

FIELD PROJECT REPORTS



By

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(MAE- FETP Scholar 2006-2008)

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December 2008

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Submitted in partial fulfillment of the requirements for the degree of

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CERTIFICATION

This is to certify that all the field projects submitted in this Bound Volume are original works carried out by **Dr. Kajal Krishna Banik** during the three field postings under the guidance of faculty of National Institute of Epidemiology (ICMR), Chennai and the local supervisor specially nominated for this purpose. This is in partial fulfillment of the requirements for the degree of Master of Applied Epidemiology and has not been submitted earlier by him in part or whole for any other (Publication or degree) purpose.


DIRECTOR

Date 30/1/18

National Institute of Epidemiology (NIE), Chennai

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Date

Kajal Krishna Banik

SECTION.1

FIRST FIELD POSTING

HEALTH SITUATION ANALYSIS OF NORTH 24 PARGANAS DISTRICT OF WEST BENGAL, INDIA, 2007

INTRODUCTION:

Since independence in 1947, India has travelled a long path with specific determination to deliver the benefits of developments to all its citizens. India's progress since 1947—crude death rate 27.4/1000 to 7.6/1000(SRS, 2005), infant mortality rate 162/1000 live births to 58/1000 live births (SRS, 2005), life expectancy 32.7 years to 66 years and population of 330 million to 1028 millions. In spite of all these India's contribution in the world are 17 % of the total deaths, 23% of the child deaths, 26% of the vaccine preventable deaths among the children, 20% of the maternal deaths, 68% of the leprosy cases, 20% of the tuberculosis cases and 10% of the HIV infected people.

The Indian people are facing the so called triple burden of disease; continuing burden of communicable diseases, increasing burden of non-communicable diseases, a health system not developed enough to tackle them both. Communicable and infectious diseases like Malaria, Diarrhoea and Respiratory tract infections are still the major killers. Non-communicable diseases like Diabetes, Hypertension, Heart diseases and Accidents are on the rise. Maternal and infant mortality, though reduced, still a major problem.

West Bengal, as a state, is having the same scenario. Outbreaks of acute Diarrhoea (mostly Cholera), and Malaria still prevail as common phenomena in the state.² Some blocks in four districts of the state are facing the problem of Kala-azar. Dengue and Chikungunya are occurring in certain pockets of three districts. Seventy five blocks in nine districts are affected with ground water contamination of Arsenic and people are suffering from Arsenicosis. A rapid, often unplanned urbanisation is

in progress and creating newer health problems in these areas. The problems of sanitation in the rural areas were there. The urban slums have come up to add their own problems to the pool. Non communicable diseases, like coronary heart diseases and road traffic accidents are on the rise.⁶ Qualified public health personnel with a well built public health system are the need of the time. The newly introduced separate public health cum administrative cadre service may be an effective forward looking step.

North 24 Parganas is a district, closely situated to the state capital and having a similar socioeconomic structure of the state. There are some specific problems in the district, as a result of its specific geographic location and socio cultural tradition of its people. Recent upsurge of Dengue and Chikungunya in some blocks are also posing threats.

As an MAE-FETP scholar I have been allotted North 24 parganas district for my field assignment. I hope my working in this district in the midst of public health complexities would enrich me with first hand experience and mutually benefit the district health system. The objectives of my study will be-

1. To describe the geography, population and socioeconomic resources of the district
2. To know the health infrastructure available and major public health priorities
3. To present health status related to the millennium development goal

The following would be a brief description of the health scenario of the district.

METHODOLOGY:

I have collected information regarding description of the district from the office of the district magistrate (DM) and the zilla parishad (ZP). To calculate the population projection for the year 2007, I have applied Geometric progression (GP) method with the census 2001 report and the state growth rate. Data on population below poverty line came from the district profile prepared by the zilla parishad. For the health related information, I have gone through the different programme reports available with the programme managers, the deputy chief medical officer of health (CMOH) s and the district Tuberculosis officer (DTO). The hospital records were taken into consideration for assessing the morbidity & mortality profile of the people in the district. We have utilised the records available at the office of the CMOH for the necessary informations on infrastructure and human resources.

I have presented the current status against the Millennium Development Goals (MDG) by three levels –the district, the state and the country. I have collected the relevant data from various sources like the web sites of the world health organisation (WHO), the united nation children fund (UNICEF), the National Family Health Survey III (NFHS III, 2005-06), reports of the state bureau of health intelligence, the district statistical hand book and reports of the different programmes.

GENERAL DESCRIPTION:

North 24 parganas district is located on the south –east part of the state. The existence of this district came into being on 1st March 1986.³ The district is surrounded by different other districts of the state and an international border of Bangladesh on the east. The climate is tropical. The temperature varies between 8° Celsius in the winter to 40° C in the summer months.² The district covers 4.61 % of the state land area (8th in the state) and 11.14 % of the state population (1st in the state).³ With a population of 8.39 million (2001 census), it is the most populous district in the state. 54.3 % of people live in the urban areas and about 48.1 % of the population were females. The sex ratio in 2001 census was 927 (less than state average of 934).² 20.6 % of the population belongs to scheduled castes while about 2.2 % are from different tribal groups. Proportion of literate population among above 7 years was 78.1 %. Male literacy was 83.9 % as compared to 71.7 % for females.² 21.5 % population live below the poverty line.⁵ The overall population density in the district was 2184 person per square KM, (Rural 1136 persons and Urban 9710 persons). 29.4 % of the people work in the industries. In the rural area, 24 % of the population are involved in agricultural works.² The district has five administrative sub divisions, one zilla parishad, 35 police stations, 22 community development (CD) blocks, 27 municipalities (highest in the state), 200 gram panchayets (GP), 2127 villages and one cantonment board. Population range in 55% of the villages was 3001 to 5000.⁴ The industrial areas of the district have a large number of seasonal & migrant populations. Five CD blocks of the district are in the Sunder bans and four CD blocks are having maximum tribal populations. The decennial growth rate of the district was + 22.69 % (higher than the state figure).

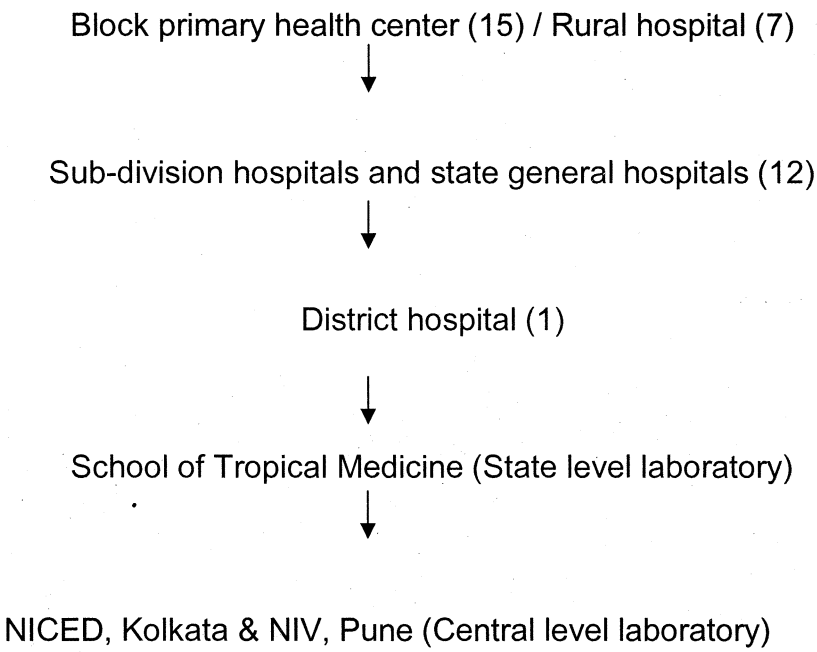
POPULATION:

The characteristics of population of the district are shown in table 1

LABORATORY FACILITY: The facilities available in the district are shown in table No 2.

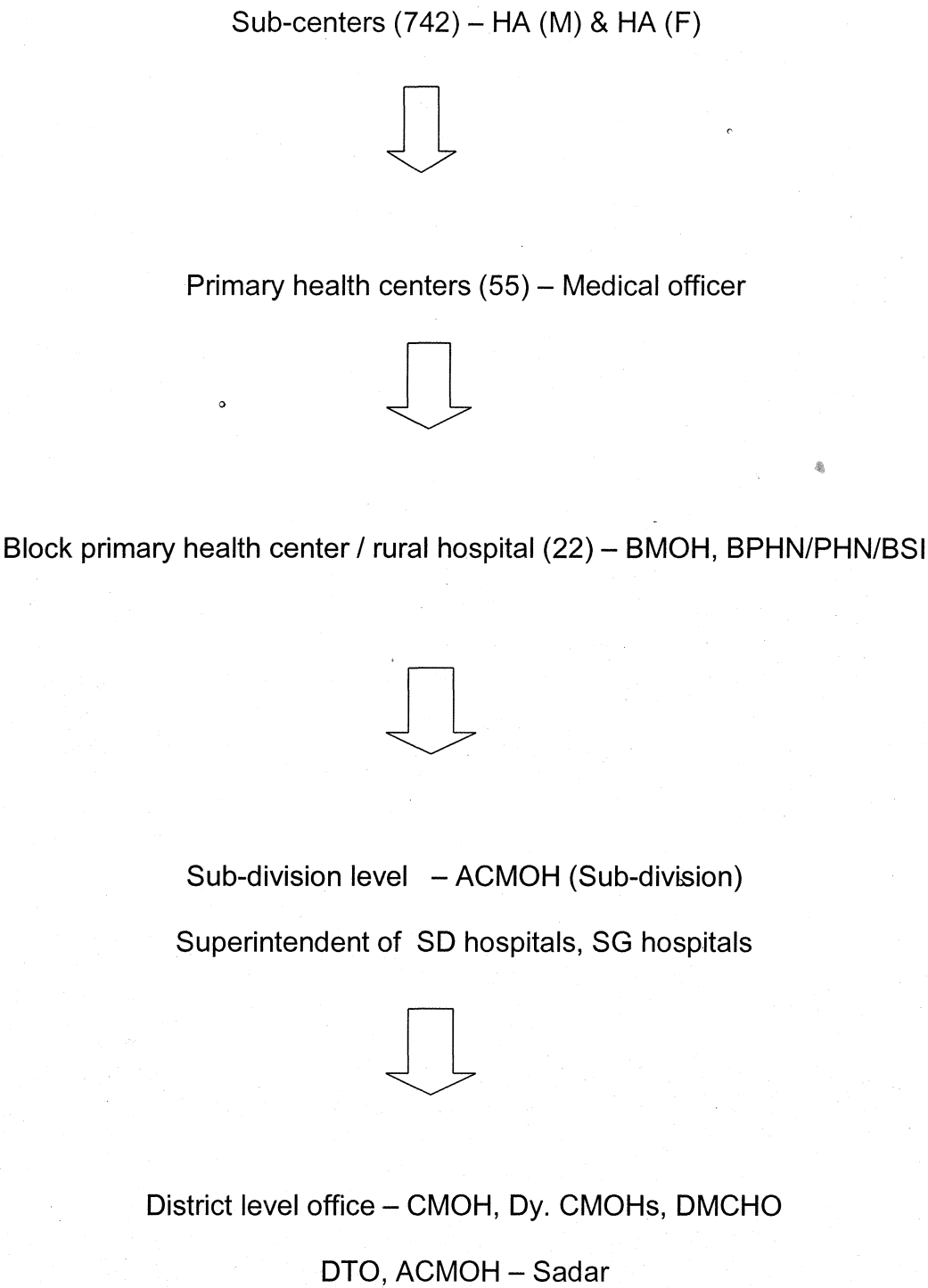
In the district, there are 35 laboratories in the public sector and 502 in the private. The district health authorities have started two pathology centres in two institutes as a public private partnership projects. In the Government laboratory, one laboratory technician is available at most of the centres performing the tests for Malaria and Tuberculosis. The blood banks perform the special diagnostic tests like HIV, HBSAg, VDRL, MP, HBcV. The private laboratories usually perform almost all the tests.

Figure 1: Flow chart of Laboratories at Government facilities



ORGANISATION OF THE HEALTH SYSTEM IN THE DISTRICT: The public health system in the district is laid down through the following levels⁶

Figure 2: Flow chart of organizational set up



The curative services above the block level are separated from the public health system. At the lower down position both are merged in the framework of primary health centres, Block health centres and rural hospitals. Health workers are at the lowest level of implementation of public health programmes in the sub centres and there are one male and a female health worker in each. There are 742 sub centres in the district. One sub centre has to cater 6000 to 7000 population.⁶ For better understanding & effective communication different committees have been constituted with the representatives of the Panchayet institutions. Rogi Kalyan Samities (RKS) have been constituted in all institutions starting from sub centres to the district hospital. These samities are working under the supervision and guidance of the district health & family welfare samity.⁶

All the rural health centres in the district is suffering from vacancies in key positions. The important vacancies are 50 % health assistant males, 100 % in sanitary inspectors and malaria inspectors. Out of 58 posts of laboratory technicians, 14 are vacant. 86 % posts of computers are vacant. District epidemiological cell is having only 50 % of its sanctioned.⁶

MAJOR PUBLIC HEALTH ISSUES:

In North 24 parganas, there are health establishments under state Government's health, labour (ESI) and municipal affairs departments. The Zilla Parishad runs one block level health center at Gobardanga, besides its other dispensaries.^{4,6} The railways is having one hospital in the district. The total health establishments available in the district are shown in table 2.

Total beds available in the district are 4635, ie 52 beds per one lakh population. For last three years, only 4 to 5 % of beds are utilised in the Primary Health Centres (PHC). Only three (3) PHCs conduct deliveries. Upgradation works are going on in different PHCs in the blocks. Ambulances, one each, were given to the Non Government Organisations (NGO) in all the blocks as a part of PPP project. As per the district HMIS, Private sectors contribute around 15% of total Institutional Delivery of the district. Newborn stabilization units are functioning in 11 block/ Rural Hospitals and this would be carried out in the rest BPHC/RHs in the year 2008-09.⁶

There are 4 FNGOs namely, Southern Health Improvement society (SHIS), Sarbik Vivekananda samity, Gandhi Peace Foundation and Gana Unnayan Parshad are working in different blocks for MCH programme, public health , health education and patient care services. 35 different NGOS are working with the health & Family welfare department in the district. They are working in the field of Tuberculosis, HIV/ AIDS, Maternal & child health, health education, voluntary blood donation, sex workers, girl child trafficking, Arsenicosis control, eye donation and blindness control and school health programmes.⁶

In the private sector, there are 225 registered nursing homes with 3439 beds, 502 pathological laboratories and diagnostic centres having X ray and ultrasonography facilities. 208 centres are registered with pre conceptional & prenatal diagnostic Act (PCPNDT Act). The majority of these centres are concentrated in the urban areas of the five sub divisions.^{4,6}

Different areas of 87 gram panchayets have been identified by the district health authority as hard to reach area in terms of provision of health care delivery. The areas are hard to the beneficiaries visa vise to the providers owing to constrains of communication. The constrains are due to geographical predominance of rivers and rivulets. There are areas in Barasat and Barrackpore sub division, where bad road condition throughout the year, act as a barrier for health care delivery.^{4,5,6}

There are 28 urban local bodies in the district. Except one, all have their own health service set up, but none of them is having the infrastructure to cover the universal population of the areas. They usually cover the population belongs to below poverty line. The services are rendered through different projects like Calcutta Urban Development Project III (CUDP III), Indian Population Project VIII (IPP VIII), Integrated Child Development Services (ICDS) and Kolkata Municipal Urban Health Organisation (KMUHO).¹⁰ In 7 Municipalities, honorary health worker (HHW) scheme has recently been introduced. There is no systematic method for collection and compilation of the reports in the municipalities. In case of Cantonment board there is no primary health care service in the area under any scheme.

These centres have no or little coordination with the health department. In case of special programme or disease outbreaks temporary communication develops between them.

MAJOR PUBLIC HEALTH PROBLEMS:

The major public health problems of the district are water borne diseases, especially acute diarrhoea, frequent outbreaks of gastroenteritis and acute respiratory infections. Malaria and Kala azar were there; recently in 2006 one block (Baduria) had an outbreak of Chikungunia fever. In 2007, 10 blocks and 7 municipalities had outbreaks of Chikungunia reported. Kala-azar is a typical public health problem in this district. It is endemic in 5 blocks.²⁰ Sporadic cases are found in almost all blocks and in 9 Municipalities.

Chronic Arsenicosis is another public health problem of the district. 19 out of 22 blocks and 3 out of 27 municipal areas are affected. Cases are detected by different health facilities and sporadic surveys by district health authority. Tuberculosis still has a major impact on morbidity as the faltering case detection and missing sputum negative cases by the system. The trend of road traffic accidents is on the rise during the previous years²⁴. This is possibly due influx of vehicles, inadequate and bad road condition and rash driving. The trend in sexually transmitted diseases is on rise, but HIV is static. The number of persons coming to the voluntary counselling centres, counselled and treated is rising. The district is having more than 1000 cases of snake bites annually with an average death toll of 10 to 15.²⁰ Flood and inundation of land by tidal water are regular problems of Bongaon and Basirhat sub-divisions of the district.

The key health priorities of the district are given in table 4.

Disease burden

Morbidity and mortality of some of the important diseases are summarized in table 5

Status in relation to Millennium Development Goals

The district is performing satisfactorily so far the measles vaccination and reduction of infant and under five mortality is concerned. In comparison to state and national average the district is having good performance in condom use rate and contraceptive prevalence rate. But the percentage of pregnant mothers receiving full ante natal care (50.58%) and skilled attendant at birth (55.1 %) is lower than state average. Performance in controlling public health diseases is showing mixed response. Table 4 will give the detailed status

Discussion: The health system of the district has an elaborate deployment spread up to the forests in the southern part. Most of the female health worker posts are filled up and some sub centres will get the second ANM soon. The posts of medical officers are mostly full. To help the block medical officer in discharging administrative duties, one block accounts manager and a data entry operator have been recruited. The district used to get help & guidance as and when necessary from the state head quarter. Many NGOs are actively working with the district administration. All institutions are having Rogi kalyan samities involving panchayet functionary. Integrated disease surveillance programme (IDSP) has been launched in 2007 and 82% of the staffs were trained.

The large size of the population and a wide area is a problem for this district. Riverine topography and presence of many backward areas is important physical barrier. Migration from Bangladesh is a problem for the district. Vacant key positions in the blocks are hampering activities like Malaria control, disease surveillance, insecticidal spray etc. The unplanned urban health infrastructure and its isolation from the general health system is also an issue of concern.

The health & family welfare department of the state Govt and the district health samity has started to formulate its own annual health plan along with the peoples representatives at all level. The action plan formulated has many new initiatives to adapt to the changes in spite of the financial & organisational limitations. It has already started different schemes to gear up public health system and to fulfil the people's expectation. It has taken the challenge before the system to reduce the urban rural divide and to bring all the units under a single umbrella. Through the Rogi Kalyan Samities it is committed to ensure the community participation. The health system development initiative (HSDI) and the integrated disease surveillance project would open up new opportunities for the district.

