

13 Epidemic Investigation

Section highlights

Following epidemics were investigated:

- Acute diarrhoeal disease in Malda district of West Bengal
- Diarrhoeal disease in different blocks of Uttar Dinajpur district, West Bengal
- Unknown fever at Murshidabad district of West Bengal
- Unknown fever at two villages of Murshidabad district, West Bengal
- Acute watery diarrhoea at Khidirpur-Hestings area, Kolkata
- Bacillary dysentery caused by quinolone resistant *Shigella dysenteriae* type 1 in north-eastern India

13. Epidemic Investigation

13.1 Investigation of an outbreak of acute diarrhoeal disease in Malda district of West Bengal

Investigators :

S. Ghosh, B.L.Sircar

At the request of Dy. Director Health Services, Govt. of West Bengal a team of the Institute investigated the outbreak of diarrhoeal diseases from 8th to 11th November, 2003.

Data were collected from CMOH & Dy. CMOH II office. The team visited Harishchandrapur, BPHC I & II, Chanchal BPHC II & Chanchal Rural Hospital (Chanchal BPHC I), Ratua BPHC I and Samsee PHC and visited at Bahirkat Village under Ratua BPHC I in Dehipur Gram Panchyate.

Increased number of diarrhoea cases were reported in 7 blocks of Malda district namely Harishchandrapur (HP) I & II, Chanchal (CHN) I & II, Ratua(RT) I & II and Manikchak (MC). Among these 7 blocks, HP II, RT I and MC were flood affected. Excess diarrhoea cases reported in HP I & II, CHN I and RT I from 1/10/03. Then it spreaded to RT II on 6/10/03, CHN II and MC block simultaneously on 27/10/03. Population at risk were 806,924, out of which 33, 719 are affected (Attack Rate :: 4.2%) and hospitalized cases are 8009 (23.7%). 1ST death occurred on 6/10/03 in RT II Block.





Large number of diarrhoea cases were clinically examined and stool samples were collected from 34 diarrhoea cases of which 30 cases already received antibiotics. Most of the cases had the symptoms of frequent passage of watery stools (about 40 percent cases had presented clinical signs and symptoms of typical rice water stools), vomiting and severe dehydration. These cases were treated by quacks with 5% dextrose and Amikacin Injection but they were not treated with ORS in initial phase.

There were 62 deaths up to 11.11.03. Case fatality rate were 0.18% among total diarrhoea cases and 0.36% (0-0.57%) among hospitalized cases. Majority of the deaths occurred in children and young adolescents. About 70% of deaths occurred in children < 10 years of age. Majority of the deaths occurred in the village level where oral re-hydration therapy (ORS) was not initiated.

Record of the hospitalised death cases were screened. Cases who died were in severe dehydration, attended hospital in late, majority of them presented with anuria or renal failure. Early detection of cases in field or affected area were lacking, these were most probably due to lack of adequate staffs in sub-canters. Surveillance system was not active.

Microbiological Examination: A total of 34 stool samples and 7 water samples were processed for isolation of enteric pathogen using standard laboratory techniques. Nineteen (56%) stool samples were positive for *Vibrio cholerae* Eltor O1, serotype Ogawa. None of the water samples was found to be positive.

Sensitivity pattern of isolated *Vibrio cholerae* strains shows that all were sensitive to Tetracycline, Norfloxacin and Ciprofloxacin and resistant to Ampicillin and Furazolidone. Five (26%) out of 19 strains were resistant to Co-trimoxazole while 17 (89%) strains were resistant to Nalidixic acid.

Control measures

Control measures already discussed with local authority:

Emphasis were given on surveillance of diarrhoea cases for early detection and effective management of diarrhoea cases.

Involvement of all Govt. sectors working particularly in remote areas was advised.

Proper manning of existing peripheral Health facilities was suggested.

Chlorination of all the tube wells and drinking water sources, and safe disposal of excreta were suggested.

Regular supply of ORS and intravenous fluids including buffer stock for epidemic preparedness at the district and BPHC level should be maintained.

Was comparing in management of the diarrhoea cases for local leaders, school teachers, Anganwadi workers, Traditional Dais and practicing quacks should be done.

Gram Panchayet leaders should take initiative for early detection of cases in the locality and should help the local health facility to control the epidemic.



People should be motivated to promote the early health seeking behaviour.

Emphasis should be given for health education to maintain personal, domestic and food hygiene. Hand washing after ablution, and before handling food should be encouraged. Better to take the food till it is hot.

Pit latrine may be constructed till the sanitary latrine can not be provided.

Health Education for use of safe drinking water and proper disposal of night-soil and waste till adequate safe potable water supply arrangement by construction of deep tube wells with cemented parapet (base) and sanitary latrines are provided.

Construction of deep tube wells for safe portable water should be arranged.

Special hygienic measures for fair and festival with adequate supply of safe water and temporary latrines.

Local Health authority (Dy. CMOH II/CMOH) should be equipped with additional funds to tackle the epidemic situation.

13.2 Report of an diarrhoeal out break in different blocks of Uttar Dinajpur district, West Bengal

Investigators:

M.K. Bhattacharya, B.L. Sarkar, J. Dean and G. Dey

In response to the request of the Honorable Health Minister and Director of Health Services, Govt. of West Bengal, an investigation of diarrhoeal outbreak was conducted by NICED (ICMR), Kolkata at different blocks of Uttar Dinajpur District, West Bengal close to the border of Bangladesh during 16th Oct to 18th Oct 2003.

