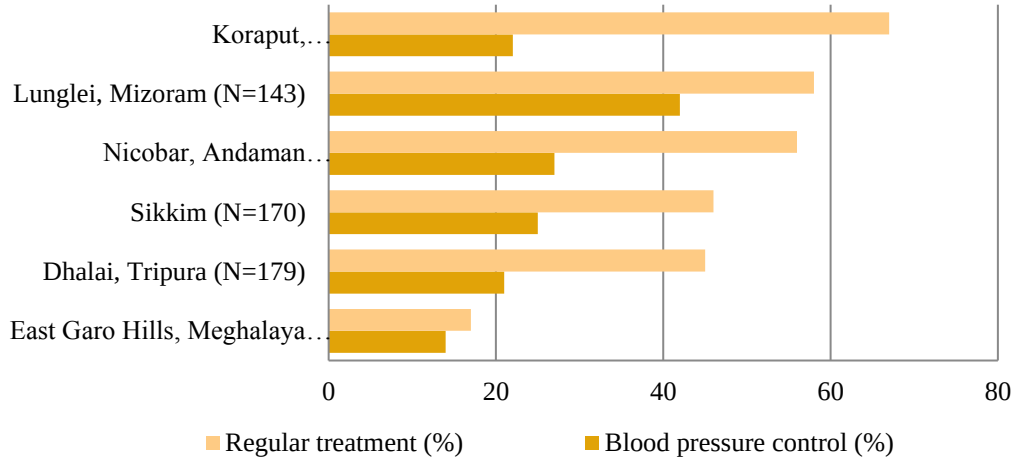


Figure 2: Poor availability of drugs in health facilities as reported by Hypertension patients

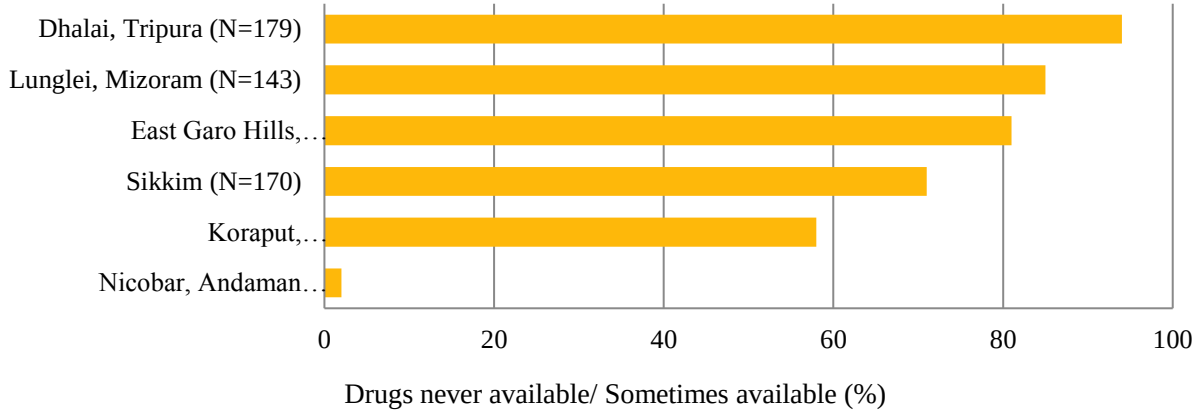
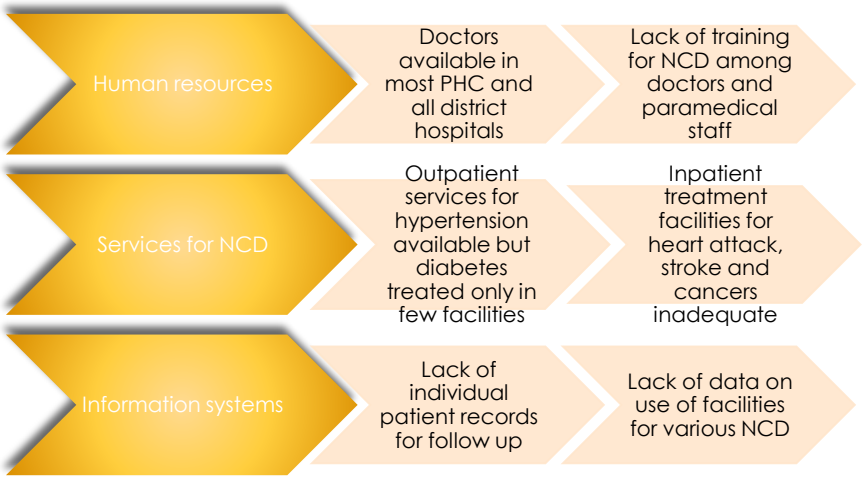


Figure 3: Availability of human resources, key services and information systems for NCD in study sites in India.



Recommendations

- **Noncommunicable disease control should be one of the health priorities for the northeastern states.**
- **Enhance awareness among community and patients**
- **Reduce mortality among those develop a heart attack or stroke**
  - District hospitals should be strengthened to provide care for heart attacks, stroke, and cancers.
- **Reduce tuberculosis mortality**
  - RNTCP program for tuberculosis should be strengthened for enhanced case detection and treatment compliance to reduce mortality due to tuberculosis.
- **Strengthen primary care health facilities for treatment of hypertension and diabetes**
  - Add additional manpower wherever needed; Train the available human resources
  - Provide an adequate quantity of drugs for the treatment of hypertension and diabetes
  - Improve infrastructure for basic lab tests and ensure adequate consumables and reagents
- **Ensure early detection of hypertension, diabetes, and cancers**
  - Screening programs to be scaled up for early detection of NCD
- **Improve information systems and reduce dropouts**
  - Individual clinical patient records should be maintained for all patients who are on treatment and dropouts should be followed up to improve compliance
  - Mechanisms for follow up of patients diagnosed with various NCDs should be developed involving health worker and ASHAs.
- **Establish monitoring and evaluation systems to understand the strengths and gaps in the ongoing programs and to understand the impact of programs in the long term**

11. DHR/ICMR VIRUS RESEARCH & DIAGNOSTIC LABORATORIES NETWORK (VRDLN), 2016-17

Name of the Principal Investigator	Manoj Murhelar
Co-investigators	Vasna Joshua, K Kanagasabai, B K Kirubakaran, M Ravi, V Ramchandran, Vishal Shete, R. Sabarinathan.
Collaborating institutes	46 Virology laboratories across India
Funding agency	Department of Health Research

BACKGROUND OF THE STUDY

The Department of Health Research (DHR), Government of India and Indian Council of Medical Research (ICMR) has been establishing a network of virology diagnostic laboratories in the country with a view to strengthening the laboratory capacity in the country for timely identification of viral diseases and other agents causing significant morbidity. NIE is doing the data management and periodically analyzing the data generated by the VRDLs. Forty-six VRDLs were functional during 2016-17.

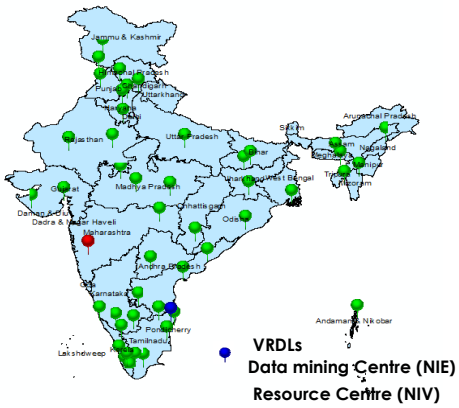


Figure 1: Map showing the DHR/ICMR Virology Laboratory network

RESULTS

Disease clusters diagnosed:

During April 2016-Mar 2017, VRDLs provided diagnosis to 327 disease clusters. These included measles (n=138), dengue (n=69), Varicella Zoaster Virus (n=39), Influenza A H1N1 (n=16), HEV (n=14), JE (n=14), Chikungunya (n=12), HAV (n=12) (Table-1). Majority of the measles outbreaks were from the states of Gujarat (73%) and Assam (24%) while dengue was reported from 12 Indian states. Information about these suspected outbreaks diagnosed by VRDLs was communicated to the state IDSP and NCDC within 24 hrs of reporting.