Steps towards decision making:

Through this process, the following functional characteristics of the public health system stood out (1) the district could not specifically prioritise the problems (2) deficiency in monitoring & supervision at all levels (3) surveillance system is deficient and (4) there is need to infuse positive attitudes in the minds of all concerned.

Conclusion:

North 24 Parganas is unique in its characteristics among the districts in the state. In spite of having regional difficulties, inequality and disparity the health department of the district has managed to maintain good position in public health scenario of the state. Through the decentralised district action plan and in close collaboration with the panchayet system it has taken initiatives to improve the status. Its concern on the long international border with frequent unauthorised migration needs action from higher authorities. It changes the population frequently pressing over the resources. The riverine area and people (21.5 %) living below the poverty line in the district, could be the seat of many public health problems. The district health authority is constantly keeping a close supervision on the situation. As a result, no serious problem developed in last few decades. It has observed a few outbreaks of different diseases in the past. Overall the district has performed fairly well in the health sector in the state.

Recommendations:

The following issues may be considered for further mobilisation of resources

1. Considering the size of the district, additional posts of district level administrative officer posts may be required, the state Government may be approached in this regard.
2. The health department official should be more vigilant in the monitoring & supervision of the sub district level staffs.
3. The sub district level officers may be utilised in a more rational and effective way, giving them more administrative and financial power.
4. The key public health posts in the blocks should be filled up for proper implementation of public health programmes. The committees with the panchayet representatives should be utilised with vision in ensuring the community participation. The district should try to increase the number of sub centres according to the prevailing norms of the Govt.
5. The district health authority should work more closely with other allied departments of the govt to bring them under regular supervision.
6. At all level the district should try to improve the data management activity. It should try to use the electronic data management. The data entry operators of the blocks may be utilised for this.
7. The performance of the sub centres, the PHC s and BPHC s should be regularly supervised by the district authority. The monthly MIES meeting may be effectively utilised for the same.

After the MAE-FETP experience, I will be able to give my expertise to the district and state health department. This experience will help me in doing outbreak investigations, evaluating surveillance system and national programmes, secondary data analysis.

We proposed potential areas on topics for my various MAE-FETP assignments which include (1) secondary surveillance data analysis on Tuberculosis, (2) description and evaluation of surveillance system in HIV in the district,(3) evaluation of blood safety programme and (4) dissertation on risk factors of snake bite and the health seeking behaviour of the people bitten by snakes in the district.

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Figure 1: Location of North 24 parganas district in the state of West Bengal , 2007

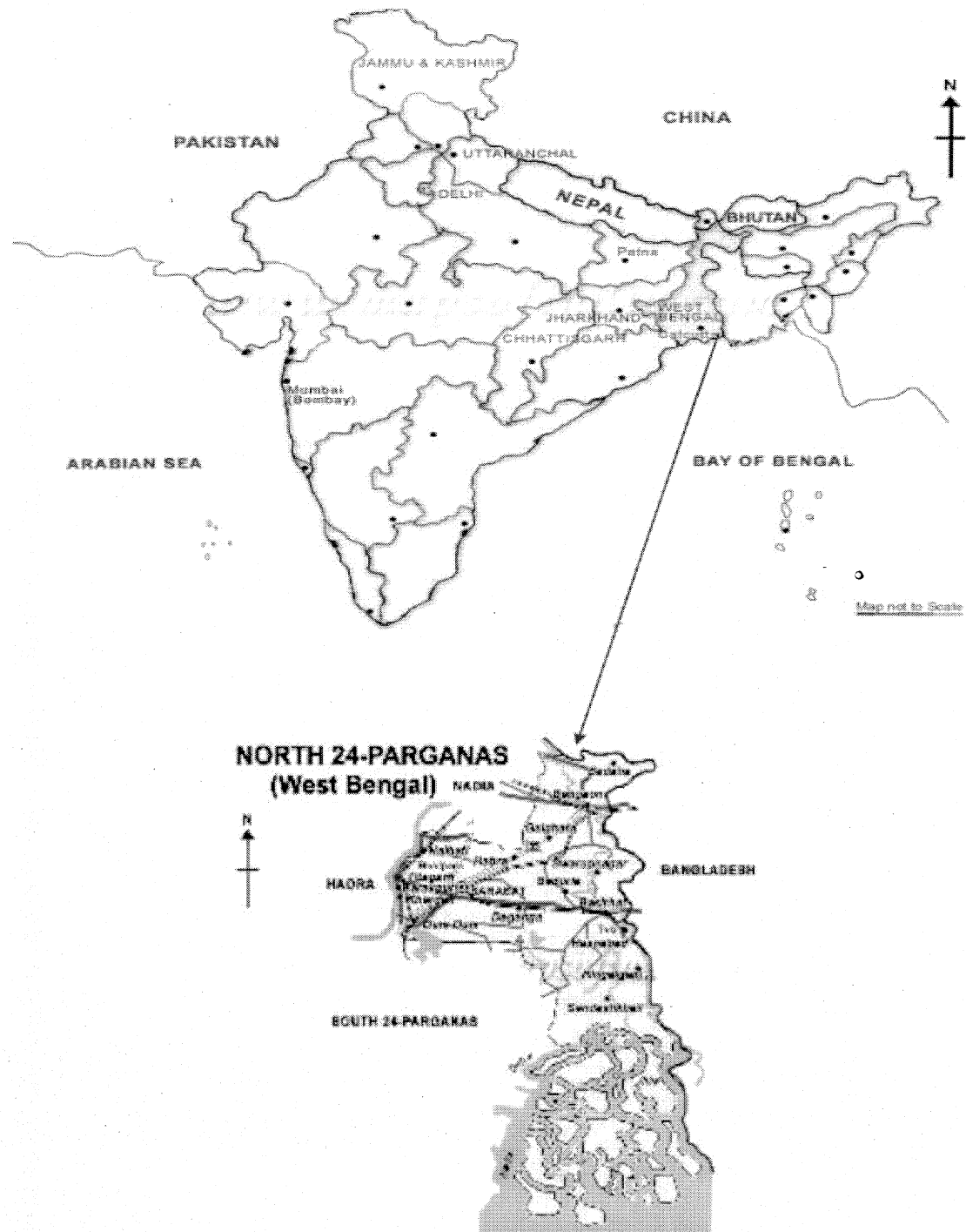


Table 1: Characteristics of population of North 24 parganas district, west Bengal, India, 2007

Population group	Population (2001)	Projected population (2007)	Proportion of the total
0 to 4 years	8,48,757	9,70,367	9.5
5 to 14 years	21,17,426	24,20,742	23.7
15 to 44 years	42,97,392	49,12,982	48.1
45 to 59 years	10,09,574	11,54,193	11.3
60 + years	6,61,137	7,55,844	7.4
Male	46,38,756	53,03,175	51.92
Female	42,95,530	49,10,953	48.08
Population BPL	Not available	21,96,038	21.5
Scheduled castes	18,40,397	21,04,110	20.6
Scheduled tribes	1,98,936	2,24,711	2.2
Urban population	48,50,947	55,46,272	54.3
Total population	89,34,286	1,02,14,128	100

Table 2: Public Health Facility in the district of North 24 Parganas available in 2006- 2007

Facility	No (2006-2007)
Sub Centres	742
GP HQ Sub Center	200
PHCs With Indoor facility	3
With only OPD facility	52
BPHCs	15
Rural Hospitals	7+1 (Gobardanga rural hospital : joint venture with Zilla parishad)
Sub Divisional Hospital	5
State General Hospital	8
District Hospital	1
Medical College with name	0
Central Govt. / Railways / PSUs /	Railways – 1
Other Departments (Jail, Police, Urban Bodies and ESI etc.)	ESI --- 1

Table 3: Key public health priorities in North 24 parganas district, West Bengal, India, 2007.

Public health priority	Key elements	Incidence rate	Case fatality Ratio	On going prevention & control programmes
Diarrhoea	Static incidence for last 5 years and Frequent outbreaks	14 to 16 per 1000 for last three years	CFR ranges from 0.02% to 0.06%	Acute diarrhoeal disease control programme reproductive & child health programme
TB	ACDR (TOTAL) NSN case detection static	ACDR (T) 114 NSP : NSN 0.33	Death rate(NSP) 2006 4.2 %	Revised national TB Control programme
Dengue & Chickunguni a	Recent outbreaks in 10 blocks	10 blocks & 7 municipalities affected		National Vector borne disease control programme
STD, HIV/AIDS	Prevalence is	Prevalence in ANC 0.25% &		National AIDS control programme Syndromic management of STD

	on the rise	in FSW clinics 4.84%		cases
Snake bite	Static incidence over few years	900 to 1200	10 to 20 deaths	No specific programme

Table 4: Laboratory facilities available in North 24 parganas district, West Bengal, India, 2007.

LEVEL	FACILITY	Tests available
Primary level	Any block primary health Centre and Rural hospitals	Blood for malaria parasite, sputum for acid fast bacilli
Secondary level	State general hospitals Sub divisional hospitals District hospital	Blood for complete hemogram, urine & stool for routine examination
Tertiary level	All India institute of hygiene & public health, Kolkata	Water analysis
	School of tropical medicine, Kolkata	Water analysis, hepatitis antigen profile, rectal swab for cholera, culture sensitivity for Shigella, Salmonella, Vibrio, Antibody test for Malaria, Kala-azar, Rickettsia and serum for Japanese encephalitis, West Nile, Dengue and Chikungunya
	National institute of cholera & enteric disease, Kolkata	Water analysis along with PCR technique, rectal swab, culture, sensitivity and sero typing of Shigella, Cholera, Rota, E.coli, Hepatitis antibody detection by ELISA
National level	National institute of virology, Pune	Antigen and antibody profile and virus isolation

Table No 5: Indicators of progress for the health related MDG in North 24 parganas, West Bengal, India, 2007.

Goal	Indicator	Value of the indicator		
		North 24 Parganas (Year)	West Bengal (Year)	India (Year)
Goal -1	Prevalence of underweight children age group- 0 to 6years	16.9 % ¹¹ (NFHS III,2005-06)	48.7 %	46.5 %
	Proportion of population below minimum level of dietary energy consumption	Not Available	Not Available	Not Available
	Percentage of children 12-35 months of age who received one dose of vitamin A in the past six months	79.86 % ¹⁴	41.2 %	21 %
	Proportion of infants under six months who are exclusively breastfed	Not available	58.6% (NFHSIII,2005-06)	46.3 %
Goal-4	Under-five mortality rate per 1000 live births	57 (SBHI,WB,2005-06)	66	93

	Infant mortality rate per 1000 live births	51 (NFHS III,2005-06)	38	58
	Measles immunization among children under one	88.3 %	74.7 %	58.8 %
Goal-5	Maternal mortality ratio per 100,000 live births	21(2005)	194	301
	Proportion of births attended by skilled health personnel	55.1(2002-2004) ¹⁴	45.7 %	40.7 %
	Contraceptive Prevalence rate any methods	67.3 %	66.6 %	48.2 %
	Any modern methods	50 %	51.5 %	
	Percentage of women receiving at least one antenatal care	90.3 %	94.6 %	61.8 %
	Three ANC	50.58 %	62.4 %	50.7 %
Goal -6 (HIV)	HIV prevalence rate aged 15-49 years percent	Not Available	Not Available	0.9

	Condom use to overall contraceptive use among currently married women aged 15 to 49 percent	4 % (NFHS III,2005-06)	4.5 %	5.5 %
	Number of children orphaned by HIV/AIDS	Not Available	Not Available	Not Available
	Percentage of men, aged 15-24 using a condom during most recent higher risk sexual encounter	Not Available	Not Available	55(2001) ¹⁹
	Percentage of STI clients who are diagnosed and treated according to guidelines	36.7 (2005) ³	86% (2003) ²⁵	89%(2003) 25
	Percentage of HIV-positive women receiving anti-retroviral treatment during pregnancy to prevent mother to child transmission of HIV	Not Available	Not Available	Not available
Goal-6 (Malaria)	Malaria death rate per 100,000 all ages and under five	0.8(2005) ²⁰	4	6

		Proportion of people with uncomplicated malaria getting correct treatment at the health facility and community levels, according to the national guidelines, within 24 hours of the onset of symptoms	Not Available	Not Available •	Not Available
		Percentage of pregnant women who have taken chemo prophylaxis or drug treatment for malaria	Not Available	Not Available	Not Available
		The proportion of households having at least one insecticide treated bed net	Not Available	Not Available	Not Available
Goal (TB)	-6	Prevalence per 100,000 population and death rate associated with tuberculosis	114 (2006) ⁸ RNTCP,GOI,2007 2.99 %	127(2006) 4.16 %	128 (2006) 4%(2006)
		Proportion of tuberculosis cases detected and cured percent under DOTS	73 %(2006) 88.6 %(2006)	78(2006) 85.6 %(2006)	72(2006) 85(2006)
		Percentage of estimated new smear-positive tuberculosis cases registered under the DOTS approach	69.5 %(2006)	76 %(2006)	(2006)

Goal- 7	Proportion of population with sustainable access to an improved water source, urban and rural,	99 (2001) ¹⁰	89.3 (1999)	Urban -96 (2002) ^{7,17} Rural-82 (2002)
	Proportion of urban population with access to improved sanitation	Total = 39.4 (2001) ¹⁰	55 (1999)	58 (2002) 7, 17
Goal-8	Proportion of population with access to affordable essential drugs on a sustainable basis	Not Available	Not Available	Not Available

Secondary data analysis on Tuberculosis in North 24 Parganas district of West Bengal, India, 2007

INTRODUCTION:

Tuberculosis (TB) is a multi – faceted disease, affecting all sections of the society around the world. It is a communicable disease caused by *Mycobacterium tuberculosis*. It affects primarily the lungs, though other extra pulmonary organs like intestine, meninges, bones, lymph nodes etc are also affected.

Tuberculosis ranks 7th in morbidity causing disease in the world.¹ Globally, estimated cases of infectious tuberculosis are 16 to 20 million, estimated new cases 8.8 million of which about 95% occur in developing countries and estimated death 1.8 million each year, majority in developing countries^{2,3}. TB is the largest single cause of death among young people and the adults².

India accounts for one fifth of global incidence of TB and tops the list of 22 high burden countries. Every year 1.8 million people develop Tuberculosis of which 800,000 are infectious in nature and 1000 die per day due to Tuberculosis. In India, more than 40% of population is infected with TB bacilli. The overall prevalence of infection is 30%. The incidence of infection is 1 to 2%. The Incidence of new cases is 1.5 per thousand excluding children below 5 years⁴.

The revised national TB control programme (RNTCP) started in 1997 has gradually expanded throughout the country. Since March 2007 all the districts in the country are under RNTCP coverage.¹ Tuberculosis still exists as a major public health problem in almost all the states in the country.

The objectives of RNTCP are: ⁴

(1) To achieve & maintain 85% cure rate of newly detected sputum positive cases and

(2) To achieve & maintain detection of at least 70% of new smear positive cases.

Presently the programme has entered in its second phase with the aims of

1) To consolidate the gains of 1st phase

2) Widen the services in respect of activity and accessibility and

3) To sustain the effects.

Currently the average Annual risk of Tuberculosis infection (ARTI) in India is 1.5%. According to the programme parameters, the expected case load is 203 cases (total cases) per 100,000 population of which 75 are expected to be smear positive, 75 are smear negative, 38 are re treatment cases (the total of treatment after default cases, relapsed cases and failure cases) and 15 are extra pulmonary cases⁴.

RNTCP works on a decentralised basis from central to district level. At the district level the district Tuberculosis officer (DTO) is the main person to look after the programme. DTO is looking after the programme as the administrative head in the district. The district has been divided into many small areas, known as Tuberculosis units (TU) comprising of a population of 0.5 million. One medical officer specifically assigned to help the DTO in these areas, called as Medical officer for TB control (MOTC). There is one designated microscopy centre (DMC) per 100, 000 population. To help these MOTCs, there is one senior TB treatment supervisors (STS) and one senior TB laboratory supervisor (STLS) in each of these tuberculosis units (TU). The

STS basically remains in charge of treatment aspects of the patients and the STLS looks after works of the designated microscopy centres. One laboratory technician works at these designated microscopy centres. The sub centres usually act as the directly observed treatment short course (DOTS) centres and there is a provision of centres at the doorsteps of the patients by community DOTS providers under special situations.

According to Government of India, West Bengal is a high performing state and achieved a case detection rate of 127 / 100,000 population. Directly observed treatment short course (DOTS), as a strategy of RNTCP, started since 1998, has full coverage in the state from 2003. Districts in West Bengal have taken the control of TB as a part of their public health priority. There are differences in their performances among the districts. Even within the district, mixed performances have been seen in different community development (CD) blocks.⁵

North 24 Parganas is one of these districts, where this mixed picture is seen. RNTCP has been launched in the district of North 24 parganas in March 2001. Initially it was a big challenge for the district to start functioning RNTCP DOTS in the whole district at a time, being the highest populated district with tremendous geographical diversity like difficult terrain areas in the Sundarbans, urban industrial belt of Barrackpur sub division and with ample size of migrant population in semi urban and rural areas.⁵ The district covers 4.61 % of the state land area (8th in the state) and 11.14 % of the state population (1st in the state). 10 % diagnosed TB cases of the state in 2006 were reported from this district.

Prevalence of tuberculosis infection in paediatric age group is higher (6%) in the district than the state (5 %).

I have been assigned to analyse the secondary data on the Revised National Tuberculosis Control Programme (RNTCP) in the district of North 24 parganas. I will analyse the data in relation to the prevailing situation in 2006 and would submit my recommendations to the district authority.

METHODOLOGY:

Data collection:

I have visited the district tuberculosis centre and met the district tuberculosis officer (DTO) and other stakeholders of the programme at their respective sites to collect the data of Tuberculosis control activities. I have visited some selected designated microscopy centres and DOTs centres to observe their activities. I have collected the data mainly from the office of the DTO and area specific information was collected from the TU level. The state level data was collected from the office of the state tuberculosis officer (STO).

Data analysis plan:

For the purpose of analysis I used the RNTCP guidelines of the central TB division (CTD) of Govt. of India and compare the performances of the district with that of the state. The RNTCP proposed the performance indicators as follows

Annualised case detection rate (Total) – 142 per 100,000 population

Annualised case detection rate (NSP) – 53 per 100,000 population

Cure rate for NSP cases --- More than 85%

3 months conversion rate of NSP cases ---- > or = 90%

Death rate less than 5%

Failure rate less than 4%

Defaulter rate less than 5%

OPERATIONAL DEFINITIONS:

Case: a patient in whom tuberculosis has been confirmed bacteriologically or diagnosed by a clinician.

Sputum smear positive pulmonary TB: smear positive pulmonary cases are those having at least two initial sputum smear examinations positive for acid fast bacilli or one sputum positive smear with either radiological abnormalities consistent with active pulmonary TB or a culture positive for *Mycobacterium tuberculosis*.

Sputum smear negative pulmonary TB: smear negative pulmonary cases are those with three initial sputum smears negative, three repeat sputum smears negative but have either a positive culture or radiological abnormalities consistent with active pulmonary TB.

Extra pulmonary TB: disease affecting any other organ except the lungs based on culture, histology, radiography or strong clinical evidence is defined as extra pulmonary TB.

