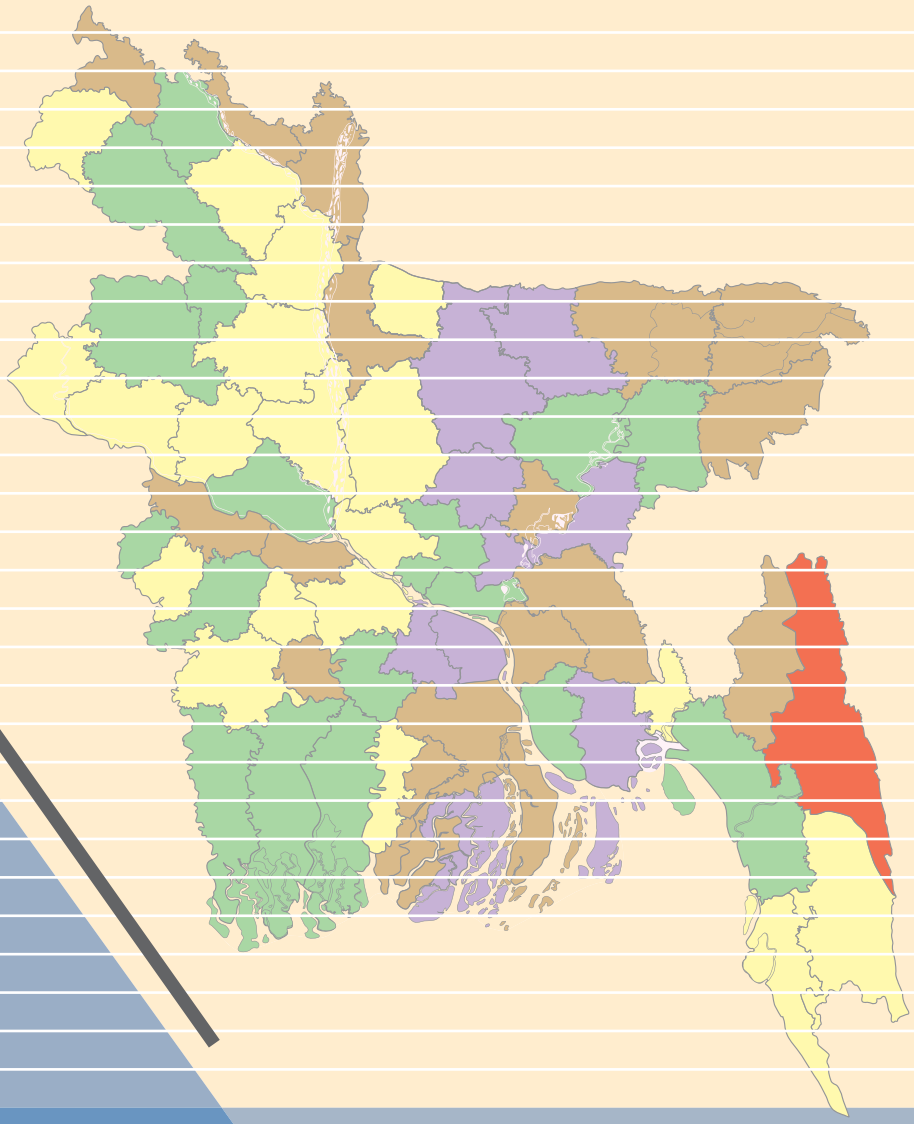
BANGLADESH

EPI

Coverage Evaluation Survey 2013



EXPANDED PROGRAMME ON IMMUNIZATION

Directorate General of Health Services

Mohakhali, Dhaka-1212

স্বাস্থ্য ও পরিবার কল্যাণ মন্ত্রণালয়

EPI Coverage Evaluation Survey 2013

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Coverage Evaluation Survey 2013

Expanded Programme on Immunization

Directorate General of Health Services

Mohakhali, Dhaka 1212, Bangladesh

November, 2013

MESSAGE

Mohammed Nasim, MP
Hon'ble Minister
Ministry of Health and Family Welfare

I feel pleasure that Expanded Programme on Immunization (EPI) under Directorate General of Health Services has been completed "Coverage Evaluation Survey 2013" and is going to publish the report.

EPI is one of the successful programs of Health sector in Bangladesh. With a view to reduce child mortality and morbidity, EPI has made a tremendous success by giving vaccines to the targeted population. As a result, the child mortality and morbidity from the vaccine preventable diseases become dramatically reduced.

Government of Bangladesh is committed to provide basic health services to all with special emphasis on children and women. As vaccination is the gateway to primary health care as well as safe, effective and economical intervention, the country started EPI activities with the support of UNICEF, WHO in 1979 with the objective to reduce infant and maternal mortality from the six awesome vaccine preventable diseases namely Tuberculosis, Diphtheria, Pertusis, Tetanus, Poliomyelitis and Measles. Later with the introduction of Hep-B, Hib and MR vaccine, EPI is now covering protection against 9 diseases reaching every door step of the community through its outreach sites.

Along its long journey, EPI developed a fruitful useful partnership with a good number of development partners for which we are very much thankful. Due to the combined efforts of all the stakeholders, donors, partners and all the professional bodies, EPI achieves tremendous success which has attracted attention at home and abroad. This year, from every corner, EPI has achieved fully vaccination coverage of 81 % in 2013 which was only 2% in 1985. It is a huge achievement and for this my heartfelt gratitude goes to the field force working sincerely to achieve such memorable task.

Coverage Evaluation Survey (CES) is a very effective tool to monitor the progress and find out the weakness of the vaccination program. Health personnel who are very much involved in this vaccination program will be benefited through the findings and recommendations of this EPI Coverage Evaluation Survey 2013 report for making good plan and formulating effective strategies to reach every child under EPI.

I acknowledge with sincere gratitude the support rendered by UNICEF, WHO, GAVI and other cooperating partners for the implementing EPI programme in Bangladesh protecting our children and mother.

Joy Bangla, Joy Bangabandhu

Long live Bangladesh

Mohammed Nasim

MESSAGE

Zahid Maleque, MP
Hon'ble State Minister
Ministry of Health and Family Welfare

It is my great pleasure to know that "EPI Coverage Evaluation Survey (CES) report 2013" under Directorate General of Health Services is going to be published.

The immunization programme is considered as a success story in Bangladesh because of its progress made during the last 25 years and its contribution to the reduction in childhood mortality and morbidity. To monitor the progress and evaluation of the Immunization programme, "Coverage Evaluation Survey (CES)" is an effective tool which EPI is regularly conducting with the support of UNICEF and WHO.

Immunization contributes to improve health and life expectancy through its social and economic impact at national and community level.

After launching of EPI in 1979, the coverage is gradually increasing which was only 2% in 1985 and now 80.7 % in 2013. It has been possible due to the combined efforts of the manpower of Health & Family Planning sector and technical support from WHO and UNICEF. I would like to thank all experts who made their valuable contribution to the CES 2013.

The Government of the People's Republic of Bangladesh is committed to ensure health for all. Therefore, our present government under the leadership of Hon'ble Prime Minister Sheikh Hasina established Community Clinics to render basic health care services to the door-step of the community.

I would like to express my thankful gratitude to the concern officials for conducting CES 2013. I hope findings of this survey will be useful to all concerned.

Joy Bangla, Joy Bangabandhu

Long live Bangladesh

Zahid Maleque, MP

MESSAGE

Secretary
Ministry of Health and Family welfare
Govt. of the People's Republic of Bangladesh

Government of Bangladesh is committed to provide basic health services to all with special emphasis on children and women. The Expanded Program on Immunization (EPI) in Bangladesh is one of the successful programs in health sector in Bangladesh which aims to reduce child morbidity and mortality from vaccine preventable diseases

EPI started its journey on 7th April 1979 with 6 conventional vaccines against six diseases. With the passing of time other new and underutilized vaccines were incorporated in national EPI program. Global Alliance for Vaccines and Immunization (GAVI) has provided a significant contribution in this regard. EPI introduced Hepatitis B in 2003, Haemophilus Influenzae type B vaccines in 2009 and MR vaccine and Measles second dose in 2012.

The Coverage Evaluation Survey (CES) is an important tool for estimating the level of vaccination coverage at national and subnational levels i.e. districts and city corporations. It also allow us to compare the progress and achievement of the program including the areas of concern i.e. reasons for left out, drop out, vaccination card retention and other quantative and qualitative aspects of the vaccination program issues. CES findings help the program personnel for making good planning, developing strategies to ensure quality service delivery that can help to reach the objectives.

I urge all officials to go through the survey report and identify why it had not been possible to reach every child and help us to design program accordingly so as to achieve desired level of coverage.

Finally, I would like to express my gratitude to UNICEF and WHO for providing financial and technical support in conducting the survey.

Mr. M. M. Neazuddin

PREFACE

Government of Bangladesh is committed to provide basic health services to all with special emphasis on children and women. In the year 1979, the government took the initiatives for implementing vaccination program to combat six vaccine preventable diseases - namely Diphtheria, Whooping cough, Tetanus, Poliomyelitis, Tuberculosis and Measles. Further initiative has been taken in 1985 to reach every child irrespective their vicinity under Universal Childhood Immunization (UCI). As a part of this initiative intensification was started in the 1986 and was completed in the year 1990 to reach every target population under EPI. It's about of strengthening and intensifying immunization services, Hepatitis B, Hib in the form of pentavalent and most recently MR and MSD vaccines has been introduced in EPI, Bangladesh. Still, a number vaccines are in the pipe-line which will be introduced in due time considering programmatic and other issues.

The program is saving thousands of children from premature deaths and agonizing life-long disabilities. The program also aims at women of childbearing age (CBA) and pregnant women to give TT vaccine against maternal and neonatal tetanus and eventually attained the Neonatal Tetanus elimination in 2008. Polio has become a history with the last indigenous case in 2000. Although there was an importation of polio outbreak during 2006, which again became a success story of EPI to contain the outbreak within a period of less than a year and limiting the case count to 18 only. As consequences of steady and sustained development, a number of globally renowned acknowledgements like GAVI Alliance Award for strengthening EPI services, UN Award for outstanding performance in achieving MDG especially in child mortality etc. have been rewarded to our country.

It is true that EPI in Bangladesh has brought visible and tangible changes over the years in terms of child mortality and morbidity from the vaccine preventable diseases. However, still there are some rooms for improvement. This National Coverage Evaluation Surveys (CES) could be good tool for helping us to identify those areas that need improvement towards achieving our desired goal.