Diagnosis provided to patients attending medical colleges:

Besides providing the diagnosis to 327 outbreaks, VRDLs investigated 149657 patients attending the medical colleges that housed VRDLs. The commonly tested virus included dengue (65100, 43%), Chikungunya (21998, 15%), Influenza A H1N1 (12886, 9%), HAV (9584, 6%), HEV (8969, 6%), HSV (7712, 5%), JE (7318, 5%). The positivity for these viruses was 23%, 26%, 12 %, 13 %, 18%, 5%, 7% respectively. Age and sex distribution of patients positive for these viruses are summarized in table - 2.

Table1: Common disease clusters diagnosed by VRDLs and their distribution across the country, 2016-17.

Clusters	Total Clusters diagnosed	States (No. of clusters)
Measles	138	Gujarat (101), Assam(33), Punjab(3), Odisha(1)
Dengue	69	West Bengal(16), Chhattisgarh(8), Odisha(7), Andhra Pradesh(8), Punjab(5), Assam(5), Kerala(6), Madhya Pradesh(4), Jammu(4), Rajasthan(4), Manipur(1), Uttar Pradesh(1)
Varicella Zoaster Virus	39	Bihar(16), Karnataka(8), Odisha(5), Jharkhand(3), Assam(2), Punjab(2), Chhattisgarh(2), Uttar Pradesh(1)
Influenza A H1N1	16	Andhra Pradesh(14), Panjab(2)
Hepatitis E Virus	14	Odisha(8), Punjab(4), Rajsthan(2)
Japanese Encephalitis	14	Odisha(10), Bihar(3), Manipur(1)
Chikungunya	12	Rajsthan(5), Andhra Pradesh(3), Jammu(2), Punjab(1), Odisha(1)
HAV	12	Odisha(7), Tamilnadu(2), Jammu(1), Karnataka(1), Assam(1)

Table 2: Age and sex distribution of laboratory-confirmed cases investigated by VRDLs (n, %)

	Dengue	Chikungunya	Influenza A/H1N1	Hepatitis A virus	Hepatitis E virus	Herpes Simplex virus	Japanese Encephalitis
Age group							
<1	81(0.5%)	43(0.8%)	39(3%)	12(1%)	3(0.2%)	91(24%)	7(1%)
1-4 yrs	390(3 %)	70(1.2%)	189(12%)	201(16%)	27(2%)	24(6%)	55(11%)
5-14 yrs	2156(14%)	458(8%)	156(10%)	531(43%)	147(9%)	43(11%)	184(35%)
15-44 yrs	9888(66%)	3512(62%)	555(37%)	358(29%)	1026(63%)	157(41%)	147(28%)
>45 yrs	2014(13%)	1542(27%)	567(38%)	100(8%)	292(18%)	51(13%)	126(24%)
No data	423(3%)	52(1%)	3(0.2%)	36(3%)	122(7%)	14(4%)	0
Sex							
Male	9315(62%)	3140(55%)	681(45%)	694(56%)	1007(62%)	185(49%)	313(60%)
Female	5636(38%)	2537(45%)	828(55%)	544(44%)	610(38%)	195(51%)	206(40%)
Total	14952	5677	1509	1238	1617	380	519

12. A MULTI-CENTRIC STUDY TO ESTIMATE THE SERO-PREVALENCE OF DENGUE VIRUS INFECTION IN INDIA

Name of the Principal Investigator	Manoj Murhekar
Collaborating institutes and Co-investigators	Indian Council of Medical Research, New Delhi; (Nivedita Gupta), ICMR-Desert Medical Research Centre, Jodhpur (SS Mohanty), ICMR-National Institute of Cholera and Enteric Diseases, Kolkata (Suman Kanungo, Shanta Dutta), ICMR-National Institute of Epidemiology, Chennai (P. Kamaraj, Santosh Kumar, Girish Kumar),ICMR-National Institute of Malaria Research, New Delhi (Deepali Anvikar), ICMR-National Institute of Traditional Medicine, Belagavi (Dr Subarna Roy), ICMR-National Institute of Research in Tribal Health, Jabalpur (Pradip Barde), National Institute of Virology, Pune (Babasaheb Tandale, Gajanan Sapkal), ICMR- Regional Medical Research Centre, Bhubneswar (Bhagirathi Dwibedi, Prakash Kumar Sahoo), ICMR- Regional Medical Research Centre for NE, Dibrugarh (Siraj Ahmed Khan), ICMR-Rajendra Memorial Research Institute of Medical Sciences, Patna (Roshan Kamal Topno), King George Medical University, Lucknow (Uday Mohan), Postgraduate Institute of Medical Education and Research, Chandigarh (Vivek Sagar, Rajesh Kumar, PVM Lakshmi, Gagandeep Grover), SHARE India, Hyderabad (Ramesh Allam Reddy, Dr B. Sailaja)
Funding agency	Indian Council of Medical Research, New Delhi
Budget	3.29 Cr

BACKGROUND OF THE STUDY

Dengue is a major public health problem in India. WHO recommends countries to consider the introduction of the dengue vaccine developed CYD-TDV (Dengvaxia®) only in geographic settings (national or sub-national) with high endemicity, as indicated by seroprevalence of approximately 70% or greater in the age group targeted for vaccination. In the absence of any data about endemicity of dengue infection in India, NIE is conducting a multicentric nationwide cross-sectional survey among individuals aged 5-45 years to estimate the age-specific seroprevalence.

METHODS

The survey was conducted in five geographic regions: North, Northeast, East, West and South and three states were selected from each region. From each selected state, four districts were selected by PPSLSS method. From each selected district two villages from rural areas and two wards from urban areas were selected by SRS method. From the selected village/ward, one Census Enumeration Block (CEB) was selected by SRS. The survey team uses the census location map to identify the boundaries of the CEB. If the maps are not available, the survey teams create a rough map of the CEB.CEBs having more than 200 households were segmented with each segment having 100 households approximately, then one segment is randomly selected. All the households in the given segment are enumerated. The survey is carried out in three age groups: 5-8, 9-17 and 18-45 years. A total of 2640 sample is planned for each age group at the national level; hence a total of 7920 sample for all the three-age group. The list of all persons in each of the three age-groups will form the sampling frame for selecting 25 persons in each age group by simple random sampling. All the selected persons will be visited to collect 3 to 5 ml blood sample and data after getting consent/assent. Blood samples will be tested for IgG antibodies against dengue, Chikungunya, and Japanese Encephalitis.

RESULTS

Current status-Ongoing

Table 1: Status of the survey as on 15th November 2017

S.No	State	No of districts completed	No of clusters completed	Blood samples collected			
				5–8 years	9-17 years	18-45 years	Total
1	Assam	3	12	163	180	167	510
2	Tripura	2.75	11	159	182	173	514
3	West Bengal	2	8	121	124	124	369
4	Odisha	1.5	6	116	125	96	337
5	Rajasthan	4	16	229	244	235	708
6	Madhya Pradesh	2	8	138	144	126	408
7	Maharashtra	3	12	199	210	173	582
8	Andhra Pradesh	4	16	332	346	313	991
9	Karnataka	2	8	152	135	127	414
10	Tamil Nadu	4	16	347	330	260	937
	Total	**28.25**	**113**	**1956**	**2020**	**1794**	**5770**
11	Delhi	Started on 14th November					
12	Bihar	Started on 15th November					
13	Meghalaya	Expected to start by 2nd week of December					
14	Punjab						
15	Uttar Pradesh						

13. PREVALENCE OF IGM AND IGG ANTIBODIES AGAINST O. TSUTSUGAMUSHI AMONG AES PATIENTS AND HEALTHY CONTROLS IN GORAKHPUR, UTTAR PRADESH INDIA: A CASE-CONTROL STUDY

Name of the Principal Investigator	Manoj Murhelar
Co-investigators	Mahima Mittal (BRD Medical College, Gorakhpur), Jeromie Wesley Vivian Thangaraj, Winsley Rose (CMC, Vellore), Valsan Verghese (CMC, Vellore), Girish Kumar, Vijay Bondre (NIV Gorakhpur), Nivedita Gupta (ICMR, New Delhi)
Collaborating institutes	BRD Medical College, Gorakhpur, NIV Gorakhpur Unit, CMC Vellore
Funding agency	Indian Council of Medical Research, New Delhi

BACKGROUND & RATIONALE OF THE STUDY

Outbreaks of acute encephalitis syndrome (AES) with high case-fatality rates have occurred in Gorakhpur Division of Uttar Pradesh, India, and its etiology has remained largely unknown. Investigations conducted during the 2015 outbreak revealed IgM against scrub typhus in >60% of AES cases. In view of the absence of information about IgM positivity from the general population, and the probability of high background antibody levels in areas to which scrub typhus is endemic areas, we conducted a case-control study among AES patients and healthy controls to compare the proportion of IgM and IgG antibodies against *Orientia tsutsugamushi*

OBJECTIVES

To compare the IgM and IgG seropositivity against *Orientia tsutsugamushi* in AES patients and healthy controls.