New case: patient who never had any treatment for tuberculosis or has taken treatment for less than one month.

Relapse: tuberculosis patient who has completed full course of the treatment and was declared as cured or treatment completed, but reports back to the health services and is found to be sputum positive for *Mycobacterium tuberculosis*.

Failure: a tuberculosis patient if remains sputum smear positive after taking 5 months or more of category I regimen under DOTS strategy or a patient on

category III if becomes sputum smear positive any time during treatment (2 months or more).

Treatment after default: a patient who has received anti TB treatment for one month or more from any source and returns to treatment after interruption of anti TB drugs consecutively for two months or more, and is found to be sputum smear positive is considered as treatment after default.

Transfer in: patient who has been transferred from another tuberculosis unit / district after being registered to continue treatment.

Others: all cases that do not fit the above definitions.

Cured: Patients who were initially sputum smear positive has completed treatment and had negative sputum smears on two occasions, one of which was at the end of treatment.

Treatment completed: a patient who completed treatment but does not meet the criteria for cure or failure.

Died: A patient who dies for any reason during the course of treatment;

Defaulter: a patient whose treatment was interrupted for 2 months or more.

Transfer out: a patient who has been transferred to another unit and for whom the treatment outcome is not known.

Treatment success: is the sum of the patients who are cured and who have completed treatment.

Initial defaulter: a patient who is diagnosed sputum smear positive but not put on treatment or referred for treatment.

OBJECTIVES OF THE STUDY: The objectives of the study were-

1. To estimate the Tuberculosis burden in the district.
2. To identify the areas of high caseload and the population at risk.

3. To describe the trend in Tuberculosis and
4. To generate hypothesis about the determinants

Study design: descriptive study based on the secondary data available at the district tuberculosis centre, North 24 parganas in 2007.

Population under study: the total population of North 24 parganas district and it was 9.5 million (2006, TB India, GOI) and the staffs working in the district for the control of Tuberculosis under RNTCP.

RESULTS: At present (in 2007), the entire district is under the Revised National Tuberculosis Control Programme (RNTCP) and is running with 21 Tuberculosis Units (TU) and 101 designated microscopy centres (DMC). The population in each TU varies from 300, 000 to 560,000.³

There were 21 medical officers TB control (MOTC), STS, STLS each and 101 laboratory technicians in the district. Presently all the posts are filled up. Out of 21 TUs, Four Tuberculosis units (19%), namely Minakhan, Ghoshpur, Sandelerbill and Sandeskhali TU were being run by an NGO, called Southern Health Improvement Society (SHIS). This NGO was entrusted to cater a population of 1300, 000 (1.3 Million) in these 4 TU areas.

The DMCs remain open all working days but the DOTs were provided from the sub center clinics only on alternate days.

There was no designated microscopy centre at the private sector in the district. Forty seven medical practitioners were engaged in different schemes in the district. Most of them (90%) were providing DOTS from their clinics.

Total case load: In 2006, the district registered total 10,908 tuberculosis cases; of which 5213 cases were new sputum smear positive pulmonary

cases (47.8%). The total case detection has been increased since the last year by 3.3 %. The trend in last five years is shown in the Figure No: 2

The disease has affected both the sexes; the male female ratio in 2006 was about 2.4 males: 1 female. It affects all the age group but the affection is more in the 15 to 44 age groups.

Suspects examined per lakh population: In North 24 Parganas, it has been seen that suspects examined rate per 100,000 population has been increased during the years. Since 2002, the case detection rate was 81.97 in 2002, 86.1 in 2003, 103.46 in 2004, 127 in 2005 and 136 in 2006 clearly shows that the case detection rate has been increased. It has been observed that every year case detection rate was higher in TUs situated in distant places than the TUs close to district head quarter. In comparison of performances of 2005, it has been seen that, in 2006, Serapole TU has maintained the highest position but Dumdum TU has gone down (105 / 100, 000 in 2005 to 89 / 100, 000 in 2006).

On an average, the district has shown an increased trend in referral of chest symptomatic (from 2.06 % in 2002 to 2.80% in 2006). The trend is shown in Figure No: 1

As per guideline of Revised National Tuberculosis Programme 2-3% of the new adult outdoor patients is chest symptomatic and should be referred for sputum smear microscopy and 10% -15% of these is sputum smear positive.

Sputum positivity rate among the suspects: In 2006, the district had shown a figure of 12 % sputum positivity rate among the referred cases, equal to the state figure. In Rudrapur and Serapole TUs the rates were as low as 8 % and in Dumdum and Bhatpara TUs these rates were as high as 16 %.

Time trend: Though there was no seasonal variation in Tuberculosis, it has been found that, in last five years, case detection was high during 2nd and 3rd quarters (in April to September), during summer and monsoon months.

Proportion of sputum positive patients living in the district placed on

DOTs: The range of sputum positive patients of the district put on directly observed treatment was 80 % to 100 % in different TU areas. Ghoshpur, Sandelerbill, Sandeshkhali and Minakhan TUs have achieved 100 % in 2005 & 2006. Dumdum and Bhatpara TU have shown 80 % and 88 % respectively. This may be a cause for the high defaulter rate in these areas.

The ratio between sputum positive and sputum negative pulmonary

cases: It has shown an inclination for the positive cases. Presently the district has shown 75 % positive cases out of all cases, which is much above than the state level (66 %). Some TU have shown more than the district figure. Minakhan TU 86 %, Amdanga TU 84 % and Panihati TU have shown 83 % sputum positive cases out of all pulmonary TB cases. The trend is shown in Figure No: 4

As per guideline of Revised National Tuberculosis Control Programme new sputum smear positive and new sputum smear negative ratio should be ideally 1:1 and should vary between 0.8-1.2.

Annualised case detection of the total cases (ACDR, Total): One of the important indicators to assess the performance of any TB control activity is to see the annualised total case detection in the district. It has been improved in the district in the last few years. In 2006, it was 114 per 100,000 population, which is less than the state level (127/100, 000). Among the TUs Amdanga

TU had only 87 cases per 100, 000 population and the district TB centre had 154 cases per 100, 000.

National target is 142 cases/ 100,000.

Annualised Case detection rate for the new sputum positive cases

(ACDR for NSP cases): In this respect, the district has improved its performances. The ACDR (NSP) has been increasing for last few years. In 2003, it was between 22 % in Sandeskhali TU to 56 % in Bagdah TU. In 2006, it was between 61 % in Dumdum TU to 102 % in Ghoshpur TU. The district figure stood at 73 %, where as the state had 78 % of NSP detection rate.

The trend in last five years is shown in Figure: 3

Annual new sputum positive case detection rate national target of 53/lac

3 months conversion rate of new sputum positive patients: In this aspect, the district is at par with the state level, having both at 90 % but B.N. Bose Hospital TU is having a conversion rate as low as 79 %, the highest conversion rate has been shown in Sandelrbill TU - 99 %.

National target is > 90%

Cure rate of new sputum positive patients: It was increasing since 2003, but in 2006 it has been slightly dropped down from 90.12 % in 2005 to 88.36 % in 2006. But it has achieved the global target of 85 % cure rate in majority of TU s. In 2006, out of 21 TUs, only Naihati TU (4.7%) had shown cure rate of 79 %. The performance of the last five years is shown in figure No: 3. The district figure was better than the state (89 % VS 86 %) in 2006.

Cure rate is slightly higher in female patients in 2006 (90.12 % VS 88.36 %).

Death rate among the new sputum positive patients: The death rate has gone up in last few years. It was 2.99 % in 2004 but gone up in 2006 to

4.14 %. Though the death rate was higher in males (3.28 %) than females (2.27 %) in 2004, but the 2006 figure has not shown any such difference.

Target is < 5%

Defaulter rate: It has been fixed at the national level that under no circumstances the defaulter rate should cross 5 % for the patients at all levels. In North 24 Parganas district the defaulter rate was all the time below 5%. In 2006, it was 4.2 %. In re treatment cases the defaulter rate is very high.

Rural urban differences: According to the North 24 Parganas district TB control society three TUs were in urban areas, comprising mostly the municipalities. In the rural areas, Four TUs were given to an NGO . This NGO, SHIS, works in the Sunderbans. Two rural TUs were under the public sector with rural population. All other TUs (12 out of 21) were having a mixed population. Certain indicators in RNTCP were better in the rural based TU areas than their urban counterparts. In the rural areas, the TU s managed by the NGO workers performed better than the others.

DISCUSSION:

According to the state TB officer, North 24 Parganas district is one of the good performing districts in the state of West Bengal in RNTCP. Started later than some other districts, it has achieved many National level targets by this time. In spite of having diverse Geography, the district has managed to reach its entire people. The NGO involvement had given the district a good dividend as evidenced by the fact that their areas have shown better results in almost all indicators. Though the district has improved in case detection rate over the years, still it is less than the state average of 163 / 1 lakh population. It may be due to the fact that the cases detected at the private facilities, mostly in the urban areas were not reported. The reason of better performance of TUs in the may be that in these distant places the facilities are mostly confined in the public sector and people availed the benefits. The industrial belt of the district, though improved in functioning, needs constant monitoring as it has shown fluctuations frequently. The case detection rate has been improved in the industrial belts. It may be due to the fact that the labourers of different industries in these areas are correctly referred for sputum tests. Different results were seen in municipality and non municipality areas of the same TU. It may be due to the fact that a large number of people migrate frequently in these areas and the field level staffs were not verifying the addresses adequately. The district has achieved the global target of cure rate of NSP cases. Now it should go for the detection of more cases. The areas where the positive cases over numbered the negative cases significantly require investigation. Similarly it should also be investigated the reasons that some areas having 16 % sputum positivity rate. The quality of

the laboratory activity of these TU needs to be ensured. The sputum negative pulmonary TB cases identification by the doctors has to be emphasised. The doctors should be trained regarding the diagnostic algorithm. The diagnosis of sputum negative pulmonary TB cases has to be seen with care. There were about 450 medical practitioners in the district of which only 47 were formally involved. So, there was a scope to increase the number in near future.

The defaulter tracing needed more emphasis. The health workers should ensure the initial home visits, as prescribed in the guidelines for reducing these defaulters.

LIMITATIONS:

The secondary data analysis on RNTCP was done by examining the data available at different levels and by interviewing some key functionaries. The scope to examine the validity of the data was limited. Possibility of bias and confounders might be present in the analysis.

RECOMMENDATIONS:

After the analysis of the available data in RNTCP in the district of North 24 Parganas, we would like to submit the following recommendations to the district authority.

1. To make the case detection at par with the state level, the peripheral health institutions (PHI) have to be encouraged to see the chest symptomatics in a more careful manners so that they may go for sputum tests.
2. To make the doctors sensitised in the programme, regular training and retraining should be organised. Similarly, the laboratory staffs should have proper training with the sense of quality assurances techniques.
3. At all levels the diagnostic algorithm has to be strictly followed.

4. The sub centres should remain open on all days. The timing should be such that TB patients may come to take the medicines or appointment of community DOTs providers may be considered.
5. The health workers and the TB health visitors (TBHV) should visit the houses of the patients at the beginning of treatment to counsel so that the initial defaulters may be reduced.
6. The district authority may initiate to increase the number of microscopy centres and the sub centres considering the size of the population.
7. In the industrial areas the number of TBHV s may be increased to have an easy access to the patients and to increase the compliance.
8. The district may go for increasing the number of NGO s to be involved in the programme, particularly in the industrial areas. The district should go for more Public private mix to involve the community in the programme. In this regard the professional associations of the doctors are important. The private practitioners of the district should be brought in the programme in a big way.
9. The district should try to involve the other related sectors in the RNTCP more effectively. There are some hospitals in the ESI, railways and municipalities. They should be involved in a more meaningful way.

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3. World Health Organisation (1996), World Health Report 1996
4. RNTCP Performance Report, India, 2nd qtr 2006, Central TB Division, Director General of Health Services, Govt of India, New Delhi.
5. Performance report of the district TB control programme, North 24 Parganas, Barasat, 2006
6. Situationa analysis of North 24 Parganas undertaken by Dr. Kajal Krishna Banik as a part of project for FETP at National Institute of Epidemiology, Chennai in 2007.

Figure 1: The geographic map used by RNTCP in North 24 Parganas,West Bengal

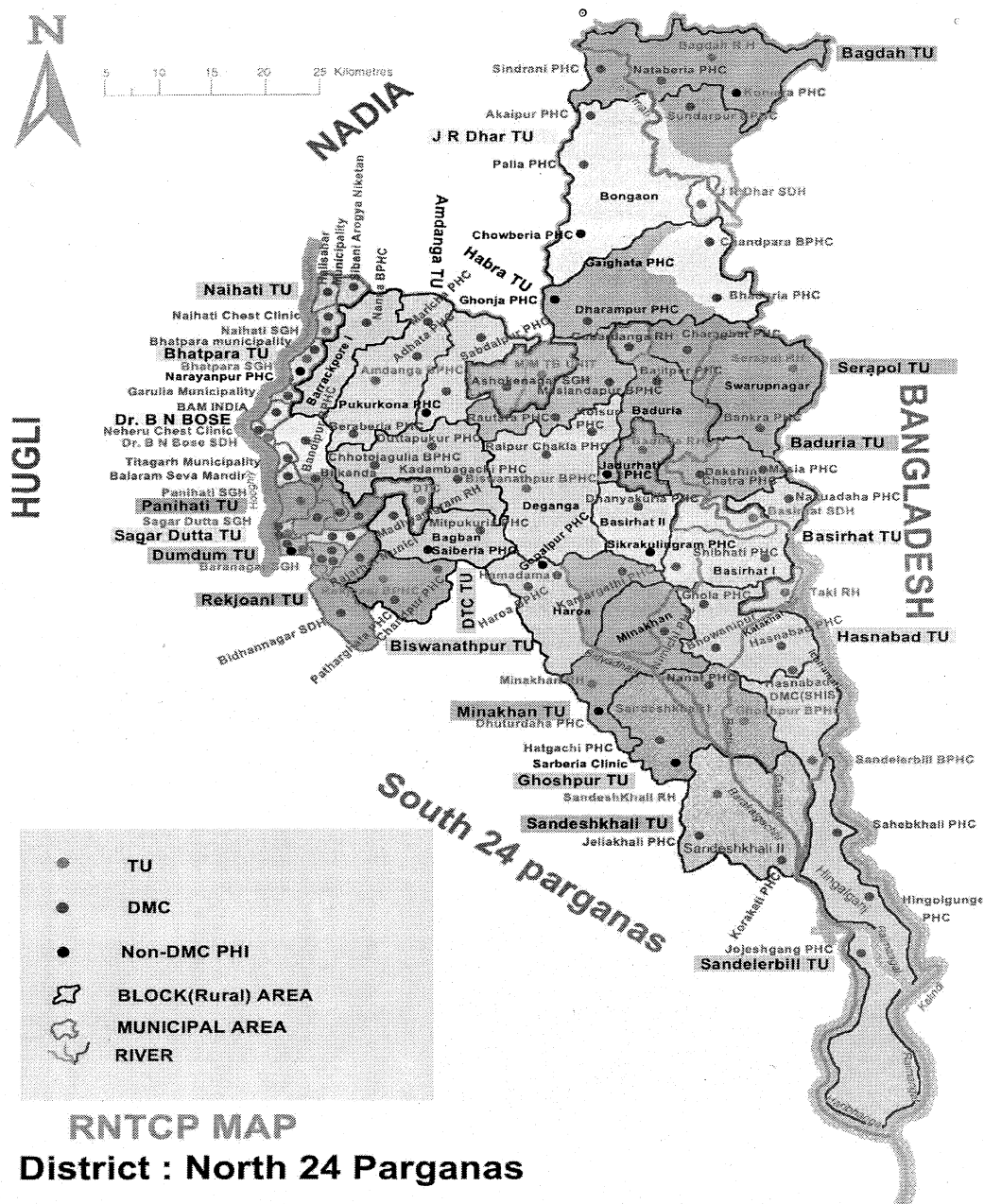


Fig 2: Yearwise total case load & NSP cases treated in 24PG(N), West Bengal, India, 2002 - 06

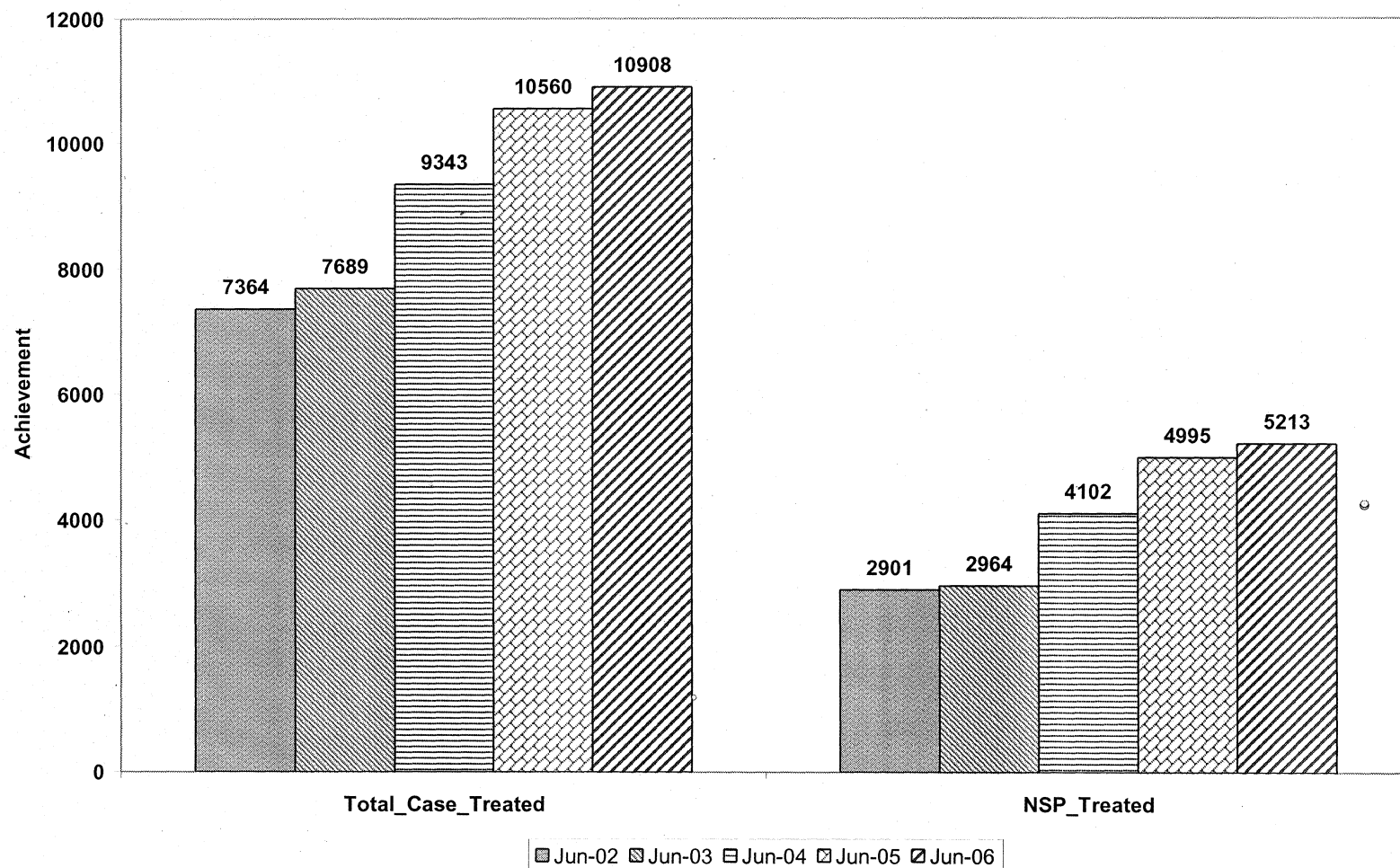


Fig 3: Yearwise selective performance indicators of RNTCP, 24 PG (N), West Bengal, India, 02 - 06

