



IOCH
Immunization and Other Child Health Project

**Vaccination Coverage Survey of Routine EPI and
2001 MNT Campaign in the Rural Areas of Dhaka,
Rajshahi and Sylhet Divisions**

September 2001

MNT Survey Report No. 5

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Acronyms

BCC	Behavior Change Communication
BCG	Bacillus of Calmette and Guerin
CES	Coverage Evaluation Survey
COSAS	Coverage Survey Analysis System
DPT	Diphtheria, Pertussis and Tetanus
EPI	Expanded Programme on Immunization
FWC	Family Welfare Center
IOCH	Immunization and Other Child Health
MNT	Measles, Neonatal and Tetanus
Mahallah	Smaller localities (smaller than a village, the urban equivalent of a para))
MOHFW	Ministry of Health and Family Welfare
Mouza	Smallest administrative locality in an Upazila
MSH	Management Sciences for Health
NGO	Non Governmental Organization
NID	National Immunization Day
OPV	Oral Polio Vaccine
TT	Tetanus Toxoid
WHO	World Health Organization

Terminology

This provides the meaning of some of the more technical terms used in this report and a brief explanation of their use.

By card: An immunization given to a child is termed as by card if the date of the dose is entered on an immunization card. Only doses recorded by card are treated as valid data in this survey.

By history: Immunization history collected from a parent's recall is termed as by history. Often no date will be mentioned. This information is only included in crude data.

Crude coverage rate is calculated from the doses recorded by card and/or by history. It is not ascertained whether the doses were given at the correct age and/or following the correct interval (where applicable). Crude data however, helps us to understand how much additional coverage could be achieved if all vaccines were given at the optimum age for the child and following the optimum interval. It also provides useful information on access to the EPI program and on the operational aspects of the provision of health services.

Valid coverage rate is calculated from the vaccinations recorded by card plus history. In the calculation process, first the rate of validity is calculated based on cards only, then this rate is applied to history cases too. Valid data includes only the doses of vaccines that were given after the minimum date of eligibility and/or after the minimum interval necessary to be effective and to protect the child. There is no maximum interval for a dose and therefore a dose administered after 52 weeks is still regarded as valid. By comparing crude coverage with valid coverage data of any particular antigen, one can determine how much coverage was lost due to the inability to give vaccine at the appropriate time.

Invalid doses are those administered at the wrong age and/or at the wrong interval. Doses administered before the minimum age in the case of DPT/Polio 1st doses and Measles vaccine or with less than four weeks interval in the case of DPT or Polio vaccines are classified as "invalid" doses.

The **criteria for a valid dose** used in this survey is the criteria recognized by the Bangladesh EPI program: minimum age for DPT/Polio 1st dose - 6 weeks old; minimum DPT/Polio interval - 4 weeks; minimum age for Measles vaccine - 38 weeks old.

Program access is measured by the percentage of children surveyed who received DPT 1st dose (crude data – by card and history) in the routine immunization session.

Fully immunized means the child has received all the doses it requires (BCG, OPV 1-3, DPT 1-3 and measles).

Missed opportunity refers to a visit of a child to a vaccination center for a dose that he received. However at that time he was also eligible for another dose of antigen that he did not receive. If the missed dose was provided at a later date, it is a *corrected missed opportunity*. If not, it is an *uncorrected missed opportunity*.

Executive Summary

Background

The last round of a three year (1999-2001) Measles Neonatal Tetanus (MNT) campaign in selected high-risk urban and rural areas of Bangladesh was conducted between August 26 and September 4, 2001 by the national EPI Program in collaboration with various development partners and organizations. The children aged 9-35 months were given measles vaccination if they had not received one in the previous 30 days and women of child-bearing age (15-49 years) were targeted for TT immunization. In addition Oral Polio Vaccine (OPV) was given to children 0-59 months. The areas were selected on the basis of low EPI coverage, cases of neonatal deaths reported in the last two years, geographically inaccessible and with hard to reach populations like migrants and floating populations. In order to evaluate the coverage of MNT campaign three surveys were conducted in urban areas and four were in rural areas. Standard WHO EPI 30 cluster survey methodology was followed to collect information. The surveys were conducted by the IOCH/MSH in collaboration with UNICEF, WHO and Save the Children, USA in September 2001. In addition to coverage, information related to knowledge, source and reasons for not receiving vaccines both for routine EPI and MNT campaign were collected. This report provides findings of the coverage evaluation survey conducted in the rural areas (where 2001 MNT Campaign was conducted) of Dhaka, Rajshahi and Sylhet Divisions. The objectives of the survey were as follows:

- a) To assess the level of coverage of routine childhood and TT immunization of women including program performance.
- b) To assess the level of coverage of OPV, TT and Measles during the 2001 MNT campaign.
- c) To find the level of knowledge about immunization, reasons for not being immunized (both routine and during the campaign) and sources of information about immunization and the MNT campaign

Coverage levels for the Routine Immunization of Children

Access: Based on crude data (card plus history), 89% of the children between 12-23 months received at least one dose of antigen (DPT 1st dose in this case) from routine immunization sessions. 7% children did not receive a dose of any antigen.

Crude coverage between 12-23 months: 91% of the children received BCG, 75% received three doses of OPV, 75% received three doses of DPT and 76% received measles vaccine. 70% children were fully immunized.

Valid coverage between 12-23 months: 91% children received BCG, 69% received three doses of OPV and DPT, and 74% received measles vaccine. 62% children were fully immunized.

Valid coverage by 12 months: 91% children received BCG, 60% received three doses of OPV, 59% received three doses of DPT and 45% received measles vaccine. 40% were fully immunized.

Dropout rate and invalid doses: Crude data for antigens received by 12-23 months of age is used for calculating the drop out rate. In the survey the DPT1 to DPT3 dropout was 16 percent and DPT1 to measles dropout rate was 15 percent

Four percent of children received an invalid dose for DPT1, 2% an invalid dose of DPT2 while 3 percent children received invalid DPT3 dose. For measles the rate was 3 percent.

Sources of immunization: 69% of the immunization services were from the government EPI outreach centers, 11% from GOB hospital and 21% from NGO EPI facilities.

Reasons for non-immunization and partial immunization

7% of the surveyed children were not immunized at all while 23% had partial immunization. Main reasons for non-immunization were: did not know about the need of immunization, did not know where to go for immunization and fear of adverse reaction.

Most important reasons mentioned by the respondents for partial immunization were: lack of knowledge about the need of second dose, did not know when to return for subsequent doses, sickness of children and vaccinator not available at the site.