METHODS

An unmatched case-control study was conducted during August 17–October 16, 2016. Children ≤15 years of age admitted to the BRD Medical College with acute onset of fever and change in mental status or new-onset seizures, excluding febrile seizures, with cerebrospinal fluid pleocytosis (cell

counts >5/mm3) were recruited as cases. Controls were healthy children ≤15 years of age residing in the home (sibling controls) or village (community controls) of AES patients. We interviewed mothers and caretakers for information for patients and controls. We collected 2-mL blood samples from patients and controls and tested the samples for IgM and IgG against O. tsutsugamushi, using commercial ELISA Kits

RESULTS

A total of 46 patients and 151 controls (69 sibling and 82 community controls) were enrolled in the study. Odds of IgM scrub typhus positivity were 35.1 (95% CI 13.4–92.3) times higher among AES cases than among controls. Odds of IgG positivity were 6.5 (95% CI 2.8–14.8), times higher among AES cases than controls. Higher levels of IgM and IgG against scrub typhus among AES cases than among controls indicates a role for scrub typhus in the etiology of AES at Gorakhpur

14. RISK FACTORS OF SCRUB TYPHUS AMONG CHILDREN AND PROGRESSION TO AES IN GORAKHPUR DIVISION, UTTAR PRADESH

Name of the Principal Investigator	Manoj Murhekar
Co-investigators	Jeromie Wesley Vivian Thangaraj, Vishal Shete
Collaborating institutes	National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore; Manipal Centre for Virus Research, Manipal, Karnataka; CDC, India; WHO-NPSP, India; CDC, India, ICMR-National Institute of Virology, Gorakhpur.
Funding agency	Indian Council of Medical Research, New Delhi

BACKGROUND OF THE STUDY

Gorakhpur and the adjoining districts of the Indian state of Uttar Pradesh have been witnessing seasonal outbreaks of acute encephalitis syndrome (AES) since 1978, causing high morbidity and mortality, especially among children. The proportion of AES attributable to JE has declined to less than 10% and its etiology has remained largely unknown. Earlier studies conducted in Gorakhpur division of Uttar Pradesh between 2014-2016 indicated scrub typhus as the major etiology of AES, accounting for about two third of the AES cases. Studies also indicated that scrub typhus accounted for nearly 20% acute febrile illness (AFI) patients. Scrub typhus initially remains present as fever before the CNS symptoms manifest. It is essential to understand the behavioral and environmental factors for acquiring scrub typhus among children in Gorakhpur division to devise a good preventive strategy. Study on the factors (such as duration of illness, health facilities visited during this duration, treatment pathway to tertiary care hospital) increasing the risk of progression to AES would help to institute early interventional strategies.

OBJECTIVES

The present study has the following two objectives:

1. Identify risk factors associated with the acquisition of scrub typhus among children in Gorakhpur region, UP
2. Compare treatment-related factors associated with progression of febrile illness due to scrub typhus to AES among children in Gorakhpur region, UP

METHODS

An unmatched case-control study was conducted to identify risk factors associated with scrub typhus in Gorakhpur and Deoria districts. The study was conducted in 5 health facilities in Deoria and 3 health facilities in Gorakhpur districts. AFI patients (fever >=3 days) attending these facilities were enrolled in the study. AFI patients were screened for the presence of IgM and IgG antibodies against Orientia tsutsugamushi (OT) using commercial ELISA Kits.AFI patients with IgM antibodies against OT were considered as cases. AFI patients negative for IgM and IgG antibodies against OT were considered as controls. Cases and controls were interviewed at their residences to collect socio-demographic information, household details, environmental information and behavioral patterns of the children.

RESULTS

Table 1: Status of investigated cases

	Gorakhpur	Deoria	Total
AFI patients enumerated (cum)	372	447	819
IgM positives (cases)	68	87	155
IgM and IgG negatives (controls)	187	222	409
Cases interviewed (cum)	68	87	155
Controls interviewed (cum)	184	222	406

A total of 819 patients were enrolled in the study. Out of 819, 155 were IgM Positives (cases) and 409 were both IgM & IgG negatives (controls). All the cases and 406 controls were interviewed at their residences. The analysis for the study is ongoing.

15. MODEL DISTRICT FOR PUBLIC HEALTH PREPAREDNESS, SURVEILLANCE AND RESPONSE: MULTI-STRATEGIC INTEGRATED APPROACH IN TIRUVALLUR DISTRICT, TAMIL NADU, INDIA

Name of the Principal Investigator	Manoj Murhelar
Co-investigators	Prabhdeep Kaur, Tarun Bhatnagar, P Manickam, CP Girish Kumar, P. Ganeshkumar, Jeromie Wesley Vivian Thangaraj,
Collaborating institutes	CDC-India, CDC-Atlanta, Directorate of Public Health & Preventive Medicine, Deputy Directorate of Health Services, Tiruvallur
Funding agency	CDC Atlanta

RATIONALE:

Emerging infectious diseases continue to pose a serious public health threat in all countries worldwide and threaten global health security. To effectively address these threats, countries need to strengthen their core public health capacities as demanded by International Health Regulation (IHR). In India, the range and burden of infectious diseases are enormous. Infectious disease surveillance is conducted mainly through the Integrated Disease Surveillance Program (IDSP) – a decentralized state-based surveillance system for selected diseases of public health importance. Although the surveillance capacity in the country has improved since the implementation of IDSP, certain gaps still remain. In addition to IDSP, Government of Tamil Nadu has initiated indigenous infectious disease surveillance systems to prevent, detect and respond to health events early for prevention of major outbreaks.

Figure 1: Tiruvallur district, Tamil Nadu

The primary aim of the project is to develop a model district for public health preparedness, surveillance and response activities. The project adopts a multi-strategic approach to prevent, detect and respond to infectious disease threats. The project is set to strengthen IDSP, Laboratory facilities, enhance workforce capacity and establish an emergency operation center. The project brings in cutting edge technology to the forefront for real-time collection of data using multiple modalities and levels, automated alert generation and early initiation of response in the field supported by rapid laboratory diagnosis at the district level. In view of developing a sustainable and feasible model district for public health preparedness, surveillance and response, we intend to work along with the stakeholders particularly with state departments concerned during development and implementation of the strategies in a phased manner. The project was implemented on 30.09.2015 at Tiruvallur district (Fig.1) in collaboration with Government of Tamil Nadu and CDC, Atlanta.