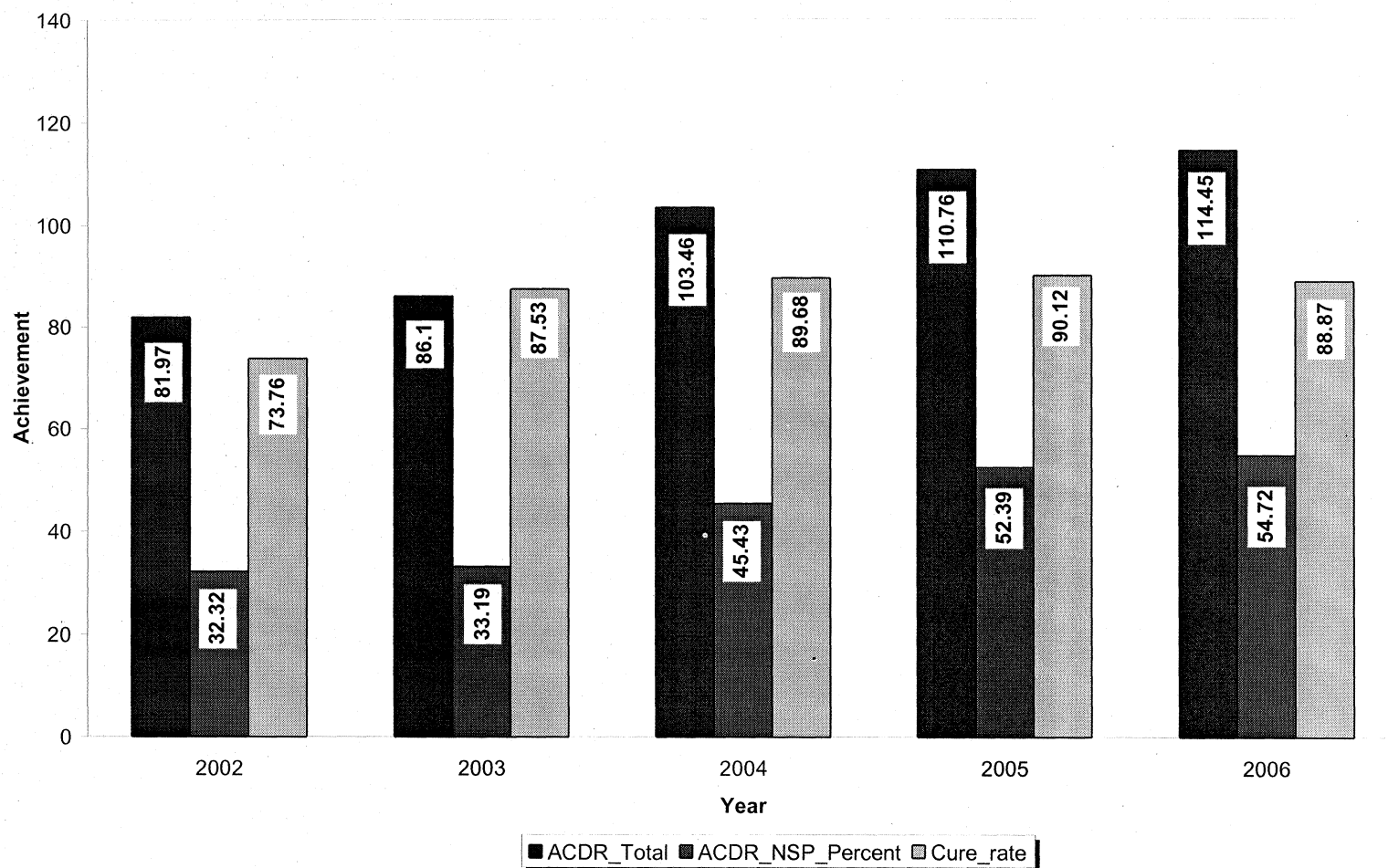
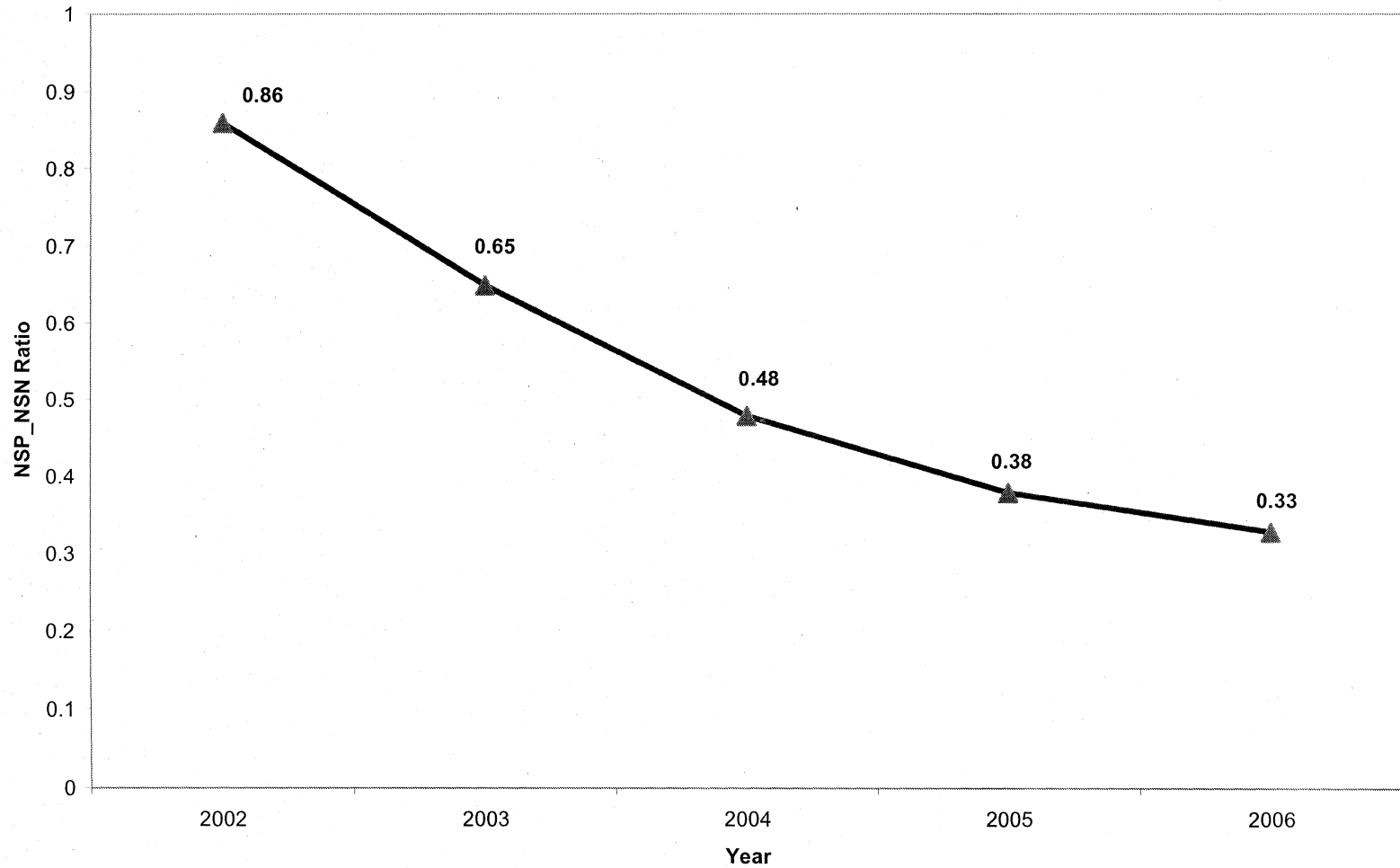


Fig 4: Yearwise trend in NSP & NSN ratio of TB cases 24PG(N), West Bengal, India, 2002 - 06



An investigation of food borne outbreak of gastroenteritis at Panicilla village, West Bengal, India, 2007

Introduction and Background:

In West Bengal, there is a culture that after the death of any person in the family, the other family members organise a "Bhoj " for the friends & relatives as a mark of respect to the departed person. This ceremony is known as sharad ceremony to the Bengalee Hindu community. To commemorate the ceremony the host arranges lunch or dinner for the friends and relatives. Usually in the rural areas they prepare all food items in the house by hiring cooks or buy some items from market. Whatever be the source of it, food borne illness following these parties is not infrequent. People usually suffer from gastrointestinal illnesses including cholera following these types of "bhoj". Usually it affects a small group of people in the community and they use locally available measures to tackle the situation. When a large number of people get affected and some requires hospitalization then the situation becomes tense. If proper measures are not taken in time deaths may also occur. Newspaper, radio and television report these outbreaks causing alert at all levels.

On 30th April, 2007, there was a sharad ceremony (Funeral party) following the death of a person, in Panicilla village, under Barasat Block I, North 24 parganas district of West Bengal, India. The sons of the deceased person organized a lunch in memory of their father and invited 250 persons from the village. After the lunch, some people became sick with symptoms of gastrointestinal upsets and a few required hospitalisation. It was telecasted in different Television channels.

About 9 PM on 30th April 2007, the chief medical officer of health of the district informed the MAE- FETP scholar over telephone that 68 people have been admitted in the district hospital from amongst the participants of the said lunch party and requested him to investigate the case. Accordingly I reached the district hospital in the morning on 1st May 2007 and initiated the investigation with the following objectives

1. To confirm the existence of an outbreak
2. To identify the factor(s) responsible for the outbreak
3. To initiate prevention and control measure and
4. To recommend measures for prevention of future similar outbreaks

As an MAE-FETP scholar, I investigated the outbreak following the standard step by step approach of outbreak investigation.

Determination of the existence of an outbreak:

I reached the hospital on 1st May 2008 and met the on duty doctors and he reported me that all the patients were from the same village and they had lunch in that party and symptoms of acute gastroenteritis. On reviewing the treatment sheets and by talking with some of the case patients, I got the information that the symptoms were mostly nausea and vomiting. A few had loose motions. Some other people, who were having the similar symptoms, went to the local health workers and doctors. I went to the village. Met a few participants of the lunch party, it was evident that the illness was confined only among the guests. There was no such illness in the past. So, I have concluded that it was an outbreak.

Confirmation of the diagnosis:

I examined the ill persons along with the treating physician of the hospital. The illness was confined only in participants of the lunch in the said house at the village on 30th April 2007 .The majority of the case patients had nausea (90.67 %) and vomiting (88.98%), few had loose motions (61.80%). Only in a small proportions of patients had fever (7.62%). The food and the water sample were tested, but no definite organism could be detected by the school of tropical medicine, Kolkata. The stool sample could not be collected as the patients received antibiotic therapy immediately. A few case patients became symptoms free by that time. I have concluded that the outbreak was probably due to an acute gastroenteritis. So I initiated the investigation.

Methodology:

Study design: I decided to conduct a retrospective cohort study.

Study population: I included all the participants of the lunch party on 30th April 2007 in the village Panicilla, Barasat Block I, North 24 Parganas district, West Bengal.

Case definition- Any person who took lunch in the funeral ceremony on 30th April 2007 in Panicilla village, North 24 Parganas and had gastrointestinal symptoms within 24 hours following the lunch.

Data collection – I decided to conduct an active case search among all the participants of the lunch party and to collect information through a questionnaire. I interviewed the hospitalized patients in the hospital and others at their residences during 1st and 2nd May 2007. I collected data on age, sex, food item (s) taken, time of lunch, onset of symptoms in case patients and treatment received. I have prepared a line listing of all the participants.

I collected some left out portions from all food items and water samples and sent to school of tropical medicine, Kolkata for chemical and bacteriological tests.

Generation of hypothesis: The condition was confined only among the participants of the lunch party, which was continued from 12-30 PM to 4 PM. Three persons had fallen sick within one hour after their lunch. All the case patients had symptoms between 1 and 4 hours of lunch. The median incubation period was 2 hours. I had drawn an epi curve and from the epi curve it was seen that there was sudden rise of cases and a sharp fall with only a single peak, so it was a point source outbreak. It affects all age groups within a short time. It was hypothesized that the illness was due to some food

item contamination. I planned to evaluate this hypothesis by descriptive epidemiology to identify the time, place and persons distribution and by conducting an analytical study.

Evaluation of the hypothesis:

I planned to conduct a retrospective cohort study among the participants. I calculated the food item specific attack rate among participants who became ill. I also calculated the relative risk of gastrointestinal illness among participants according to food items exposure to measure their strength of association. I planned to conduct an environmental survey as well.

Results:

It was reported that 250 persons of the village were invited. 237 persons actually had lunch. Altogether 118 persons fallen ill, male 70 (59 %). 68 persons out of the ill persons (58%) needed hospitalization, male 55.88 %. Median age of the affected persons was 22 years. The attack rate was highest in the 60 + age group (69.23 %). Table 1.

Symptoms started appearing one hour after the lunch and the last case patient had symptoms four hours after the lunch. The people took lunch between 12 30 PM to 3.30 PM. Figure 1

The organizer had hired two cooks for food preparation. The preparation for food was started from 6 AM and it was ready by noon. They prepared all food items except the curd and sweets, which were bought from a local shop. The sweets and curd were brought at 11 30 AM and were kept in room temperature till the service. Four family members served the foods to the guests.

It has been seen that the attack rate is higher in those who had taken curd (65%) than those who did not take it (21%), Relative risk 3.81, (95 % CI 1.85 – 7.89). The attack rate was highest in curd eaters.

The laboratory could not detect any specific organism either in the left out food items or in the water samples sent.

On environmental survey it was detected that person who prepared the curd had some sore throat and skin infections.

This type of situation is possible in *Staphylococcus aureus* food contamination. The curd maker may be the source of the infection.

Implementation of control and preventive measures:

The epidemiologist in training had taken the following measures

1. The affected persons were examined and appropriate measures were taken to reassure them in the community.
2. The admitted patients were managed with treating physician
3. The sweets maker had been given talk on the importance of personal hygiene and food safety including the importance of food handling & preparation.
4. The people of the village were told regarding the importance of the proper food handling & preparation.

The outbreak of food borne gastroenteritis in the village Pancilla, Barasat Block I, West Bengal, India was probably due to contamination of the curd from the person who had prepared it. He was suffering from *Staphylococcus aureus* infection of the skin and respiratory tract, which may be transmitted through the skin or the respiratory passage to the curd

Recommendations:

The following recommendations were placed before the chief medical officer of health of the district.

1. All the food shops including sweet shops should have food license and quality of the foods have to be tested periodically
- 2 the food item makers should be educated regarding food hygiene and safety.

Discussions:

Contamination of food is possible by many ways. Raw materials, prepared foods and the other articles like water and utensils may also be the source of contamination. It may be pathogens but faults during storage, preparation and handling stages. Though cooking kills some in storage and handling may make it re-contaminated. The persons who come in contact with the food in different ways may also be the carrier of the infection. The cause may be infection with microorganisms, or parasites or it may be contaminated by some chemical substances. Heavy metals and poisons used in agriculture may often cause food contamination causing outbreaks. There are some bacteria normally present in the environment; on occasion they may cause food contamination. *Staphylococcus aureus* is peculiar in this regard. It is a common pathogen present in the skin, respiratory passage and hair of some normal persons. These are easily transferred to food and cause food borne illness. In these infections the symptoms are usually mild, often not be able to recognize and the detection of the causative organism is not possible always. These infections are due the enterotoxin, produced by the organisms which act on the receptors in gut that transmit impulses to medullary centers. In *Bacillus cereus* food contamination, the symptoms are vomiting and diarrhea, but they start appearing 8 to 16 hours of ingestion. Usually the vehicle in this type of contamination is fried rice. In *enterotoxigenic E.coli* food poisoning the acute onset watery diarrhea starts 24 – 48 hours after ingestion. There may be muscle cramps. They last for 1-2 days. In cholera, large amount of watery diarrhea starts 8 to 24 hours after food. In *Shigella* infection, abrupt onset of bloody diarrhea, cramps, tenesmus and fever starts 12 to 30 hours after

having food. Food should be taken fresh and should not be stored for a long time in the normal temperature. The young, very old and those with weakened immune system are especially at risk of food borne illness. Usually food borne illnesses are mild in nature but it may cause havoc, even death of persons. All concerned with food handling should have the knowledge of food hygiene.

The persons who are having respiratory or skin infections should avoid food items preparation. Similarly individuals coming in contact with different food sources should be careful in this regard.