The Uttar Dinajpur district Geographically located in the North Bengal and total population is 26 lakhs (approx). Population in different blocks were depicted in table 13.2.1.



**No. of blocks - 9****Table 13.2.1.** The population of the said blocks.

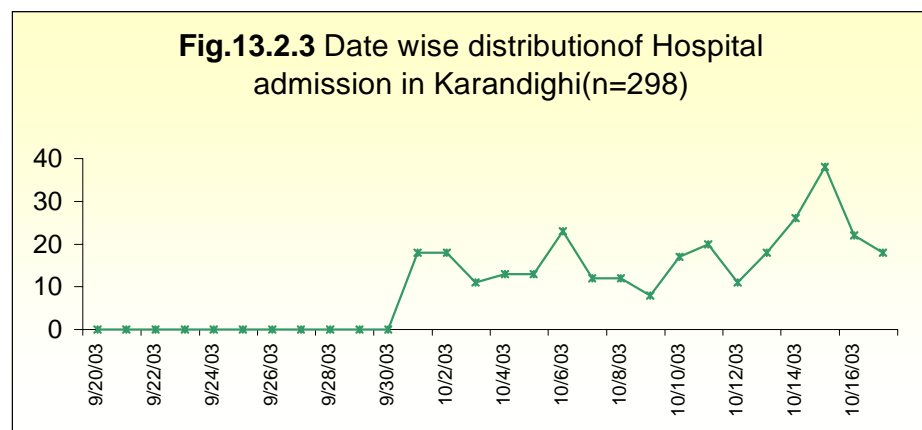
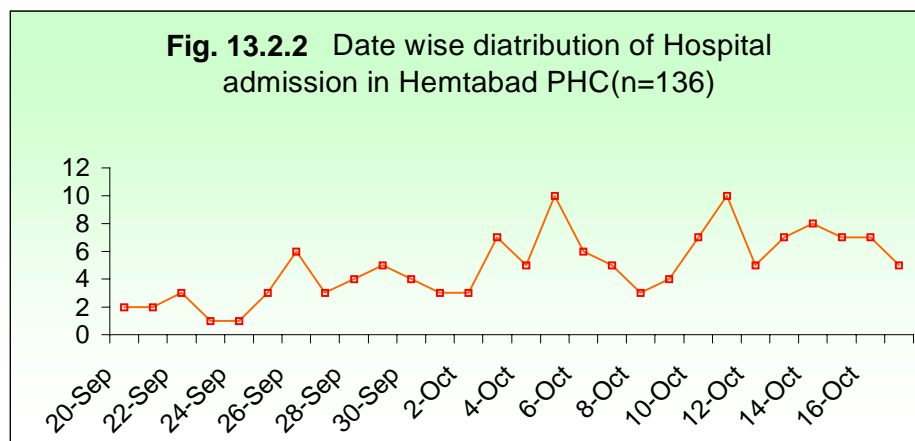
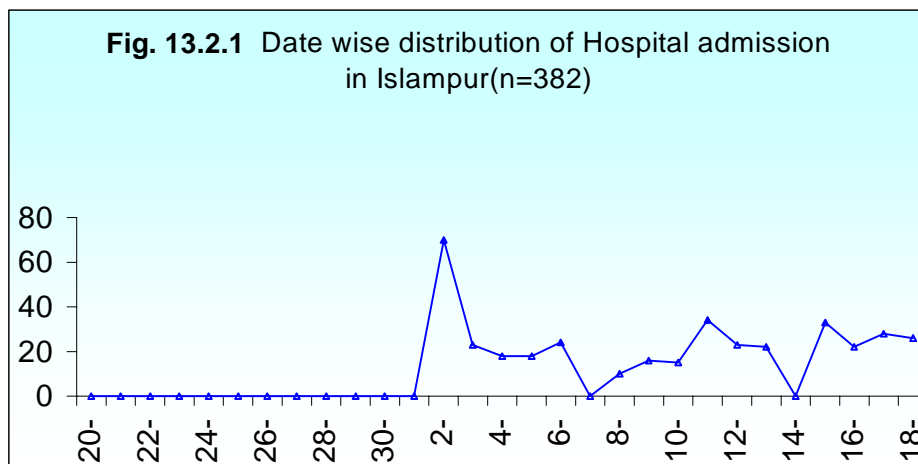
Name of the block/ municipality	Mid year estimated population in 2003	<5 years population
Itahar	262768	39807
Raiganj	363559	60546
Hemtabad	124556	20482
Kaliyaganj	200072	28466
Karamdighi	324610	67994
Goalpokhar II	241596	49311
Goalpokhar I	257305	51584
Islampur	256839	48225
Chopra	238182	49269
Islampur (U)	54526	7444
Raigunj (U)	168008	10319
Kaliaganj (U)	50114	5782
Total	2542135	439229

Method of investigation:

The team met the members of the district health authority, who briefed them about the latest outbreak situation (index case, onset of outbreak, worst affected blocks, outcome of cases, presenting features.). They also accompanied the investigating team to the blocks and the rural hospital mentioned above. Up to 18th Oct, the picture of outbreak is as follows:

Total number of affected blocks	-	9
Population of affected blocks	-	2542135
Date of first attack	-	20.9.2003
Total number of Hospital admission	-	998
Total number of death	-	23







Total 15 patients were enlisted in the survey. Stool samples were collected from the hospitalized cases and a total no. of 17 water sample were collected from different source of drinking water of different blocks of Uttar Dinajpur.

Information was also collected from the block authority about age and sex wise distribution of the population. Sex distribution of the population was unavailable. Age wise distribution was found as above 5 years and below 5 years age groups.