APPROACHES

The project has seven approaches (Fig.2):

1) Strengthen public health workforce capacity
2) Strengthen/establish facility-based surveillance (FBS) for Acute Diarrheal Disease, Acute Respiratory Tract Infection and Acute Febrile Illness in Public Health Facilities
3) Establish event-based surveillance (EBS) at community
4) Strengthening public health preparedness, surveillance and response during mass gatherings
5) Strengthen information system - Develop District Level Data Management Platform (DLDMP)
6) Strengthen Emergency Management (EOC) at State and District

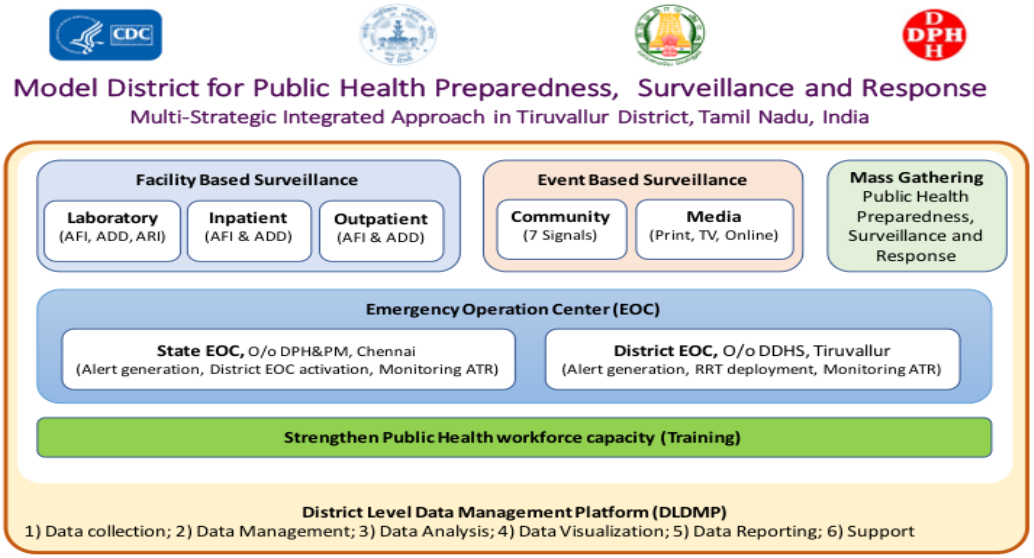


Figure 2: Overview of the GHSA approaches, Tiruvallur district, Tamil Nadu

METHODS

Develop a District Level Data Management Platform (DLDMP)

Data collection, compilation, and storage have been automated using an in-house built ODK software application. The ODK application has been installed in the mobile phones of the health worker for faster data collection and real-time transfer and storage of data. After synchronizing with the ODK server, the data is extracted as excel sheet for analysis. Based on the pre-fixed algorithms, data are analyzed to generate alerts and alert summary is prepared on daily basis. The alert report consisted of the geographical location of alerts (residence), the trend of AFI admissions (Block wise and for the district) and dengue positive cases. The summary reports were shared with the district authority through email and designated WhatsApp group. Follow up action was instructed by the district health authority in the same WhatsApp group. Automation has enabled us to capture 10,827 IPD cases and 1,408 alerts and through OPD surveillance we have captured 1475 cases and 6 alerts.

Event Based Surveillance
The health officials from the block like VHNs, HIs and Medical officers will be trained first on the process of EBS and then each VHNs will identify volunteers from their respective villages/habitation. Then these volunteers will be trained by VHNs to report the events from their villages. The VHNs will also train about how to communicate the events through SMS.

Media Surveillance
We identified 49 informal sources including newspapers, news channels, online news websites, mobile news applications, social media, web forecasting, custom web search engines, and Government websites for scanning health-related signals. We categorized events into 11 alerts and 3 response groups. All events were entered in an open source android application and synchronized to the cloud server. Action taken reports for verified events were received through WhatsApp group and email. Daily summary report by place is shared in the same group and through email. This group was moderated by District health officer and District Epidemiologist, and events were posted by all group members.

Facility-Based Surveillance (FBS)
Infrastructure and Equipment: Laboratory infrastructure strengthening: Additional space (400 sq.ft) for the laboratory was allotted by Hospital administration to facilitate bacteriological testing of samples. BACTEC instrument has been procured and installed in December 2016. Training for using BACTEC has been conducted during the 1st week of Jan 2017. Real-time PCR machine has been procured and installed in September 2017. Facility-based surveillance at Tiruvallur GH was initiated on 5th October 2016. The surveillance staff were enrolled first seven (based on time of admission) AFI and ADD inpatients up to April 2017 and subsequently increased to 20 patients from May 2017. Case Recruitment Form (CRF) was filled by surveillance staff through an interview with the patient (or guardian/family member) and abstract demographic and clinical information.

Improved lab services with Automated Blood Culture
AFI and ADD surveillance has been initiated at district government hospital for bacteriological testing of blood and stool samples respectively. A total of 1129 AFI cases and 452 ADD cases have been enrolled in the surveillance. Apart from serological testing automated blood culture has been installed for bacterial culture. Bacteriological testing of samples using BACTEC has started after the formal inauguration on 21.02.2017. Sensitization training for all hospital clinicians was also conducted on 21.02.2017

Establishing State and District Emergency Operation Centre (EOC)
State EOC has been established at DPH Office, Chennai with Human resources recruited and major equipment have been procured. EOC staff had completed the Federal Emergency Management Agency (FEMA) online training.

RESULTS

A. District Level Data Management Platform (DLDMP):

DLDMP Automated alert generation and alert sharing

- Data collection, compilation, and storage have been automated using an in-house built ODK software application. The ODK application has been installed in the mobile phones of the health worker for faster data collection and real-time transfer and storage of data.
- Open source Mobile App for data collection
  - This tool is now being used to enter daily inpatient AFI and ADD cases collected by field staff and District Surveillance Unit. Able to abstract 100% village details and 90% habitation details for AFI and ADD inpatient admission
- Daily Alert Summary with alerts and line list (Fig. 3)
  - The summary reports were shared with the district authority through email and designated WhatsApp group
- DLDMP application development, integration of data analytics of software development in DHIS2 platform is in process.
- DLDMP Web Application, Android app, Exe downloader development is in process.

Completed activities:

- Updated eDFSS tablet-based data collection forms were developed using ODK by the NIE team
- The tool has a unique cascading feature aiding in the collection of the exact habitation of the patient. This tool is now being used to enter daily inpatient AFI and ADD cases collected by DSU at the district level
- After the revision of ODK based on piloting, 26 Health inspectors 14 data entry operators and 20 staff nurses were

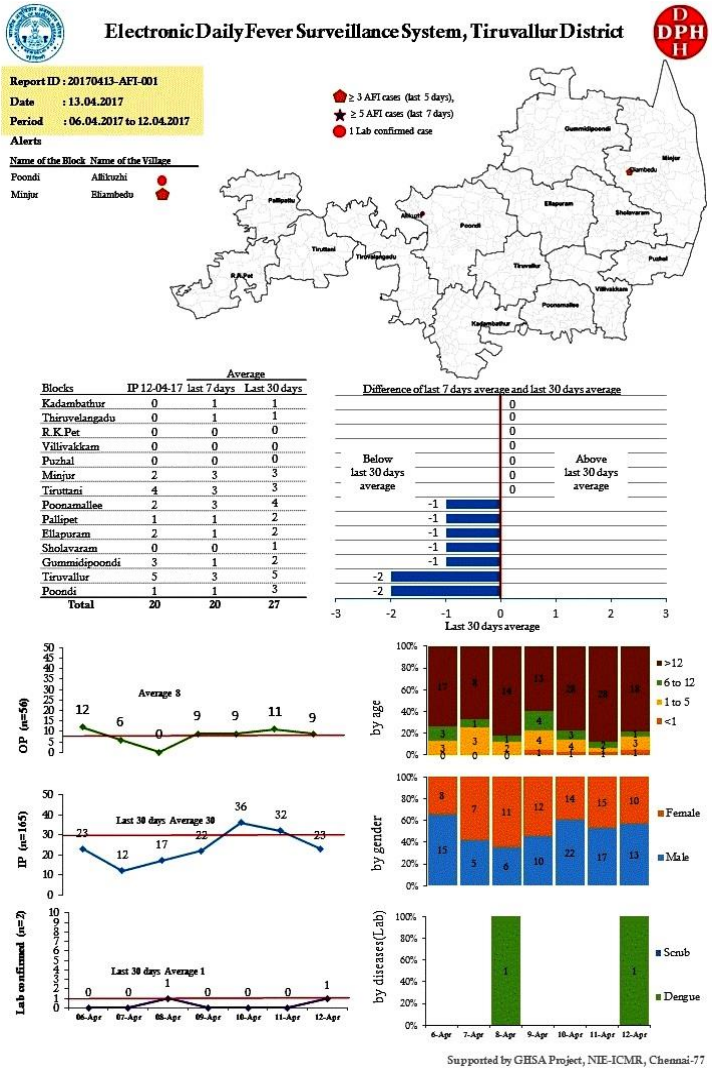


Figure 3. Daily alert summary

given hands-on training on the ODK application Software at Tiruvallur and Poonamalle Health Unit District.