Like before, CES 2013 was a joint effort undertaken by GOB and partners. I would like to express my sincere thanks to UNICEF for their generous support in conducting the EPI Coverage Evaluation Survey 2013.

Finally, I would like to thank Nielsen Bangladesh for carrying out this Survey for their quality works. Thanks to the respondents who provided their valuable time with required information for the survey without which this study would not have been possible.

Prof. Dr. Deen Mohd. Noorul Huq
Director General
Directorates General of Health Services
Mohakhali, Dhaka 1212

FOREWORD

It is indeed a great pleasure for me to write forwarding note for EPI National Coverage Evaluation Survey (CES) 2013.

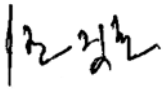
EPI is considered a success story in Bangladesh because of its remarkable progress made during the past 20 years. It provides almost universal access to immunization services as measured by the percentage of children under the age of one receiving BCG, which has increased from 2% in 1985 to 99% in 2013. However, the percentage of children under the age of one receiving all doses of vaccines at the right time and right interval has been achieved to 81% (CES_2013).

Bangladesh has been conducting annually national coverage evaluation survey (CES) in regular basis. This survey has been proved as the most acceptable means of EPI program both in quantitative and qualitative aspects of the program.

Accordingly, EPI Coverage Evaluation Survey (CES) 2013 carried out by Nielsen Bangladesh with the financial support form UNICEF. The purpose of conducting 2013 CES is to assess the childhood vaccination coverage under routine EPI, TT vaccination coverage among women having children of 0 - 11 months, TT5 coverage among women of 18-49 years, OPV coverage in the 20th NIDs and Vitamin-A and Albendazole coverage during NVAC which was held in June 2012. As mentioned earlier, both qualitative and quantitative aspects were assessed in all the areas. This nationwide survey was conducted in 76 units that includes all 64 districts, 10 City Corporations and 2 slums in two City Corporations. The survey findings will provide us an overall picture of EPI performances which enable us to analyze the performances of individual survey unit along with the national and divisional performances that can help us to take appropriate measure to address the concern areas.

I would like to thank all personnel in EPI HQ for their valuable contributions to the CES 2013. My sincere thanks to Nielsen Bangladesh for conduction the survey successful. My special thanks to UNICEF for their financial support to carry out this important survey. I would like to express my sincere thanks to WHO for their valuable contributions in the survey.

I believe this CES report will serve as a useful monitoring tool for all managers working in government and non-government organizations to take necessary strategies to reach all target groups under EPI to protect them against preventable diseases. We look forward to all concerned persons in the country for using the CES 2013 document for the improvement of the EPI program.



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ACKNOWLEDGEMENT

As a part of program performance evaluation, Bangladesh has been conducting national Coverage Evaluation Survey (CES) since 1991. The survey would provide us national, divisional, district and city corporation level EPI performance. In 2013, the survey was conducted in all 64 districts, 10 city corporations and 2 slums (1 in Dhaka City Corporation and the other one in Chittagong City Corporation). The survey result provides us more detailed picture of districts' and City Corporations' vaccination performances. It would also help us to analyze and identify low performing districts and City Corporation in order to take appropriate measures to improve the situations.

It is evident that vaccination coverage under EPI is increasing over the past years since last one decade. Survey results indicated that in 2010, the national valid fully vaccination coverage (FVC) was 79.4%, and in 2011 it was 80.2% while it is further increased by one percentage (81%) in 2013. Considering this achievement we can say that it plays an important role in reducing child mortality and morbidity from vaccine preventable diseases in the country. Acknowledging this tremendous success, Bangladesh has been recognized internationally through receiving International awards from United Nations in 2010 and in 2009 or 2012 from GAVI.

I must congratulate EPI Head Quarter personnel to provide support in planning, coordinating and other aspects of this survey. I also express my gratitude to Dr. Jucy Merina Adhikari, Immunization Specialist, UNICEF for her sincere support and contributions in this event. Thanks to WHO for their technical support. I must acknowledge UNICEF, Bangladesh for financial support to undertake this survey. My sincere thanks to Nielsen Bangladesh for supporting Expanded Program on Immunization (EPI) through conducting the survey and preparing this report.

Hope this report would be useful for all concern persons

Dr. Shafiqur Rahman
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EPI and Surveillance
Directorate General of Health Services
Mohakhali, Dhaka 1212

November 2013
Dhaka

TABLE OF CONTENTS

ACRONYMS

BBS	Bangladesh Bureau of Statistics
BCG	Bacillus Calmette Guerin
BCC	Barisal City Corporation
CC	City Corporation
CCC	Chittagong City Corporation
CES	Coverage Evaluation Survey
Com CC	Comilla City Corporation
DNCC	Dhaka North City Corporation
DSCC	Dhaka South City Corporation
DPT	Diphtheria, Pertussis and Tetanus
EA	Enumeration Area
EPI	Expanded Programme on Immunization
IPHN	Institute of Public Health Nutrition Bangladesh
IU	International Unit
KCC	Khulna City Corporation
LAUNCH	Large Number of Unimmunized Children
MNT	Maternal & Neonatal Tetanus
NCC	Narayanganj City Corporation
NGO	Non-Government Organization
NID	National Immunization Days
NNS	National Nutrition Services
NT	Neonatal Tetanus
NVAS	National Vitamin A Supplementation
OPV	Oral Polio Vaccine
PAB	Protected at Birth
PPS	Probability Proportional-to-Size

PNVAC	Post-natal Vitamin A Capsule
RCC	Rajshahi City Corporation
Ran CC	Rangpur City Corporation
SBA	Skilled Birth Attendant
SCC	Sylhet City Corporation
SPSS	Statistical Package for Social Science
TT	Tetanus Toxoid
UNICEF	United Nations Children's Fund
USBA	Unskilled Birth Attendant
VAC	Vitamin A Capsule
WHO	World Health Organization

GLOSSARY

Cluster	Cluster is defined an enumeration area which constitute of on average with 120 households
Crude	Vaccine received irrespective of vaccination schedule such as exact age and interval for each antigen
Fixed Sites	Received vaccine from EPI outreach centers and hospitals (consider only for NID)
Fully Vaccinated	If a child receive doses of the "standard eight" antigens-BCG, 3 doses of Pentavalent (diphtheria- pertussis -tetanus-(DPT), Hib, and HepB, polio (3 doses), and measles vaccines
Hard to Reach Area	If the recorded time to go to a cluster (Mouza) took more than 2 hours from Upazila Headquarter, the cluster was identified as hard-to-reach area
Invalid	Vaccine received not following EPI vaccination schedule of exact age and dose interval for each antigen
Mahallah	Smallest identifiable area of municipalities, which is known to the inhabitants as mahallah
Mouza	A revenue village with a jurisdiction list number and defined area is called mouza.
PAB	The newborn is protected if the mother has tetanus antibody status while the child is born. The mother achieved this status by taking appropriate doses of TT vaccine
Valid	Vaccine received following EPI recommended exact age and dose interval for each antigen
Upazila	Lowest administrative unit (sub-district level)

EXECUTIVE SUMMARY

In Bangladesh, Expanded Programme on Immunization (EPI) aims to achieve coverage objectives: (a) to increase vaccination coverage at least 90 percent at the national level and 85 percent at district level and (b) disease reduction objectives: maintain polio free status; maintain maternal and neonatal tetanus elimination status; achieve 95 percent measles coverage and reaching measles elimination status by 2016. EPI in Bangladesh has been recognized for its sustained high vaccination coverage and great contribution to the reduction in childhood morbidity and mortality. The Government of Bangladesh, in collaboration with UNICEF, WHO and Partner Agencies, is making every effort to reach the un-reached children by using the Reach Every Community (REC) strategy. Since its initiation, EPI has continued to diversify its efforts in terms of area coverage, prevention against diseases, quality service and awareness building as well as technical skill of the health personnel. Maintaining polio free and maternal & neonatal tetanus elimination status and reduction of child mortality and morbidity are a challenge for Bangladesh in achieving Millennium Development Goal. To overcome this challenge, EPI, in collaboration with UNICEF and WHO, is making serious efforts to identify the areas which should be addressed properly.

The acts of introducing new vaccines, organizing workshops in medical colleges and hospitals, introducing software based monitoring tools in some selected districts, providing training to statistician and Medical Technologists of EPI to monitor the vaccination status of children, organizing NID once in a year, maintaining effective management of 8 sites strategies, periodically organizing crush programs for hard-to- reach areas, making vaccine available, establishing child registers to follow up the immunization status, formulating micro plans for the health workers and strengthening monitoring system are major efforts to increase the immunization coverage.

As a result of the outstanding performance in improving the child immunization status, Bangladesh achieved GAVI Alliance Award in 2009 and 2012, which is given as a recognition to achieving the Millennium Development Goals (MDG), particularly in reducing child mortality.

In Bangladesh, EPI is implemented through various outreach centers and clinic-based activities. Motivation and education on immunization are provided during the household visits by the health workers, who are known as Health Assistants (HA), and family planning field workers, called Family Welfare Assistants (FWA). The vaccination services are available at the outreach sites like EPI sites, satellite clinics, static clinics and community clinics.

Though Bangladesh has got a remarkable success in reaching universal coverage with BCG, still it is behind the target coverage of 90 percent with valid doses of all antigens. BCG coverage was 99 percent in CES 2011 while it was only 2 percent in 1985. In 2006, full vaccination coverage was 71 percent and it was increased by 80.2 percent in 2011 across the country. The previous coverage evaluation surveys show that district-wise coverage varies from one year to another. These ups and downs of coverage level in the districts increase demand for identifying the causes and in a way strengthening the monitoring activities.

To measure the achievements and drawbacks of the programme and to make strategic plan in order to achieve coverage objective, Coverage Evaluation Survey is an important mean. Established in 1991 as a monitoring tool to assess performances, achievements and progress of the Expanded Programme on Immunization (EPI), the government of Bangladesh, in collaboration with UNICEF and WHO, has been conducting the periodic EPI National Coverage Evaluation Survey, also known as CES, which were conducted every year, except in 1996, 2004, 2008 and 2012. Since 1991, a total of 18 CESs were conducted so far. In 2013, the 19th CES was conducted with the financial assistance from UNICEF and technical assistance from UNICEF, WHO and EPI.