Figure 1: Frequency distribution of symptoms of gastroenteritis cases at Pancilla village, West Bengal, India, 2007

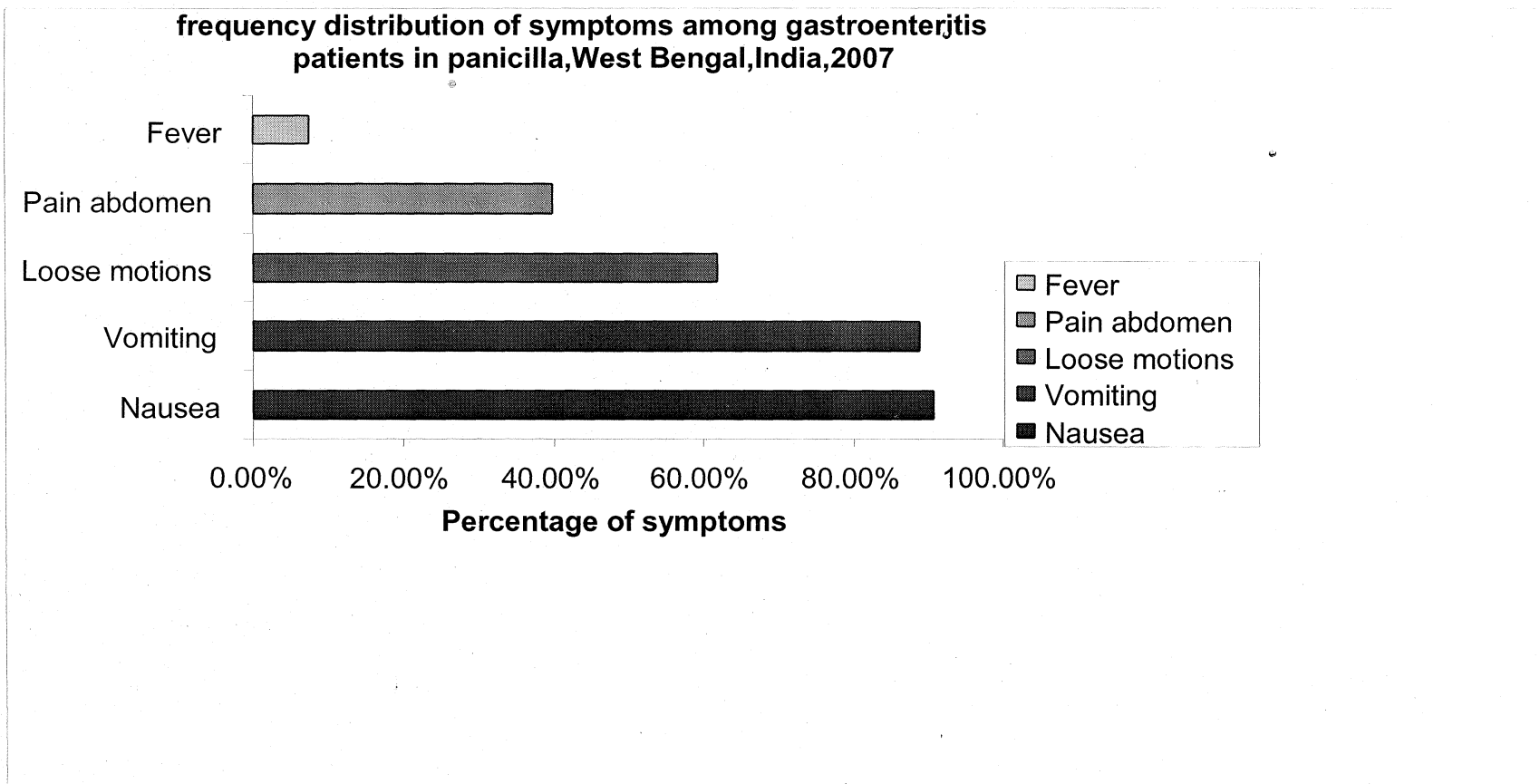


Figure 2. Epicurve showing the number of cases of gastroenteritis by time of onset Panicilla, West Bengal, India, 2007

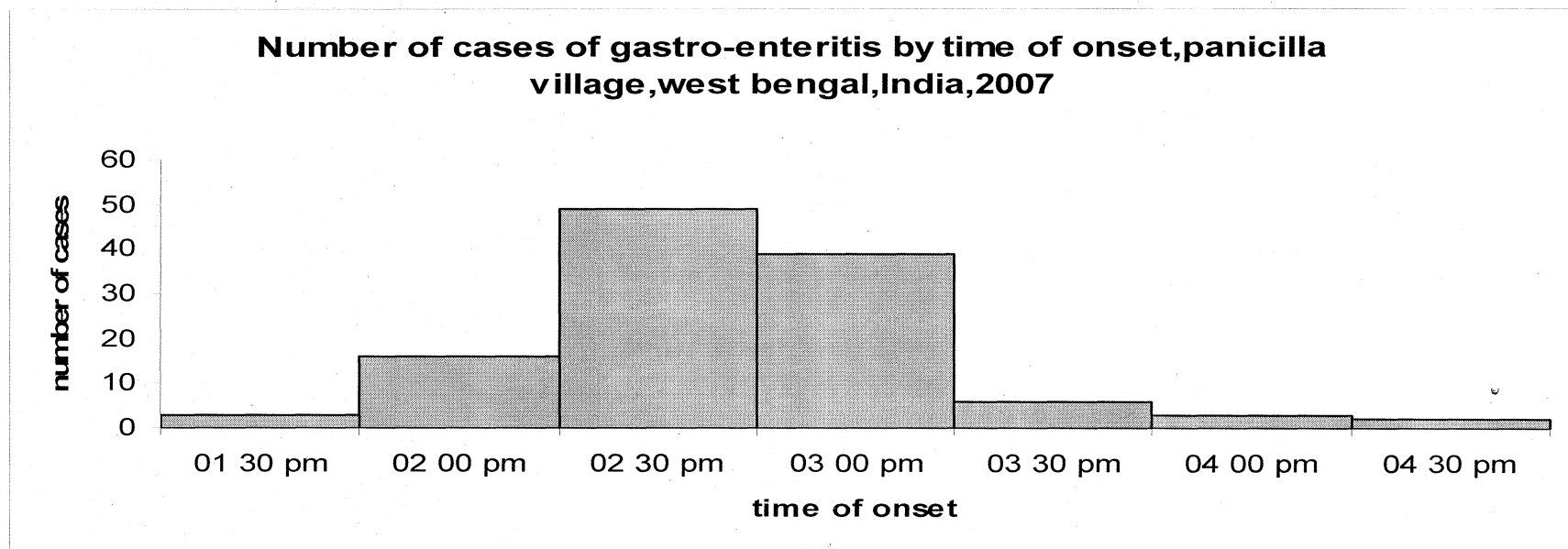


Table 1: Attack rates of gastro-enteritis by age and sex, Panicilla village, Barasat I, West Bengal , India, 2007

		Number of cases	Population	Attack rate
Age group (In years)	0-4	8	22	36.36 %
	5-14	35	53	66.03 %
	15-44	53	125	42.4 %
	45- 59	13	24	54.16 %
	60 +	9	13	69.23 %
Sex	Male	70	134	52.25 %
	Female	48	103	46.75 %
Total		118	237	

Table 2: Comparison of incidence of illness among those who ate and who did not selected food items, Panicilla, West Bengal, India, 2007

Incidence among those who ate					Incidence among those who did not eat				Relative risk	95% CI	PAF%
Food item	Ill	Not ill	Total	Attack rate (%)	Ill	Not ill	Total	Attack rate (%)			
Rice	104	118	222	46.84	14	1	15	93.33	0.5	0.06 -- 3.89	
Dal	106	117	223	47.53	12	2	14	85.71	0.55	0.12-- 2.53	
Shukto	102	84	186	54.83	16	35	51	31.37	1.74	0.9 -- 3.37	23
Vegetables	98	77	175	56	20	42	62	32.25	1.73	0.94 -- 3.19	24
Brinjal fry	105	115	220	47.72	13	4	17	76.47	0.62	0.19 -- 1.97	
Fish curry	101	82	183	55.19	17	37	54	31.48	1.75	0.92 -- 3.34	19
Chatny	106	114	220	48.18	12	5	17	70.58	0.68	0.18 -- 1.96	
Papad	105	115	220	47.72	13	4	17	76.47	0.62	0.19 -- 1.97	
Curd	107	56	163	65.64	11	42	53	20.75	3.16	1.85 -- 7.89	45
Sweets	92	74	166	55.43	26	35	61	42.62	1.3	0.85 -- 2.68	13

SECTION.2

SECOND FIELD POSTING

o

Blood safety programme in North 24 Parganas district of West Bengal, India, 2008 --- an evaluation

“Despite all technological marvels that humanity is experiencing, a reliable and safe blood supply is still out of the reach for untold millions of people around the world”.

Director General, WHO, World Health Day 2000.

INTRODUCTION AND BACKGROUND:

Blood is an essential element of human life, and there are no substitute. Blood transfusion services occupy a vital space in any National Health Service delivery system. It is also a scarce resource. The availability of safe and adequate blood saves lives of millions. If not properly screened, however, blood becomes a conduit for transmitting life threatening infections, e.g., hepatitis B, hepatitis C, HIV/AIDS, syphilis and malaria.

While no blood transfusion is completely safe, countries with a well-managed blood transfusion service, such as Japan, USA and the Western Europe have achieved commendable levels of blood safety; yet make no claims to providing 100% infection free blood. The frequency of viral transmission, per unit of blood transfused in the USA, is estimated as 1 in 103,000 for HCV, 1 in 63,000 for HBV and 1 in 493,000 for HIV.¹

Developing countries account for 80 % of the population, but contribute only 40 % of the global blood supply. More than 60 % of the blood supply in developing countries is collected from family / replacement donors and paid blood donors, who are at a significantly higher risk for transfusion-transmissible infections than voluntary donors.² In 2002, 39 countries, of which five were developing, had achieved 100% collection from voluntary, non

remunerated donors. By 2004, this has risen to 50 countries. Out of the 11 new countries that achieved this, three were least developed countries.³ Shortfalls in blood supply have a particular impact on women with pregnancy complications, trauma victims and children with severe life-threatening anaemia.⁴ As per WHO Global data Base 2002, data from 178 countries indicates that out of 83 million units of blood collected annually, 13 million units are not screened for HIV or other transfusion-transmissible infections (TTI). Till the mid-nineties, up to 8 per cent of new HIV infections in India were attributed to the transmission of unsafe blood. Currently, and largely on account of overall improvement in the quality of blood and blood products, less than 3 percent of new HIV infections are traceable to the transmission of unsafe blood.⁵ Reliable nationwide figures for viral transmission are not available in India.

The provision of safe and adequate blood supply at national level is the responsibility of the government/national health authority of each country. Blood Transfusion Services (BTS) should be established in accordance with the agreed national blood policy and plan and within a legislative framework. It should be responsible for establishing and maintaining a national quality system, including the development of guidelines and standards, staff training, a data/information management system and a system for monitoring and evaluation of all blood transfusion activities.⁶

In India, there is a long history of formulating a national blood policy. After a long debate, Indian National blood policy was adopted in 2002 and it became a part of the National AIDS control programme. The National Blood Policy aims at ensuring easy accessibility and adequate supply of safe and quality

blood and blood components collected from Voluntary and non-remunerated blood donors.

Blood safety is an integral part of the National AIDS Control Programme in India. At the State level, in State AIDS Societies, Blood safety officers have been assigned the responsibility to co-ordinate programmes. In order to facilitate the functioning, ' Government of India provides assistance for staff salary, contingency and transportation vehicles. The staff provided under this component is, Joint/ Deputy Director, Technical Assistant and Drug Inspectors.

Objectives of India's National Blood Policy

The major objectives of the Blood Safety Programme is to ensure the easily accessible, adequate supplies of safe and quality blood and blood components for all irrespective of economic or social status. This objective translates into the following responses for which necessary steps were initiated in right earnest.

1. To ensure organized blood-banking services at the State/district level
2. To educate and motivate people about blood voluntary donation voluntarily
3. To enforce quality control of blood.⁷

In West Bengal, there are 109 blood banks, under the control of the state and central government and under some private organisations. It is also a fact that, there is a strong mass movement in the state for voluntary blood donation. During the last few years, the proportion of blood collection from

voluntary donors has increased and presently it is at the top most places in the country.⁸

The voluntary blood donation movement is also strong in the north 24 Parganas district of the state. There was no study in the past to evaluate the blood safety programme in the district.

Under the above circumstances, we have planned to undertake a systematic evaluation of the blood safety programme in the district with the following objectives.

OBJECTIVES OF THE STUDY:

General Objective:

To evaluate the current status of blood safety programme in North 24 Parganas district in the state of West Bengal, India, 2007-08.

Specific Objectives:

1. To evaluate the current status of voluntary non remunerated blood donors recruitment and retention system in the district
2. To assess the existing status of blood storage, processing and testing facilities in the blood banks and
3. To evaluate the current status of rational use of blood and blood products in the district

MATERIALS AND METHODS:

Preparatory activities:

We met the project director of the West Bengal State AIDS Prevention & Control Society (WBSAP&CS) at the Swasthya Bhawan, Kolkata and presented our project. The project director sent us to undertake the project in the district of North 24 Parganas at the Eastern side of the state.

We met the CMOH of the district and presented our project. He sent us to Deputy Chief medical officer of health II (Dy CMOH II). The Dy CMOH-II is the programme officer in the district for the prevention and control of HIV/AIDS. He looks after the blood safety programme in the district.

We identified three important arms of the blood safety programme for our evaluation. The identified arms were - (1) recruitment and retention of voluntary non-remunerated blood donors, (2) the storage, processing and testing of collected blood and (3) the rational use of blood and blood products.

We planned to undertake the study for evaluation of blood safety programme by constructing a logic model with input, process and output and identifying certain indicators for each of these. We have studied the evaluation as follows:

Study design: Cross sectional descriptive study.

Study period: From 2003 to 2007 with an observation period between 1st December 2007 to 29th February 2008.

Study settings and population: The blood banks in the district, the staffs working in these banks. To evaluate the selection of the donors, we observed some blood donation camps and interviewed selected donors. As there was no training of doctors on rational use of blood in the last few years, we have

restricted our analysis in analysing some requisition forms sent by the clinicians for evaluation on rational use of blood.

Sample size and sampling technique:

We intended to include all the existing blood banks in the district. Of the six blood banks in the district, we found that one blood bank is exclusively working for the defence personnel, so we excluded it from our study. Thus we included five blood banks in the district for the present study.

We also intended to include all the regular staffs working directly for the blood collection, storage, testing and supply. All together, there were 9 doctors, 16 technicians and 6 nursing staffs as regular staffs in these blood banks (N = 31). We could interview all doctors (100%) and all the nursing staffs (100%) but 13 technicians (81.25%). Thus the overall response rate was 90.32 % (28/31).

We were informed that during this time of the year (December to February), on an average one hundred blood donation camps are usually held in the district and average donors are 50 per camp. We decided to select 20% (N= 20) of the camps for observing the blood donor selection procedure and interview 20% of the donors (10 donors per camp) in these camps for assessing the donor motivation, recruitment and retention efforts of the blood banks.

We visited 20 blood donation camps (equally divided among facilities, 4 per blood bank). We selected systematically every third donor in these camps till total ten have been selected for assessing the recruitment, retention efforts of the blood banks. Accordingly we observed and interviewed systematically selected 160 donors from 16 camps conducted by the Govt blood banks and

40 donors from the four camps participated by the private blood bank. Altogether 200 donors were selected for this purpose. Among the donors we interviewed, 80% were male donors. We used the donor screening and registration card as check list for observing the selection procedure. We were told that during this period usual demand in each blood bank on an average 300 to 400 units per month. For assessing the rational use of blood we have decided to review total 300 requisition forms received by each facility during the study period. We systematically selected every third requisition form till the required number (N=300) is reached from each blood bank. Thus, we selected total 1500 forms (1200 from Govt. and 300 from private blood bank).

Study techniques and tools: We used the following techniques for this study

a) review of National guidelines b) available records and reports c) interview of key informants and donors and d) observation of the activities of the staffs at the blood banks and in the camps.

We used a pre-designed schedule for data collection and a checklist for observation of the activities as a tool in the study.

Operational definitions:

We used the definitions recommended by the drugs and cosmetics act of the Govt. of India and NACO guidelines for blood safety throughout the study:

Safe blood: blood that will not transmit any disease to the recipients, it will not cause any adverse reactions and which will serve the purpose for which it is transfused.

Voluntary donor: a person who voluntarily donates blood after he/ she has been declared fit after a medical examination, for donating blood, on fulfilling

the criteria given, without accepting in return any consideration in cash or kind from any source.

Replacement donor: a donor who is a family friend or a relative of the recipient.

Professional donor: a person who donates blood for a valuable consideration, in cash or kind, from any source, on behalf of the recipient and includes a paid or a commercial donor.

Regular donor: any donor who donates blood at least twice in a year.

Blood bank: a place or organisation or unit or institution or other arrangements made by such organisation, unit, or institution for carrying out all or any of the operations for collection, aphaeresis, storage, processing and distribution of blood drawn from donors and/ or for preparation, storage and distribution of blood components.

Blood components: a drug preparation obtained, derived or separated from a unit of blood drawn from a donor.

Blood product: a drug manufactured or obtained from pooled plasma of blood by fractionation, drawn from donors.

Rational use of blood: the use of blood where there is no other alternative available for the benefit of the recipients.

Not rational use of blood: for this study we have decided to term the Blood use is not rational as" Blood used despite the availability of safer alternative therapy such as administration of specific "haematinic" to correct nutritional anaemia. Most requests are for a single unit of blood which rarely, if at all, is of any benefit to the recipient and carries all the risks associated with blood transfusion. The use of single unit of blood should be strongly discouraged.

Use of whole blood should be discouraged. Facilities to prepare blood components should be made available in larger number of hospitals. Administration of components is safer, more effective and is a better utilisation of a scarce human resource". (Ref: NACO guidelines for appropriate use of blood, GOI)

Activities of the blood banks:

Activities of the blood banks were (a) donor recruitment and retention, (b) blood Collection, (c) blood testing, (d) blood processing, (e) storage of blood and blood components, (f) issue of blood and blood components, for use when clinically needed and (g) training of all categories of staffs and motivating community for voluntary blood donation.

RESULTS:

Evaluation in respect to recruitment and retention of voluntary blood donors:

Input:

Blood banks: There were six blood banks in the district. One blood bank works exclusively for the defence personnel, no relation with the community as such. Out of remaining five, Four (4) belonged to the Government of West Bengal and the rest one to a private agency. This is 5.5% of the state (West Bengal has 109 blood banks).

All the blood banks were in operation for last few years and they are all licensed as per the Drugs and cosmetics Act 1945 of the Govt. of India.

Two (50%) of the state Govt blood banks are within the hospital complexes; two are situated isolated in separate building. The private blood bank is situated within the hospital complex but in a separate building.

Infrastructures and Human resources

In the Govt blood banks (N= 4) there are seven (7) doctors, six (6) nurses and twelve (11) technicians. The private blood bank (N= 1) has two (2) doctors, one (1) nurse and four (4) technicians on a regular basis.

All the doctors (N= 9) working in these blood banks are medical graduates. They are not having any degree or diploma in transfusion medicine or pathology. The technicians are diploma holders (12 out of 16, 80%) in laboratory technology (DMLT). They are all having more than one year's experience in the testing of blood. All the sanctioned posts are filled up. The blood banks have human resources as per the establishment table, declared

by the health & family welfare department of the state Govt in 1991 ref GO no : H / MS/ 293/ 1 H-18/87 dated the 20th February 1991 (schedule H).

In one government blood bank, there are two counsellors, joined in the month of November and December 2007 respectively. During the last three months, they have not attended any blood donation camp.

Training status of the staffs:

All the available staffs are trained by the state AIDS prevention & control society in different aspects of blood banking but not on recruitment strategy.

All the blood banks are working under the guidance of the regional blood transfusion council, situated at Nil Ratan sarkar medical college, Kolkata.

Process:

Working hours of the blood banks:

Only one out of four (25%) Govt. blood banks remain open round the clock, others are keeping an on call services beyond official hours.

The private blood bank, located at the district head quarter is open for 24 hours.

Methods for collection of blood:

All these five blood banks collect blood both from camps and in house. The Govt. blood banks usually accept camp proposal on prefixed days, but the private blood bank is available any day of the week. Two (50%) Govt blood banks and the private blood bank used to go outside the district to collect blood from voluntary donors.

Organisation of voluntary blood donation camp: Each blood bank usually receives ten to fifteen proposals per month but it has to refuse three to five proposals. These blood banks do not have any organised effort to motivate

and recruit blood donors. The recruitment of donors is done by different non government organisations (NGO) and mass organisations.

Replacement collection in house: All blood banks excepting one collect blood from replacement/ family donations.

Educational activities:

The blood banks are using the materials published by some NGOs for donors' motivation and recruitment. Sometimes they get educational materials, mostly posters from the state AIDS prevention & control society. Usually the organisers use these materials only on the donation day in the camp area.

Involvement of NGOs: On visiting the district and interviewing the staffs of the blood banks we came to know that there are three NGOs in the district, who are active in voluntary blood donation campaign. They usually coordinate with the government blood banks. With the help of the organisers these NGOs used to organise sensitisation programmes for the prospective donors.