- Daily Summary Report finalized
- Geo profile of Tiruvallur with points (latitude and Longitude) and polygons (boundaries) developed and verified with authorities
- A customized mass gathering tool has been developed with a software developer and was pilot tested in the Panchkroshi Yatra 2017 mass gathering event. The tool encompasses a mobile based application for data collection, real-time synchronization with a server and an automated dashboard to generate reports and alerts. A generic version of the application is being developed to cater to all mass gathering events
- ODK forms have been developed for Panguni Uthiram festival at Palani in Dindugal District April 2017 and Periyapalayam Bhavani Amman Aadi Festival July 2017, Tiruvallur District mass gathering event. A mobile-based ODK application for data collection, real-time synchronization with a server to generate reports and alerts.

B. Event-Based Surveillance

Ongoing activities-

- SMS/IVRS based EBS system: Since the volunteers are easy with call-based reporting system than SMS, the decision has been taken to develop an SMS and IVRS based reporting system. Development of software is on the process.

- Training to AWW and school teachers: Anganwadi workers and school teachers are key person mostly missed during training so they are trained separately by face to face.

Outcomes from completed activities

Training: Event-based surveillance was rolled out in two blocks (Ikkadu and Ellapuram) of Tiruvallur

Figure 4. EBS Pocket card for VHN and volunteer training

district. Next level of training has been completed for 630 volunteers.
IEC materials: Posters and pocket cards were designed which will act as the resource for capacity building of volunteers and a guiding tool for them (Fig 4)

Manual on EBS
Manual on EBS was developed and translated in the local language Tamil, which will provide guidance for health workers participating in event-based surveillance.

Results from completed activities: Forty-three signals were received from volunteers 15 events for fever with rash (signal 1), eight clusters of animal deaths (signal 6), six diarrhea event (signal 2) and two hospitalizations for respiratory illness (signal 1) ten events for Fever (mostly dengue clusters) and only one unusual which is also discarded. Eleven events were discarded by the village health nurses and one by health inspectors after visiting the site.

C. Media Surveillance
During this year 2036 events were posted of which 844 (41.4%) were public health-related events. Among the public health-related events, 297 (35.2%) signals were disease related early warning signals and for the same action-taken report was received at DSU.

D. Facility-Based Surveillance
Sensitization training of the Facility based surveillance for all clinicians was conducted on 11th April'2017. A situational assessment and feasibility study was conducted to expand of FBS to Ponneri and Tiruthani sub-district Government hospitals in Tiruvallur. After the study, it has been decided to expand the FBS to these two sub-district Government hospitals. In the month of August 2017 AFI surveillance has been initiated at Tiruttani and Ponneri GH. The surveillance staff were enrolling first 5 (based on time of admission) AFI cases in 24 hours in IPD for the study.

For the period ending 30 September 2017, samples from 2164 AFI cases were collected. Among them 239 (11.0%) tested positive for dengue IgM, 128(5.9%) tested positive for NS1, 180 (8.3%) for leptospirosis, 180 (8.3%) for scrub typhus and 26 (1.2%) tested positive for malaria. 736 patients were tested for automated blood culture and 160 (7.3%) showed positive signals in BACTEC.
In ADD Surveillance, among the 245 ADD cases tested 18 (7.3%) patients were positive for pathogens. Among the 18 cases detected 9 (3.6%) were positive for rotavirus and 9 (3.6%) were positive for enteric pathogens. Among the enteric pathogens tested Shigella sp. and Salmonella sp. were detected in 9 (3.6%) and 2 (0.81%) cases respectively.

Establishing State and District EOC
i. Physical infrastructure for state and district EOC has been established
ii. Equipment (computers, projectors, LCD screens, photocopier, network connectivity, and office stationeries) for EOC has been procured and installed at state and district EOC.
iii. EOC staff had completed the Federal Emergency Management Agency (FEMA) online training.

iv. Capacity building of state EOC and district EOC team on emergency management has been completed
v. Draft SOPs for district EOC has been technically reviewed
vi. Human resources to operate EOC has been recruited and stationed at both state and district EOC

E. Workforce Strengthening

Two years Field Epidemiology Training Program [Master of Public Health (Epidemiology and Health Systems)]: 9th cohort: Out of a total of 17, six were selected from Tamil Nadu.10th cohort: In 10th cohort seven of fifteen were selected from Tamil Nadu.

Integrated FETP for Epidemiologist and Microbiologists was conducted during 13-17 June 2017 at Trichy, in collaboration with CDC and NCDC. It was Integrated Epidemiology and Laboratory training. About 60 Trainees from 32 districts of Tamil Nadu participated and trainees were District Epidemiologists, District Microbiologists, and Laboratory microbiologists. Sessions on Surveillance, outbreak investigation, data management, and analysis, scientific communication and report writing was organized. Few of the sessions made as common for both epi and lab trainees. Six mentors identified from NIE and briefed in about training curriculum and guidelines for assignments. Five districts assigned under each mentor. Epidemiologists will complete the assignments (Outbreak investigation assignment and Surveillance system assessment) with the help of the lab person (Microbiologist) in the district. Mentors will guide and direct the trainees. A two-day workshop where all districts (Epi and Lab person) will present their assignments is planned for Aug 2017.

Training program on Disease Surveillance, Outbreak, and Response for Medical Officers, Tiruvallur has been conducted during 6- 8 Sep 2017. About 17 Medical Officers were updated about the GHSA project and refreshed with the knowledge on public health surveillance, preparedness and response.

The second batch of Baseline Epi Training for the medical officers of Tiruvallur district and Second workshop on Frontline Epi training for District Epidemiologist are conceived for implementation. Initial micro-planning, preparation and necessary approvals from state government have been initiated.

Epidemic Intelligence Service Officers (EISO) recruitment process was initiated for 1st Batch EIS India South.

Learning Management Software for GHSA Workforce Strengthening: Introduction of MOODLE as LMS to enhance and facilitate the learning experience of MPH scholars. Training of students of MSc Virology from King's College over the Basics of Public Health.

16. NIE-ICMR-WHO ETHICS COURSE FOR INDIAN ETHICS COMMITTEES

Name of the Principal Investigator	P. Manickam
Co-investigators	Tarun Bhatnagar, Prabu Rajkumar
Collaborating institutes	WHO, ICMR Bioethics Unit
Funding agency	WHO, India

BACKGROUND OF THE STUDY

Health research involves multiple paradigms (clinical trials, socio-behavioral- epidemiological-basic science research & AYUSH) and multiple settings (private, public, clinical research organizations and pharmaceutical companies). It is governed by guidelines, regulations, and accreditation. Evidence indicates members of Ethics Committees (ECs) in India lack in-depth knowledge on ethical principles involved, operations and current SOPs. ICMR is at the forefront of developing ethical guidelines and recently released National ethical guidelines for biomedical and health research involving human participants. In this context, there is a need for multi-faceted, comprehensive, up-to-date, tailor-made training for members of India's ECs. Continuing ICMR-NIE's efforts on health research MOOCs (Called "NIeCer" courses), NIE proposes to offer NIeCer102: an online course for ethics committees towards capacity building of EC members in reviewing health research proposals in accordance with guidelines.

OBJECTIVES

The present research has the following objectives:

- Develop training materials for the online course for ethics committees in India
- Run the online course for ethics committees in India

METHODS

The course development is guided by an advisory group with members from leading Indian government bodies like ICMR, The Central Drugs Standard Control Organization and Translational Health Science and Technology Institute and that of WHO-India and health research professionals from reputed institutions across the country. We have a local co-coordinating team consisting of members from NIE and NIRT to carry the work forward. We have framed the syllabus and identified the speakers. We have collaborated with NPTEL of IIT Madras for recording, post-production, and offer of course on a dedicated platform.