ROUTINE CHILDHOOD VACCINATION COVERAGE

Nationally, 80.7 percent of the surveyed children received all the doses of each antigen by the age of 12 months following the EPI-recommended age and interval. By specific antigen, 99.3 percent of the children received BCG as against the children who received Penta1 (90.9 percent). However, 92.6 percent of the children received Penta2 and 92.0 percent of the children received Penta3. The difference was higher between BCG and Penta1 (8.4 percentage points) than Penta3 and Measles (6.5 percentage points) doses. On the other hand, the difference was much lower between Penta2 and Penta3 (0.6 percentage point). The valid coverage declined down from 99.3 percent for BCG to 85.5 percent for measles. The remarkable gap between BCG, which is termed as the Access to Vaccination Service and the last antigen measles resulted from dropout and the act of administering invalid doses (see Figure A3).

By type of residence, compared to their urban counterparts valid coverage was found to be higher among the children who reside in rural areas. 81 percent of the children were found to be fully vaccinated with all the valid doses in rural areas and 80 percent of the children residing in urban areas were found to be fully vaccinated (see Figure A9). By gender, slight difference of 1 percentage point was observed in the coverage between male and female children (81 percent for males and 80 percent for females) (see Figure B13).

Across the division, the highest percentage of full vaccination coverage by the age of 12 months was in Rajshahi division (85.2 percent) while it was the lowest in Barisal division (77.5 percent). This was followed by Khulna (84.8 percent), Rangpur (81.5 percent), Sylhet (80.7 percent); Chittagong (79.3 percent) and Dhaka (79.0 percent) divisions (see Figure A4).

Among the city corporations, the coverage was found to be the highest (91 percent) in Rajshahi City Corporation and the lowest (70 percent) in Chittagong City Corporation. Valid vaccination coverage in other city corporations were 87 percent in KCC, 85 percent in SCC, 82 percent in Com CC, 81 percent in DNCC, 78 percent in Ran CC, 77 percent in BCC, 76 percent in DSCC and 72 percent in NCC (see Figure B6).

While analyzing the trend in full vaccination coverage by the age of 12 months, a sharp enhancement was observed over the last one decade. Since the beginning of the last decade (1991-2000), the trend was almost constant between 1991 and 1993.The coverage increased

from 50 percent in 1993 to 62 percent in 1994. Since 1994, the levels of vaccination fluctuated, but remained almost at the same level till 2000. A continuous improvement in the coverage started from 2001. In the last one decade it increased by 29 percentage points. The coverage was 52 percent in 2001 which increased to 81 percent in 2013 (see Figure A12).

As regards to the crude coverage levels, 93 percent of the children were found to be fully vaccinated in CES 2013. By specific antigen, crude coverage was 99 percent for BCG, 97 percent for Penta3 and OPV3 and 93 percent for measles (see Figure A1). By area of residence, it was 93 percent in both urban and rural areas (see Figure A7).

Among the administrative divisions, crude coverage was found to be highest in Rajshahi (95 percent) and lowest in Barisal divisions (91 percent). Crude coverage was 94 percent in Rangpur and Khulna followed by Chittagong (93 percent) and Dhaka and Sylhet divisions (92 percent).

By City Corporation, crude coverage was the highest in RCC and Com CC (97.1 percent each), and the lowest in BCC (89.0 percent), showing a large disparity of coverage levels between the divisions. Crude coverage in DNCC was 94.3 percent, which was followed by SCC and KCC (93.3 percent each), DSCC, CCC, NCC (92.4 percent each) and Ran CC (91.0 percent).

Program Quality

Incidence of Invalid Dose: A dose is considered as invalid when a vaccine is administered without following the exact age and interval as recommended by EPI. Nationally, in 2013, 4.4 percent of the total Penta1 doses and 3.8 percent of the total measles doses administered among the surveyed children were found to be invalid (see Figure C5).

Dropout: A child is considered to have dropped out when s/he misses any of the subsequent doses of the recommended antigens (three doses of Penta, 3 doses of OPV and one dose of measles vaccine). Overall, the dropout rate was found to be 2.2 percent for Penta1- Penta3 and 6.4 percent for Penta1-measles across the country (see Figure C11).

Abscess Following Vaccination: Adverse Events Following Immunization (AEFI) in the form of abscess might occur in some cases at the site of parental vaccination. The incidence of abscesses following Penta or measles vaccination was calculated in order to assess the safety of the injections for childhood vaccination. This rate was computed as the proportion of the recipients of Penta or measles vaccine who had an abscess after receiving any of these antigens.

Overall, 1.2 percent of the children who received Penta or measles vaccines reported to have had an abscess after receiving vaccine (see Figure C21). Occurrence of abscesses following Penta or measles vaccination was 1.1 and 1.6 percent in rural and urban areas respectively.

Card Retention Rate: In CES 2013, 81 percent of the mothers/caregivers reportedly retained the vaccination card across the country. Card retention rate was much higher in rural areas (83 percent) than that in urban areas (76 percent)(see Figure C1). Compared to CES 2011, it was 4 percentage points higher in 2013. Nationally, the card retention rate in 2013 was 81 percent as compared to 77 percent in 2011 (see Figure C2).

Reasons for Never or Partial Vaccination: In order to achieve the coverage objectives, information about the reasons for one's abstaining himself/herself from vaccination is very important. Since the routine administrative data do not provide any accurate information in this regard, vaccination coverage is estimated through surveys.

Mothers whose children were not vaccinated were asked about the reasons of not immunizing their children (see Table C1). Almost one-third of them reported 'fear of side effects' (30.8 percent) while 19.2 percent of them 'did not believe in vaccination'. A similar percentage reported 'not to take their children to health complex for the vaccine due to child's sickness'. Seven percent of the mothers admitted that they did not know that the child should be given vaccine. On the other hand, 4.2 percent said that the workers did not give the vaccine to the child for child's sickness. The same percentage as the previous one admitted about their idleness in giving their child the vaccine and 3.3 percent said that they were busy. Another 3.3 percent reported that their child cries so they could not give him/her vaccine. Except that, the other reasons for not immunizing the child were rumors and even the mothers did not know where to go for vaccine. Among the reasons for partial vaccination, the results show that 16.3 percent of the mothers did not take their children to the health complex for their child's sickness. About fifteen percent of them reported that they didn't know the time of the vaccine of measles.

Knowledge about the Common Side-effects of Vaccination: Children experience minor side-effects after the vaccination. It lasts for a short time and the child recovers soon without any problem. CES 2013 made an assessment of the mothers' knowledge about the common side-effects that occur following the vaccination. All over the country, 93 percent of them reported fever as the common side-effect of vaccination while 6 percent of them mentioned about scar/abscess (see Figure C24).

TETANUS TOXOID (TT) VACCINATION COVERAGE AMONG MOTHERS WITH 0-11 MONTHS OLD CHILDREN

Valid TT Vaccination Coverage

Nationally, 44 percent of the mothers received all the 5 doses of TT vaccination (see Figure F2). However, there was a slight variation between urban (43 percent) and rural (44 percent) areas in this regard. Area wise analysis of valid TT2 dose shows a difference of 1 percentage point between urban and rural areas - where the TT2 coverage in urban areas was 97 percent, it was 96 percent in rural areas.

The valid TT3 coverage was 83 percent nationally. It declined down to 64 percent for TT4 and 44 percent for TT5 doses. Similarly, in urban areas valid TT3 coverage was 84 percent and TT4 was 63 percent as against 84 percent coverage for TT3 and 64 percent for TT4 in rural areas (see Figure F2).

Crude TT Vaccination Coverage

Crude TT vaccination coverage is defined as the vaccination coverage which is estimated without considering the proper interval between the consecutive doses. Analysis of crude TT vaccination coverage shows that 58 percent of the mothers completed all the 5 doses of TT vaccine across the country. There was variation in the coverage between urban (57 percent) and rural (58 percent) areas in terms of the access to the vaccination service. Nationally, 98 percent of the mothers received TT1 and 96 percent of them received TT2 vaccination.

Across the country 96 percent of the mothers received TT2 doses. It decreased down to 88 percent for TT3, 74 percent for TT4 and finally, 58 percent for TT5 dose. A similar trend was observed in both urban and rural areas (see Figure F1).

Retention of TT Vaccination Cards

A little over one-third (37 percent) of the mothers reported that they had the TT vaccination card. However, 55 percent mentioned that they lost it. Fifty nine percent of the mothers residing in urban areas and 53 percent of them in rural areas lost their cards. Likewise, card retention rate was found to be 40 percent across the country with 6 percentage points difference between urban (36 percent) and rural (42 percent) areas (see Figure G1).

The Incidence of Invalid Doses

CES 2013 indicates that the incidence of invalid doses was more prevalent for TT3 vaccination and that the incidence rate decreased for the subsequent doses. Thirteen percent of the total surveyed mothers received invalid doses of TT3 across the country. The incidence of invalid doses for TT4 was 12 percent across the country - 12 percent in both the rural and urban areas. However, for TT5 the rate was 11 percent nationally. TT5 coverage was 11 percent in rural and urban areas (see Figure G4).

Children Protected at Birth (PAB) against Neonatal Tetanus

In the country, 91 percent of the children were found to be protected at birth against tetanus. The rural-urban variation was 2 percentage points (91 percent in rural and 93 percent in urban areas) (see Figure G10). The national trend of PAB shows a slow but gradual increase with some minor fluctuations in PAB since 1999 (see Figure G11). PAB against tetanus increased by 10 percentage points - from 83 percent in 1999 to 93 percent in 2011. A further change from the CES 2011 to 2013 showed a 2 percent decrease in PAB (from 93 percent to 91 percent).

Among the rural divisions, PAB against tetanus was found to be the highest (93 percent) in Rajshahi and the lowest (83 percent) in Barisal. Ninety two percent of the children were protected at birth against tetanus in Khulna and Rangpur which was being followed by Dhaka and Chittagong (91 percent each) and Sylhet (89 percent) (see Figure G12).

In contrast, the proportion of the children protected at birth against tetanus was found to be the highest (99 percent) in DNCC and ComCC and the lowest (80 percent) in SCC. Ninety six percent of the children were protected at birth in NCC, RCC and Ran CC, which was being followed by CCC (95 percent), DSCC (93 percent), and BCC and KCC (90 percent) (see Figure G13).