The rapid epidemiological survey was conducted at the 9 affected blocks to understand the clinical presentation and transmission dynamics of this out break.

Following tables and the figures show daily distribution of Hospital admission cases at the study area.

Table 13.2.2 Number of death at Uttar Dinajpur district from 20.09.2003 to 18.10.2003

Name of the block	No. of death
Hemtabad	5
Islampur and chopra	11
Karamdighi & Kaliaganj	4
Goalpokhar I & ii	2
Raiganj	1
Itahar	0
Total	23

The map of the Uttar Dinajpur along with blocks is annexed herewith*

Clinical presentation of the cases (n=15) as follows:

Table 13.2.3 Age Distribution of 15 Diarrhoea cases.

Age	No. of cases	Percentage(%)
£ 10yrs	7	46.67
>10yrs	8	53.33
Total	15	100

No. of Male = 6 (40%)

No. of Female = 9 (60%)



Table 13.2.4 Clinical presentation of 15 hospitalized Diarrhoea cases.

Feature	Present (%)	Absent (%)
Stool character (watery)	15 (100%)	Nil
Vomiting	12 (80%)	3 (20%)
Fever	Nil	15(100%)
Tenesmus	Nil	15 (100%)
Similar case in family	8 (53.3%)	7 (46.7%)
Degree of dehydration	Treatment received	Total No. (%)
Severe	I.V. fluid	10(66.7%)
Moderate	ORS	5(33.3%)



*Patients treated
in the floor in an
epidemic
situation*

Conclusion:

It is observed that the character of stool was watery. Maximum no. of cases (here 12 out of 15 - 80%) were associated with vomiting. It was not associated with fever or tenesmus. Similar cases in family were found in 53.3% cases (8 out of 15). Degree of dehydration was severe in 66.7% cases (10 out of 15) which were being treated with I.V. fluid. Rest of the cases (5 out of 15) received ORS solution. Patients were being treated with injection tetracycline &/or metrogyl or fluoroquinolones &/or metrogyl.



Recommendation:

1. The district health authority must be alert so that all the steps would be taken to control this outbreak and to arrange for the proper management of cases.
2. Adequate supply of drugs, posting of personnel should be done.
3. An effective surveillance system is to be establish to monitor the disease with such symptom complex and for the early prediction of such outbreak

13.3 Epidemic investigation report of an unknown fever at Murshidabad district of West Bengal

Investigators:

M.K. Bhattacharya, K. Sarkar, A.K. Sinha, S. Chatterjee

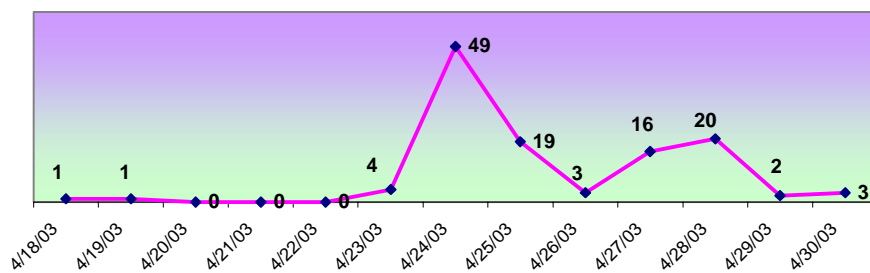
Introduction:

An epidemic investigation of unknown fever was carried out at villages of Nawda Block of Murshidabad district during 29th April to 2nd May 2003 after receiving a request for the same from West Bengal State health authority on 28th April 2003. The team reached the spot on 29th April 2003 and came back on 2nd May 2003 after completing their field part of investigation.

Geographical area involved:

Villages of Nawda block and adjoining parts of Murshidabad district, which are about 60 km. away from the District H.Q., Beharampur. The worst affected villages were Sarbangapur, Roy pur, Sangipur, Chandpur, Poredanga, Batuknathpur etc. These are all adjacent villages close to Amtala rural hospital.

Fig 13.3.1 Cases of unknown fever attended at Amtola Rural Hospital (18 - 30 April 2003)



Method of investigation:

The team met the members of district health authority, who briefed them about the latest epidemic situation (first case, onset of epidemic, worst affected villages, outcome of cases, presenting features, occurrence of similar cases in previous years etc.). They also accompanied the investigating team to the rural hospital (Amtala



Rural Hospital), where most cases were admitted and treated. The team examined all admitted cases clinically and made working case definition to search more cases in the community. Following this, biological samples of blood and CSF were collected from the patients suffering from disease. Twenty-five blood slides were collected from 25 cases. Information was also collected from the hospital authority about daily case distribution since beginning till the day of investigation, sex-wise distribution, age-wise distribution, village-wise distribution, referrals, deaths due to these cases etc. A rapid epidemiological survey was conducted at the affected villages to understand the community incidence rate of the disease, secondary attack rate and other transmission dynamics of this epidemic. This was followed by collection of samples from healthy controls staying at the affected villages. Information was also collected on possible contacts with animals, history of travel and movement history of cases to find out the source.