Communication with the donors:

The blood banks do not communicate with the donors to come for repeat donation. There is no organised effort on the part of blood bank staffs to motivate prospective donors.

Collection team: During our visits to 20 blood donation camps, we found two technicians in 17 camps (85%) along with one doctor.

Selection of donors:

The staffs of the blood banks reported that they take history from each and every prospective donor. They reported testing for haemoglobin of the prospective donors.

Emergency medicine at the camp:

All the blood banks reported that they carry one emergency medicine tray with them in camp collection.

Replacement donors:

All blood banks in the district excepting one government blood bank collected blood as replacement in the last three months. In 2007, 6.09 % of the total collection was from the replacement donors. The private blood bank has collected 20.88% of its collection from replacement.

Register of repeat donors and deferral cases:

The blood banks maintain a camp wise register of blood donors. The staffs of the blood banks usually defer some prospective donors in each camp for various reasons.

Outcome:

During the three months of our study, the government blood banks have participated in 96 voluntary blood donation camps and collected 4407 unit of blood (male donors 87.36%). On the other hand, the private blood bank has participated in 21 voluntary blood donation camps and collected 957 units of blood (male donors 81.61%). The government blood banks have collected 82% of the total collection. Overall male donors constitute 86.33% of all donors. In the same period of the last year, the total camps were 98 and collection was 3874.

The government blood banks reported that in 96 to 99% donors they asked the questions related to personal behaviour of the prospective donors, but we could observe the same in 59 to 76% of donors. The staffs of the private blood bank reported that they asked in 85 % to 92.5% of donors but we observed

the same in 82.5% to 85% donors. It has been seen that the questions related with the personal were not asked by the blood bank staffs more rigidly. There is a significant difference in asking these selected questions by the public and private blood bank (p value= 0.002%, Fischer T test).

No blood bank tests the haemoglobin level before donation. Two Govt blood banks (50%) and the only private blood bank used the blood bag weighing device to know the amount of blood taken from individual donor (350 ML).

But during observation of 16 camps participated by Govt blood banks we could find the medicine tray in 11 (68.75%) camps and 4 camps participated by private blood bank we found the medicine tray in 3 (75%) camps. The blood bank staffs reported that they did not get any serious adverse reactions to any of the donors in the last three months.

The blood banks have not produced any educational materials for the prospective donors or the community at large in last one year. The private blood bank has organised a few programmes (exact number not recorded) on awareness in the last six months for the common people.

The blood banks do not maintain any list of repeat donors. On interrogation it was told that on an average they get 5 to 10 percent repeat donors in the camps.

Similarly no blood banks maintain the list of deferral with the reason of deferral. On interrogation it was told that about 5 to 10 persons per camp (10 to 20 %) were deferred by the staffs of the blood banks.

The blood banks do not communicate with the donors subsequently to motivate them for repeat donation.

In 2007, the collection from voluntary donation was 93.91%., less than last year.

EVALUATION IN RELATION TO STORAGE, PROCESSING AND TESTING OF BLOOD:

Input:

Infrastructure and human resources: All blood banks are having their own laboratories. In the blood banks facility for storage and testing are available.

Laboratory and technicians: The technicians are all trained in laboratory testing by the state AIDS control society. One of the staffs looks after the temperature. The standard operative procedure formulated by the National blood policy is applicable for the blood banks in the district.

The regional council of blood transfusion is there to guide the blood banks for maintenance of quality. The Govt of West Bengal has identified the school of tropical medicine as the nodal centre for quality assurances.

Test kits and other materials: The blood banks get all the materials and kits from the state AIDS control society free of cost. There are ELISA readers in two blood banks. They have separate refrigerators for storing the kits.

Quality assurance: The regional reference laboratory has been identified for the quality assurance of the blood banks in the district. For this district, the school of tropical medicine, Kolkata is the reference laboratory.

Process:

Time of tests:

The time interval between arrivals of blood to the actual testing varies between two to forty eight hours.

Place of testing: There should be separate space for virological and serological tests in all blood banks.

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Process:

Time of tests:

The time interval between arrivals of blood to the actual testing varies between two to forty eight hours.

Place of testing: There should be separate space for virological and serological tests in all blood banks.

Processing of blood:

The blood should be processed including the mandatory testing as per the guidelines of the NACO.

The same technicians of the blood banks who have collected blood from the camps do the processing works in the laboratories.

After processing the blood, a label is fixed on the bag with the specific identification number, the date of collection and the name and amount of anticoagulant used.

Testing of blood:

Technicians of the blood banks are testing the blood for grouping, Hepatitis B and C, HIV I and HIV II and for Syphilis (VDRL).

Maintenance of temperature of the refrigerators:

The blood bags were stored in the required temperature at 2 to 4 degree C. One of the available staff usually monitors the thermograph. No staffs are specifically allotted for this job. The test kits are stored in a domestic refrigerator in 2 to 4 degree C temperature.

Biomedical waste disposal:

All the blood banks treat the bio medical wastes as per the guidelines of the biomedical waste disposal Act.

Supply of blood:

The private blood bank supply blood mainly to its own hospital and the other private nursing homes in the district. One (25 %) Govt. blood bank supplies only to its own hospital. The other three (75 %) Govt blood banks are supplying to the Govt. hospitals and different private hospitals and nursing

homes. Usually they supply blood on receiving the requisition from the doctors in a specific form (form number 24A).

Output:

All the blood banks keep the tested blood bags in a separate refrigerator. The refrigerators are marked as "tested blood" and "untested blood" accordingly.

The private blood bank has standard operation practices (SOP) guidelines at all places displayed, but the same was not seen in any of the Govt. blood banks.

The technicians are not using the personal protective devices in any of these blood banks. However, they wash the hands thoroughly before and after blood handling. No blood bank tests the blood for Malaria parasite and Haemoglobin level. They simply write that test has been done and found negative for malaria parasite.

We have got the information that in the last year no instruments and equipment was tested for their quality or calibration. During last six months, no samples were sent to the reference laboratory for cross checking or no person from the reference laboratory visited the blood banks of the district to check the quality of the tests performed.

There is no system of checking the necessity of blood transfusion at the blood banks. They simply supply blood based on requisition, if available, after checking the grouping and cross matching within one to three hours time. They hand over the tested blood, the cross match report and a written direction for carrying blood to the person. The blood banks usually supply blood as per the Government policy.

EVALUATION IN RELATION TO RATIONAL USE OF BLOOD:

Input:

Tested blood: The blood banks store tested blood in the blood banks after the tests.

Trained health care workers: There was no training of doctors in the last few years in the district. Doctors from the district sub divisional and state general hospitals under the public sector and from the private nursing homes used to ask for blood from these blood banks.

Availability of alternatives: The hospitals were provided with required amount of other intravenous fluids round the year.

Process:

Availability of blood round the clock: The blood banks supply blood when they receive requisitions from the attending physicians of the Govt and private hospitals and nursing homes in a specific form.

Training: the blood bank employees were trained in blood banking but the doctors were not trained in rational use of blood.

Transfusion: the hospitals and nursing homes use the blood for their patients.

Output:

As there was no training of doctors on rational use of blood, we have analysed the issue with the requisition forms received at blood banks. About 22% of all requisitions in the Government blood banks and 28% in the private blood bank were for chronic anaemia. 19% of the requisitions in the Government blood banks were for single unit of blood, whereas the private blood bank received

17% requisitions for single unit. Increasing the haemoglobin level of the prospective recipient was the indication of transfusion was seen in 45% of the requisitions. There was no requisition for any blood components received by any of the blood banks during the last three months.

There was no reported shortage of other intravenous fluids during study period from any of the hospitals in the district..

No hospital in the district has a transfusion committee.

DISCUSSION:

The availability and safety of blood depends on multiple steps in the transfusion chain. This starts with a healthy and a motivated population, retention of voluntary non-remunerated donors, processing and testing of all donated blood, availability of blood and blood products, rational use of blood and its components and post-transfusion monitoring of the patient. At every step, any lowering of quality will reflect on the class of the final product. Quality management of blood transfusion services is an all-encompassing concept that needs to be integrated into the working of any blood transfusion service to achieve ideal results.⁹ As a customary the blood banks should motivate the prospective donors from the community. They should recruit the voluntary, non remunerated donors and try to retain them as regular donors. But the blood banks in this district had no efforts during these periods to recruit and retain the donors actively.

The blood banks should visit the donation sites before the camp and they should provide the post phlebotomy advice and cautioned as to possible adverse reactions. For ensuring blood safety, the blood banks shall provide pre and post donation counselling services. All blood banks shall train their donor organisers / medical officer to undertake counselling. The blood banks of the district did not organise any such programme in the last year. They were dependant on the NGOs and other mass organisations.

The drugs and cosmetics Act 1945 in India has provided a clear guideline for selection, deferral of blood donors. These guidelines are mandatory for all concerned. It has been shown by many studies that the voluntary, non remunerated donors are the safe source of blood. Even the replacement

donors may not always be safe as there is a possibility that professional donors may enter in the form of a relative or friend.¹⁰ So selection of donors must be done with caution. In India, on an average 52% of the donors are voluntary and 48% are replacement donors.¹¹

Many countries including India have banned collection from professional blood donors. In India, no person is allowed to donate blood and no blood bank is allowed to draw blood from a person more than once in three months. Donors should be screened with a careful history and appropriate laboratory screening tests on each unit of blood. These directives are not followed in the district.¹²

The blood bank should assess the haemoglobin (Hb%) level of the prospective donor by copper sulphate solution with specific gravity 1.053 equivalent to 12.5 gram% of haemoglobin. The level shall not be not less than 12.5 Gm% or the packed cell volume (PCV) shall not be less than 38%. Blood bank should not depend on the clinical estimation of haemoglobin by examining the colour of the tongue or conjunctiva.¹³ If blood is collected from a donor with 12.5 Gram% of Hb, then the recipient may get 0.5 to 0.75Gm% increase in his/ her Hb% by each such unit of blood. According to the directives from the apex court, following a public litigation, it has been made compulsory in India that all the blood has to be tested for HIV, Hepatitis B and C, Malaria and Syphilis. Maintenance of good laboratory practice is one of the most important components of bio medical waste management and handling rules.

2 to 5 % of all samples and all reactive samples of the donated blood on mandatory testing of blood banks would be sent to the department of Virology, school of tropical medicine or to the nearest microbiology department of

medical colleges for cross checking. In addition to this, surprise visit to the blood banks by the representative from the school of tropical medicine or from concerned microbiology department or official assigned for such visit would collect the random samples for cross check in any microbiology department of any medical college. The institute will act as the nodal center for external quality assurance as per guidelines of NACO.¹⁴, This aspect of blood banking is grossly inadequate in the district.

According to the world health organisation, to meet the requirement of safe blood of any country a minimum of 1 % of its population should voluntarily donate blood annually. The total population of the district is 10 million as on 2007. The requirement of blood may be assessed on the basis of number of hospital beds with a criterion laid down by WHO of 6 to 16 units (average 11 units) of blood per hospital bed. In North 24 Parganas district, there are 3021 beds in 542 government institutions and 3493 beds in 225 registered nursing homes. Accordingly the district may require 71654 unit blood units annually.

In India public sector blood banks collect only 52 per cent of blood from voluntary donations. The blood banks of this district collected 95% of blood from voluntary donors. The district has increased its collection from voluntary blood donors in successive years. (Table). It has been reported by the staffs of the blood banks and some NGO members that the other blood banks from Kolkata are collecting blood from this district almost regularly. One NGO activist reported that the average number of such camp per month would be not less than 15 and the annual collection would be around 10000 units. These figure usually do not shown in the districts overall collection amount. At present rate, the district is collecting about one fifth of its requirement as par

WHO. If the amount collected by the other blood banks is added in the district account and the facilities of components are available in the district there will not be any shortage of blood in this district. Actually, human body requires blood components most of the time than whole blood. Whole blood consists of several components; Red Blood Cells, Platelets and Plasma, and the plasma itself contain a variety of proteins. It is also known that most developing countries depend on whole blood than blood components. In India, 80 % of blood used is whole blood. WHO recommends that the ratio of the use of blood components to whole blood should be 90:10, since only a limited category of clinical interventions requires whole blood. Use of blood components instead of whole blood, known as "Blood Component Therapy", allows several patients to benefit from one unit of donated whole blood. Promoting blood component therapy would bring down the requirement of whole blood by as much as 60 to 70 %. Administration of components is safer, more effective and is a better utilisation of a scarce human resource.¹⁵

We know that one unit of whole blood can give 4 blood components and thereby meet the requirements of four patients. There is no facility of blood components separation in the blood banks of the district. Clinical use of blood is not monitored. As a result, many transfusions are clinically unnecessary, providing little or no benefit to the patients who receive them and wasting a scarce resource that may result in a shortage of blood and blood products for patients in real need.

According to annexure II of the guidelines of the WBSAP & CS , there should be a hospital transfusion committee for the blood banks , comprising of surgeons, obstetricians & other clinicians with the superintendent as the

chairman. In North 24 Parganas district there is no such committee in any of the hospitals.

In India, blood banks and blood transfusion centres operate in total isolation; their standards vary from state to state, city to city, and from one centre to another centre in the same city. The hospital based decentralized blood banking system has led to a skewed distribution of resources and makes difficult any implementation of a stringent quality control program.

CONCLUSION:

After going through the process of collecting data and evaluating the performance of the blood banks in the district of north 24 Parganas in West Bengal we have concluded that -

The blood banks in this district have no active role in motivating the community for voluntary blood donation. They did not produce any educational materials in the last year.

The recruitment and retention of voluntary blood donors is totally dependant on the non government organisations. The blood banks only participate in the collection.

The selection criteria are not fully maintained. The questions regarding the personal risk factors were not asked rigidly.

The prospective donors were assessed clinically for their haemoglobin level.

The blood banks do not maintain any register for repeat donors and deferral cases. They do not communicate with the donors subsequently after one time donation. All the donors in the camps are recorded as new donors in the district.

The blood banks do not collect the required amount of blood from the donors.

Collection from the replacement donors is going on in the district.

The storage, processing and testing of collected blood is done by the same technicians who participated in the camp collection. The medical officer acts as the supervisor technical person.

The blood bags are stored in the required temperature (2-4° C). No staffs are specifically made responsible for temperature maintenance.

No separate laboratory for the serology and virology tests in 75% of the government blood banks.

On an average, the tests are done within 48 hours of collection. The blood banks test all the blood as per guidelines, except malaria and haemoglobin.

Majority of the blood banks do not have standard operative procedure.

The technicians are not using the personal protective devices regularly. They only use hand washing technique.

The quality assurance is not practised by the blood banks. The cross checking of the laboratory is not in practice in these blood banks. No equipment from any blood bank was calibrated in the last six months.

There was no training of doctors on rational use of blood in the district in the last one year. The blood banks deal with only the whole blood. There is no component facility in the district.

The requisitions have shown that a good number of requisitions are for single unit of blood and majority were intended to raise the haemoglobin level of the prospective recipients.

RECOMMENDATIONS:

After going through the evaluation process we would like to place the following recommendations to the district health authority.

For recruitment and retention of voluntary non remunerated donors:

- 1) All the staffs of the blood banks should be trained in recruitment strategies
- 2) There should be separate staffs for camp collection and testing in the blood banks
- 3) The staff pattern needs revision. There should be at least three medical officers and five technicians per blood bank. This will help to keep the services open round the clock and to accommodate all the camp collection proposals.
- 4) The blood banks should have separate fund for producing educational materials to organise regular programme to recruit voluntary non remunerated donors and for further communication to retain them.
- 5) They should maintain separate register with contact details of all the donors, both new and repeat and they should encourage the regular donors

o

For storage, processing and testing of blood:

- 1) The blood banks should be at a properly identified place and illuminated. The disposition of areas should be according to the recommendations in the national guidelines.
- 2) They should organise regular training and retraining programme for the doctors and other health workers for different aspects of blood use.
- 4) The blood banks must perform all the mandatory tests with each unit of blood collected.
- 5) There must be separate space for serology and virology tests.

6) The SOP should be adhered to and the referral center should keep its supervision regular.

For rational use of blood:

1) The doctors should be trained on rational use of blood with out further delay.

2) Efforts should be made to establish at least one component separation unit in the district.

3) There should be a programme for post transfusion surveillance of the recipients for transfusion transmissible infections.

4) There should be a hospital transfusion committee in each and every hospital.

Blood Safety

Checklist World health organisation 2002

Blood transfusion service

- | | |
|---|-----------------------------------|
| ☐ Government commitment and support | available in the entire country |
| ☐ National blood policy/plan | declared in 2002 |
| ☐ Legislation/regulation | available |
| ☐ Organization with responsibility and authority for the BTS | available |
| ☐ BTS management committee | not available in the district |
| ☐ BTS medical director in charge | one medical officer is acting as |
| ☐ BTS quality manager | not available |
| ☐ Specialist BTS advisory groups | not available |
| ☐ Trained BTS administrative and technical staff | all staffs in the blood banks are |
| ☐ Adequate budget | decided at the state level |
| ☐ National quality system | available |

Blood donors

- | | |
|---|----------------|
| ☐ National blood donor programme officer | not known |
| ☐ Blood donor unit | available |
| ☐ Blood donor recruitment officer | not available |
| ☐ Standard operating procedures | not available |
| ☐ Training of staff in blood donor unit | trained |
| ☐ Low-risk donor populations | not methodical |

☐ Educational materials	occasional available mostly by
NGO	
☐ Register of voluntary non-remunerated blood donors	not maintained
☐ Donor selection, deferral, care and confidentiality	not maintained in 100% cases
☐ Donor notification and referral	not done
☐ Monitoring of TTIs	not done
Testing of donated blood	
☐ Technical officer	not available
☐ Screening strategies and protocols	available
☐ Training of laboratory technical staff	trained
☐ Screening of all donated blood for TTIs	except malaria all tests
☐ Blood grouping and compatibility testing	done
☐ Good laboratory practice, including bank available	only at barasat cancer blood
standard operating procedures (SOPs)	
☐ Continuity in testing	available
☐ Effective blood cold chain	maintained
Clinical use of blood	
☐ National policy and guidelines on the clinical use of blood	available
☐ Training of clinicians and BTS staff	no training for clinicians
☐ Prevention, early diagnosis and treatment	not available
☐ Alternatives to transfusion (crystalloids	available

and colloids)

- | | |
|--|-----------|
| ☐ Effective clinical use of blood | not known |
| ☐ Monitoring and evaluation | irregular |

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Table1: Facility wise distribution of responses on selected questions on donor selection as reported and observed during blood donation camps in North 24 Parganas, West Bengal, India, 2007-08

Criteria	Reported (%) (N = 200)		Observed (%) (N= 200)	
	Govt 160	Private 40	Govt 160	Private 40
Q 12. have you received blood or blood products in the last 1 year/	158(98.75%)	36 (90%)	121(75.63%)	34 (85%)
Q 13.have you any reason to believe that you may be infected by either hepatitis, malaria,HIV/AIDS and/ or venereal disease?	157(98.13%)	37 (92.5%)	112 (70%)	33 (82.5%)
Q 14.persons who inject themselves with drugs, have multiple sexual partners or partners of same sex are more likely to be infected with virus causing AIDS. Do you practice any of the above?	154(96.25%)	34 (85%)	94 (58.75%)	34(85%)

Table 2: the facility wise distribution of requisition forms analysed for studying the rational use of blood in North 24 Parganas, west Bengal, India, 2007-08

Indications	Government blood banks requisitions N= 1200 (%)	Private blood bank requisition N= 300 (%)	Overall in the district N = 1500 (%)
Anaemia	264 (22%)	84 (28%)	348 (23%)
Single unit requisition	226 (18.83%)	52 (17.33%)	278 (18.53%)
To increase Hb level	547 (47.25%)	138 (46%)	685(45.67%)
Haemoglobin level quoted	768 (64%)	268 (89.33%)	1036(69.07%)

Table 3 : Year wise collection of blood in the district of North 24 Parganas, West Bengal, India, 2003-07.