TT VACCINATION COVERAGE AMONG WOMEN AGED BETWEEN 18-49 YEARS

Thirty two percent of the total surveyed women received 5 doses of TT vaccine across the country - 32 percent in rural and 33 percent in urban areas. The valid coverage of TT2 was 89 percent nationally and no variation was found in urban and rural areas. A decreasing trend in the coverage of TT3 and TT4 was observed irrespective of the areas. In such case, as a whole, 74 percent of the surveyed women received TT3 and more than half of them (52 percent) received TT4 (see Figure J2).

The findings above show that, compare to the urban areas, vaccination status against tetanus was slightly lower in rural areas. EPI program should increase IEC activities through field workers to create awareness on the importance of early completion of 5 doses of TT vaccine.

Among the surveyed women, 92 percent of the women received TT1 followed by TT2 (89 percent), TT3 (80 percent) and TT4 (65 percent). A similar declining trend was observed both in rural and urban areas. Crude TT1 vaccination coverage was found to be equal in both urban and rural areas of Bangladesh (92 percent) (see Figure J1). Besides that, TT2 coverage rate was 89 percent, TT3 80 percent, and TT4 65 percent in rural areas against the coverage rate of 89 percent for TT2, 80 percent for TT3, and 66 percent for TT4 in urban areas (see Figure J1).

OPV COVERAGE DURING THE 20TH NID

Ninety six percent of the children aged between 0-59 months were vaccinated with OPV during the first round of 20th NID held on 7th January, 2012. However, there was a slight variation of 1 percentage point between urban (97 percent) and rural (96 percent) areas in this regard. Similarly, urban-rural variation in OPV coverage was observed in the second round of 20th NID. During the second round, 96 percent of the children in urban areas and 94 percent of the children in rural areas received OPV (see Figure N1). Regarding the source of OPV vaccination, it was found that 99 percent of the children received OPV from the fixed site in both the rounds of 20th NID (see Figure N2). The rest of the children received vaccine during the child- to- child search (0.8 percent in 1st round and 0.5 percent in 2nd round) and from mobile centers (0.3 percent in 1st round and 0.2 percent in 2nd round).

Across the country, 94 percent of the children received OPV in both the rounds (see Figure N1). The urban-rural variation in OPV coverage was 1 percentage point. In urban areas it was 95 percent and in rural areas it was 94 percent (see Figure N1).

Ninety four percent of the rural children received OPV during 20th NIDs in both the rounds. By rural divisions, OPV coverage was the highest in Rangpur (98 percent) and the lowest in Dhaka division (91 percent). The second highest OPV coverage was found in Khulna and Rajshahi (96 percent) which was being followed by Barisal (94 percent), Chittagong (92 percent) and Sylhet division (91 percent) (see Figure N4).

Likewise, in the city corporations, Rajshahi City Corporation had 100 percent OPV coverage in both the rounds. The second highest OPV coverage in both the rounds was found in DNCC, CCC and SCC (99 percent) which was being followed by Com CC and Ran CC (98 percent), BCC (97 percent), KCC (96 percent), DSCC (95 percent) and NCC (88 percent) (see Figure N5).

VITAMIN A COVERAGE AMONG THE INFANTS, VITAMIN A SUPPLEMENTATION COVERAGE AMONG THE POSTPARTUM WOMEN AND 12-59 MONTHS OLD CHILDREN

Vitamin A Coverage among 6-59 Months Old Children

Vitamin A deficiency (VAD) is a major contributor to child mortality. Sustained control of VAD is essential to meet the Millennium Development Goal (MDG) for the reduction of child mortality. In 2012, the Government of Bangladesh conducted National Vitamin A Plus campaign on June 2 with support from Micronutrient Initiative, UNICEF and WHO. Through this campaign, the Government of Bangladesh has provided a high potency Vitamin A capsule (200,000 IU) among the children aged between 12-59 months. Vitamin A (200,000 IU) is given to the children (12-59 months old) during the national Vitamin A Plus campaign; an infant (6-11 months) receives one vitamin A capsule (100,000 IU) and postpartum mothers receive one vitamin A capsule (200,000 IU) (within 6 weeks of delivery) through routine EPI.

In 2012, 84 percent of the infants aged between 6-11 months and 93 percent of the infants aged between 12-59 months received Vitamin A across the country. Vitamin A coverage was higher in urban areas compared to the rural areas. Eighty seven percent of the infants aged between 6-11 months received Vitamin A in urban areas while the proportion of infants aged between 6-11 months who received Vitamin A in rural areas was 83 percent. Vitamin A coverage for the infants aged between 12-59 months in urban and rural areas were 94 percent and 92 percent respectively (see Figure P1).

Anthelmintic Coverage among 24-59 Months Old Children

Albendazole tablet as an Anthelmintic was given to the children aged between 24-59 months during Vitamin A Plus campaign held on June 2, 2012. Ninety percent of the children received Anthelmintic treatment during Vitamin A Plus campaign across the country (see Figure Q1). The coverage was 2 percentage points higher among the female children (90 percent) than the male children (88 percent). There was no difference in urban-rural coverage.

In rural areas by division, the coverage of Anthelmintic treatment was the highest in Rangpur division (92 percent) and the lowest in Barisal division (87 percent). Ninety percent of the children received Albendazole tablet in urban areas. City corporation coverage was the highest in CCC (97 percent) which was being followed by DNCC (96 percent), Ran CC (96 percent), KCC (96 percent), BCC (93 percent), DSCC (91 percent), RCC (90 percent), SCC (87 percent), Com CC (86 percent) and NCC (79 percent) (see Figure Q3).

Chapter 1

INTRODUCTION

1.1 Background

In Bangladesh, Expanded Programme on Immunization (EPI) aims to achieve (a) coverage objectives: to increase vaccination coverage at least 90 percent in national level and 85 percent at district level, and (b) disease reduction objectives: maintain polio free status; maintain maternal and neonatal tetanus elimination status; achieve 95 percent measles coverage and reaching measles elimination status by 2016. EPI in Bangladesh has been recognized for its sustained high vaccination coverage and great contribution to the reduction in childhood morbidity and mortality. The Government of Bangladesh, in collaboration with UNICEF, WHO and partner agencies, is making every effort to reach the un-reached children by using the Reach Every Community (REC) strategy. Since its initiation, EPI has continued to diversify its efforts in terms of area coverage, prevention against diseases, quality service and awareness building as well as technical skill of the health personnel. Maintaining polio free and maternal & neonatal tetanus elimination status and reduction of child mortality and morbidity are a challenge for Bangladesh to achieve Millennium Development Goal. To overcome this challenge, EPI, in collaboration with UNICEF and WHO, is working seriously to identify the areas which should be addressed properly.

The acts of introducing new vaccines, organizing workshops in medical colleges and hospitals, introducing monitoring tools with software in some selected districts, providing training to statistician and Medical Technologist (EPI) to monitor the vaccination status of the children are the foremost efforts to increase the immunization coverage. In addition to such the other major efforts are: organizing NID once in a year, maintaining effective management of 8 sites strategies, periodically organizing crush programs for hard-to-reach areas, making vaccine available, registering child to follow up the immunization status, formulating micro plans for the health workers and strengthening monitoring system.

As a result of the outstanding performance in improving the child immunization status, Bangladesh achieved GAVI Alliance Award 2009 and 2012, which is given as recognition for achieving the Millennium Development Goals (MDG), particularly in reducing child mortality.

In Bangladesh, EPI is implemented through various outreach centers and clinic-based activities. Motivation and education on immunization are provided during the household visits by the health workers, who are known as Health Assistants (HA), and family planning fieldworkers, called Family Welfare Assistants (FWA). The vaccination services are available at the outreach sites like EPI sites, satellite clinics, static clinics, and community clinics.

Though Bangladesh has got a remarkable success in reaching universal coverage with BCG, still it is behind the target coverage of 90 percent with valid doses of all antigens. BCG coverage was 99 percent in CES 2011 while it was only 2 percent in 1985. In 2006, full vaccination coverage was 71 percent and across the country it was increased by 80.2 percent in 2011. The previous CESs shows that district-wise coverage varies from one year to another. These ups and downs of coverage level in the districts increase demand for identifying the causes and in a way strengthening the monitoring activities.

To make strategic plan in order to achieve coverage objective, Coverage Evaluation Survey is an important mean. Established in 1991 as a monitoring tool to assess performances, achievements and progress of the Expanded Programme on Immunization (EPI) the government of Bangladesh, in collaboration with UNICEF and WHO, has been conducting the periodic EPI National

Coverage Evaluation Survey, also known as CES, which were conducted every year, except in 1996, 2004, 2008 and 2012. Since then, a total of 18 CESs were conducted so far. In 2013, the 19th CES was conducted with the financial assistance from UNICEF and technical assistance from UNICEF, WHO and EPI.

1.2 Objectives of EPI Coverage Evaluation Survey

The objectives of CES 2013 include making assessment of the following:

- Childhood vaccination coverage through routine EPI
- TT Vaccination Coverage among women having children less than 1 year to find out the status of protection at birth against Tetanus of the children
- TT5 coverage among women 18-49 years of age to assess the progress of TT5 programme
- OPV coverage in the 20th NIDs and Vitamin-A and Albendazole during NVAC held in June 2012
- The immunization programme quantity (Crude and valid coverage, coverage by one year of age, dropout rates) and quality (percentage of invalid doses, vaccination card availability, post-vaccination abscesses, other AEFI, reasons for left outs and drop outs, etc.)
- Trends in vaccination coverage and dropout rates at the national, divisional, City Corporation and district levels
- Identify the reasons for failure to vaccinate children through NID and Vitamin A campaigns
- Provide information as a basis for making concrete recommendations and planning for improving routine immunization activities

CES 2013 was commissioned for the government (EPI-DGHS) with financial support from UNICEF Bangladesh and technical collaboration with UNICEF, WHO and EPI. The survey was carried out by Nielsen Bangladesh. The specific survey tasks included selecting sample clusters; development, pre-testing, and finalizing the questionnaires with the approval of the UNICEF, WHO and EPI-DGHS; recruiting and providing training to the survey staff; and planning and implementing the fieldwork. Nielsen Bangladesh was also responsible for processing and analyzing EPI survey data and writing reports of the survey.