Result:

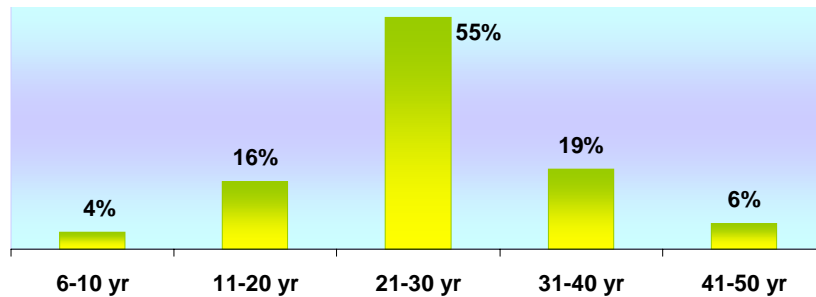
Daily distribution of cases at hospital:



Epidemic investigation in a hospital



Fig 13.3.2 Age distribution of unknown fever cases (n = 66)



Hospital, where most cases were treated. Cases started coming to the hospital since 18 April, reached its peak on 24th April then declined over a period of next 2 days. A second smaller peak followed this further on 28th April, which seemed to decline finally on subsequent days. There were no similar cases attended in the hospital during previous years. This confirms that it is an epidemic.

Examination of clinical cases:

A total of 16 cases were examined clinically. Most of them (80%) presented with fever, headache and weakness but all had a common symptom of tingling and numbness. Some presented with nausea but none complained of vomiting and or diarrhoea. The symptoms lasted for 4-5 days with spontaneous recovery. On examination, there was no hepato-splenomegaly or signs of meningeal irritation or any other neuro-deficit. There was no secondary attack in the family among close contacts. Blood samples were collected from all 16 cases, which were divided and kept in to 2 parts (clotted blood for obtaining serum and heparinised blood). CSF samples were collected from 2 cases, as facility for collection of CSF was grossly inadequate at the rural hospital.

Rapid survey for the disease at community:

Two worst affected villages, Roypur and Sangipur, were surveyed using local health resources and using the case definition of presence of tingling & numbness with or without fever and headache. A total of 66 affected persons were detected at various stages of disease process, out of total population of 3560. This gives an incidence rate of 1.85 or approximately 2%. Cases were distributed sporadically in the community (only one case in a family and then again another case in some other family with many unaffected houses in between). Figure 13.3.2 shows the age-wise distribution of cases.

It is evident from above that young adults were suffered most. Cases are less as age increases or decreases with peak age of 21-30 years. Sex-wise females suffered most with male-female ratio were 1:4. So, it was the young female who suffered most. Regarding marital status, 81% were married and rest was unmarried. Eighty percent of detected cases had history of keeping domestic animals (goat, cow, duck, hen etc.) in



their houses. Mosquitoes were present in the houses with collection of water in surrounding agricultural fields. There was no secondary attack among close contacts including health care delivery workers.

Investigation of death cases:

Two cases were referred from Amtala Rural Hospital to Beharampur District Hospital. These cases were presented with features of encephalopathy. First case was referred from Amtala Rural Hospital to district hospital on 18th April and second case was on 19th April. Both expired on 21st April 2003. No laboratory investigation report was available for examination. Home visit was made to houses of both expired cases. Both were said to be close friends and had spent long time together before they suffered from the disease. On enquiry it was found that there were 4 friends close to each other. Two of them suffered from disease and expired (as already mentioned), one had mild type of attack (fever, tingling & numbness) and recovered spontaneously and other didn't have any symptom.

Laboratory Confirmation:

A total of 26 blood slides were collected and examined. All the slides were from female cases as female outnumbered males. Eighteen cases (69.2%) showed presence of leucocytosis ranging from 12,000 to 17,000/cmm with neutrophil count ranges from 70-78%. Most of them were hypochromic (indicative of malnutrition) and a few were anisocytosis. Ten cases were found with presence of toxic granular neutrophils (38%). Lymphocyte count was within normal range. No parasite was detected in any of the blood slides. Platelets were found to be adequate.

CSF sample was collected from 2 cases and both were found to be normal both physically and biochemically indicating no meningeal involvement by microorganism.

Arrangement is being made to detect any other possible viral infection from serum and heparinised blood samples.

Epidemiological Interpretation:

Considering above information, the epidemic could be due to some viral etiology with very low infectiousness or it could be due to heat hyper-pyrexia compounded with malnutrition.

13.4 Report of an epidemic investigation of an unknown fever at two villages of Murshidabad district, West Bengal

Investigators:

M.K. Bhattacharya, M.K. Saha and T.K. Sen

In response to the request of the Director of Medical Education and Director of Health Services, Govt. of West Bengal, an investigation of outbreak of unknown fever was conducted by NICED (ICMR), Kolkata at two villages of Murshidabad district close to the border of Bangladesh during 8th June to 10th June, 2003. The teams started from Kolkata at the afternoon of 7th June, reached Baharampur, the district headquarter





in the late evening. The investigation was launched from the morning of 8th June, 2003. The team came back to NICED at the afternoon of 10th June.

Geographical location and population characteristic:

The affected villages are in Lalgola community development block of Murshidabad, about 60 Km from the district headquarter at the bank of river Ganga. The worst affected villages are Kuchidanga, Kadamtala, Janardanpur and Natundiar. These are all adjacent villages. The nearby health facility is Krishnapur Rural Hospital.

Name of the block - Lalgola

Total population of block - 267565

The population of the said villages is:

Table 13.4.1 Name of the affected villages and population

Name of the village	Total population	<5 years population
Kucludanga	2728	267
Kadamtala	2070	302
Natundiar	2574	872
Janardanpur	3060	510
Total	10432	1951

Further breakup of age distribution and sex distribution of population of the said villages were not available.

