



16 IVI-NICED Collaborative Project

Section highlights

A number of projects related to surveillance and disease burden of cholera, shigellosis and typhoid fever were undertaken by International Vaccine Institute (IVI), Seoul, DPR Korea in collaboration of this Institute. Basic aim of this collaboration is that to identify and develop suitable field area for vaccine trials.

16. IVI-NICED Collaborative Project

International Vaccine Institute (IVI), based in Seoul, DPR Korea, is a premier institute involved in development of vaccine and implementation of vaccine trials for diseases which are major public health problem. They are conducting DOMI projects (Diseases Of the Most Impoverished) funded by Bill and Melinda Gates Foundation. IVI with NICED, Kolkata as its major collaborating agency in India, has undertaken two important DOMI projects to generate epidemiological data on cholera and typhoid so that appropriate preventive measures can be taken to minimize the incidence of these diseases in West Bengal, as well as in India.



*Demographic Survey
at IVI field area*



Projects already undertaken:

1. Surveillance for typhoid fever and cholera in eastern Kolkata, West Bengal, India
2. Existing data collection: disease burden due to Cholera, Shigellosis and Typhoid fever in India.

Also several new projects are in progress:

1. Study on Socio-behavioral effect of typhoid
2. Economic effect of typhoid:
 - a) Willingness To Pay
 - b) Cost Of Illness
3. Typhoid vaccine trial

16.1 Surveillance for typhoid fever and cholera in eastern Kolkata, West Bengal, India

Typhoid and cholera are prevalent in West Bengal, especially in the overcrowded slum population in Kolkata, where there is lack of proper sanitation and safe water. Moreover, lack of proper health education and poor hygienic practices contribute to huge burden of these diseases among them. Although cholera and typhoid can be prevented by improving sanitation, quality of drinking water, practicing good hygiene like hand washing etc., these long-term measures are difficult to achieve. Thus, IVI, along with NICED, is aiming to identify appropriate preventive measures like vaccination against these diseases.



Demographic survey at IVI field area

Objective

Overall goal is to generate accurate epidemiological data on typhoid and cholera in impoverished slum population of Eastern Kolkata in preparation for field trials of vaccine against them.

Specific objectives of this study:

To estimate the age sex specific incidence of typhoid fever and cholera cases in impoverished slum dwellers in two wards of eastern Kolkata, West Bengal, India

To estimate the burden of disability associated with typhoid fever and cholera

To determine the antimicrobial susceptibility pattern of *Salmonella typhi* and *Vibrio cholerae*





To establish a surveillance system for treated typhoid fever and cholera in the study population in preparation for an effectiveness trial of Vi polysaccharide typhoid fever vaccine and an efficacy trial of the Vietnam-Bio Farma killed whole cell cholera vaccine

Period of the study: The project started in Sep. 2002 and is scheduled to be completed in May 2004.

Ongoing activities:

Study site selection: The slum areas of ward 29 and 30 of Kolkata Municipal Corporation.

Study population: Demographic census was conducted in the study area once in 2002 and once in 2004 in the study area. A total of 57,099 populations in 10,995 households were enumerated.

Data processing: An IVI data management division has been set up at IDH where data are double entered into computers; and checked and edited for any errors. Families were issued Identification Card bearing names and ages of all family members. Digitized mapping of study area using Geographic Information System (GIS) has been completed which will help to determine the distribution of cases and other relevant parameters of the area.