1.3 Survey Design

CES 2013 was conducted following WHO 30 clusters sampling design which was aimed to generate estimations for the national level by rural and urban areas as well as in rural areas by division and urban areas by City Corporation. CES 2013 was also intended to provide separate estimates for each of the 76 survey units covering the whole population. The 76 survey units worked in sixty-four (64) districts, ten (10) city corporations - Dhaka North City Corporation (DNCC), Dhaka South City Corporation (DSCC), Narayanganj City Corporation (NCC), Rajshahi City Corporation (RCC), Rangpur City Corporation (Ran CC), Chittagong City Corporation (CCC),

Comilla City Corporation (Com CC), Khulna City Corporation (KCC), Barisal City Corporation (BCC), and Sylhet City Corporation (SCC) and 2 slums - 1 in Dhaka and 1 in Chittagong City Corporation.

1.4 Individual Surveys

To acquire the result as per the study objectives, CES 2013 introduced five types of individual survey by study subjects. The surveys were:

- Childhood Vaccination Coverage Survey
- Tetanus Toxoid Vaccination Coverage Survey (TT survey) among mothers with children 0-11 months old
- Tetanus Toxoid Vaccination Coverage Survey among the women who were 18-49 years old (TT5 Survey)
- OPV Coverage Survey to estimate coverage in the 20th NIDs
- Vitamin A and Anthelmintic coverage survey to estimate coverage during Vitamin A Plus Campaign held in June 2012

1.5 Survey Subjects

As has been mentioned earlier, CES 2013 consisted of five types of survey. However, the survey included 7 types of subjects:

Childhood Vaccination Coverage Survey: Children aged between 12-23 months and were born between 01 January, 2011 and 31 December, 2011.

TT Survey: Mothers having 0-11 months old children (who delivered child between 01 January, 2012 and 31 December, 2012).

TT5 Survey: Women who were 18-49 years old.

OPV Coverage: Children aged between 0-59 months and were born between 17 February, 2007 and 11 January, 2012.

Vitamin A Coverage: Children aged between 12-59 months and were born between 5 June, 2007 and 3 June, 2011.

Vitamin A Coverage: Children aged between 6-11 months and were born between 4 June, 2011 and 5 December, 2011.

Anthelmintic Coverage: Children who were aged between 24-59 months and were born between 5 June, 2007 and 3 June, 2010.

1.6 Sample Size

The sample size of CES was determined by the survey units independently by using WHO 30 cluster coverage survey sampling technique. From each survey unit, 30 clusters were selected following the systematic random sampling techniques from the list of Mouzas and Mahallas available with Bangladesh Bureau of Statistics (BBS). Seven survey subjects were selected from each cluster for each type of survey separately. Before the selection of samples, a sampling frame with eligible subjects was made for each category of the respondents separately. Thus, a total of 210 samples were drawn from each survey unit, and nationally 15,960 samples were covered for each survey. Overall, 111,720 subjects were selected for five types of survey, which comprised of CES 2013 samples. The total sample is presented in Table 1 below.

Table 1: Distribution of Survey Units, Clusters and Survey Subjects by Division/City Corporation Areas

Divisions/City Corporations/ Slum areas	Number of survey units	Number of clusters	Number of 12-23 months old children (Child)	Number of mothers of 0-11 months old (TT)	Number of women 18-49 years age (TT5)	Number of 0-59 months children (NID)	Number of 6-11 months children (Vitamin A-1,00,000 IU)	Number of 12-59 months children (Vitamin A capsule – 2,00,000 IU)	Number of 24-59 months children (Anthelmintic)
Dhaka Division	17	510	3,570	3,570	3,570	3,570	3,570	3,570	3,570
Chittagong Division	11	330	2,310	2,310	2,310	2,310	2,310	2,310	2,310
Rajshahi Division	8	240	1,680	1,680	1,680	1,680	1,680	1,680	1,680
Rangpur Division	8	240	1,680	1,680	1,680	1,680	1,680	1,680	1,680
Khulna Division	10	300	2,100	2,100	2,100	2,100	2,100	2,100	2,100
Barisal Division	6	180	1,260	1,260	1,260	1,260	1,260	1,260	1,260
Sylhet Division	4	120	840	840	840	840	840	840	840
City Corporation	10	300	2100	2100	2100	2100	2100	2100	2100
Slum of DCC	1	30	210	210	210	210	210	210	210
Slum of CCC	1	30	210	210	210	210	210	210	210
Total	**76**	**2,280**	**15,960**	**15,960**	**15,960**	**15,960**	**15,960**	**15,960**	**15,960**

1.6.1 Selection of Samples

The samples for CES 2013 were selected by using the following procedure.

Step-1: 30 clusters for each sampling unit were selected by using the systematic random sampling technique following PPS method.

Step-2: Mouzas/Mahallas were used to define a cluster. Each defined cluster has, on an average, 120 households; a sketch map of each cluster was drawn which was characterized by land identification.

Step-3: From each selected cluster, on an average, 120 households were listed to identify the target population and a sampling frame was prepared separately for five types of survey, and 7 samples were selected randomly for each type of survey.

Step-4: It included interviews of the selected samples through a pre-designed questionnaire.

1.6.2 Selection of Sample Clusters

Sample clusters of CES 2013 were selected at two stages by following the systematic random sampling technique while using PPS method. A list of all Mouzas/Mahallas with households of a district was made, and 30 Mouzas/Mahallas were selected from each survey unit. In this way, a total of 2280 clusters were selected from the 76 survey units. Each cluster consists of 120 households. The Mouza/Mahalla having more than 120 households was segmented into two or required number. Each segment consisted of 120 households. One segment was selected randomly. This selected segment within the Mouza/Mahalla was considered as a sample cluster in CES 2013.

1.6.3 Selection of Sample Households

Sample households of CES 2013 were selected randomly from the sampling frame prepared through household listing exercise. All households of selected sample clusters (i.e. Enumeration Areas - EA) were visited (on an average an EA had 120 households), and detailed information about the target samples were obtained. By using the information gathered, children aged between 12-23 months, mothers having children aged between 0-11 months, women aged between 18-49 years irrespective of marital status, and children aged between 0-59 months, 6-11 months, 12-59 months and 24-59 months were identified. A separate sampling frame with eligible respondents was prepared for each target population. 7 target samples for each survey were randomly selected from each sampling frame.

1.7 Questionnaires

CES 2013 used five types of questionnaires to collect information separately from seven survey subjects. Draft questionnaires were developed and were discussed with UNICEF, WHO and EPI. Pre-testing was done in the field. Pre-test findings were incorporated and finalized in consultation with UNICEF, WHO, EPI and IPHN. In addition to the questionnaire, the survey used household listing form to identify the target respondents and sampling frame form with a view to provide uniform opportunity to each survey subject. The following five questionnaires and two forms were used:

- Child Form was administered for obtaining data for child vaccination coverage
- TT Form was administered for obtaining data from the mothers to ascertain protection of their children against tetanus at birth

- TT-5 Form was administered for the women aged between 18-49 years
- NID Form was administered for the 0-59 months old children to ascertain OPV
- Vitamin A Form was used to obtain information regarding Vitamin A and Anthelmintic coverage
- Household listing format
- Sampling frame

All questionnaires used in CES 2013 are included in the Appendix of this report.

1.8 Implementation of the Survey

1.8.1 Recruitment

The field staff for CES 2013 was recruited in January, 2013. It included Assistant Survey Coordinators, Quality Control Officers, Field Supervisors and Interviewers. The recruitment criteria included educational attainment, maturity, group cohesiveness/team spirit, experiences from other surveys and one's ability to work away from home for more than one month. EPI CES recruitment procedure followed three steps.

A written examination was held at the Nielsen Field Office and the qualified candidates were further invited to have an oral test as it is important to understand surveyors' interview and communication skills. After the interview, field personnel were initially recruited as trainees and allowed to attend the training program. Recruited staffs were individually evaluated by the Nielsen core research and data acquisition team. At the final stage, each of the trainees was appointed to a particular post in the light of her/his performance during the training period and field test. Trainees with best performances were appointed as Quality Control Officers, Supervisors and Interviewers. For possible later-replacement of unsuitable recruits, more staff members were recruited as trainees.

In addition, a separate 10-member quality control team was recruited to ensure a better quality survey in 2013. They were recruited from Nielsen's regular and highly qualified quality controller pool and have worked as a separate quality control unit under the direct supervision of team leader.

1.8.2 Training

A total of six-day comprehensive training program on interviewing was held for the field personnel from 12 February, 2013, to 19 February, 2013. Nielsen Bangladesh trained the interviewers in 2 batches, each of which comprised of 35 trainees. The training methods included classroom lectures by using multimedia, demonstration interviews, role-playing, field practices and problem reviewing. Director, Primary Health Care & line Director of MNC&AH, Program Manager, EPI and Surveillance, Deputy Program Manager, Procurement and Supplies, Deputy Program Manager, NNS were present in the training program as resource persons.

Immunization Specialist of UNICEF and Data Manager of WHO was also present in the training programme.

1.8.3 Fieldwork

The fieldwork was carried out from 23 February, 2013 to 5 May, 2013 with a total of 55 interviewing teams. Nielsen Bangladesh deployed these 55 interviewing teams for data collection. Each of the teams consisted of two Field Interviewers and one Supervisor. Besides, 35 interviewers worked as the reserve resource. Thus, in total 200 field personnel were involved in CES 2013. There were 5 quality control teams, each of which comprised of two people to check the quality of the fieldwork. Moreover, a separate quality control unit worked across the country in CES 2013 under the direct supervision of Team Leader. Besides, researchers, high management and consultant monitored and checked the quality of the fieldwork. Representatives from the partner organizations including - UNICEF, WHO and EPI-DGHS - also visited the field to monitor the fieldwork.

1.8.4 Data Management and Statistical Analysis

For data analysis, two powerful statistical packages called SPSS and Quantum version 5.8 were used. This software is capable of producing any kind of cross-tabs and statistical analysis in conjunction with SPSS.

Data processing and analysis included code construction, coders' training, coding, data punching, data verification and quality control, and data processing and, finally, the analysis to facilitate the required output. Data of CES 2013 has been entered by using data base software FOXPRO version 2.6 and cleaned by using software clipper version 5.3. Tables were generated by using the Quantum version 5.8.

1.9 Weighting

In CES 2013, national level coverage for all 5 types of surveys was weighted.

1.10 Reports

The national report consists of the following seven chapters.

Chapter 1: Describes the background, objectives, design and implementation of CES 2013.

Chapter 2: Provides an analysis of the findings received from the childhood vaccination coverage survey.

Chapter 3: Shows TT vaccination coverage survey among the mothers with 0-11 months old children.

