

13. Epidemic Investigations

13.1 Report of diarrhoeal outbreak in different wards of Garulia, North 24-Parganas, West Bengal

In response to the request of the Ministry of Health & Family Welfare, Govt. of West Bengal, an investigation of diarrhoeal outbreak in different wards of Garulia, N 24Parganas was conducted by NICED (ICMR), Kolkata on 26th April 2006. The team consisted of Dr. Mihir Kr. Bhattacharya (Assistant Director, NICED), Dr. M.K.Saha (Senior Research Officer), Dr.Palash Kundu (SRF, Med) and Dr.Rama Bhunia (MAE-FETP,Scholar)

The total population of the area is 79840

No. of wards - 21

Method of investigation:

The team met the members of the 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 wards and the hospitals. On 26th April 2006, the picture of outbreak is as follows:

<i>Population at risk</i>	-	5700
<i>Total number of affected wards</i>	-	8 (3, 4, 6, 7, 8, 12, 13, 17)
<i>Most affected ward</i>	-	4, 6 & 12
<i>Date of first attack</i>	-	21.04.2006
<i>Total number of Hospital admission</i>	-	105
<i>Total number of death</i>	-	1

A total of 105 patients were enlisted in the survey, out of which ??? cases were taken from different wards of Garulia. A total number of 6 water samples were collected from different pumping stations and source of drinking water of different wards of Garulia, North 24 Pgs.

Total patient enlisted

Ward No. 3	--	01
Ward No. 4	-	31
Ward No. 6	-	25
Ward No. 7	-	07
Ward No. 8	-	02
Ward No. 12	--	29
Ward No. 13	---	09
Ward No. 17	---	01

Total- 105

Before survey, a definition was made of the case and it was “**history of diarrhoea irrespective of age group**”.

A rapid epidemiological survey was conducted in the affected wards to understand the clinical presentation and transmission dynamics of this outbreak.

Geographic Information of affected area:

Garulia is situated in North 24 Parganas and is presently under Garulia Municipality .

Population consisted of people speaking different languages and sharing different occupation and lifestyle. The area is congested and comprising of both poor and rich.

Now Garulia Municipality is supplying treated drinking and potable water from its Treatment Plant, twice in a day, in the morning and afternoon, in a major portion of the region. Most of the pipelines are ill maintained & chances of contamination are high. Most houses have sanitary privies, though few katcha privies remain till date. Drainage system is not adequate and is not properly functioning in most of the areas. Drainage system and piped water supply running side by side

Age Distribution of Examined Cases:

Age	Cases at Garulia
(0-5)	2
(>5-10)	1**
(>10-20)	1
(>20-30)	0
(>30-40)	2
>40	2

** One Control (not suffering from diarrhea)

Sex Distribution of Examined Cases:

Sex	Cases at Garulia
Male	8
Female	0

CLINICAL PRESENTATION OF 8 CASES IN GARULIA DISPENSARY

Watery stool	8 (100%)
Vomiting	3 (37.50%)
Fever	2 (25%)
Tenesmus	3 (37.50%)
Similar cases in family	2 (25%)
Degree of dehydration	
Mild	2(25%)
Moderate	6 (75%)
Severe	0 (0%)

Results:

Out of 8 water samples 5 were positive for faecal contamination.

1. Sample No.3: ward No-11
2. Sample No.4: ward No-6, Outfall drain road
3. Sample No.5: ward No-12, United Club
4. Sample No.7: ward No-11, Near bari Masjid
5. Sample No.8: ward No-10, Near Kapur Chand Keshari

Rest 3 samples were having no faecal contamination

6. Sample No.1: ward No-12
7. Sample No.2: ward No-13 Water tank
8. Sample No.6: ward No-6, Bansh bagan Durgabari

Results:

All together 8 water samples and 8 stool samples were taken from the patients of different wards. Out of 8 stool samples, 2 were positive for *V cholerae* 01 Inaba and we could not isolate *V. cholerae* 01 from the water samples.