RESULTS

All the identified faculty members have accepted the invitation. We completed three meetings of the advisory group and several rounds of meetings of local co-ordination team. Many of them have recorded the course. We have recorded a few case studies as well. We also are in the process of completing recording from eminent persons in research and ethics for an introductory video.

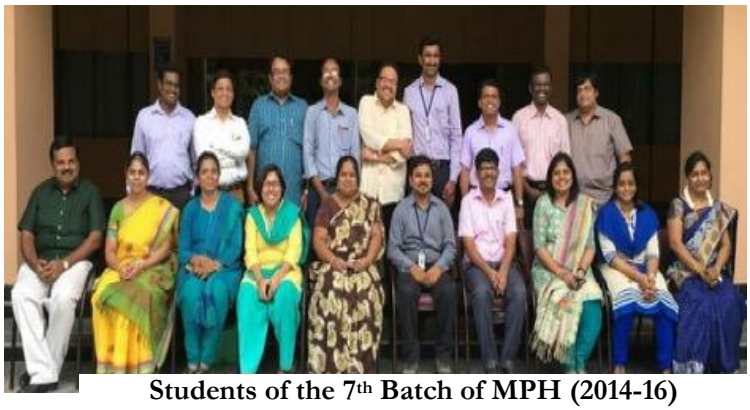
Figure 1: Participants in the advisory group meeting.

17. MASTER IN PUBLIC HEALTH

The ICMR School of Public Health at the National Institute of Epidemiology has been conducting two-year Master of Public Health (Epidemiology and Health Systems) since 2008. The highlights of this program during the year 2016-17 are as under:

Master of Public Health (Epidemiology and Health Systems)

- MPH (EHS) is in its tenth year.
- 18/19 scholars of the seventh (2014) and 2 scholars of sixth (2013) cohort graduated.
- 15/17 scholars of the eight (2015) cohort and one scholar of the seventh cohort (2014) completed their dissertation in June 2017.
- 14 scholars were admitted in the tenth cohort in July 2017 (5 Tamil Nadu, 3 Himachal Pradesh, 1 Arunachal Pradesh, 1 Chattisgarh, 1 Goa, 1 ICMR-NIRT-Chennai, 1 Kerala, 1 Uttar Pradesh)

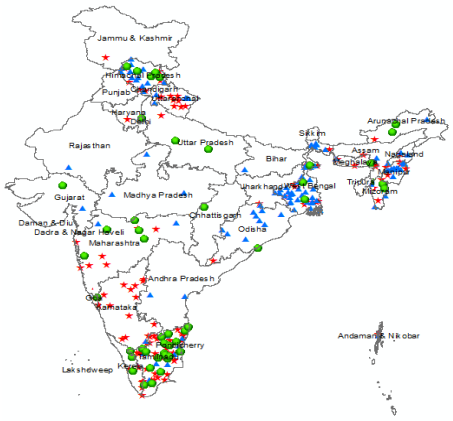


Students of the 7th Batch of MPH (2014-16)

- 15 abstracts of 11 of our MPH trainees are selected for presentation at the 8th TEPHINET Bi-regional Scientific Conference held in Siem Reap, Cambodia, 2016.

	Cohort	Number
Graduates		231
MAE	2001-10	108
MPH (HSDR)	2008-10	41
MPH (EHS)	2011-16	82
Current Scholars		31
Second year	2016-18	17
First year	2017-19	14
Total		262

Table 1: Number and distribution of skilled public health workforce in 28 Indian states



Map 1: Distribution of SPH trained public health workforce in 28 Indian states

18. M.SC. BIOSTATISTICS

NIE has commenced Master's program in Biostatistics in collaboration with Periyar University, Salem, in August 2016. Three scholars were admitted in the first cohort (2016) and thirteen scholars in the second cohort (2017) First and Second Semester examination for the first cohort was conducted in November 2016 & April 2017 respectively.

NIE conducted a National Symposium on Biostatistics and Health Research, inviting college students for poster presentation on "Application of Statistics in the fields of Medicine and Health Research – My perceptions" on 30th January 2017. 35 participants from various colleges attended.

Students of Mathematics & Statistics disciplines of different Universities participated in this symposium. Thirty-eight students participated and twenty presented their ideas as posters on the theme. The first three best posters were awarded prices. Senior Director - Operations (Biostatistics) at Cognizant Technology Solutions, Mumbai gave an illuminating talk on the role of Biostatistician in today's age of information and the various career prospects available to young Statisticians in IT Field. Professor of Biostatistics, PSG Medical College, Coimbatore gave an inspiring talk on the role of statistical analysis in evidence-based research with special reference to the medical field and clinical trials.
The first batch of MSc Biostatistics is at present in the III semester of the course. The second batch of MSc Biostatistics course commenced on 3 July 2017 and thirteen students joined the course and the distribution of the students across the country is shown below.

Figure 1: Participants in the workshop

19. WORKSHOPS/TRAINING PROGRAMS ORGANIZED

- First and second Induction Training Programs for ICMR Scientists, National Institute of Epidemiology, Chennai, India (3-7 Apr, 2017; 10-14 Jul, 2017)
- Meetings of the Advisory Group for NIE-ICMR-WHO Online course for Ethics Committees in India (NIeCer102:e4IEC), (17 Mar 2017, 25 Oct 2017, 27-28 Nov 2017)
- Training Program on Disease Surveillance, Outbreak investigation and Response for medical officers, Tiruvallur, Tamil Nadu, ICMR- National Institute of Epidemiology, Chennai, India. 6-8 Sep, 2017
- Orientation to Clinical Research Methods for mental health professionals, Institute of Mental Health, Chennai, India. 24-25 Jul, 2017
- National Symposium for undergraduate students "Biostatistics and Health Research" 30 Jan 2017.
- Virus Research Diagnostic Laboratory Network, online data management training workshop. 3 Feb 2017.
- Regional Training of Trainers (TOT) workshops on HIV Sentinel Surveillance (HSS) (10–11 January 2017, 14 March 2017)
- [1]Workshop on Infectious Disease Outbreak Investigation and Surveillance. Yenepoya University, Yenepoya Medical College, Mangaluru, India. 20-22 Sep, 2017.
- *MECOR India 2017 Course – Level 2 (Methods in Epidemiologic, Clinical& Operations Research), American Thoracic Society, Mahabalipuram, India. 24-29 Apr, 2017
- *2017 FETP Accreditation Reviewer Training, Training in Epidemiology and Public Health Interventions Network (TEPHINET), Stockholm, Sweden. 27 Feb-1 Mar, 2017