Method of investigation:

The team met the members of the district health authority, who briefed about the latest outbreak situation (index case, onset of outbreak, worst affected villages, outcome of cases, presenting features, occurrence of similar cases in previous years etc.). They also accompanied the investigating team to the villages and the rural hospital mentioned above. Up to 8th June, the picture of outbreak is as follows:

Total number of affected villages	-	4
Population of affected villages	-	10432
Date of first attack	-	26.5.2003
Date of first information	-	2.6.2003 at 6.00 PM
Total number of fever cases	-	258
Total number of death	-	19

The information about similar episodes in the corresponding months of previous 3 years suggests that the present occurrence of the disease is an outbreak with considerably high case fatality.



The team selected Kuchidanga and Kadamtala for the rapid epidemiological survey (10 out of 19 deaths occurred in these two villages). A questionnaire for rapid survey was prepared. A working case definition was formulated: “Any person suffering from fever since 15th May, 2003 at Kuchidanga and Kadamtala villages in Lalgola block, Murshidabad district.” Both the questionnaire and the case definition were discussed among the health workers of that block and survey was conducted by the team with their help. Total 87 patients were line listed in the survey conducted on 8th June, 2003. Biological samples of blood were collected from the cases.

The block authority was asked about age and sex wise distribution of the population. Sex distribution of the population was unavailable. Age wise distribution was found as ‘Above 5 years’ and ‘Below 5 years’ age groups. The rapid epidemiological survey was conducted at the two affected villages to understand the attack rate of the disease, clinical presentation and transmission dynamics of this epidemic.

Out of 87 patients line listed, 1 patient (ID 3) was excluded as it is not befitting with the case definition, 6 patients (ID 4, 6, 10,11,12,15) were excluded as they are residents of villages outside the study area. The data also showed that the disease occurred mainly among children and adolescents. The case definition was revised on the basis of survey data as follows: “Any person up to 15 years of age suffering from fever with or without cough, respiratory distress and convulsion since 15th May, 2003 in Kuchadanga and Kadamtala villages, Lalgola block, Murshidabad district.”

As per the new case definition, only one patient was found above 15 years of age (ID 5) and excluded. The data was analyzed on the basis of the survey findings of 79 cases.

Descriptive Epidemiology:

Following table and the figure show daily distribution of unknown fever cases at the study area.

Fig. 13.4.1 Epidemic curve of the unknown fever cases (n=79) at Kuchidanga & Kadamtala, Murshidabad

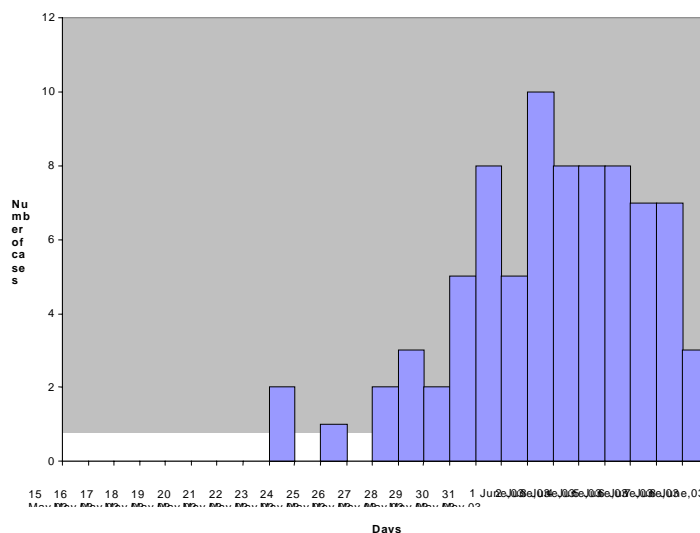
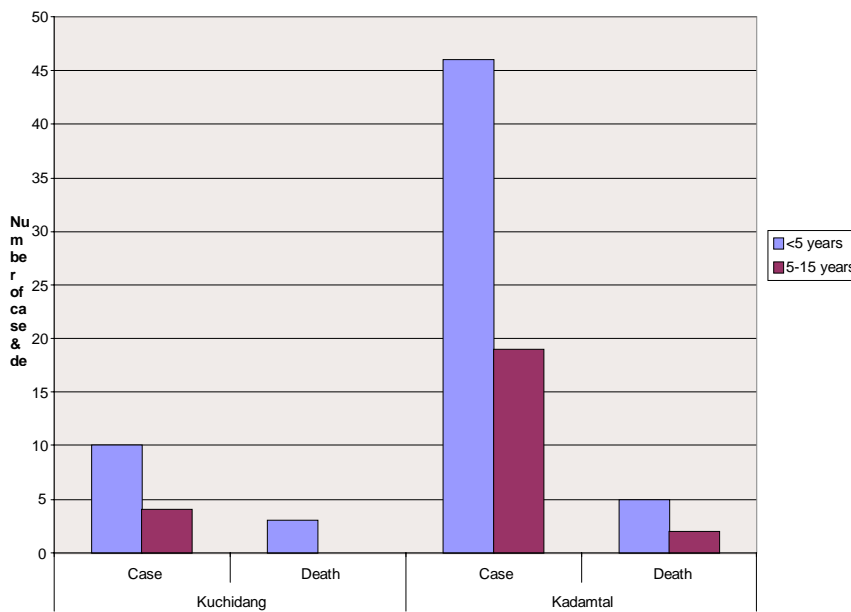




Table 13.4.2 Day wise number of cases (n=79) in Kuchidanga & Kadamtala villages, Murshidabad

Dates	Number of cases	Dates	Number of cases
15.5.2003 to 22.5.2003	0	31.5.2003	8
23.5.2003	2	01.6.2003	5
24.5.2003	0	02.6.2003	10
25.5.2003	1	03.6.2003	8
26.5.2003	0	04.6.2003	8
27.5.2003	2	05.6.2003	8
28.5.2003	3	06.6.2003	7
29.5.2003	2	07.6.2003	7
30.5.2003	5	08.6.2003	3

Fig 13.4.2 Number of cases and deaths at Kuchidanga and Kadamtala villages, Murshidabad



The epidemic curve suggests the possibility of a common source epidemic, peaking on 2-6-03 and then slowly coming down during the following week. However, it was still in the active stage though declining on 8-6-03, the day of the investigation.