Drug sensitivity tests were carried out in NICED laboratory and it was observed that the organism was sensitive to gentamycin and tetracycline (which is the drug of choice for treating cholera). The organism was intermediately sensitive to fluoroquinolones and completely resistant to ampicillin, cotrimoxazole, nalidixic acid and furazolidone.

Conclusion:

It is observed that the character of stool was watery in 100% cases. 37.50% cases (3 out of 8) were associated with vomiting. It was associated with fever in 25% (2 out of 8) and tenesmus in 37.50% (3 out of 8). Degree of dehydration were found to be severe in 0% cases, moderate in 62.50% (5 out of 8), mild in 37.50% (3 out of 8) who were admitted and treated with i.v.fluids and inj.Tetracycline &/or Metrogyl or fluoroquinolones &/or Metrogyl and inj. Ampicillin and inj.Amikacin in Barasat State General Hospital.

Recommendation:

Primary:

- Chlorination of piped water supply.
- 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 to take care of cases and prevent development of carriers.
- An effective surveillance system is to be established to monitor the disease with such symptom complex and for the early prediction of such outbreak.
- Construction of deep tube wells for safe potable water.
- Local Health authority (Dy. CMOH II/ CMOH) should be equipped with additional funds to tackle the epidemic situation.

Secondary:

- Regular check-up and maintenance of pipelines. Establishment of effective Sanitation Barrier.
- Daily collection of house wastes.
- Properly treated drinking water, containing free residual chlorine should be made available to all households.
- Ensuring 100% establishment and utilization of sanitary latrines.
- Establishment of appropriate and adequate drainage system and their proper maintenance.
- Proper record keeping with surveillance.
- Setting up of back up Microbiological Laboratory for early diagnosis and treatment.

- Improvement of personal hygiene particularly use of sanitary latrine, hand washing after ablution and before feeding of child.
- Use of good quality bleaching powder for disinfection. Careful handling of cases.
- Collection of drinking water in narrow –mouthed container and covering of storage water.
- Proper disposal of garbage.

13.2 Report of diarrhoeal outbreak in different blocks of Tamluk, Purba Midnapur, West Bengal

In response to the request of the Ministry of Health & Family Welfare, Govt. of West Bengal, an investigation of diarrhoeal outbreak in different blocks of Tamluk, Purba Midnapur was conducted by NICED (ICMR), Kolkata on 28th April & 4th May 2006. The team consisted of Dr. Mihir Kr. Bhattacharya (Assistant Director, NICED), Dr. A. Palit (Assistant Director, NICED), Dr. Palash Kundu (SRF, Med) and Mr. Subal Turi (Sweeper).

The total population of the area is **25000**

Block-Sahid Matangini Block

Method of investigation:

The team met the members of the 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 different blocks and the hospitals. On 28th April & 4th May 2006, the picture of outbreak was as follows:

Total Population of affected area	:	25000
Affected Population	:	5700
Affected Village	:	11
Affected G.P.	:	4
Date of first attack	:	21.04.2006
Total number of Hospital admission	:	105
Total number of death	:	1

A total of 105 patients were enlisted in the survey, out of which 16 cases were taken from different blocks of Tamluk. A total number of 6 water samples were collected from different pumping stations and source of drinking water of different blocks of Tamluk, Purba Midnapur.

Total patient enlisted - 105

Date wise admitted pt. at hospital:

Date	Pt. admitted
21/04/06	4
22/04/06	18
23/04/06	9
24/04/06	12
25/04/06	11
26/04/06	19

27/04/06	14
28/04/06	18

Total- 105

Before survey, a definition was made of the case and it was “**history of diarrhoea irrespective of age group**”.

A rapid epidemiological survey was conducted in the affected wards to understand the clinical presentation and transmission dynamics of this outbreak.

Geographic Information of affected area:

Sahid Matangini block is in Tamluk and is presently under the district of Purba Midnapur.