Coverage levels for the Routine TT Immunization of Women

27 percent of women interviewed had all five doses of TT. Ninety five percent women had first dose of TT while 84 and 71 percent of women had second and third dose of TT respectively. The rate for fourth dose of TT was 52 percent. Five percent women had no dose of TT. The drop out rate of first dose of TT vaccine to second dose was 12 percent. The corresponding rates for TT1 to TT3 and TT1 to TT5 were 25 and 79 percent respectively. 95 percent of women had received first dose of TT indicating good access to TT immunization. 35 percent of women had TT card at the time of interview, and TT card retention rate was 47%. Of the women interviewed 73% of newborn were protected against tetanus.

Knowledge about EPI: Sixteen percent of the respondents knew that by 12 months a child has to complete the immunization schedule and 14% percent knew that a child has to go four times to the center to complete the EPI schedule. 18% of the respondent knew that 5 doses are required for life- time protection against tetanus. The sources of correct knowledge about required number of times to go to EPI center for full immunization were: government health worker (28%), Family/friend (21%), NGO worker (41%) and radio (10%)

Coverage levels for the 2001 MNT Campaign

85 percent of children (0-59 months) had OPV during the campaign, 75 percent of children aged between 9-35 months received measles shot (except those who received measles vaccination within one month prior to the campaign) and 65 percent women of child bearing age (15-49 years) had TT vaccination during the campaign.

Comparison with the coverage of August 2000 NNT campaign: The OPV coverage slightly reduced compared with that of the last year's NNT Campaign (85% vs. 87%); while TT coverage increased by 8 percentage points (65% vs. 57%)

Information and motivation activity during the MNT campaign: 72 percent of the respondent mentioned that health worker visited their household before the MNT campaign. 42% of the household interviewed had a referral slip for OPV provided by the health worker when visited before the campaign; while 24% percent of the women got TT card during household visit before the campaign. The government health workers were the main source of information about the campaign at the household level (85%) followed by NGO worker (6%), miking (3%) and family/friend/neighbor (4%). 36 percent of the respondent mentioned that someone came to the household to inquire about receiving vaccination during the campaign period.

Reasons for not receiving vaccines during the MNT campaign: The most important reasons for not receiving OPV during the campaign were: lack of information about MNT campaign, mothers was too busy, child sickness and child not at home. For measles different reasons given by the respondents were: lack of information about the campaign, vaccine/vaccinator was not available at the site, child had measles vaccination earlier and child not at home. Not knowing about the campaign, too busy at home, received TT one month before the campaign, believing that she is fully immunized and mothers' away from home were the most important reasons for not receiving TT vaccine.

Problems detected

The continuity of the childhood immunization program was affected by drop out rate (16% for DPT1 to DPT3 and 15% for DPT1 to measles) and poor knowledge of mothers/care takers about immunization and EPI schedule (only 16% of the respondents knew that by 12 months a child has to complete the immunization schedule and 14% percent knew that a child has to go four times to the center to complete the EPI schedule). Valid coverage by 12 months was only 40 percent. 27 percent new born were still not protected and knowledge of 5 doses of TT was low (18%). Lack of information about the campaign and low motivation of health workers (only 38% of the household had a referral slip for OPV and 8% percent of the women got TT card from the health workers during their household visits before the campaign) were the most important limiting factors for poor coverage during the MNT campaign.

Suggested solutions

In order to reduce drop out rate actions are needed to improve counseling of mothers about the importance of all vaccines and the correct timing of different vaccines by the service providers. The service providers and community outreach workers should register all pregnant women in their area and follow up to ensure TT doses to protect their newborns. Behavior Change and Communication (BCC) activities on community awareness on the benefits of 5 doses of TT should be further developed and implemented. Information about campaign should be disseminated through various communication and social mobilization activities and targeted household visits by health workers.

Introduction

The ministry of Health and Family Welfare of the Government of Bangladesh in collaboration with various development partners and organizations have been conducting a three years Measles Neonatal Tetanus campaign popularly known as "MNT Campaign" since 1999 in selected areas. The objective of the MNT campaign is to reduce morbidity and mortality from tetanus and measles. In the campaign oral polio vaccine (OPV) was included to facilitate the ongoing polio eradication activities. During the first two years vaccines against tetanus and polio were included while in last round measles vaccine was added. The third round of the campaign was conducted between August 26, 2001 and September 4, 2001 in the selected urban and rural areas of Bangladesh.

The MNT campaign is an additional immunization activity on top of the routine immunization program in the country specially targeted to reach women and children in high-risk areas who would otherwise remain unreached and unprotected. The target areas for MNT campaign were slums in four city corporations (Dhaka, Chittagong, Khulna and Rajshahi), twenty-seven municipalities and high-risk rural areas (554 unions in 1818 upzillas). The high-risk rural areas were determined by low coverage of immunization, geographically inaccessible areas, cases of neonatal deaths reported in last two years and hard to reach populations like migrants and floating populations. Targeting these areas will increase overall vaccination coverage and reduce transmission of poliovirus.

The MNT campaign targeted 0-59 months old children for OPV, 9-35 months for Measles except those who received measles vaccination during the last one month and 15-49 years women for Tetanus Toxoid (TT). The campaign lasted for eight consecutive days from 8 am until 4 pm. In urban areas this was extended as per local need and the sessions were continued in the evening for working women. Planning meetings of key stakeholders, training of trainers and volunteers, Interpersonal communication through household visits, miking and registration of target groups, supervision and reporting were the major activities in the implementation of campaign. In all cases autodestruct syringes were used to ensure safety.

In order to evaluate the coverage of the MNT campaign of August 2001, a number of coverage evaluation survey was conducted following WHO EPI standard 30 cluster survey. The surveys were conducted in collaboration with Unicef, WHO and Save the Children, USA in urban and rural areas. In total 3 urban and four rural cluster surveys were conducted. These included one 30 cluster survey for slums of Dhaka City Corporation, one 30 cluster survey for slums of Chittagong, Khulna and Rajshahi City Corporations, one 30 cluster survey for twenty seven selected municipalities, one 30 cluster survey for the MNT unions of Brahmanbaria district, one 30 cluster survey for the MNT unions of Kishorganj district and two 30 cluster surveys for all other rural MNT unions. The rural areas were divided into south and north depending on the geographical locations of the selected unions. The survey also collected data on routine EPI coverage and information related to knowledge, source and reasons for not receiving vaccines. This report describes the findings of the survey conducted in rural areas of Dhaka, Rajshahi and Sylhet Divisions where 2001 MNT Campaign was conducted.

Objectives

- a) To assess the level of coverage of routine childhood and TT immunization of women including program performance.
- b) To assess the level of coverage of OPV, TT and Measles during the 2001 MNT campaign.
- c) To find the level of knowledge about immunization, reasons for not being immunized (both routine and during the campaign) and sources of information about immunization and the MNT campaign

Methodology

Standard WHO EPI 30 cluster survey method was used to collect information. The immunization information were collected on a randomly selected group of 210 children /women from 30 clusters (7 children/women per cluster) in a given community. It gives an estimate of immunization coverage to within +- 10 percentage points of the true population with 95% statistical confidence, assuming a design effect 2 (The survey methodology and its limitations are presented in Annex A).