Following tables and figures show the age and sex distribution of cases, Attack rates and Case Fatality rates

Table 13.4.3 Age distribution of fever cases (n=79), Kuchidanga & Kadamtala, Murshidabad

Name of village	Population			Cases *		Death **	
	Total	<5 years	>5 years	<5 years	>5 years	<5 years	>5 years
Kuchidanga	2728	267	2461	10	4	3	0
Kadamtala	2070	302	1768	46	19	5	2
Total	4798	569	4229	56	23	8	2

Fig 13.4.3 Clinical presentation of cases, Kuchidanga & Kadamtala, Murshidabad

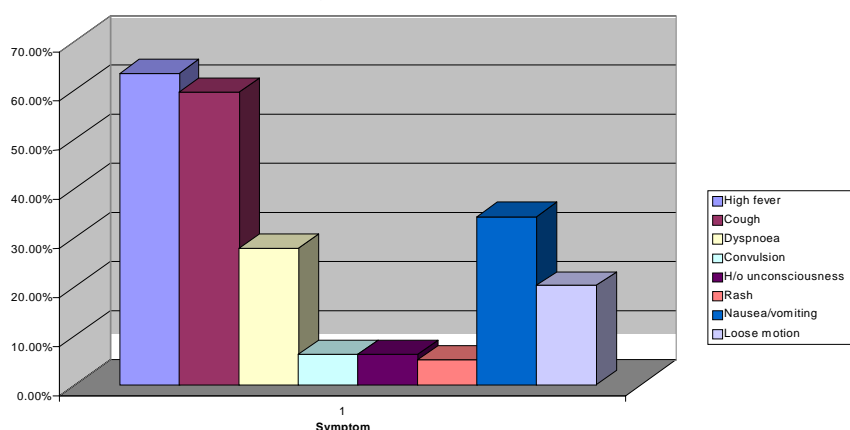


Table 13.4.4 Percentage distribution of cases age wise (n=79) in Kuchidanga & Kadamtala villages, Murshidabad

Age	Percentage
<1 year	7.6%
1-5 years	63.3%
6-10 years	25.3%
11-15 years	3.8%
Total	100%



Scientist in epidemic investigation



All the cases were within 15 years of age. All the deaths were within 10 years of age. Almost 71% cases are within 5 years of age, most affected being 1-5 years age group. With the increase of age, number of cases decreased, only 3.8% in the 11-15 years age group.

Table 13.4.5 Percentage distribution of cases sex wise (n=79) in Kuchidanga & Kadamtala villages, Murshidabad

Sex	Percentage
Male	48.1%
Female	51.9%
Total	100%

It is evident that there is no significant sex difference among the cases. Both male and female children are more or less equally affected.



Table 13.4.6 Attack rate & Case fatality rate of cases (n=79), Kuchidanga & Kadamtala, Murshidabad

Name of village	Attack rate		Case fatality rate	
	<5 years	> 5-15 years	<5 years	>5-15 years
Kuchidanga	3.74%	Could not be calculated due to absence of proper denominator	30%	0%
Kadamtala	15.23%		10.9%	10.5%
Total	9.84%		14.3%	8.7%

* Only 2 out of 10 deaths are in >5 years age group.

To understand the place characteristics the map of the Lalgola block and that of the affected villages are annexed herewith. The cases were scattered throughout the village area. Children of adjacent houses were affected. In some houses more than one case were found.

Clinical presentation:

Mean duration of illness was 5.14 days. Most of the patients presented with high fever with respiratory symptoms. Some presented with convulsion with or without respiratory symptoms. Mortality was high among those cases.

Table 13.4.7 Clinical presentation of the cases (n=79), Kuchidanga & Kadamtala, Murshidabad

Symptoms	Percentage	Symptoms	Percentage
High fever	63.3%	Rash	5.1%
Cough	59.5%	H/o unconsciousness	6.3%
Respiratory distress	27.8%	Nausea/vomiting	34.2%
Convulsion	6.3%	Loose motion	20.2%

Investigation of death cases:

10 death cases were investigated and details were found from the records and from their family members. It was observed that the durations of illness of the cases were very short in almost all the cases. Presentations were mostly with respiratory symptoms with or without convulsion. 5 male and 5 female children were the victims.