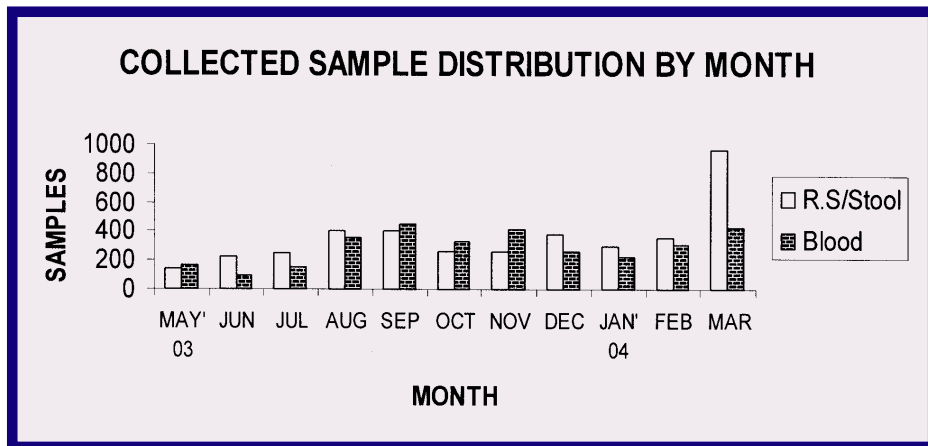
Surveillance: For passive surveillance of cholera and typhoid, five field outposts have been set up in wards 29 and 30 manned by doctors, community health workers, sample collectors (both male and female), and field supervisors (taken from the community). Each health outpost covers a population of 12,000 approximately. Moreover, two health outposts have been set up in two referral hospitals - B.C.Roy Children Hospital, and I.D.Hospital, Kolkata.

Activities in outpost:

Blood samples are collected from patient having fever for 3 days or more for confirmation of typhoid (by serology and culture) and rectal swabs are taken from patients suffering diarrhoea (3 or more loose stools in 24 hours) for isolation of *V. cholerae*.

Laboratory Tests:

- 1. Blood samples collected through field outposts are processed in IVI lab for



a. Serology :
(Widal, Tubex,
Typhidot M.)

b. Culture and
sensitivity pattern
for *S. Typhi*

2. Stool samples
(culture and
sensitivity pattern
for *V. cholerae*.)

Results:

Surveillance data from
21st April 2003 till 31st
March 2004 revealed that
121 cholera cases were
confirmed out of 4541
stool samples (3.4%) and
463 typhoid cases were
confirmed among 3142

blood samples (10.4%) tested. More over 73 malaria cases were detected out of 1845 blood slides examined.

Staff strength of the project:

Epidemiology staff: 117 comprising of Medical epidemiologist, clinical supervisor, medical officers, field supervisor, community health workers and sample collectors (M&F).

Data management staff: 13 comprising of data manager, asst. data manager, data secretary, and data entry operators

Laboratory staff: 9 comprising of researchers assistants, lab. technicians, and lab. attendants.

Other staffs: 16

The study is in progress.

16.2 Existing data collection: disease burden due to Cholera, Shigellosis and Typhoid fever in India

Period of the study:

The project was started in Feb 2003 and was completed in Feb 2004.

NICED in collaboration with IVI have completed the existing data collection on the disease burden due to typhoid fever, cholera and shigellosis in India. The data collected from various source are as follows:

Literature review:

In addition to international journals selected from IVI, relevant articles were searched through Pub med.



Data management for IVI Project





Four national libraries were visited, two in Kolkata (National Institute of Cholera and Enteric Diseases library and National Library) and two in Delhi (National Institute of Communicable Diseases and ICMR Library). In total, 23 articles on cholera, 12 articles on typhoid fever and 8 articles on shigellosis were collected. We have been abstract of the data from collected article were entered into MS-Access program. The data entry has been completed.



Mrs. Sushma Swaraj, Honble' Minister of Health and Family Welfare, Govt. of India at NICED

Government data:

Two types of government data (demographic and epidemiological) were collected from various published and unpublished sources. Data entry is complete. Data was obtained from:

- a) West Bengal: The data were collected from the annual and monthly reports of the State Bureau of Health Intelligence.
- b) Delhi: The data were collected from reports and annual reports such as "Health Information of India" from the National Institute of Communicable Diseases (NICD).
- c) Mumbai: The data were collected from the annual reports of the Mumbai Municipal Corporation and Maharashtra Health Bureau Office.

Hospital and laboratory data:

Eight hospitals in Kolkata, five hospitals in Delhi and six hospitals in Mumbai were visited and data was collected from the hospital records, which included information on inpatients by age, sex, duration of stay, and laboratory results. Data on culture results and drug sensitivity pattern from National Institute of Communicable Disease, Delhi and the State Laboratory, Pune and Kasturba Hospital Laboratory, Mumbai. The data entry has been completed. Analysis is awaited.

Staff strength of the project: 8 comprising of supervisor, doctors, non-medical fellows and data entry operators.