Chapter 4: Administrates TT vaccination coverage survey among the women aged between 18-49 years.

Chapter 5: Presents OPV coverage.

Chapter 6: Presents Vitamin A, and Anthelmintic coverage.

Chapter 7: Presents discussions and programmatic implications.

Chapter 2

CHILDHOOD VACCINATION COVERAGE SURVEY

This chapter discusses vaccination coverage derived from the data CES 2013 conducted among the children aged between 12-23 months. In addition, vaccination card retention rate, program quality in terms of administering vaccine following vaccination schedule, knowledge on the visits required to complete all the doses, adverse event following immunization, reasons for drop-out and left out are discussed in this chapter. Along with the findings, the survey objectives, importance and childhood vaccination schedule, and calculation of vaccination coverage are presented in this chapter.

2.1 Objectives of the Childhood Vaccination Coverage Survey

Childhood vaccination coverage survey was conducted with the objective to estimate the coverage level at the national as well as divisional level and by type of area. The specific objectives of the childhood vaccination survey were as follows:

Objectives of the child survey were to ascertain -

- Childhood vaccination coverage among 12-23 months old children
- Vaccination card retention rate
- Incidence of invalid doses
- Incidence of post-vaccination abscesses
- Vaccination dropout rates
- Reasons for children not being vaccinated fully, or at all
- Sources of receiving vaccines
- Vaccination Coverage by background Characteristics

2.1.1 Profile of the Children and their Parents

The level of education of the parents (mothers and fathers) is an important influencing factor of routine immunization and other health-seeking behavior.

Table A1 shows that 15.3 percent mothers of the surveyed children were illiterate, while 27.8 percent of them completed their primary education, and 40.6 percent had at least 6 to 9 years of education. However, 8.9 percent of the mothers completed 10 years of education and 4.8 percent of them had 12 years of education.

As expected, a higher number of mothers in urban areas (14.0 percent) than their rural counterparts (7.6 percent) completed 10 years of education. However, the percentage of mothers completed their secondary education in rural areas (41.6 percent) are higher than the mothers' in urban area (38.7 percent). The proportion of children with illiterate fathers was high in rural areas (24.1 percent), compared to that in urban areas (12.9 percent). The analysis further shows that the percentage of the fathers who completed SSC/Dakhil/'O' Level education was higher in urban areas (13.5 percent) than that in rural areas (7.9 percent).

Table A1: Percentage Distribution of Children by Age, Gender and Profile of their Parents

Profile	Urban	Rural	Total
Child's Profile			
Child's age (in months)			
12-18	32.6	36.7	35.4
19-23	67.5	63.4	64.6
Mean age (in months)	20.6	20.3	20.4
Gender			
Male	52.1	52.0	52.0
Female	47.9	48.0	48.0
Profile of Parents			
Mother's Education			
Illiterate	9.8	16.5	15.3
Primary	21.3	29.5	27.8
Secondary	38.7	41.6	40.6
SSC/Dakhil/'O' Level	14.0	7.6	8.9
HSC/Alim/'A' Level	9.8	3.3	4.8
Bachelor's degree/Fazil	3.5	1.1	1.6
Master's Degree/Kamil	2.8	0.5	1.0
Father's Education			
Illiterate	12.9	24.1	21.8
Primary	22.1	32.1	29.7
Secondary	27.1	26.9	26.9
SSC/Dakhil/'O' Level	13.5	7.9	9.1
HSC/Alim/'A' Level	9.9	5.0	6.0
Degree/Fazil	7.6	2.6	3.7
Master's/Kamil	6.9	1.5	2.7
Total	**3640**	**11900**	**15960**

2.2 Childhood Vaccination

Children are born with a natural immunity to certain infections. Antibodies pass through the mother's placenta to the fetus before birth, protecting the baby from infection. Breast-fed babies continue to receive antibodies from their mothers' breast milk. However, this natural immunity eventually wears off, usually within the first year of life. Children might get some serious fatal disease including diphtheria, Haemophilus influenza Type B, hepatitis B, measles, meningitis, mumps, pneumonia, polio, rubella, tetanus, whooping cough (pertussis).

In the past, a number of serious childhood diseases reached epidemic proportions, taking thousands of lives and often leaving children with lasting mental or physical problems. Vaccines can now prevent many of these diseases.

With an aim to reduce child mortality, morbidity, and disability associated with tuberculosis, tetanus, diphtheria, measles, pertussis, poliomyelitis, Haemophilus Influenza (Hib), and Hepatitis-B, the government of Bangladesh provides vaccines through EPI program. The children in Bangladesh routinely get vaccines that protect them from the aforementioned nine deadly childhood diseases:

- Tuberculosis
- Diphtheria
- Pertussis (whooping cough)
- Tetanus
- Poliomyelitis
- Hepatitis-B
- Haemophilus Influenza type-b (Hib),
- Measles
- Rubella

As per the EPI-recommended vaccination schedule, children must get vaccines against the nine diseases before their first birthday. However, Rubella vaccine was not considered in the CES 2103. A fully vaccinated child, therefore, receives all the doses of eight antigens (without Rubella) under the EPI- recommended schedule. The full course of child vaccination in Bangladesh under the EPI program includes:

- BCG - one dose against tuberculosis
- Three doses of Pentavalent against diphtheria, pertussis, tetanus, Hep-B, and Hib
- Four doses of Oral Polio Vaccine (OPV) against poliomyelitis
- One dose of measles vaccine against measles

As regards to vaccine administration, Expanded Programme on Immunization (EPI) Bangladesh follow WHO approved a standard schedule. Table A2 presents the EPI vaccination schedule -

- BCG at or after birth (10-14 weeks);
- Pentavalent at an age of six weeks or after that;
- Measles and OPV4 at the age of 270 days or after the completion of 9 months and later.

The interval between the consecutive doses of OPV1 and Pentavalent1 should be four weeks or more, which means that OPV2 and Pentavalent2 should be given after four weeks, or more of OPV1 and pentavalent1. OPV3 and Pentavalent3 should be given after four weeks or more, after OPV2 and Pentavalent2. OPV4 is given along with the measles vaccine. As per EPI guideline, a child should be vaccinated with all the doses of each antigen by the age of 12 months. Table A2 shows the antigens and the doses of interval considered for the CES 2013.

Table A2: Antigens and doses of interval considered in the survey

Name of Disease	Name of Vaccine	Number of Doses	Interval between Doses	Age of Start
Tuberculosis	BCG	1	-	At birth
Diphtheria, Pertussis, Tetanus, Haemophilus Influenza (Hib) type b, Hepatitis-B	Pentavalent (DPT + Hep-B + Hib)	3	4 weeks	6 weeks
Polio	OPV	4*	4 weeks	6 weeks
Measles	Measles	1	-	9 months (270 days)

* 4th dose of OPV is given with measles vaccine

2.3 Childhood Vaccination Coverage

Childhood vaccination coverage was derived from the data obtained from EPI CES 2013. Two sources of information - a) Vaccination Card, and b) Mother's/Caregiver's history - were considered for calculating the coverage. Vaccination card was used as the main source of information. The date of vaccination for every dose of each antigen recorded in the card was mentioned in the questionnaire. In case of the non-availability of the card, vaccination status was recorded through discussion with the mothers/caregivers and their report was considered as history.

In CES 2013, two types of childhood vaccination coverage have been assessed - crude coverage and valid coverage (valid by the age of 23 months and valid by the age of 12 months, respectively). Crude coverage was assessed by considering the data of both valid and invalid doses a child received. An invalid dose occurs when the dose is administered before the recommended age or interval (for multi- doses antigens), i.e. less than four weeks from the prior

dose. The valid coverage, on the other hand, was assessed in terms of dose (s) of any antigen administered following the EPI-recommended age and interval. Both valid coverage and crude coverage of vaccination were assessed for each specific antigen and all together. Crude coverage, against valid coverage, indicates how much more valid coverage could have been gained if all antigens were given to the target children at the appropriate time within the first year of their life. In other words, comparison between crude coverage and valid coverage shows how much coverage was lost due to the failure to provide antigens to children at the appropriate age and interval. Full valid vaccination coverage by 12 months is defined as the vaccination done with all the doses of every childhood antigens at the recommended age and the interval following EPI guideline by the age of one year of the child.

2.4 Coverage Rates from Card and History

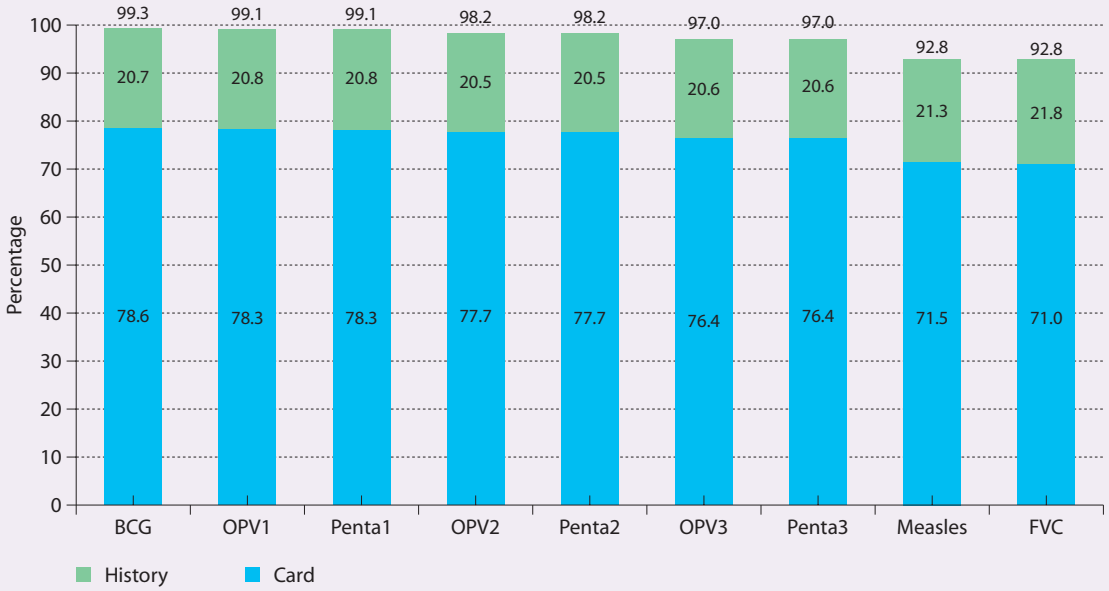
It has already been mentioned earlier that there were two sources of information regarding vaccination status could be gathered. Vaccination coverage was assessed by using both the sources of information - card and history. Therefore, this section deals with the vaccination coverage rates derived from the vaccination cards of the children and the history derived from the mothers'/caregivers' description.