Year	2003 No (%)	2004 No (%)	2005 No (%)	2006 No (%)	2007 No (%)
Voluntary collection	10807 (89.31)	9970 (93.17)	11960 (96.89)	14368 (96.44)	18411 (93.91)
Replacement collection	1293	731	384	531	1194
Total collection	12100	10701	12344	14899	19605

Table 4: Collection of blood from different sources and the tests done in the blood banks in North 24 Parganas, West Bengal, India, 2007. .

Tests	Voluntary collection N= 18411	Replacement collection N= 1194	Total collection N= 19605
HIV test	18411	1194	19605
HIV positive (%)	48 (0.26%)	1 (0.08%)	49
Hepatitis B test	18411	1194	19605
Hepatitis B positive (%)	194 (1.05%)	6 (0.5%)	200
Hepatitis C test	18411	1194	19605
Hepatitis C positive (%)	74 (0.4%)	0	74
VDRL test	18411	1194	19605
VDRL positive (%)	82	4	86

Recruitment & retention of vol donors	Indicators	Data needed	Data collection method	Evaluation design
Blood bank	Proportion collects	Proportion takes part Total blood banks	Review of records Interview	Observational study
Technicians	Proportion available	Proportion takes part Total number	Review of records	Observational study
Counsellors	Proportion available	Proportion takes part Total number	Review of records	Observational study
Collection team	Proportion available	Proportion takes part Total number	Review of records	Observational study
Transport	Proportion available	Proportion takes part Total number	Review of records	Observational study
NGO	Proportion available	Proportion takes part Total number	Review of records	Observational study
IEC materials	Proportion distributed	Proportion distributed Total published	Review of records	Observational study

Recruitment & retention of vol donors	Indicators	Data needed	Data collection method	Evaluation design
Blood onation camp	Proportion of camps held	Proportion held Total camps planned	Review of records	Observational study
Replacement collection	Proportion of replacement	Proportion of replacement Total collection	Review of records	Observational study
Training	Proportion of staffs trained	Proportion trained Total number	Review of records	Observational study
Counselling	Proportion of donors counselled	Proportion counselled Total donors	Review of records	Observational study
Sensitising sessions	Proportion of sessions held	Proportion of sessions held Total planned	Review of records	Observational study Survey
Communication	Proportion of donors contacted	Proportion contacted Total donor	Review of records	Observational study Survey
IEC materials	Proportion used	Proportion used Total distributed	Review of records	Observational study
Recruitment & retention of vol donors	Indicators	Data needed	Data collection method	Evaluation design
Blood collected	Proportion of target achieved	Proportion of target filled Total target	Review of records Interview	Observational study
Voluntary donors	Proportion of vol donor	Proportion of vol donor Total donors	Review of records	Observational study
New donor	Proportion of new donor	Proportion of new donor Total donor	Review of records	Observational study Survey
Repeat donor	Proportion of repeat donor	Proportion of repeat donors Total donors	Review of records	Observational study Survey
Informed donor	Proportion of informed donor	Proportion of informed donor Total donors	Review of records	Observational study Survey

Storage, Processing & Testing of blood	Indicators	Data needed	Data collection method	Evaluation design
Standard operative procedure	Proportion of items used	Proportion used Total items	Review of records Interview	Observational study
Trained technicians	Proportion takes part	Proportion takes part Total staffs	Review of records	Observational study
Kits	Proportion of kits used	Proportion used Total available	Review of records	Observational study
Fund	Proportion utilised	Proportion utilised Total available	Review of records	Observational study
Quality assurance	Proportion of samples retested	Proportion of sessions held samples retested	Review of records	Observational study
Refrigerators	Proportion utilised	Proportion contacted Total tests done	Review of records	Observational study

Storage, Processing & Testing of blood	Indicators	Data needed	Data collection method	Evaluation design
Training	Proportion training held	Proportion of training held Total planned	Review of records Interview	Observational study
Testing	proportion of tests done	Proportion tests done Total tests	Review of records Interview	Observational study Survey
Monitoring & supervision	Proportion of visits made	proportion of visit made Total visits planned	Review of records	Observational study
Temperature maintenance	Proportion of recorded temp	Proportion of temp seen Total available	Review of records	Observational study
Discard of Wastes	Proportion of blood discarded	Proportion of blood discarded Total blood	Review of records	Observational study
Personal protection equipments	Proportion of staffs used	Proportion of staffs used PPE Total staffs	Review of records	Observational study
Storage, Processing & Testing of blood	Indicators	Data needed	Data collection method	Evaluation design
Blood stored at right temp	Proportion training held	Proportion of training held Total planned	Review of records Interview	Observational study Survey
Tests done	proportion of tests done	Proportion tests done Total tests	Review of records	Observational study
Tested blood available	Proportion of visits made	proportion of visit made Total visits planned	Review of records	Observational study

Rational use of blood	Indicators	Data needed	Data collection method	Evaluation design
Tested blood available	Proportion of tested blood given	Proportion of tested blood given Total blood given	Review of records Interview	Observational study
Tested components available	Proportion of components available	Proportion of components given Total supply	Review of records	Observational study
Trained health workers	Proportion of HCW s trained	Proportion of HCW trained Total HCW	Review of records	Observational study
Alternative fluids available	Proportion of alternative fluid available	Proportion of alt fluid used Total transfusion	Review of records	Observational study
Rational use of blood	Indicators	Data needed	Data collection method	Evaluation design
Blood requisition	Proportion of requisitions met	Proportion of tested blood asked Total fluid asked for	Review of records Interview	Observational study Survey
Components requisitio	Proportion of components met	Proportion of components asked for Total fluid asked for	Review of records Interview	Observational study Survey
Training of HCWs	Proportion of HCW s trained	Proportion of HCW trained Total HCW	Review of records	Observational study
Requisition of fluids	Proportion of alternative fluid asked for	Proportion of alt fluid asked for Total fluid asked for	Review of records	Observational study
Rational use of blood	Indicators	Data needed	Data collection method	Evaluation design
Tested blood supplied	Proportion of requisitions met	Proportion of tested blood asked Total fluid asked for	Review of records Interview	Oservational study Survey
Components supplied	Proportion of components met	Proportion of components asked for Total fluid asked for	Review of records Interview	Oservational study Survey
Trained HCWs	Proportion trained used blood	Proportion of HCW trained Total HCW	Review of records	Oservational study
Fluids supplied	Proportion of alternative fluid supplied	Proportion of alt fluid asked for Total fluid asked for	Review of records Interview	Oservational study Survey

Description and Evaluation of the surveillance system for HIV infection in district North 24 Parganas, West Bengal, India, 2007

INTRODUCTION & BACKGROUND:

The history of HIV and AIDS is in its third decade. The number of people living with HIV is now estimated at 33.2 million (30.6 million to 36.1 million). The prevalence percentage of HIV among adults has levelled off (0.8 % prevalence since 2001). The global number of new HIV infections has decreased. There were an estimated 2.5 million (1.8 million to 4.1 million) new infections in 2007, down from 3.2 million (2.1 million to 4.1 million).¹

The number of people who died due to AIDS related illnesses has declined in the last two years to 2.1 million (1.9 million to 2.4 million). The reduction is due to (1) major improvements to UNAIDS and WHO methodologies – recently endorsed by independent international experts, (2) better surveillance system in some countries and (3) changes adopted in some key epidemiological assumptions.¹

The revised estimate for India combined with important revisions of estimates in five Sub Saharan countries (Angola, Kenya, Mozambique, Nigeria and Zimbabwe) account for 70 % of the reduction in HIV prevalence as compared to 2006 estimates.

In India, the new and more accurate estimates of the HIV show that around 2.5 million people were living with HIV in 2006- lower than the previous estimate of 5.7 million and the national level prevalence among 15 to 49 years age group is 0.36 %. The total AIDS cases reported since 1991 to October 2007 was 1,94,697.² This data came from expanded and improved

surveillance including a national house hold survey and the use of more robust and enhanced methodology¹.

In India, HIV affects mainly the productive age groups (15 to 49 years). Both sexes are equally affected. Majority (86%) of these infections were due to unsafe and unprotected sexual practices. Usually the marginalised and the poor suffer most. It is mostly confined among the high risk groups. Facility for treatment is not accessible and affordable to majority of them. The union government has initiated fresh steps to control the situation with National AIDS control programme III (NACP III , 2007 - 2012).

The Indian state, West Bengal is a low prevalent state. The first HIV infection from the state was reported in 1986. Since the upward surge noticed in 2001, the state AIDS control programme has taken all possible steps to detect the infections at the earliest opportunity by increasing the number of voluntary counselling and testing centres. The blood banks have been equipped with the facility of all compulsory tests including tests for HIV I and II. Prevention of parent to child transmission programme is going on in different institutions. Different targeted intervention projects have been undertaken to monitor the trend in the specific groups over the time. In 2006 07, there were 103 blood banks, 32 VCTCs, 27 PPTCT centres, 33 STD centres and 2 ART centres. In 2007, there were 13,385 HIV positive people and 3175 AIDS patients in the state.³

North 24 Parganas district of West Bengal shares 11.14 % of the state population on 4.61 % state land area. The district has a long international border on its east and cross border migration is a regular feature here. It also has a wide area of industrial zone, having a pool of migratory workers.³ It is

reported that a large number of people from this district frequently go to other states for livelihood and better income. They used to come to their families in vacations. Through the international highway in the district huge number of trucks and other vehicles move. All these have led this district a vulnerable one for HIV infection.⁴

Under these circumstances we would like to describe and evaluate the existing surveillance system in relation to HIV in the district of North 24 Parganas, West Bengal, India in 2007.

The objectives of the study are:

- 1) To describe the existing surveillance system for HIV/AIDS in the district
- 2) To evaluate the system in terms of the sensitivity, simplicity, acceptability, flexibility, representativeness, timeliness and cost.
- 3) To determine whether the system met the UNAIDS / WHO / NACO / WBSAP & CS guidelines and
- 4) To place recommendations to the district health authority to improve the system

HIV SURVEILLANCE IN INDIA:

In 1985 Indian council of medical research (ICMR) started screening of blood from high risk groups at national institute of virology, Pune, and Christian medical college of Vellore to determine if HIV was present in India. The first case of HIV was detected in 1986 in Chennai. Surveillance activities expanded to cover the country for identification of geographic spread of infection and major mode of transmission. In 1993 a sentinel surveillance system was introduced with a predefined scientific protocol. Since 1998 ,the

National AIDS control organisation (NACO) in collaboration with the national institute of health & family welfare (NIHFW) and the national institute of medical statistics (NIMS), the Indian council of medical research (ICMR), have been conducting annual rounds of HIV surveillance in designated sentinel sites all over the country. Over the years, the number of sentinel sites has increased from 180 in 1998 to 703 in 2005 to 1122 sites in 2006. The sentinel sites cover many areas like STD clinics, ANC clinics, injecting drug users (IDU), man having sex with man (MSM), and tuberculosis treatment sites.⁵

HIV SURVEILLANCE IN WEST BENGAL:

In west Bengal, the sentinel surveillance was started from 1998 with 6 sentinel sites, 3 in ante natal clinics and 3 in sexually transmitted diseases. In 2007 there are 47 sentinel sites in the state distributed in 13 ANC clinics, 12 STD clinics, 5 clinics for injecting drug users, 3 for men having sex with men, 9 for the female sex workers, 5 for the truckers and one for the migrant labours as target intervention projects. There were, however, considerable differences in the prevalence rates from district to district.⁶

Besides these there are other programmes and targeted intervention (TI) projects like the integrated counselling and testing centres (ICTC), the routine screening of the collected blood units in the blood banks, the prevention of parent to child transmission (PPTCT), and other targeted interventions for the female sex workers (FSW), men having sex with men (MSM) etc for providing routine surveillance data in HIV.

OBJECTIVES OF HIV SENTINEL SURVEILLANCE:

The objectives of HIV sentinel surveillance are:

- 1) To provide an understanding of the spread of HIV infection by determining the level of infection in different states and identifying pockets of high prevalence (hot spots),
- 2) To determine the geographical distribution and time trends of infection, to provide information for prioritisation of resources and evaluation of the national response,
- 3) To estimate number of people infected with HIV in the country, utilising the HSS data in the absence of any other reliable community based data,
- 4) To identify data to facilitate the integration of HIV/AIDS and reproductive & child health (RCH) under the national rural health mission (NRHM).⁷

MATERIALS AND METHODS:

Preparatory phase:

We have visited the office of the project director of the West Bengal state AIDS prevention & control society (WBSAP&CS) at the Swasthya Bhawan, Kolkata and met the project director. We briefed him about our project and he referred us to the chief medical officer of health (CMOH) and the deputy chief medical of health II (Dy CMOH II), the programme officer, of North 24 parganas district for the district level information. Accordingly we met the CMOH and the Dy CMOH II of the district and presented our plan for their information and guidance.

Data collection:

We collected the necessary information from the office of the Dy CMOH II and from different sentinel sites. We collected information by reviewing the records and reports of different programmes in the district. We also conducted interviews with some of the stake holders of the programme at the district and sentinel sites level with pre designed structured questionnaire. We have reviewed different literature and guidelines from different agencies, like NACO, WHO and UNAIDS.

We would like to present the findings in two parts – (1) the description of the existing surveillance system and (2) the evaluation of the system in respect of some selected attributes.

DESCRIPTION OF THE EXISTING SURVEILLANCE SYSTEM:

Sentinel surveillance:

It is the most common form of surveillance in HIV/AIDS. The HIV sentinel surveillance system (HSS) in India involves carrying out cross sectional studies of HIV sero-prevalence (also known as prevalence survey) at regular intervals among selected groups of people. This population are also referred to as sentinel groups. With HSS, the trends in HIV infection are monitored over time by group and by place. Sentinel surveillance is carried out once in a year to look at HIV infection trends. The annual round of HSS is conducted in designated sentinel sites for three months during the last quarter of the year. These sites were chosen as blood is already being drawn for some other purpose and a part of it could conveniently be separated and tested for HIV in an unlinked anonymous manner during a specific period of the year. Trends are estimated from 400 samples from low risk group sites and 250 samples

from high risk sites. In both the groups the persons selected are 15 to 49 years of age with certain other selection criteria. The exact dates fixed up by the NACO. The HSS is being conducted in all the states of the country.

At the site level, there is one sentinel site in charge. At the HIV testing laboratory, one person is designated as in charge of the testing site.

II .Routine surveillance:

Integrated counselling and testing centre (ICTC): previously it was known as voluntary counselling and testing center (VCTC). They are established to facilitate people to have their doubts cleared by professionally qualified, specifically trained counsellors. After counselling and having obtained the informed consent the counsellors send the clients for the tests. Qualified laboratory technologists are there in these VCTCs. They do the tests as per guidelines of the national AIDS control organisation (NACO). People may directly walk in these centres or they may be referred to these centres by the treating physicians. The clients are offered the pre & post test counselling services. The counsellor and the laboratory technologist prepares the reports and send the same to the state AIDS prevention and control society on a monthly basis in a structured proforma with a copy to the deputy chief medical officer of health II of the district.

Blood banks: blood banks are conducting the passive surveillance in HIV by screening all the blood units collected. As per national guidelines they test the blood with one antigen for assessing blood safety. The blood banks test for HIV I and II. These blood banks submit the monthly reports to the district and state nodal officer.

PPTCT: The centre is usually attached with the ante natal clinic of the hospital. There are one counsellor and a laboratory technologist appointed for this purpose. The expectant mothers are counselled by the counsellors. After counselling and obtaining the written informed consent they are referred to the laboratory technologist for testing. The testing is done as per the national guidelines maintaining the confidentiality. Usually three tests are done in this PPTCT centre. The counsellor and the laboratory technologist prepare the monthly report and send them to the state AIDS prevention and control society with a copy to the district programme officer.

Population under surveillance:

1. **Sentinel surveillance:** the people who are attending the designated sites in the antenatal clinic or the clinic for the female sex workers or their clients as the case may be during the study period.
2. **Routine surveillance:** the following groups constitute the population for the routine surveillance (1) persons who attend the integrated counselling and testing centres for counselling or testing (2) the pregnant women who are attending the ante natal clinic of the hospital (3) the attendees of the sexually transmitted disease (STD) clinics of the hospitals and (4) the blood donors.

OPERATIONAL DEFINITIONS:

Case definition

For community level HIV surveillance, no standardized case definition was available. We adapted WHO case definition of HIV-AIDS.

The expanded WHO case definition for AIDS surveillance states that for the purpose of AIDS surveillance an adult or an adolescent (>12 years of age) is

considered to have AIDS if a test for HIV antibody gives a positive result, and one or more of the following conditions are present:

- a) >10% body weight loss or cachexia, with diarrhoea or fever, or both, intermittent or constant, for at least 1 month, not known to be due to a condition unrelated to HIV infection.
- b) Cryptococcal meningitis
- c) Pulmonary or extra-pulmonary tuberculosis
- d) Kaposi's sarcoma
- e) Neurological impairment that is sufficient to prevent independent daily activities, not known to be due to a condition unrelated to HIV infection (for example trauma or cerebro vascular accident).
- f) Candidacies of the oesophagus (which may be presumptively diagnosed based on the presence of oral candidiasis and accompanied by dysphagia).
- g) Clinically diagnosed life-threatening or recurrent episodes of pneumonia, with or without etiological confirmation.
- h) Invasive cervical cancer

Major features of this expanded surveillance case definition are that it requires an HIV serological test and includes a broader spectrum of clinical manifestations of HIV.

Data source: We collected information from the records and reports of the sentinel surveillance sites, VCTCS, blood banks, PPTCT reports from ante natal clinics and by interviewing some of the key stakeholders and programme managers.

Reporting and feedback: For the sentinel surveillance, there are in charges for different sites appointed by the WBSAP & CS. They were appointed for the period, during which the sentinel surveillance continues.

- The sentinel site in charge and the HIV testing laboratory in charge send the report to the state AIDS prevention and control society.

The district nodal officer, the deputy chief medical officer II, usually send reports to the state AIDS control society quarterly after collecting and compilation reports received from different reporting units of the district for the routine passive surveillance in HIV in the district.