The rural north areas of Bangladesh included unions from Dhaka, Rajshahi and Sylhet divisions of Bangladesh where MNT campaign was conducted. The clusters were selected from the list of villages in unions. The lists of selected clusters are given in Annex B and their locations are shown in the following map.

In the survey seven children between 12-23 months (children born between September 12, 1999 and September 11, 2000) were selected from each cluster to ascertain their routine vaccination status. Seven women between 15-49 years of age, irrespective of their marital status were selected for TT status.

In case of MNT children born between September 5, 1996 and August 25, 2001 were included for OPV coverage while children born between September 5, 1998 and November 25, 2000 were considered for measles vaccination. Another seven women of childbearing age (15-49 years) were interviewed for TT immunization during MNT campaign.

For routine immunization information about program coverage (childhood and women TT), program access, continuity, quality, reasons for non-immunization/partial immunization and knowledge about EPI was collected using standard 30 cluster survey questionnaire.

For MNT following information were collected about OPV, Measles and Tetanus:

- a) OPV: OPV received during the campaign, site of OPV vaccination, reason for not receiving OPV, household visited before MNT campaign and referral slip provided and household visited to inquire about receiving vaccine during the MNT campaign.

- b) Measles: measles vaccine received during the campaign, site of measles vaccination, reasons for not receiving measles vaccination, source of information about the MNT campaign, household visited during the MNT campaign
- c) TT: TT vaccine received during the campaign, reason for not receiving TT during the MNT campaign, source of information about MNT campaign, household visited before the MNT campaign to give information about the MNT campaign and gave card and household visited during the MNT campaign to inquire about receiving TT vaccination.

All questionnaires were translated into Bangla and pre-tested before the final survey.

IOCH survey team collected field data. Interviewers were trained and the data were collected over a week time between September 22, 2001 and September 29, 2001. The teams were supervised in the field to ensure quality and completeness of data. Data entry and analysis was done by IOCH using COSAS 4.41¹, EpiInfo and SPSS. Simple tables and graphs were produced to summarize results. The final report was produced by the Monitoring and Evaluation Unit of the IOCH/MSH.

¹ COSAS (Coverage Survey Analysis System) is a dedicated software for analyzing coverage evaluation survey data

Limitations

Limitations of the 30-cluster survey method

Although the 30-cluster survey method is relatively simple, it has several limitations² that can be grouped into two types:

Linked to the sampling method:

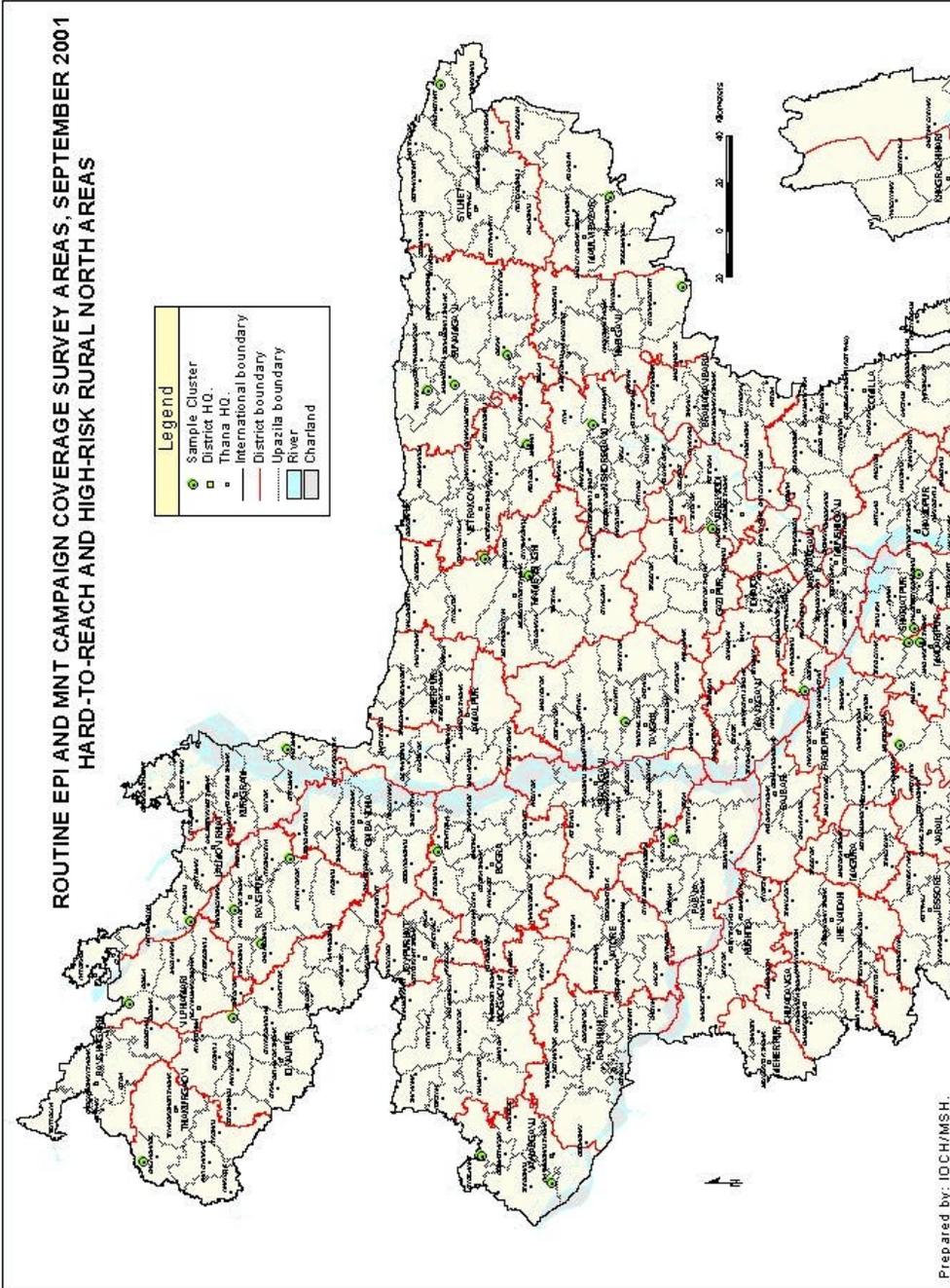
- ? As an inherent bias in the sampling technique in 30 clusters, bigger mouzas are more likely to be selected as a cluster. The survey leaves out scattered small mouzas with poor access to services. It also does not reflect the lack of uniformity in service availability or the behavior of particular populations.
- ? There is a wide confidence interval (+/- 10%). It means that if the result shows 56% of children received a valid dose of measles before 12 months of age, then the “true” figure of measles immunization of children could be anywhere between $(56-10) = 46\%$ and $(56+10) = 66\%$. This type of survey is useful when the coverage is low but is less relevant to assess higher coverage or to compare surveys – unless there is a big difference between two surveys.
- ? To be relevant, the analysis of valid data must apply to a relatively high percentage of available cards.