2.4.1 Levels of Crude Vaccination Coverage

Crude vaccination coverage is defined as the coverage estimated without considering the exact age and interval recommended in the childhood vaccination schedule. Figure A1 presents the crude vaccination coverage rate computed from both the sources - card and history. It shows that 92.8 percent of the children received all the antigens without maintaining the EPI-recommended age and the interval suggested in the childhood vaccination schedule.

Access to vaccination service with BCG was 99.3 percent across the country. Coverage for the subsequent antigen and/or doses was found lower due to the dropout from receiving vaccination service. Coverage of the first dose of Penta/OPV was 99.1 percent, OPV2/Penta2 was 98.2 percent, Penta3/OPV3 was 97.0 percent and measles coverage was 92.8 percent. This finding shows a wider gap between the subsequent doses and/or antigen which was more pronounced for measles and Penta1. Crude coverage of measles was 92.8 percent as against 99.1 percent coverage of Penta1. The national rate of crude coverage was found to be 92.8 percent among 12-23 months old children.

Figure A1. Crude vaccination coverage by age 23 months by their card and history status (%)

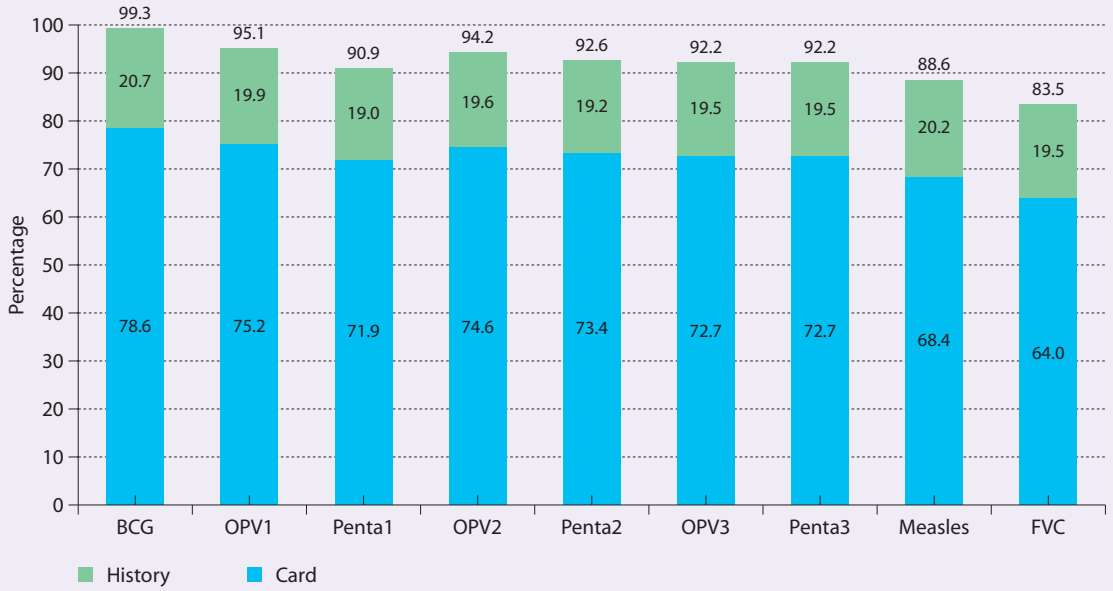


Source : CES 2013

2.4.2 Levels of Valid Vaccination Coverage by 23 Months

As per EPI-recommended vaccination schedule, a child should receive all the recommended doses of vaccines before his/her first birthday. The survey result shows that in some cases children were vaccinated beyond the first birthday and until the attainment of 23 months of age. Figure A2 presents the national valid vaccination coverage with all the recommended antigens at the age of 23 months. The valid vaccination coverage was calculated from card and history.

Figure A2. Valid vaccination coverage by age 23 months by card and history status (%)



Source : CES 2013

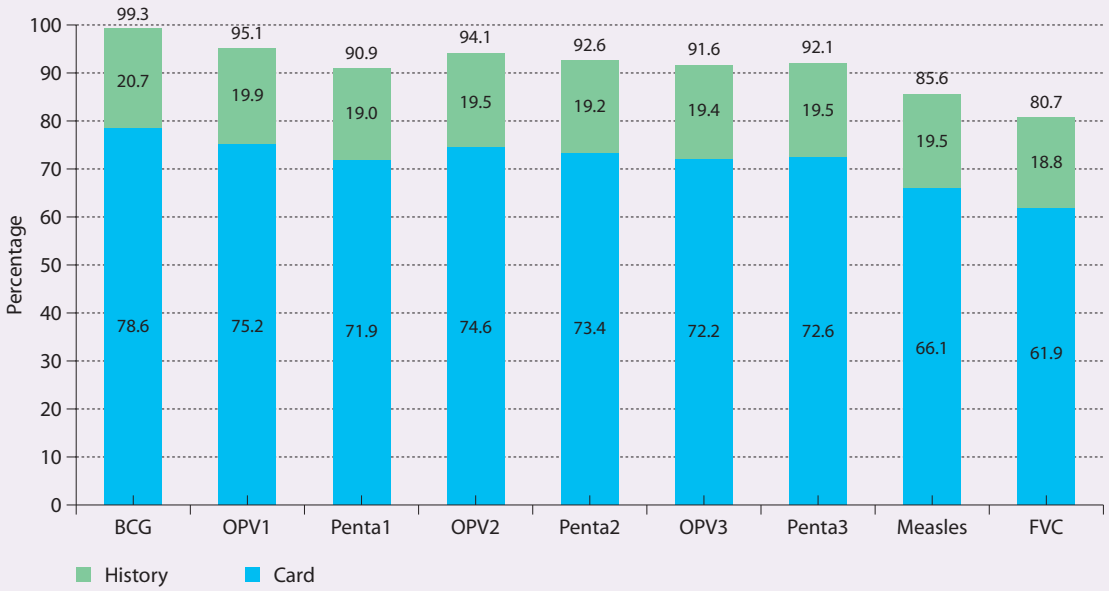
Nationwide 83.6 percent of the children received all the vaccines by the age of 23 months following exact age and interval. The percentage of children who received BCG was much higher than that of Penta1 and measles. Ninety nine percent of the children received BCG, while the proportion of the children who received Penta1 was 90.9 percent and measles was 88.7 percent. However, after receiving BCG a slow decrease in the vaccination coverage was observed.

The difference in the coverage between BCG and Penta1 was found to be 4.2 percentages. About ninety three percent of the children received Penta2 which was decreased to 92.3 in Penta3. It is to be mentioned here that dropout and the act of administering the vaccine without following the EPI-recommended vaccination schedule contributed towards making such differences between the doses as well as specific antigen.

2.4.3 Levels of Valid Vaccination Coverage by 12 Months among the 12-23 Months Old Children

For ensuring effective vaccination, EPI-recommended vaccination schedule for specific antigen should be followed. Under the EPI in Bangladesh, every child is targeted to be vaccinated with all the available antigens within his/her first year of life, i.e. by 12 months of age. Figure A3 shows valid vaccination coverage of specific antigen by the age of 12 months among the children aged between 12-23 months, which were derived from vaccination cards and history taken from mothers/caregivers.

Figure A3. Valid vaccination coverage by age 12 months by card and history in CES 2013 (%)

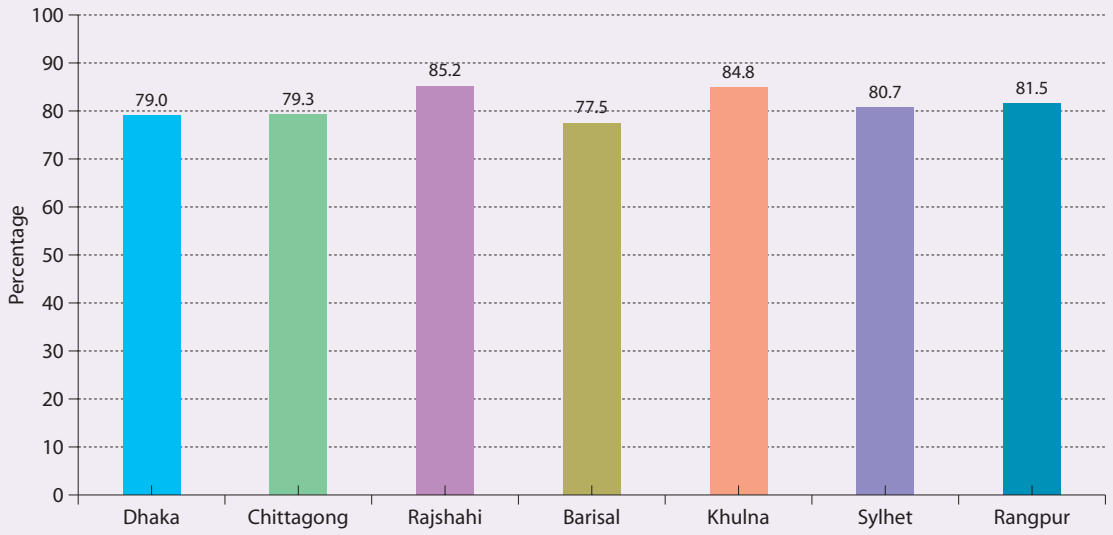


Source : CES 2013

The figure above shows that 80.7 percent of the surveyed children received all the doses of each antigen by the age of 12 months while following the EPI-recommended age and interval. By specific antigen, 99.3 percent of the children received BCG as against the children who received Penta1 (90.9 percent). However, 92.6 percent of the children received Penta2, and 92.0 percent of the children received Penta3. The difference was higher between BCG and Penta1 (8.4 percentage points) than Penta3 and Measles doses (6.5 percentage points). On the other hand, the difference was much lower between Penta2 and Penta3 (0.6 percentage point).

Figure A4 shows the analysis of valid vaccination coverage by the age of 12 months across the divisions of Bangladesh. The highest percentage of full vaccination coverage by the age of 12 months was in Rajshahi division (85.2 percent) whereas the lowest percentage of coverage was in Barisal division (77.5 percent). This was being followed by Khulna (84.8 percent), Rangpur (81.5 percent), Sylhet (80.7 percent), Chittagong (79.3 percent) and Dhaka (79.0 percent) division.