Table 13.4.8 Findings of the death cases (n=10) at Kuchidanga & Kadamtala, Murshidabad

Sl. No.	Name and address of the diseased	Clinical features	Date of attack	Date of death
1.	Najkura khatoon - 2 yrs. C/o Naimuddin Sk	Fever, cough, respiratory distress	28.5.03	31.5.03
2.	Kutubuddin - 1 yrs.6m. C/o Humayun Kabir Kuchidanga	Fever with cough with respiratory distress	31.5.03	2.6.03
3.	Manirul Islam- 1yrs.8m. Mustakim Kuchidanga	Fever with cough, respiratory distress with convulsion	4.6.03	6.6.03
4.	Fitu Seikh - 7 yrs. C/o Badrul Islam Kadamtala	High fever with respiratory distress	31.5.03	31.5.03
5.	Fatema Khatoon - 3 yrs. C/o Abul Hussein	High fever with respiratory distress	1.6.03	2.6.03
6.	Mousumi - 3 yrs. C/o Nurful Haque Kadamtala	High fever with abdomen pain and respiratory distress	5.6.03	5.6.03
7.	Almgir Seikh - 6 yrs. C/o Khabir Seikh Kadamtala	High fever with convulsion	28.5.03	29.5.03
8.	Sufia - 3 yrs C/o Muntaj Kadamtala	Fever with convulsion with respiratory distress	28.5.03	29.5.03
9.	Saidur Rahman -1yr. 8m. C/o Abdul Alim Kadamtala	High fever with respiratory distress with convulsion	28.5.03	29.5.03
10.	Safira Khatoon - 3 yrs. C/o Mantu Seikh	High fever with respiratory distress with convulsion	29.5.03	30.5.03

Sample Collection:

A total of 10 samples (ID 1-7, 84-86) of which 10 clotted blood, 7 whole blood, 7 slides, and 7 in Minimum. Essential Media were collected and brought to the laboratory of NICED, Kolkata for analysis.



Conclusion:

It was observed that quite a large number of patients suffered from respiratory distress along with high fever. Of the 10 patients who died in these two villages, 6 patients also had suffered from convulsion. Dates and time onset of illness and death suggested that duration in between were very short ranging from few hours to 3 days.

The epidemic curve shows the possibility of a common source epidemic in its declining state.

The children at the age group of 1-5 years were mostly affected. There was no evident sex differentiation among cases and deaths.

Cases were mostly found in the study area in a scattered manner with clustering in some houses.

The mode of transmission was possibly from person to person. Vector (mosquito) population at this time was very low in the affected area.

Clinico-epidemiological observations of the investigation suggested the possibility of a communicable disease of viral origin, which has potentiality to cause respiratory disease and encephalopathy to certain patients and b) the possibility of a communicable disease with viral origin which was primarily responsible for encephalopathy with respiratory complications as a consequence.

However, final diagnosis of the disease causing this outbreak can only be made after laboratory confirmation of the causative organism from the samples under study.

Though no data of weather temperature of previous years has been found, it has been told by all concerned that in this year, the atmospheric temperature was comparatively higher than the previous years which might have aggravated the hyperpyrexia of the patients leading to high mortality. The local people have a superstitious belief to care fever cases by wrapping the child with clothes and quilts. It may lead to the increase of core temperature, thus further complicating the situation.

Malnutrition and worm infestation were the other two causes which may have added fuel to the fire.

Recommendations:

The district health authority must be alert so that all the steps would be taken to control this outbreak and to arrange for the proper management of cases.

Adequate supply of drugs, posting of personnel should be done.

More vehicular support may be needed for the early referral of the complicated cases to the higher centers.

An effective surveillance system is to be established to monitor the disease with such symptom complex and for the early prediction of such outbreak in future.





Vector control measures are to be taken. Serious study on the vector population should be taken up with the persons having necessary expertise.

Educate the public as to the modes of spread and control and also about managing hyperpyrexia.

Steps are to be taken to reduce malnutrition and worm infestation.

Report of visit to Jangipur Subdivision Hospital

Investigators:

M. K. Bhattacharya, M. K. Saha

Apart from the investigation of the villages at Lalgola block, the NICED team also visited Jangipur SD hospital situated in Jangipur block to investigate the occurrence of an unknown fever and convulsion with a high case fatality.

It was learnt that during 15th May to 9th June, 2003, 206 fever cases were admitted out of which 21 died. Dominant features of those cases were fever with convulsion and fever with pneumonia.

We had a discussion with the physicians and pediatricians of the said hospital and came to know that through out the previous 3 years the patients with fever and convulsion along with other signs of encephalopathy admitted at the SD hospital every fortnight. But in this year, the case fatality was very high and duration of illness of those patients was very short.

The team examined 4 patients (3 living, 1 just died) at the ward of the said hospital. The major clinical findings were high fever with convulsion and features of pneumonitis (Radiologically confirmed).

A total of 4 samples (ID No. J1-J4) of which 4 clotted blood, 3 whole blood, 3 blood slides, 3 in Minimum Essential Media, 1 CSF specimen were collected and brought to the laboratory of NICED, Kolkata for analysis.

The NICED team suggests a thorough investigation of these episodes. It has also observed weakness in the surveillance of such disease and proposed its strengthening.

Bacteriological report of an outbreak investigation carried out for unknown fever in Murshidabad District, West Bengal

Bacterial aetiology of unknown fever cases have been investigated in microbiology laboratory of NICED by Dr. S. Dutta. Four throat swab samples were sent to the bacteriology laboratory on 20.6.2003, which were inoculated onto blood agar and incubated at 37°C overnight with or without CO₂. Translucent colonies of normal flora were grown in culture. On biochemical examination the organisms were identified as *Neisseria lactamica*, a commensal organism found in healthy children.



13.5 Report of an outbreak investigation of acute watery diarrhoea at Khidirpur-Hastings area, Kolkata

Investigators:

S. Dutta, K. Sarkar, S. Ray

On request from Chief health Officer, Directorate of health Services, Government of West Bengal, Kolkata Metropolitan Urban Health Organisation, and in pursuance of the office order no. E-32/2003- Off.Ord. dated 23 June 2003 a team proceeded to Kidderpore-Hastings area for diarrhoeal disease investigation during 23- 24 June 2003.