EVALUATION OF THE SYSTEM:

We used various attributes as indicators to assess the surveillance system of HIV for the study as follows –

Acceptability: For acceptability of the second generation HIV surveillance, we considered the proportion of voluntary counselling and testing centres and blood banks reporting prevalence data to the district. We also considered proportion of counselled accepts testing, collects reports and accepts post test counselling.

Flexibility: We analysed the utilization of the potential sources of information available to obtain surveillance data to assess the flexibility of the HIV surveillance of the district which is at present restricted to yearly sentinel sero-surveillance only. We analysed the proportion of counsellors in VCCTC-s and functionaries of the blood banks of the districts willing to participate in HIV surveillance.

Representativeness: To assess representativeness of the different population subgroups with different risks of HIV infection in the surveillance

system, we assessed for each group, the extent of the surveillance coverage and the actual HIV prevalence in that group according to best available evidence, which was past surveillance data, as no population based sero-surveillance had been done in the district before. We also considered the proportion of the population of the district that is catered by the sentinel sites and the potential sources for HIV surveillance.

Timeliness: We used two indicators for timeliness of the surveillance system. First, we found out the time interval between surveillance period and feedback to the district. Secondly, we considered the frequency of reporting by the potential other sources of surveillance to the district. The feed back by the district to the peripheral level was also considered.

Simplicity: We reviewed the surveillance flow chart to detect opportunities for simplifications.

Cost: The cost incurred for the sentinel surveillance activities and the flow and utilisation of funds and logistics were reviewed to assess any obstacle compromising sentinel activities.

METHODS USED FOR EVALUATION:

We evaluated the surveillance system by (1) reviewing the records and reports available in the district and (2) interviewing some key stakeholders of the system. We interviewed the deputy chief medical officer of health II, the medical officer in charge of the blood banks (N= 6), the counsellor and the laboratory technician of the VCTC (N= 6) and the ANC clinics (N= 2) and the personnel involved in the sentinel sites (N= 6).

We have done the evaluation during the period October 2007 to January 2008.

RESULTS:

Description of the surveillance system:

In west Bengal, the 2007 the XI th round of sentinel surveillance, conducted from October 2007 to December 2007 extended up to 15th January 2008 with 47 sentinel sites.

Sentinel sites:

In North 24 parganas district of West Bengal we have two sentinel sites. One is for the low risk group population from the antenatal clinic attendees at Madhyamgram Rural hospital (RH) of the Government and the other one site is the drop in site for the female sex workers (FSW) at Basirhat, run by one non Government organisation (NGO), called as Seth Bagan Mahila Sangha (SBMS). Both the sites had one in charge, one nursing person and an attendant each.

The site at Madhyamgram RH was functioning from 2005 (IX th round, HSS). However the site at Basirhat started functioning from the X th round in 2006. The antenatal clinic in Madhyamgram rural hospital runs once in a week. Average number of pregnant women being seen per clinic day was about 100. The total number of ante natal mothers seen at this facility during these three months was 1070. This clinic completed its 400 samples by the second week of December. It was 37% of the total attendees. The rural women were 67% (716 / 1070). The technician collected the blood and separated the same into two parts. One part was used there for VDRL test. The other portion they sent to the testing laboratory, the All India institute of hygiene & public health,

Kolkata. They have collected the blood and sent the samples maintaining the guidelines of the state AIDS control society.

In the FSW site at Basirhat, the average number of samples drawn per day was 15 to 20. It completed the collection of 248 samples by the end of December 2007. The site incharge sent the samples maintaining the guidelines to its testing laboratory at the Microbiology department of Calcutta National medical college, Kolkata.

Evaluation of the surveillance system for HIV according to the selected attributes of the system:

ACCEPTABILITY: From the available records of the district, we found, only one (33%) ICCTC submitted the reports regularly. The other two were not regular. 886 persons (98%) of the male clients (N=904) counselled accepted testing and of which 815 (92 %) collected their reports. Out of the 815 persons collected the reports, 727 (89%) accepted the post test counselling. The rates are less in female attendees.⁸

Out of six blood banks in the district, only three (50%) submitted their reports to the programme officer regularly by the 5th of the next month.

The only PPTCT site in the district reported regularly to the district programme officer by 5th of the next month on 75% occasions..

FLEXIBILITY: We undertook a qualitative interview of all the staffs involved in the voluntary counselling and testing centers to asses their attitude regarding willingness to utilise their services for controlling other similar diseases. We have found that 80% of the counsellors and 100% of the laboratory

technicians were willing to accommodate hepatitis B along with HIV. We also interviewed the counsellors and laboratory technicians of the blood banks and in the district and found that 100% of the counsellors and 90% of the laboratory technicians are willing to work in the HIV surveillance programme.

SIMPLICITY: The sentinel activities were implemented directly by the state level bypassing the district programme officer. All the counsellors in these centres have opined that the formats are complicated. It may be simplified.

REPRESENTATIVENESS: With 54.3% of the population of the district living in urban area, both the sentinel sites were situated in the areas which are not fully urban in nature. In the ante-natal clinic, situated in a municipality, 60% of the ante natal mothers were from rural areas. Though the head quarter of the site for female sex workers is in a urban area, about 64% of the workers were from the rural areas. It was not possible to detect the proportion of the female sex workers who act as flying sex workers. Among all the eligible persons attending the sites during the surveillance period, 37 % were tested in the ANC and 63.2% in the female sex workers site during this period.

TIMELINESS: The feedback of the report of the sentinel sites from the state is usually sent after three to five months of the surveillance period. The potential other sources reported to the district monthly. Only 33 % of the ICCTCs, 50 % of the blood banks sent their reports regularly. In case of the PPTCT center, it has sent 75 % reports with in stipulated time. There was no feed back from the district to the sentinel sites.

COST: To conduct the state level sentinel surveillance in this round the state AIDS prevention & control society has spent a total sum of Rs 3500,000. The state supplied most of the logistics and equipments required by the sentinel

sites. It had given fund for the training of staffs before, during and after the surveillance for review meeting. For conducting the site level expenses the public sector site at the ANC was given Rs 20000 and the NGO site was given Rs 24000 from the state. Both the sites were able to utilise 100% of the same. The fund reached the site level during the surveillance period. On an average, total expenditure per site was RS 75 000.⁸ The ANC site could not detect a single positive case but the FSW site could get 12 positive cases in 2007.

USEFULNESS: There is no analysis or interpretation of the data from the different potential sources at the district level and no action on the sentinel surveillance feedback by the district unless instructed by the state authorities.

DISCUSSION:

The district considered the sentinel sero-surveillance as the sole report for the HIV. The second generation HIV surveillance was not implemented in the district and there was no behavioural survey in the district to track the risk behaviour to guide biological data collection and explain trends in HIV infection.

There were only two sentinel surveillance sites in the North 24-Parganas district, but other potential sources of data for HIV surveillance was also available in the district. In the final report on updating mapping and size estimation for core groups at risk of HIV / AIDS commissioned by state AIDS society and undertaken by the Quest India, submitted in March 2007, it had been seen that there were female sex workers bases in brothel, non brothel flying and home based. The estimated number increased over the years. The estimated number in 2003-04 was 1393 and became 4660 in 2006-07. The estimated number of brothel, non brothel and home based female sex workers in the district has been increased. They estimated the number as 1378 brothel based, 2434 non brothel and 847 home based female sex workers in the district. The geographical location of these workers was such that only about 20 to 30 % were from the sub division from which the sentinel site was chosen. So, there is a possibility of non capturing of sex workers. There may be some potential risky areas unrepresented in the sentinel surveillance. There were three Government VCCTC-s, six blood banks, and one PPTCT unit in the district hospital and two STD clinics. Patients from district chest and

tuberculosis clinic are also being referred to the VCCTC-s. Their reports not included in the district surveillance.

Although the existing sentinel surveillance system helped to generate a public response and target prevention activities in the district, but the district was completely by-passed with regards to planning, implementation and data processing of the surveillance. This somewhat reduced the simplicity of the system by hampering smooth and timely flow of information.

The vast urban areas of the district in the industrial area and around the national highway have not taken into consideration by these sites because of their geographical location. So, the data generated by this surveillance is not true representative of general population of the district.

The majority population of North 24-Parganas district lives in urban areas, but both the sentinel sites of the district were situated in the semi urban area, with one of them at the extreme side of the district reducing the representativeness of the surveillance system. The VCCTC-s and the blood banks cover mostly the urban areas, though the blood banks often conduct voluntary blood donation camps in the rural areas of the district. The PPTCT in the district covers a very small proportion of the rural area of the district. So the majority of population of the district coming from urban background remained virtually uncovered by any biological surveillance for HIV.

The municipalities of the district (Total number 27) are having their own health care workers and infrastructure. If these workers are trained and utilized for the awareness generation then this could cover wide urban areas. They could be utilized regarding when to suspect HIV/AIDS, where to send the patient for

testing and availability of care and support for AIDS would strengthen the surveillance at the urban community level, but this was also found lacking.

With low flexibility of the system at the district level, useful information from other potential sources was not used to identify risk-groups and sub-populations needed to be targeted for intervention. Though all the VCCTC-s and blood banks reported to the district every month with good acceptability, this data was not analysed and interpreted and no feedback was given or action was taken at the district level on this data reducing the usefulness of the surveillance system at the district level.

LIMITATIONS:

The evaluation process had the following limitations

1. The data was maintained at the state level, district had data in pieces.
2. The data flow from district to state was not regular. There was possibility of overlapping of information.
3. The reference laboratory had own system of testing, the district authority were unaware of the procedure.

CONCLUSIONS:

The HIV surveillance in the district of North 24 parganas district of West Bengal based on directives and instructions from state AIDS & prevention control society. The district level officers were not involved in the activities. All the sites were in semi urban areas. In the entire district there were only two sentinel sites involving the pregnant women and female sex workers which were grossly inadequate considering the size and populations of the district. The surveillance work had done by selected workers only (six in two sites).

The analysis and interpretation was done at the state level. The district authority was informed after a lapse of about three to five months.

RECOMMENDATIONS:

This study allowed recommending measures to improve surveillance of HIV infection in the North 24-Parganas district.

Firstly, decentralization of the sentinel surveillance at the district level is necessary to increase the involvement of district level functionaries in the activities, and thus ensure proper and timely implementation of activities.

Secondly, more sentinel sites and VCCTC-s are needed in the urban areas of the district to identify at-risk sub-populations.

Thirdly, the large number of health workers of the municipalities and other public health functionaries may be utilized for increasing awareness and orientation of the community to enhance surveillance at the community level.

Fourthly, implement the second generation HIV surveillance at the district level by risk-behavior survey and utilizing other sources of information.

Lastly, analysis and interpretation of the surveillance data at the district level will ensure appropriate, fast and timely targeted programmes.

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Table 1: Logical frame indicating surveillance attribute indicators of HIV infection, North 24-Parganas district, West Bengal, 2007

	Indicators	Data needed	Source of data
Acceptability	Proportion of voluntary counselling and testing centres reporting prevalence data to the district	Number of centres reporting data	District HIV office records
		Total number of centres in operation	State AIDS society records
	Proportion of blood banks reporting prevalence data to the district	Number of blood banks reporting data	District HIV office records
		Total number of blood banks in operation	District blood safety records
Flexibility	Utilization of the potential sources of information available to obtain surveillance data	Potential sources of information available	District HIV office records
			Interview with district HIV officer
	Proportion of counsellors in testing centres willing to participate in HIV surveillance	Sources utilized for surveillance	District records
		Proportion of counsellors willing to participate	Interview of counsellor
Representativeness	For each group, comparison of (1) extent of the surveillance coverage and (2) the actual HIV prevalence in that group according to best available	Total number of counsellors working in the district on HIV	District and NGO-s records
		Number of sentinel surveillance sites/ activities in different population groups	District records

	evidence.	Prevalence of HIV in different population groups according to all sources of information	Surveillance data Articles in journals and internet Grey literature
Cost	Cost incurred for the sentinel surveillance activities	Cost of testing Remuneration of centres Costs at the district level Number of tests done, centres included and districts involved	State HIV surveillance officer
Timeliness	Median time interval between surveillance period and feedback to the district	Surveillance period of last years Dates of feedback to the district	Records of sentinel centres District and state records
Simplicity	Review of the surveillance flow chart to detect opportunities for simplifications	Description of the actual system Description of the theoretical system	Qualitative interviews with participants Guidelines, operation manuals and forms

Table 2: Selected indicators for evaluating the different attributes of HIV surveillance of North 24-Parganas, West Bengal, India, 2007 - 08.

Attribute	Indicators	N /n	%
Acceptability	Proportion of voluntary counselling and testing centres reporting prevalence data to the district	1/3	33
	Proportion of blood banks reporting prevalence data to the district	3/6	50
Flexibility	Utilization of the potential sources of information available to obtain surveillance data	2/12	18
	Proportion of counsellors in testing centres willing to participate in HIV surveillance	2/5	40
Representativeness	Proportion of patients coming from the urban area in the FSW site (sentinel site)	197 / 458	43
	Proportion of patients coming from the rural area in the AN clinic (sentinel site)	716 / 1070	67
	Out of estimated adult living with HIV, those from rural background (India)		57
Cost	Proportion of allotted budget utilised by the sentinel site		100
Timeliness	Time interval of final feedback to the district and sentinel site in 2008	3 months	

Table 3: Performance of the sentinel sites in North 24 Parganas, West Bengal, India, 2005 - 07

SENTINNEL SITE: ANTENATAL CLINIC

YEAR	ROUND	No of samples tested	No of samples +VE	Prevalence rate	CI
2005	9 TH	400	2	0.5	0.08 - 1.08
2006	10 TH	400	1	0.25	0.16 - 0.66
2007	11 TH	400	0	0	0
SENTINNEL SITE: FSW (TI)					
2006	10 TH	248	8	3.23	1.37 - 5.08
2007	11 TH	248	12	4.84	2.60 - 7.08

**Master of Applied Epidemiology (MAE) – Indian Field Epidemiology
Training Programme
Scientific study critique form**

General information:

Title of the paper: Cassia occidentalis poisoning as the probable cause of
hepatomyoencephalopathy in children in Western U.P

Authors: V.M. Vashishtha, Amod Kumar, T.Jacob John & N.C. Nayak

References:

Reviewer: Dr. Kajal Krishna Banik

MAE_FETP, VIIth cohort, NIE (ICMR), Chennai

Date: 14.02.2008

General narrative comments: The study is basically a hospital based case study providing following a community based outbreak based investigation in 2002 –2005. The study provided some interesting findings with the following comments:

a) The sample size of the study was very less (18). It would be better if at least 30 cases could be investigated, in that case the duration of study could be prolonged.

b) Criteria for diagnosis were not specific and objective.

c) Only 8 (44.4%) among 18 cases had history of taking Cassia pods. 66.7% cases gave H/o pica stating the probability of existence of some other environmental toxins.

d) The duration of time interval between intake of Cassia and onset of clinical manifestations not mentioned.

Area	Checklist items	Grading from 1 (strongly disagree) to 5 (strongly agree) *					Explanations [†]
		1	2	3	4	5	
Overall assessment of the paper	The background provides a description of the public issue at the global and local levels and logically introduces the need to answer a specific research question.			√			The description is more or less relevant including the objectives
	The methods section provides sufficient information on the methods used, including the type of study, the sampling strategy, the case definitions, the data collection and the data analysis.				√		The sample size is less. Case definition not specific No definite criteria for selection of controls
	The results reports sound scientific results that meet the study's objective and the research question. They are presented with sufficient details and adequate statistical information (e.g., Confidence Intervals).			√			Results the study's objective and research question with sufficient details
	The discussion summarizes and interprets the results, discusses the findings in view of what is already known, frames what the results of the study can support, defines the limitation of the work and suggests next steps in terms of (1) intervention and (2) research.			√			Next steps of intervention and research not mentioned. Discussion summarizes and interprets the results with review of other paper.

Area	Checklist items	Grading from 1 (strongly disagree) to 5 (strongly agree)					Explanations
		1	2	3	4	5	
Methods	The study design is adequate to meet the objective.			√			A community based study with proper study design could have been better
	The study population is well defined and relevant to the research question			√			Sample size small
	Definitions are specified, sound and based upon standardized criteria when available.		√				Case definition not specific
	Sampling methods are statistically sound and adapted.	√					No sampling method
	The sample size was estimated beforehand appropriately.	√					Sample size small

The study is exempt from bias.	√					Chances of bias there like selection as well as interviewer's bias there.
The data that were collected are well described and relevant.			√			Data relevant and well described
The data was collected was of sufficient quality.			√			Quality of data could have been further improved if the toxin could be identified
The analysis is thought beforehand and appropriate.			√			Appropriate to some extent
The indicators generated are appropriate and well calculated.			√			Disease indicators not specific
The statistical tests used are appropriate and well computed.				√		Test appropriate and well computed
Appropriate attention has been given to human subject protection issues.	√					Not clears from the study

Area	Checklist items	Grading from 1 (strongly disagree) to 5 (strongly agree)					Explanations
		1	2	3	4	5	
Writing	The content is well distributed by chapters and sections.		√				Distribution is more or less acceptable
	The language is simple and clear. The word count is < 3000.		√				Language simple and understandable
	The writing is sequential, going from one point to the next.		√				Sequence is maintained
	The active voice is used throughout.		√				Active voice used in the paper
	The vocabulary is precise, consistent and standardized.		√				Vocabulary consistent
Tables and figures	There are no more than five tables and or figures. All are needed.					√	Only two tables
	The choice of graph or table to display information is judicious.	√					Graph not used
	The tables are clear, exact and the totals add up.					√	Tables clear and understandable
	The graphs are effective, appropriate and understandable.	√					Graph not used

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"Safe blood" – is it really safe in North 24 Parganas, West Bengal, India, 2007-08?

Background:

Worldwide 3 to 5 % of HIV infections are transmitted through blood and blood products To ensure blood safety and bring uniformity in blood banking India adopted the national blood policy in 2002. Blood safety starts from selection of voluntary non remunerated donors, testing for transfusion transmissible infections and rational use. The percentage of voluntary donors in West Bengal remained 87 %, among the highest in the country.

Methods:

We evaluated the blood safety programme in the North 24 Parganas district by reviewing the records of 2007-08, observing some of the activities and by interviewing some staffs and donors during December 2007- February 2008.

Results:

Only one out of five (20%) blood bank collected 100% from voluntary donors. Two of five (40 %) blood banks remained open round the clock. None of the staffs (N = 31) were trained in donor motivation, recruitment and retention techniques. The collection from voluntary donors dropped from 97 % in 2006 to 94% in 2007. Selecting donors after collecting information on high risk personal behaviour as reported was 93 % (Range: 85 %- 99 %) but we observed in 76 % (Range: 59%- 85 %) cases. None of the blood units were tested for malaria parasites. No external quality assessment done in last one year. There was no training of doctors on rational use of blood in the district in last three years. No component separation unit was available in the district. 348 out of 1500 (23%) of all requisitions were for chronic anaemia. Requisition for single unit of blood varies between 17 % to 19 % cases. 45 % of requisitions were for raising the haemoglobin level of the recipients.

Conclusion:

Although blood collection from voluntary donors was decreasing, no efforts were seen to retain the regular donors. Untested blood may increase the possibility of malaria transmission. Training of doctors on rational use of blood may reduce the total demand. Availability of components will reduce the unnecessary whole blood use.