Linked to the implementation:

- ? The selection of the index house is key. Too often, the proper method is not followed because the surveyors do not make the effort to number all the houses from their location to the end of the mouzas along the direction indicated by the bottle or by the pencil.
- ? If a household includes an eligible child who is not at home for a few hours, the surveyor often does not return later on but skips the house and substitutes another child. This is, of course, an incorrect procedure that introduces a bias.

It is also important to remember that this survey coverage data gives little information about the current program as it documents the activities of a year earlier.

**ROUTINE EPI AND MNT CAMPAIGN COVERAGE SURVEY AREAS, SEPTEMBER 2001
HARD-TO-REACH AND HIGH-RISK RURAL NORTH AREAS**



Prepared by: IDCH/MSH.

Results

Routine immunization coverage of children

Table 1 shows childhood immunization coverage achieved by the routine EPI in rural northern areas of Bangladesh. The crude data shows coverage for BCG, OPV3, DPT3 and Measles at 91, 75, 75 and 76 percent respectively. The corresponding valid data for these antigens were 91, 69, 69 and 74 percent. Valid coverage by 12 months for BCG, OPV3, DPT3 and Measles were 91, 60, 59 and 45 percent respectively.

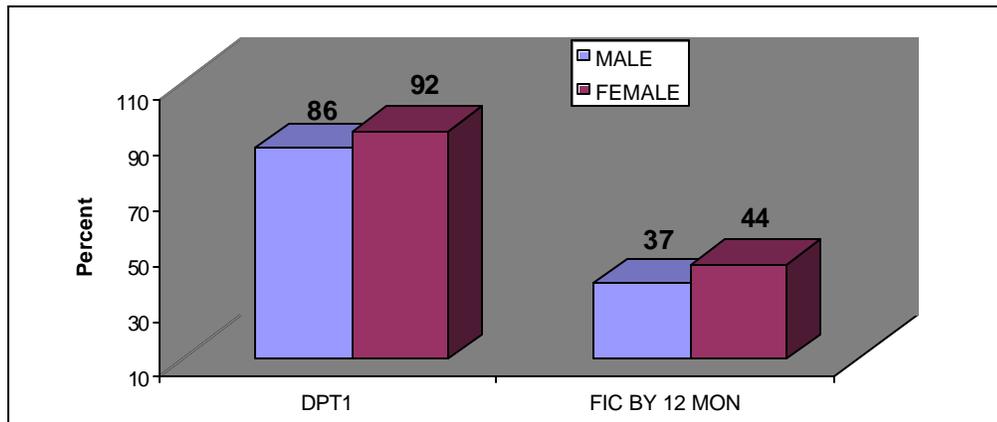
Crude coverage of full immunization of 12-23 months age group was 70 percent. The coverage for the same age group for valid data was 62 percent. When considered for 12 months the coverage went further down to 40 percent. The low coverage of fully immunized child for this age group compared to 12-23 months age group was mainly due to low measles coverage (76% vs. 45%).

Table 1. Routine immunization coverage of children

Name of vaccine	Coverage (12-23 months)		Coverage by 12 months of age
	Crude (%)	Valid (%)	Valid (%)
BCG	91	91	91
OPV1	91	87	85
OPV2	85	79	76
OPV3	75	69	60
DPT1	89	86	86
DPT2	82	77	74
DPT3	75	69	59
Measles	76	74	45
Fully immunized	70	62	40
Zero dose	7	-	-

Table 1 shows difference between crude data and valid data. It shows considerable difference between crude coverage and valid coverage for DPT3 (75% vs. 69%) and full immunization (70% vs. 62%) for 12- 23 months age group. The valid coverage further reduces when we consider coverage by 12 months age (69% vs. 59% for DPT3 and 62% vs. 40% for full immunization), indicating that a significant proportion of children receive vaccination after one year of age.

Figure 1: Access and FIC by 12 months by sex

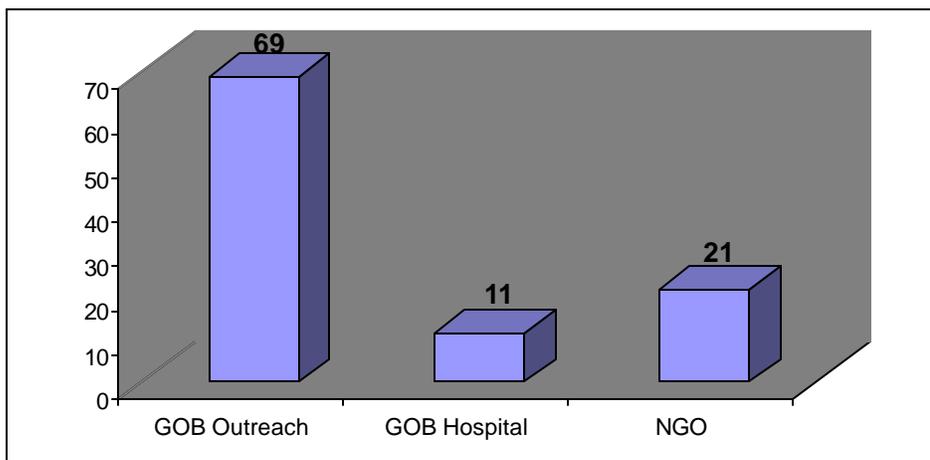


DPT1 (access) and Full Immunization Coverage (FIC) by 12 months by sex are shown in *figure 1*. It shows immunization coverage for girls was slightly higher than the boys in terms of both access to immunization (92% vs. 86% for DPT1) and full immunization (44% vs. 37%)

Program access

89 percent of the children surveyed received DPT1. 69% of the immunization services were from the government EPI outreach centers, 11% from GOB hospital and 21% from NGO EPI facilities (*figure 2*).