A total of 16 stool samples were collected from clinical cases. Out of them 5 were found to be positive for *V. cholerae* O1. Out of seven samples collected from healthy community contacts one was found to be positive for *V. cholerae* O1. A few water samples were also collected from nearby sources of water. Almost 80% of the samples were found to be not suitable for drinking purpose (increased coliform count, beyond acceptable limit of 50 CFU per 100 ml of water), although no sample was found to be positive for *V. cholerae* O1. Short term and long term measures were recommended for combating the disease spread in the community and containment of the organism.

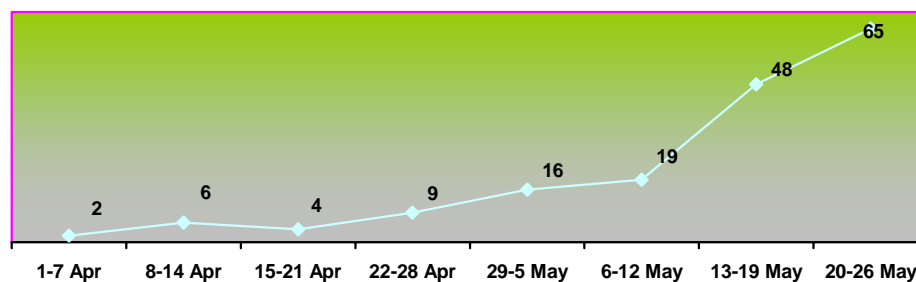
13.6 Epidemic Investigation of bacillary dysentery caused by quinolone resistant *Shigella dysenteriae* type 1 in north-eastern India

Investigators:

K. Sarkar and S.K. Niyogi

An epidemic investigation of bloody dysentery was carried out at a rural village of Mizoram nearing Manipur border, during last week of May and first week of June 2003. The outbreak begun since first week of April 2003 and continued till first week of June 2003. The affected village was situated in a very remote and inaccessible place on the top of a hill, about 210 km away from state capital. The total population of the village is 995 and is mainly inhabited by the local population (80%) along with migrated refugee population from the neighbouring state (20%) First case was reported to have occurred in a refugee family, from where it further spread to local population.

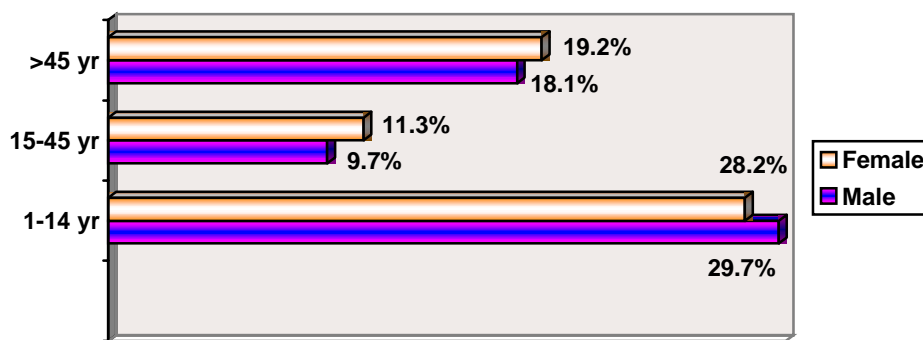
Fig. 13.6.1 Epidemic curve of bloody diarrhoea



On investigation, it was found that total village population was at risk as cases were found to be distributed in all age groups and both sexes except below one year. Children were affected more than adult. A total of 169 cases were found to suffer from bloody diarrhoea since 1st April 2003 till the day of investigation as per case definition. The attack rate in the population was 17% (169 out of 995) without any case fatality. Clinically cases were presented typically with features of acute bacillary dysentery.

The cases were treated with a variety of antibiotics like co-trimoxazole, nalidixic acid, tetracycline, norfloxacin and ciprofloxacin, which were given in incomplete dosage and for shorter durations. Personal hygiene was found to be extremely unsatisfactory and there was no habit of washing hands with soap-water following defecation or prior to food intake.

Fig. 13.6.2 Age & sex-wise distribution of bloody dysentery cases.



The investigating team collected twelve fresh faecal samples from dysentery cases. Three out of 12 (25%) yielded *Shigella dysenteriae* type 1 on culture. For isolation of *Shigella* species, stool samples were inoculated into MacConkey agar and Hektoen Enteric agar (Difco, Detroit, MI), and the characteristic colonies were identified by standard biochemical methods (4), subsequently, serogroups and serotypes were determined by visual inspection of slide agglutination tests with commercial antisera (Denka Seiken, Tokyo). Antimicrobial susceptibility testing was performed by an agar diffusion disk method, as recommended by the National Committee for Clinical Laboratory Standards.

The strains were found resistant to ampicillin, co-trimoxazole, nalidixic acid, norfloxacin and ciprofloxacin. They were sensitive to ofloxacin, azithromycin and ceftriaxone. Earlier we reported reduced susceptibility of ciprofloxacin against *Shigella dysenteriae* type 1. Presently we observed that *Shigella dysenteriae* type 1 strains has developed resistance to ciprofloxacin which is of great concern. There is an urgent need to search for other effective antimicrobial agents for treating shigellosis. Apart from the usual factors involved in the spread of diarrhoeas, the main reason evoked to explain the duration of the outbreak has been the lack of adequate and specific antibiotic therapy. Also effort should be made to prevent indiscriminate use of antimicrobial agents which is an important cause of emergence and dissemination of drug resistance strains.