[1] *NIE scientists participated as faculty*

20. PUBLICATIONS

Sl. No	Citation	Impact Factor
1	Wagh V, Jamadar B, Murhekar M. Photokeratoconjunctivitis Outbreak Associated with Damaged Metal Halide Lamps — Maharashtra State, Western India, June 2016. MMWR 2016; 65(44);1238–1239	11.48
2	Mahima Mittal, Jeromie Wesley Vivian Thangaraj et al. Scrub Typhus as a Cause of Acute Encephalitis Syndrome, Gorakhpur, Uttar Pradesh, India. Emerging Infectious Diseases 2017; 23	6.99
3	Murhekar MV, Mittal M, Prakash JA, et al. Acute encephalitis syndrome in Gorakhpur, Uttar Pradesh, India - Role of scrub typhus. J Infect. 2016 Dec;73(6):623-626.	4.4
4	K Kanagasabai, V Joshua, M Ravi, R Sabarinathan, BK Kirubakaran, V Ramachandran Murhekar MV . Epidemiology of Japanese Encephalitis in India: Analysis of laboratory surveillance data, 2014-2017. J Infect. 2017 Sep 29, 2017.	4.4
5	El Bcheraoui C, Afshin A, Charara, R, et al GBD 2015 Eastern Mediterranean Region Obesity Collaborators (2017). Burden of obesity in the Eastern Mediterranean Region: findings from the Global Burden of Disease 2015 study. International Journal of Public Health, 1-12. DOI: 10.1007/s00038-017-1002-5	2.3
6	Manickam P, Mehendale SM, Nagaraju B, et al. International open trial of uniform multi-drug therapy regimen for leprosy patients: Findings and implications for national leprosy programmes. Indian J Med Res. 2016; 144: 525-35	1.53
7	Joshua V, Murhekar MV, Ashok M et al. Mapping dengue cases through a national network of laboratories, 2014-2015. Indian J Med Res 2016;144:938-41.	1.53
8	Fredrick TT, Kaur P, Murhekar MV et. al, Diabetic retinopathy and its risk factors in patients with type 2 diabetes attending rural primary healthcare facilities in Tamil Nadu. National Medical Journal of India. 2016 (1): 9-13.	1.41
9	Fredrick T, Kaur P, Murhekar MV, et al. Diabetic retinopathy and its risk factors in patients with type 2 diabetes attending rural primary healthcare facilities in Tamil Nadu. National Medical Journal of India. 2016;29(1):9.	
10	Marak B, Kaur P, Sudha R, Selvaraju S. Non-communicable disease comorbidities and risk factors among tuberculosis patients, Meghalaya, India. Indian J Tuber; 2016.63:123-125	
11	Debnath F, Bhatnagar T, Sundaramoorthy L, Ponnaiah M. Competency of peripheral health workers in detection & management of common syndromic conditions under surveillance, North 24 Parganas, West Bengal, India, 2016: a cross-sectional study. Global Health Epid Genomics 2017;2, e15:1-8. Doi:10.1017/gheg.2017.13	
12	Banurekha V, Bhatnagar T, Savithri S, Kumar ND, Kangusamy B, Mehendale S. Extent of Implementation of Screening Tuberculosis Patients for Diabetes Component of the Tuberculosis Control Programme in an Urban Setting in South India. J Association Physicians India 2017;65:102.	
13	Banurekha V, Bhatnagar T, Savithri S, Kumar ND, Kangusamy B, Mehendale S. Sputum conversion and treatment success among tuberculosis patients with diabetes treated under the Tuberculosis Control Programme in an Urban setting in South India. Indian J Community Med 2017;42:180-2.	

14	Ranjan A, Bhatnagar T, Babu GR, Detels R. Sexual behavior, HIV prevalence and awareness among wives of migrant workers: results from cross-sectional survey in rural North India. Indian J Community Med 2017;42:24-9.	
15	Debnath F, Ponnaiah M, Improved timeliness for reporting of acute diarrhoeal disease under surveillance overtime: Evaluation of integrated disease surveillance programme in North 24 Parganas, West Bengal, India, 2015, Clin Epidemiol Glob Health (2017), https://doi.org/10.1016/j.cegh.2017.10.006	
16	B Velayutham, B Kangusamy, V Joshua, S Mehendale. The prevalence of disability in elderly in India–Analysis of 2011 census data. Disabil Health J. 2016;9(4):584-92.	
17	S Kuruwa, V Joshua, V Shetty, N Mistry. Trends and spatial clustering of leprosy cases over a decade in a hyper-endemic area of western Maharashtra, India. Lepr Rev (2016) 87, 294–304.	
18	V Joshua. Spatial and temporal trends in new case detection of leprosy in India. Lepr Rev (2016) 87, 183–190.	
19	Prevalence of Disability in Children and Adolescents in India, 2011. Banurekha Velayutham, Boopathi Velayutham, V Joshua, S Mehendale. Ind. J. Youth Adol. Health 2016; 3(3).	
20	Tushi A, Kaur P. Process evaluation of communitisation programme in public sector health facilities, Mokokchung district, Nagaland, 2015. Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine. 2017 Apr;42(2):81.	
21	Kaur P, Rao SR, Venkatachalam R, Kaliaperumal K. Hypertension treatment and control in a rural cohort in Thiruvallur, Tamil Nadu, India. Indian journal of public health. 2016;60(4):298.	
22	Marak B, Kaur P, Rao SR, Selvaraju S. Non-communicable disease comorbidities and risk factors among tuberculosis patients, Meghalaya, India. indian journal of tuberculosis. 2016;63(2):123-5.	
	Contributing authors from NIE	
23	NCD Risk Factor Collaboration. Worldwide trends in blood pressure from 1975 to 2015: a pooled analysis of 1479 population-based measurement studies with 19.1 million participants. The Lancet. 2017;389(10064):37-55.	44.0
24	NCD Risk Factor Collaboration. Trends in adult body-mass index in 200 countries from 1975 to 2014: a pooled analysis of 1698 population-based measurement studies with 19.2 million participants. The Lancet. 2016;387(10026):1377–96	44.0
25	Collaborators (166). Nations within a nation: variations in epidemiological transition across the states of India, 1990–2016 in the Global Burden of Disease Study. Lancet. 2017 Nov 13 2017.	44.0
26	NCD Risk Factor Collaboration. A century of trends in adult human height. Elife. 2016;5:e13410	7.73
	Chapter in Book	
27	Manickam P, Viduthalaivirumbi B, Murhekar MV. Public health aspects of Marina protest against ban on "Jallikattu". . In: Swapna Sundar. Occupy Marina. 2017; Emerald Publishers, Chennai.	

21. SCIENTIFIC ADVISORY COMMITTEE

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Dr. K. R. Thankappan
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Director
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Dr. D.T. Mourya
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REPRESENTATIVE, INDIAN COUNCIL OF MEDICAL RESEARCH (ICMR)

Dr. Sanjay Mehendale
Additional Director General &
Chief, ECD Division
Indian Council of Medical Research
Ansari Nagar, New Delhi – 110 029

22. INSTITUTIONAL HUMAN ETHICS COMMITTEE

CHAIRPERSON

Prof. Thangam Menon
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Dr. V. Venugopal

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Prof. Sreekumar Nellickappilly

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Mr. J. Arockiasamy

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Dr. B. Ganesh

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Mr. W. Michael Antony Joseph

Section Officer,
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MEMBER SECRETARY

Dr. R. Prabu

Scientist-C,
Member Secretary
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Dr. B. Ganesh, Scientist D was appointed as the new Member-Secretary of NIE – IHEC taking over from Dr. R. Prabu; Dr. R. Prabu, Scientist-C, and Mr. Subhendu K Acharya, Scientist C were appointed as two new affiliated members while Mr. J. Arockiasamy**,** Scientist-D was replaced (with effect from 15, December 2017).

23. LIST OF STAFF MEMBERS

	Name	Designation
Scientific Staff		
1	Dr. M.V. Murhekar	Scientist-G & Director
2	Mr. A. Elangovan	Scientist-F
3	Dr. J. Yuvaraj	Scientist-F
4	Dr. Prabhdeep Kaur	Scientist-E
5	Dr. C.P. Girish Kumar	Scientist-E
6	Dr. Tarun Bhatnagar	Scientist-E
7	Dr. P. Manickam	Scientist-E
8	Dr. T. Vijayapushpam	Scientist-E
9	Mr. J. Arockiasamy	Scientist-D
10	Dr. B. Ganesh	Scientist-D
11	Dr. Bhavani Shankara Bagepally	Scientist-D
12	Dr. Rajkumar Prabu	Scientist-C
13	Dr. P. Ganesh Kumar	Scientist-C
14	Dr. Vineet Kumar Kamal	Scientist-C
15	Mr. Subhendu Kumar Acharya	Scientist-C
16	Dr. Vasna Joshua	Scientist-B
17	Dr. M. Santhosh Kumar	Scientist-B
18	Mr. V. Saravana Kumar	Scientist-B
Administrative Staff		
19	Ms. V. Sudha	Senior Administrative Officer
20	Mrs. D. Parvathi	Asst. Accounts Officer
21	Mr. N.K.S. Brahaspathy	Private Secretary
22	Mr. A. Murugarasan	Private Secretary
23	Mrs. R. Udayalakshmi	Section Officer
24	Mr. Michael Antony Joseph	Section Officer
25	Mr. S. Kumaravel	Section Officer
26	Mrs. Shanthi Balasubramanian	Assistant