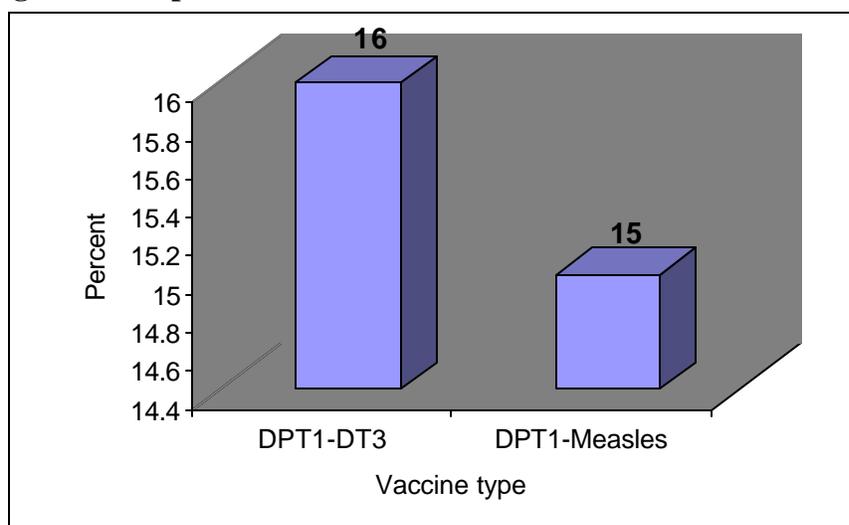
Figure 2: Providers of childhood immunization



Program continuity (drop out rate)

Crude data for antigens received by 12-23 months of age is used for calculating the drop out rate. In the survey the DPT1 to DPT3 dropout was 16 percent and DPT to measles dropout rate was 15 percent (*figure 3*).

Figure 3: Dropout rates for childhood immunization



Program Quality

Four percent of children received an invalid dose for DPT1; while 3 percent children received invalid DPT3 dose. For measles the rate was 3 percent. 91 percent of children received BCG dose. Of them 96 percent children had scar in their arm. Uncorrected missed opportunity rate for all the antigens were within 4%. 43 percent of households had EPI card at the time of interview; while EPI Card retention rate was 52%. (table 2).

Table 2: Invalid doses of childhood immunization

Antigens	Percent
DPT 1	4
DPT2	2
DPT 3	3
Measles	3

Reasons for non-immunization and partial immunization of the children

7% of the surveyed children were not immunized at all while 23% had partial immunization. Main reasons for non-immunization were: did not know about the need of immunization, did not know where to go for immunization and fear of adverse reaction.

In table 3 reasons for partial immunization of children in the survey area given. Most important reasons mentioned by the respondents for partial immunization were: lack of knowledge about the need of second dose, did not know when to return for 2nd, 3rd dose and vaccinator was not available at the site.

Table 3. Reasons for partial immunization

Reasons	Number	Percent
Did not know about the need of second dose	15	31
Did not know when to return for 2 nd , 3 rd dose and measles	8	16
Vaccinator not available at the site	5	10
Did not know where to go for vaccination	3	6
Child/Mother sick	3	6
Other reaction after pervious	3	6
Mother's too busy	3	6
Fear of adverse reaction	2	4
Injection was to painful	2	4
Others	5	11

Routine TT immunization coverage of women (15-49 years)

27 percent of women interviewed had all five doses of TT. Ninety five percent women had first dose of TT while 84 and 71 percent of women had second and third dose of TT respectively. The rate for fourth dose of TT was 52 percent. Five percent women had no dose of TT (*figure 4*).

Figure 4: TT coverage of women of 15-49 years

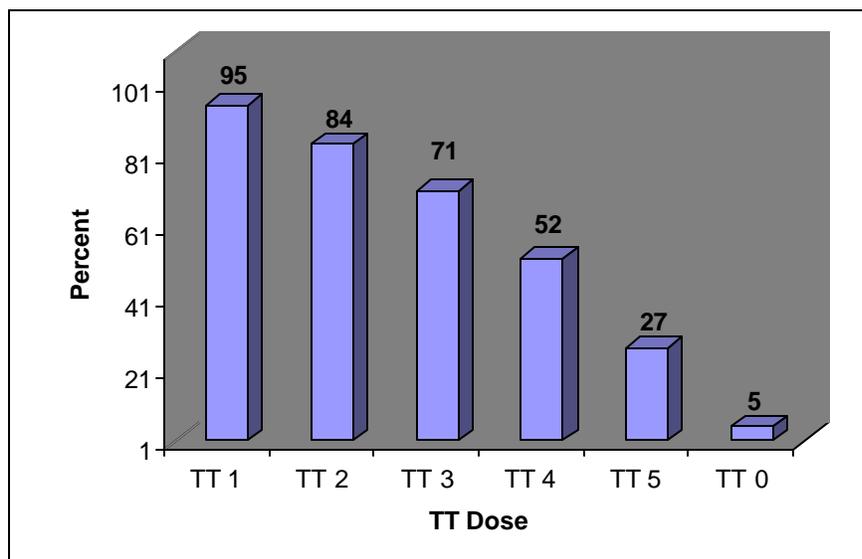
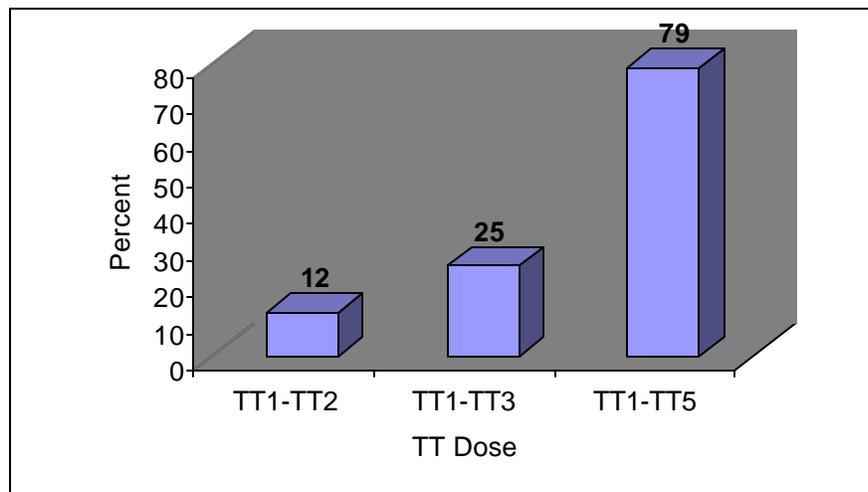


Figure 5: Dropout rates for TT immunization



The drop out rate of first dose of TT vaccine to second dose was 12 percent. The corresponding rates for TT1 to TT3 and TT1 to TT5 were 25 and 79 percent respectively (*figure 5*).

95 percent of women had received first dose of TT indicating good access to TT immunization. 35 percent of women had TT card at the time of interview. TT card retention rate was 47%.

Protection against tetanus at birth

Mothers interviewed were asked about their TT status during their last pregnancy. The newborn was considered protected against neonatal tetanus if the mother had two valid doses before the delivery or followed TT5 doses schedule. Of the women interviewed, 73% of newborns were protected against tetanus.