Population consisted of people speaking different languages and sharing different occupation and lifestyle. The area is congested and comprising of both poor and rich.

Now Sahid Matangini block is supplying treated drinking and potable water from its Treatment Plant, twice in a day, in the morning and afternoon, in a major portion of the region. Most of the pipelines are ill maintained & chances of contamination are high. Most houses have sanitary privies, though few katcha privies remain till date. Drainage system is not adequate and is not properly functioning in most of the areas.

Age Distribution of Examined Cases:

Age	Cases at Tamluk
(0-5)	2
(>5-10)	2
(>10-20)	2
(>20-30)	7
(>30-40)	0
>40	3

Sex Distribution of Examined Cases:

Sex	Cases at Tamluk
Male	5
Female	11

Clinical presentation of 16 cases in Tamluk, Purba Midnapur

Watery stool	15 (93.75%)
Mucoid stool	1 (6.25%)
Vomiting	10 (62.50%)
Fever	1 (6.25%)
Tenesmus	1 (6.25%)

Degree of dehydration	
Mild	5(31.25%)
Moderate	8 (50.00%)
Severe	3(18.75%)

Particulars of death:-

Age(Yrs)	Sex	Address	Date of Attack	Date of Death
6	M	Vill:-Udaychak P.O:- Ballukhat Dist:- Purba Midnapur	23/04/06	23/04/06

Acute patients were mostly sent to Purba Midnapur District Hospital, Tamluk Hospital,

Results:

All together 6 water samples and 16 stool samples were taken from the patients admitted at the Purba Midnapur District Hospital.

Out of 6 water samples, 5 samples were positive for *V.cholerae* 01 *Inaba* and fecal *E.coli*. It was observed that all the samples, which were collected from taps supplying potable water for domestic use and from the leakage point in ward 2, were positive. 3 water samples collected from pumping stations were negative.

Out of 16 stool samples, 14 samples were positive for *V.cholerae* 01 *Inaba*. Stool samples of 2 cases did not confirm presence of any *Vibrio cholerae* which may be due to receipt of appropriate antimicrobial agent.

Drug sensitivity tests were carried out in NICED laboratory and it was observed that the organism was sensitive to gentamycin and tetracycline (which is the drug of choice for treating cholera). The organism was intermediately sensitive to fluoroquinolones and completely resistant to ampicillin, cotrimaxazole, nalidixic acid and furazolidone.

Conclusion:

It was observed that the stool character was watery in 93.75% and mucoid in 6.25% cases. 50% cases (8 out of 16) were associated with vomiting. It was associated with fever (6.25%) and tenesmus (6.25%) in few cases. Degree of dehydration as found to be severe in 18.75% cases who were admitted and treated with I.V.fluids and inj. Tetracycline or fluoroquinolones & /or Metrogyl or inj.Ampicillin and inj. Amikacin.

Recommendation:

Primary:

- Chlorination of piped water supply.
- 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 to take care of cases and prevent development of carriers.

- An effective surveillance system is to be established to monitor the disease with such symptom complex and for the early prediction of such outbreak.
- Construction of deep tube wells for safe potable water.
- Local Health authority (Dy. CMOH II/ CMOH) should be equipped with additional funds to tackle the epidemic situation.

Secondary:

- Regular check-up and maintenance of pipelines. Establishment of effective Sanitation Barrier.
- Daily collection of house wastes.
- Properly treated drinking water, containing free residual chlorine should be made available to all households.
- Ensuring 100% establishment and utilization of sanitary latrines.
- Establishment of appropriate and adequate drainage system and their proper maintenance.
- Proper record keeping with surveillance.
- Setting up of back up Microbiological Laboratory for early diagnosis and treatment.
- Improvement of personal hygiene particularly use of sanitary latrine, hand washing after ablution and before feeding of child.
- Use of good quality bleaching powder for disinfection. Careful handling of cases.
- Collection of drinking water in narrow –mouthed container and covering of storage water.
- Proper disposal of garbage.