27	Mrs. K. Pappu	Assistant
28	Mrs. Uma Manoharan	Personal Assistant
29	Mrs. R. Alamelu	Personal Assistant
30	Mrs. G. Umaiya Parvathy	Assistant
31	Mr. P. Raja	Assistant
32	Mr. R. Arumugam	Stenographer
33	Mrs. R. Janaki	Stenographer
34	Mrs. K. Mahalakshmi	Stenographer
35	Mr. Raj Kumar	UDC
36	Mrs. P. Sharly Devi	UDC
37	Mr. S. Suresh	UDC
38	Mr. V. Chandrasekar	LDC
39	Mr.P.B. Santhosh Kumar	LDC
40	Mr. D. Mahendran	Attendant (Services)

Technical Staff

41	Mr. L. Sundaramoorthy	Principal Technical Officer
42	Mr. C. Govindhasamy	Principal Technical Officer
43	Mr. K. Kanagasabai	Principal Technical Officer
44	Dr. S. Venkatasubramanian	Principal Technical Officer
45	Mrs. R. Sudha	Principal Technical Officer
46	Dr. N. Uthayakumaran	Principal Technical Officer
47	Mr. K Kanagasabai	Principal Technical Officer
48	Mr. B.K. Kirubakaran	Senior Technical Officer (3)
49	Mr. M. Ravi	Senior Technical Officer (3)
50	Mr. P. Kamaraj	Senior Technical Officer (3)
51	Mr. K. Boopathi	Senior Technical Officer (3)
52	Ms. P. Jayasree	Senior Technical Officer (3)
53	Mr. T. Daniel Rajasekar	Senior Technical Officer (3)
54	Mr. V. Ramachandran	Senior Technical Officer (3)
55	Mr. G. Elavarasu	Senior Technical Officer (3)
56	Mr. R. Ramakrishna Rao	Senior Technical Officer (3)
57	Mr. S. Satish	Senior Technical Officer (2)

58	Mrs. P.Kannaki	Senior Technical Officer (2)
59	Mrs. A. Tamilarasi	Senior Technical Officer (2)
60	Mrs. P. Shantha	Senior Technical Officer (2)
61	Mrs. P. Lourdu Stella Mary	Senior Technical Officer (2)
62	Mrs. R. Shanthi	Senior Technical Officer (2)
63	Mrs. M.R. Santhi	Senior Technical Officer (2)
64	Mrs. I. Kalaimani	Senior Technical Officer (2)
65	Mr. S.A. Raveendra	Senior Technical Officer (2)
66	Mr. Rakesh Kumar Yadav	Senior Technical Officer (2)
67	Mr. T. Ravichandran	Senior Technical Officer (2)
68	Mr. M. Jagga Babu	Senior Technical Officer (2)
69	Mr. C. Sagayanathan	Senior Technical Officer (2)
70	Mr. K. Satish Kumar	Senior Technical Officer (2)
71	Mrs. Annamma Jose	Senior Technical Officer (2)
72	Mr. D. Murugan	Senior Technical Officer (2)
73	Mr. D. Augustine	Senior Technical Officer (2)
74	Mr. C. Prabakaran	Senior Technical Officer (2)
75	Mr. M. Anthony Doss	Senior Technical Officer (2)
76	Mr. V. Ramesh	Senior Technical Officer (2)
77	Mr. T. Subba Rao	Senior Technical Officer (2)
78	Mr. R. Gopinath	Senior Technical Officer (2)
79	Mr. S. Lucas Leonard	Senior Technical Officer (1)
80	Mr.P. Ashok Kumar	Senior Technical Officer (1)
81	Mr. A. Jeya Kumar	Senior Technical Officer (1)
82	Mr. R. Harikrishnan	Senior Technical Officer (1)
83	Mr. N. Vengatesan	Senior Technician (3)
84	Mr. M. Murali Mohan	Senior Technician (3)
85	Mr. A. Krishna Kumar	Senior Technician (3)
86	Mr.V.S. Ashok Kumar	Senior Technician (3)
87	Mr. P. Baskaran	Senior Technician (3)
88	Mr. S. Sittayya	Senior Technician (3)
89	Mr. Rang Lal Meena	Technical Officer

90	Mr. A. Kaleb Raja Kumar	Technical Officer
91	Mr.A. Gnanamurthy	Senior Technician (2)
92	Mr. R. Ravi	Senior Technician (2)
93	Mr. M. Tamilmani	Senior Technician (2)
94	Mr. D. Anandaraj	Senior Technician (2)
95	Mr. R. Ranganathan	Senior Technician (2)
96	Mr. T. Karunakaran	Technical Assistant (1)
97	Mr. A. Suresh	Technical Assistant (1)
98	Mrs. R. Vijayaprabha	Technical Assistant (1)
99	Mr. K. Ramu	Senior Technician (1)
100	Mr. K. Damodaran	Senior Technician (1)
101	Mr. D. Justinraj	Senior Technician (1)
102	Mr. M. Balusamy	Technician-C
103	Ms. S. Dhana Priya Vadhani	Technician-C
104	Mrs. V.S. Shyma	Technician-C
105	Mr. Harshal Bhimrao Sonekar	Technician-C
106	Mr. D. Chokkalingam	Technician-C
107	Ms. K. Gayathri	Technician-C
108	Mr. M. Saravanan	Technician-A
109	Mr. A. Valli Theivanai Pangalan	Technician-A
110	Mr. H. Dinesh Kumar	Technician-A
111	Mr. V.M. Srinivasan	Technician-A
112	Mr. T. Magesh	Technician-A
113	Mr. D. Gunasekaran	Technician-A
114	Mrs. M. Punitha	Technician-A
115	Mr. A. Mohan	Technician-A
116	Mr. M. Manoj Kumar	Technician-A
117	Mr. E. Thiruppugazh	Staff Car Driver (Grade-II)
118	Mr. K. Karthikeyan	Staff Car Driver (Ord.Grade)
119	Mr. D. Jayaraman	Staff Car Driver (Ord.Grade)
120	Mr. P. Ebenezer	Staff Car Driver (Ord.Grade)
121	Mr. A. Palani	Staff Car Driver (Ord. Grade)

122	Mr. A. Mani	Field Assistant
123	Mr. D. Prabaharan	Field Assistant
124	Mr. A. Subramani	Field Assistant
125	Mr. N. Maharaja	Field Assistant
126	Mrs. S. Mallika	Field Assistant
127	Mr. K. Loganathan	Field Assistant
128	Mr. M. Anbalagan	Field Assistant
129	Mr. E. Gandhidoss	Field Assistant
130	Mr. K. Shanmugam	Field Assistant
131	Mr. S.Sudandaraselvan	Field Assistant
132	Mr. M.R. Ravi	Field Assistant
133	Mrs. S. Sarada	Field Assistant
134	Mrs. K. Kasturi	Field Assistant
135	Mrs. A. Nirmala	Field Assistant
136	Mr. E. Anandan	Field Assistant
137	Mr. V.Penchala Narasaiah	Field Assistant
138	Mrs. S. Jamuna	Field Assistant
139	Mr. A.S. Madhan	Field Assistant
140	Mr. S. Baskaran	Field Assistant
141	Mr. M. Boopathy	Multi - Tasking Staff (MTS)

New scientists joined NIE, Chennai

Dr Vinit Kumar Kamal
Scientist 'C'

Mr. Subhendu K Acharya
Scientist 'C'

Dr. M. Santhosh Kumar
Scientist 'B'

Mr. V. Saravana Kumar
Scientist 'B'

National Institute of Epidemiology (NIE) received recognition for maintaining an international ethical standard of practice in research

The Institutional Human Ethics Committee of the National Institute of Epidemiology (NIE - IHEC) received the recognition for maintaining an international standard of practice in ethics in research by **SIDCER-FERCAP**

(SIDCER-FERCAP which is the WHO appointed international body for evaluating and recognizing the ethical standard practices in research institutes in the line of interracially recommended WHO operational guidelines visited National Institute of Epidemiology in the month of September 2017. They scrutinized the procedures adopted in the IHEC and given suggestions for improvement. NIE - IHEC incorporated the suggested improvement. After final evaluation, National Institute of Epidemiology (ICMR), Chennai was awarded a certificate of recognition in the month of November 2017.

National Institute of Epidemiology

(INDIAN COUNCIL OF MEDICAL RESEARCH)

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