Knowledge of EPI (child immunization and TT)

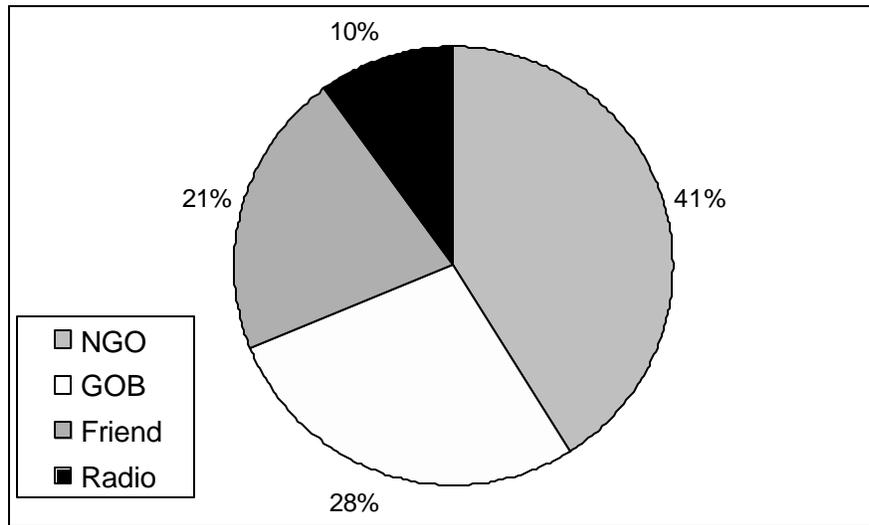
Table 4 shows the knowledge of EPI of the respondents in the survey area. Sixteen percent of the respondents knew that by 12 months a child has to complete the immunization schedule and 14% percent knew that a child has to go four times to the center to complete the EPI schedule. 18% of the respondent knew that 5 doses are required for life- time protection.

Table 4. Knowledge of EPI among women

Variable	Correct Knowledge (%)	Incorrect Knowledge (%)	Don't Know (%)
Age of full immunization	16	22	62
Number of times child required to go to EPI center for full immunization	14	30	56
Number of TT doses required for life time protection	18	8	74

The sources of correct knowledge about required number of times to go to EPI center for full immunization were: government health worker (28%), Family/friend (21%), NGO worker (41%) and radio (10%) (*figure 6*).

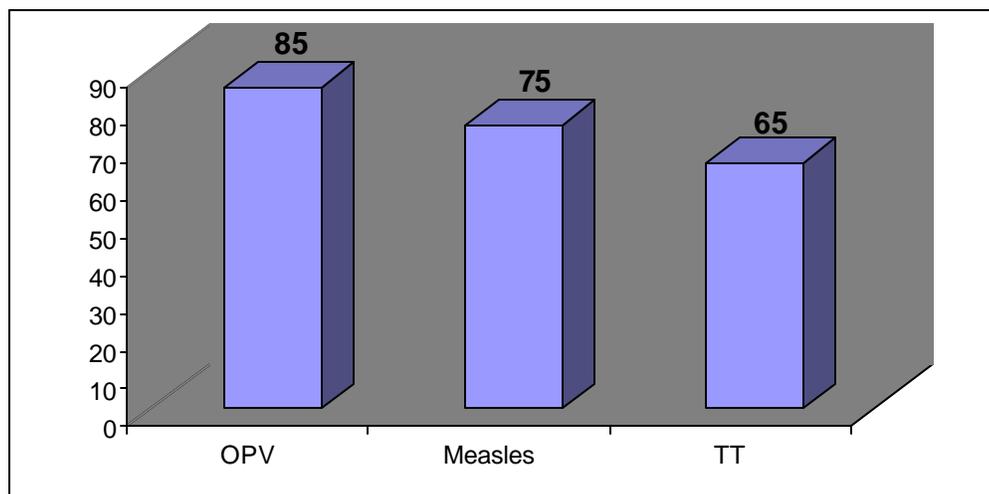
Figure 6: Sources of correct knowledge about required number of times to go to EPI center for full immunization



Coverage of MNT Campaign 2001

85 percent of children (0-59 months) had OPV during the campaign, 75 percent of children aged between 9-35 months received measles shot and 65 percent women of child bearing age (15-49 years) had TT vaccination (*figure 7*).

Figure 7: Coverage of MNT Campaign - 2001



Comparison with the coverage of August 2000 NNT campaign: The OPV coverage slightly reduced compared with that of the last year's NNT Campaign (85% vs. 87%); while TT coverage increased by 8 percentage points (65% vs. 57%)

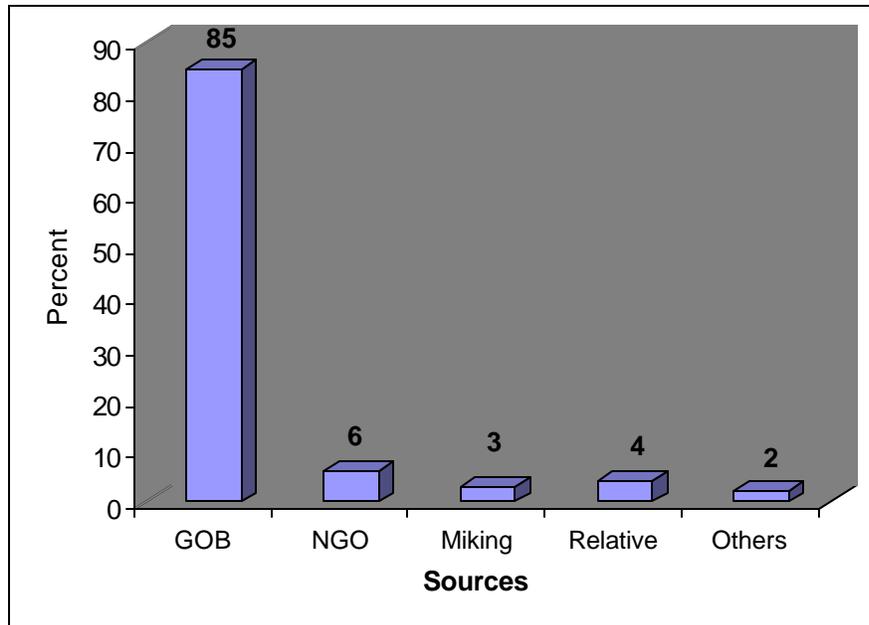
Reasons for not receiving vaccines during the MNT campaign

The most important reasons for not receiving OPV during the campaign were: lack of information about MNT campaign, mothers' too busy, child sickness and child not at home. For measles different reasons given by the respondents were: lack of information about the campaign, vaccine/vaccinator was not available at the site, child had measles vaccination earlier and child not at home. Not knowing about the campaign, too busy at home, received TT one month before the campaign, believing that she is fully immunized and mothers' away from home were the most important reasons for not receiving TT during the campaign (table 5).

Table 5. Reasons for not receiving OPV, Measles and TT during MNT Campaign

Reasons	OPV (%)	Measles (%)	TT (%)
Did not know about MNT	52	50	31
Vaccine/vaccinator was not available at the site	3	8	2
Too busy	10	2	13
Long queue	3	2	2
Time inconvenient	-	-	2
Waited for house visit	3	-	-
Not taken- Child/mother sick	3	2	2
Religious/social barrier		2	1
Does not believe in vaccine	-	4	-
Fear of side effect	3	2	2
Believed she is fully immunized	-	-	9
Received TT/Measles one month prior to MNT	2	2	6
Not given- child/mother sick	7	4	2
Already vaccinated	-	6	-
Child/mother was not at home	13	13	12
Taken to the center, but not given	-	-	9
Others	1	3	7

Figure 8: Sources of information about MNT Campaign



Sources of information and household visit during the MNT campaign

The government health workers were the main source of information about the campaign at the household level (85%) followed by NGO worker (6%), miking (3%) and family/friend/neighbor (4%) (*figure 8*).

72 percent of the respondent mentioned that health worker visited their household before the MNT campaign. 42% of the household interviewed had a referral slip for OPV provided by the health worker when visited before the campaign; while 24% percent of the women got TT card from the health worker during their household visit before the MNT campaign. 36 percent of the respondent mentioned that someone came to the household to inquire about receiving vaccination during the campaign period.

Discussion

The survey found 70% crude coverage of full immunization against six EPI diseases among children aged between 12-23 months with good access (89 percent) to immunization in northern rural Bangladesh. However, the coverage drops down to 62 percent when valid doses are considered and further down to 40% when considered by 12 months of age. The crude coverage is close to the national coverage for rural areas (74 percent).⁴ While the program had very good access the continuity of the program was not good as reflected in drop out rate for DPT1 to DPT3 at 16 percent and DPT1 to Measles at 15 percent. In case of TT among child bearing aged women (15-49 years) the access rate was high with 95 percent women having first dose of TT. However, 27% of newborns were unprotected from neonatal tetanus.

Basic knowledge of the respondents about EPI was very low. Only 16 percent of the respondent knew the correct age of full immunization and only 18% of the women knew that 5 TT doses are required for lifetime protection. About one-third of the mothers did not know about the need and importance of the 2nd or 3rd dose, and another 16% did not know when to return for subsequent doses.

Lack of knowledge about the importance of immunization, did not know where to go for immunization, fear of adverse reaction, and no faith in immunization were the reasons for non immunization, which indicate that the wrong perception about immunization still persists in the community. While lack of knowledge about the need of second dose, when to return for 2nd, 3rd dose and vaccinator not available at the EPI site resulted in high drop out rate and consequently to low full immunization coverage rate in the surveyed population. Proper counseling at every contact for subsequent dose, reminding the EPI schedule and time to return for subsequent dose by the health workers can decrease drop out rate and improve compliance for full immunization by the end of one year age of the child.

Lack of information of the campaign was the major reason for not receiving vaccines during the campaign. This reflects poor advocacy, inadequate social mobilization and communication activities at the community and household level. Reasons given by the respondents for not receiving measles and TT during the MNT campaign indicate gaps and misconception about measles and TT vaccine in the campaign on top of routine vaccination. Families and communities should be adequately informed about the objective of the campaign and thus the importance of these vaccines during a campaign.

Conclusions and Recommendations

Childhood immunization

Access to EPI services in the survey area was high (89 percent) but full immunization coverage of children by 12 months of age was low (40 percent). The low immunization coverage can be attributed to high drop out rate and low level of knowledge of mothers/caretakers about immunization and EPI schedule.

Recommendations

- ? Actions are needed to improve counseling of mothers about the importance of all vaccines and the correct timing of different vaccines by the service providers.

TT immunization of women (15-49 years)

27% newborns were unprotected against tetanus. Knowledge about 5 doses of TT required for life- time protection was low (18%).

Recommendations

- ? The service providers and community outreach workers should register all pregnant women in their area and follow up to ensure TT doses to protect their newborns.
- ? Behavior Change and Communication (BCC) activities on community awareness on the benefits of 5 doses of TT should be further developed and implemented.

MNT Campaign

Lack of information of the campaign was the most important limiting factor for coverage of all three antigens.

Recommendations

- ? Information about campaign should be disseminated through various communications and social mobilization activities, and targeted household visits by health workers.

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The following are extracts from **Anthony G Turner, Robert J Magnani and Muhammad Shuaib's** article entitled "**A not quick as quick but much cleaner alternative to the Expanded Programme on Immunization (EPI) cluster survey design**" published in the *International Journal of Epidemiology* in 1996, volume 25, Issue No. 1, pages 198-203.

The standard EPI Cluster Survey Design

"The sample design for the EPI Cluster Survey is a two-stage design involving the selection of 30 primary sampling units or 'clusters' (usually village or other area units), from which 210 children with a target age range (usually 12-23 months) are chosen, seven children per cluster. The sample size of 210 children (per domain or stratum) is mandated by the desire to estimate the level of immunization coverage to within +/- 10 percentage points of the true population proportion with 95% statistical confidence, assuming a design effect (i.e. *deff*) of 2.0. Based upon prior experience with immunization coverage surveys (primarily in the US), 30 clusters are generally thought to be necessary to yield sufficiently reliable estimate."

"In the standard design, clusters are chosen from a list of primary sampling units (i.e. villages, urban communities, census enumeration areas etc.) through systematic random sampling with probability proportional to estimated size (*ppes*). The latest estimates of cluster population sizes, which are assumed to be proportional to the number of children in the target age group in each cluster, are typically used as measures of size. The 30 clusters so chosen are then visited by survey field staff who carry out the second stage of sample selection and conduct the household interviews. "

"The original EPI design called for sample children to be chosen randomly from a list of all eligible children in each sample cluster. However, because the creation of lists of households and children tends to be time-consuming, costly, and unfeasible in some settings, this procedure is only infrequently used in actual practice. Instead, one of several simplified second stage sampling procedures is commonly used. In one variant, children are selected by first choosing a random direction from a central location in a village or community (e.g. by spinning a bottle). The number of households in that direction to the edge of the community is then counted, and one household is randomly chosen to be the first sample household. Subsequent households are chosen by visiting the nearest neighboring households until information has been gathered on seven children. In a yet simpler variant, a direction from a central starting point is randomly chosen as described above and households are contacted as the interviewer moves in the chosen direction until the required information has been gathered for seven children."

"The second stage sampling methods described above are 'quota sampling procedures' and some of the problems resulting from the use of this approach have been noted over the years."

"First, quota sampling does not ensure that every eligible member of the target population has a known, non-zero chance of being selected. Hence, the standard EPI design, as it is usually applied, is not a true probability sample design."

"A second problem concern sampling weights. However, since measures of size in sampling frames are often inaccurate due to census errors and changes in population since the census was taken, application of the standard EPI Cluster Survey method does not automatically result in a self weighting sample. The survey data must be weighed in order to yield unbiased estimates. However, since selection probabilities are not known in most EPI Cluster Survey applications, sampling weights can not be calculated."

"Thirdly, a computer simulation study demonstrates that the EPI Cluster Survey based upon quota sampling at the second stage of sample selection is considerably more prone to sampling bias than conventional cluster sampling, particularly where immunized children are 'pocketed' within clusters. "

"Finally, there is the issue of how second stage sample selection should proceed in surveys with multiple measurement objectives."

Annex-B

List of Selected Clusters for the Survey

District	Thana	Union	Mouza name	Village name	Total Population	Cluster No.
Dhaka	Dohar	Nayabari	Dakshin Bahra	Bahra	2499	1
Gopalganj	Moksdpur	Gobindapur	Palpara	Palpara	1305	2
Madaripur	Sadar	Chilarchar	Purba Raghurampur	Purba Raghurampur	1142	3
	Sadar	Panchakhola	Janjira	Char Kalikapur	2519	4
Mymensingh	Gauripur	Bhangnamari	Bhangnamari	Anantaganj	21	5
	Gauripur	Sidhla	Sidhla	Charali	2020	6
Narsingdi	Palash	Charsindur	Kauadi	Kauadi	1947	7
Netrokona	Madan	Madan	Bri-barikandi	Barikandi	548	8
Sariatpur	Bhedargonj	Digar mohishkahali	Digar mohishkahali	Wahab Dhalir Kandi	628	9
	Palong	Binodpur	Mohammadpur	Dakshin Mohammadpur	1534	10
Tangail	Kalihati	Elenga	Sherpur	Sherpur	539	11
Bogra	Shibgonj	Saidpur	Baria	Baria	251	12
Dinajpur	Khansama	Goaldihi	Hashimpur	Hashimpur	5402	13
Kurigram	Rowmari	Bandaber	Purar Char	Uttar Tapur Char	438	14
Lalmonirhat	Kilganj	Bhotemari	Saulmari	Saulmari	2679	15
	Nawabganj	Gomostapur	Bhangabaria	Bhangabari	Bahangabari Islampur	2250
Shibgonj		Ghorapakhia	Ghorapakhia Debuttar	Ghorapakhia Debuttar	9366	17
Nilphmari	Domar	Gomnti	Dakshin Ambari	Dakshin Ambari	2712	18
Pabna	Faridpur	Demra	Kalyani	Brikalyani	322	19
Rangpur	Badarganj	Madhupur	Madhupur	Madhupur	5675	20
	Pirgacha	Kaikuri	Sulli Para	Sulli Para	1601	21
	Sadar	Uttam	Abhiram	Madhya Abhirampur	1364	22
Thakurgaon	Baliakhandi	Paria	Machhkhuria	Machhkhuria	1556	23
Hobiganj	Chunarughat	Gazipur	Gobarkhola	Jatragaon	126	24
Maulavibazar	Kamalgonj	Shamshernagar	Samshernagar T.g.	Sonechhara	1148	25
Sunamganj	Derai	Derai sormangal	Douz	Douz	1626	26
	Jamalganj	Jamalganj	Chandpur	Hindu Kalipur	156	27
	Tahirpur	Tahirpur	Jamalgar	Surjergaon	685	28
Sylhet	Kanighat	Purba Laxmiproshad	Bhati Barapait	Bhati Barapait	1957	29
Kishoreganj	Mithamain	Gopedighi	Gopedighi	Khasapur	1487	30

Annex-C

List of Never Vaccinated Children Identified by Clusters

District	Thana	Union	Mouza name	Village name	Total Population	Cluster No.	Never Vaccinated Children
Dhaka	Dohar	Nayabari	Dakshin Bahra	Bahra	2499	1	-
Gopalganj	Moksdpur	Gobindapur	Palpara	Palpara	1305	2	-
Madaripur	Sadar	Chilarchar	Purba Raghurampur	Purba Raghurampur	1142	3	-
	Sadar	Panchakhola	Janjira	Char Kalikapur	2519	4	4
Mymensingh	Gauripur	Bhangnamari	Bhangnamari	Anantaganj	21	5	-
	Gauripur	Sidhla	Sidhla	Charali	2020	6	7
Narsingdi	Palash	Charsindur	Kauadi	Kauadi	1947	7	-
Netrokona	Madan	Madan	Bri-barikandi	Barikandi	548	8	-
Sariatpur	Bhedargonj	Digar mohishkahali	Digar mohishkahali	Wahab Dhalir Kandi	628	9	-
	Palong	Binodpur	Mohammadpur	Dakshin Mohammadpur	1534	10	-
Tangail	Kalihati	Elenga	Sherpur	Sherpur	539	11	-
Bogra	Shibgonj	Saidpur	Baria	Baria	251	12	-
Dinajpur	Khansama	Goaldihi	Hashimpur	Hashimpur	5402	13	-
Kurigram	Rowmari	Bandaber	Purar Char	Uttar Tapur Char	438	14	-
Lalmonirhat	Kilganj	Bhotemari	Saulmari	Saulmari	2679	15	-
Nawabganj	Gomostapur	Bhangabaria	Bhangabari	Bahangabari Islampur	2250	16	1
	Shibgonj	Ghorapakhia	Ghorapakhia Debuttar	Ghorapakhia Debuttar	9366	17	-
Nilphmari	Domar	Gomnti	Dakshin Ambari	Dakshin Ambari	2712	18	-
Pabna	Faridpur	Demra	Kalyani	Brikalyani	322	19	-
Rangpur	Badarganj	Madhupur	Madhupur	Madhupur	5675	20	-
	Pirgacha	Kaikuri	Sulli Para	Sulli Para	1601	21	-
	Sadar	Uttam	Abhiram	Madhya Abhirampur	1364	22	-
Thakurgaon	Baliakhandi	Paria	Machhkhuria	Machhkhuria	1556	23	-
Hobiganj	Chunarughat	Gazipur	Gobarkhola	Jatragaon	126	24	1
Maulavibazar	Kamalgonj	Shamshrnagar	Samshernagar T.g.	Sonechhara	1148	25	-
Sunamganj	Derai	Derai sormangal	Douz	Douz	1626	26	-
	Jamalganj	Jamalganj	Chandpur	Hindu Kalipur	156	27	-
	Tahirpur	Tahirpur	Jamalgar	Surjergaon	685	28	-
Sylhet	Kanighat	Purba Laxmiproshad	Bhati Barapait	Bhati Barapait	1957	29	2
Kishoreganj	Mithamain	Gopedighi	Gopedighi	Khasapur	1487	30	-

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