Figure A4. Valid vaccination coverage by age 12 months by divisions in CES 2013 (%)

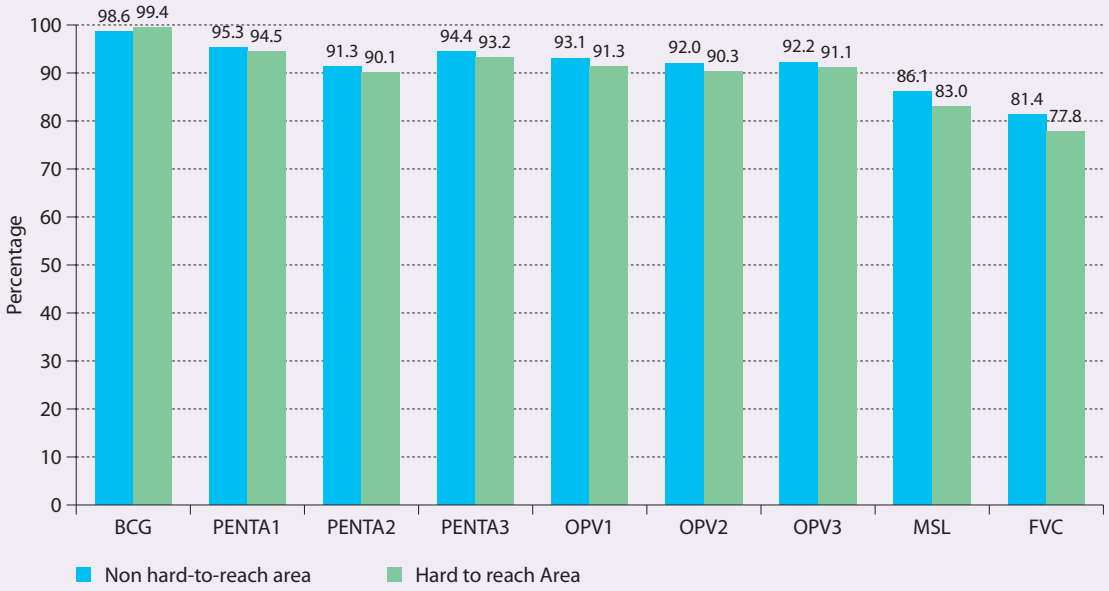


Source : CES 2013

To have a better understanding of access to vaccination service, further analysis was based on the percentage of children received all the valid vaccine by the correct age of 12 months by hard-to-reach area (see Figure A5). Hard-to-reach area and non-hard-to-reach area was determined by recording the time it took to reach a cluster from the Upazila Headquarter. If the time recorded was more than 2 hours the cluster was identified as hard-to-reach area. The analysis by the hard-to-reach area is important as it identifies the coverage of EPI against its reach in remote regions.

The variation in receiving a full vaccination by hard-to-reach and non-hard to reach area found to be 3 percentage point where the coverage of hard-to-reach area was 77.8 percent and non-hard-to-reach stood at 81.4 percent. The coverage of BCG by hard-to-reach and non-hard-to reach area was 99.4 and 98.6 percent respectively. But in the following antigens the coverage in hard-to-reach area lowered compared to non-hard-to-reach area. The coverage of Penta1 in hard-to-reach area was found to be 94.5 percent whereas it was 95.3 percent in the non-hard-to-reach part. Variation of OPV1 coverage by hard-to-reach and non-hard-to-reach area was 2 percentage points. In part of Penta2, OPV2, Penta3, OPV3 and Measles the variation of coverage by area was 1 percent, 2 percent, 1 percent, 1 percent and 3 percent respectively (see figure A5).

Figure A5. Percent distribution of children who received all the valid vaccine by the age of 12 months by hard-to-reach area



Source : CES 2013

2.4.4 Differential in Valid Vaccination Coverage by the Age of 12 Months by Background Characteristics

Table A3 presents full valid vaccination coverage by the age of 12 months among the 12-23 months old children. It shows a slight variation in coverage by geographical areas (81.2 percent in rural and 80.4 percent in urban areas). Similarly, a difference was observed between the vaccination coverage of male and female children (0.8 percent).

As regards the educational attainment of the mothers of the children, the survey found variation in vaccination coverage among the vaccinated children. The more the educational attainment of the mother was, the higher the valid vaccination coverage of her child by the age of 12 months was. Valid coverage of the children whose mothers attained 10 years of education (82.4 percent) was found to be 7.3 percentage points higher than that of the children whose mothers had no education (75.1 percent). The highest difference (12.4 percent) was revealed among the children whose mothers were graduate (the coverage was 87.5 percent) and whose mother had no education (the coverage was 75.1 percent).

Similarly, family income appears to be an influential factor in the vaccination coverage. Table A3 shows that children who were from higher income groups had more vaccination coverage compared to the children who were from lower income group households. .

About seventy seven percent of the children who were from lower income group (up to Tk. 3,000) received all the valid doses of vaccines before observing their first birthday as against 83.1 percent who belonged to higher income groups (10,000 and above) (see Table A3).

By wealth quintile, it is seen that the coverage was the highest (83.7 percent) in upper quintile and the lowest (76.9 percent) in the poorest class. This analysis also revealed that the vaccination coverage increases from the lower to the upper quintiles. It is mentioned here that wealth quintile was constructed using principal component analysis. Asset information was collected using child form and covered information on household ownership of a number of consumer items, ranging from an almirah to a rickshaw/van, as well as dwelling characteristics, e.g., source of drinking water, sanitation facilities, and type of material used for flooring.

Each asset was assigned a weight generated through principal component analysis, and the resulting asset scores were standardized in relation to a normal distribution with a mean zero and standard deviation of one. Each household was then assigned a score for each asset, and the scores were summed for each household; individuals were ranked according to the total score of the household in which they resided. The sample was then divided into quintiles from one (lowest) to five (highest).

The urban-rural analysis shows that mothers residing in rural areas are more careful about immunizing their children timely. Although it is not a common scenario in the society of Bangladesh that most of the mothers in rural areas will accompany their children for vaccination, EPI appears to be an exception in this regard. It is a successful program in Bangladesh. More than three-fourth (81.2 percent) of the children in rural areas were vaccinated before observing their first birthday as against 80.4 percent of them residing in urban areas.

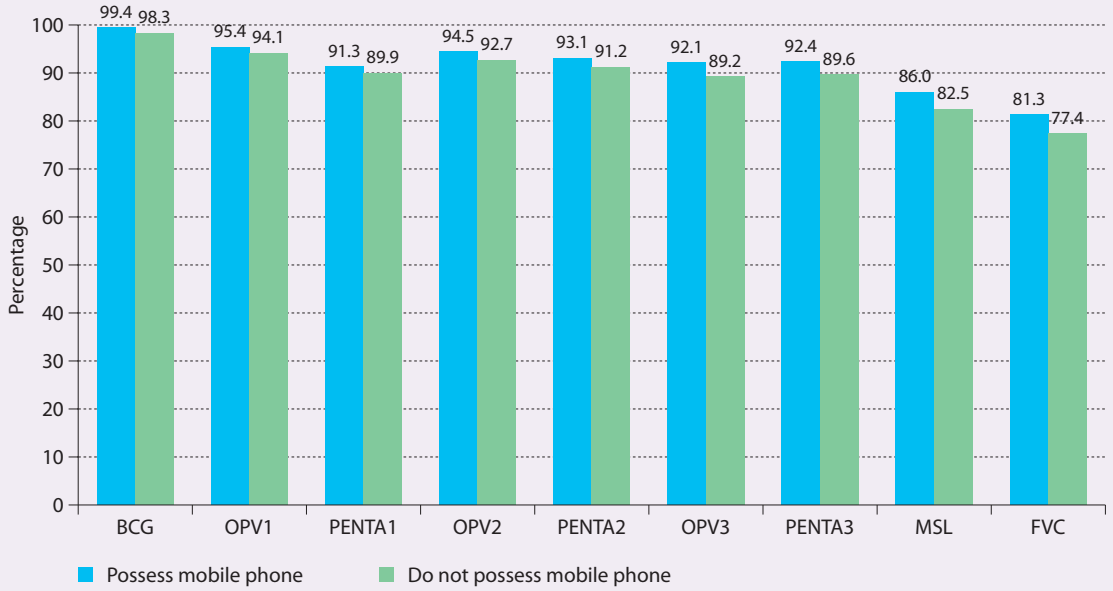
Table A3: Percentage of Children who received all the Valid Vaccine by the Age of 12 Months by Background Characteristic

Background Characteristic	BCG	Pentavalent			OPV			Measles	FVC
		1	2	3	1	2	3		
Sex									
Male	99.3	91.2	93.2	92.3	95.4	94.4	91.9	85.7	81.0
Female	99.2	90.9	92.4	91.7	95.0	94.0	91.3	85.2	80.4
Residence									
Urban	99.3	90.9	92.4	91.1	94.6	93.6	90.8	84.3	80.4
Rural	99.3	91.1	93.1	92.5	95.4	94.5	92.2	86.4	81.2
Mothers Education									
Illiterate	97.4	88.5	89.9	88.4	93.1	91.4	87.2	79.7	75.1
Primary	99.2	90.7	92.0	91.2	95.2	93.5	90.6	83.2	78.4
Secondary	99.7	91.7	93.9	92.9	95.7	95.2	92.9	87.3	82.4
SSC/Dakhil/'O' Level	99.9	91.9	93.6	93.9	95.3	94.9	93.8	89.9	85.4
HSC/Alim/'A' Level	99.9	92.9	94.7	94.9	96.3	96.7	95.8	90.6	85.0
Degree/Fazil	100.0	93.0	95.3	95.3	96.8	95.9	95.3	92.1	87.5
Masters/Kamil	100.0	94.1	94.1	95.9	96.7	95.8	95.0	91.8	89.0

Background Characteristic	BCG	Pentavalent			OPV			Measles	FVC
		1	2	3	1	2	3		
Monthly Family Income									
Upto 3000	97.4	90.4	91.5	90.4	94.9	93.2	89.0	81.9	77.0
3001 - 5000	98.9	89.9	91.6	90.2	94.1	93.0	89.8	83.7	78.3
5001 - 7000	99.2	89.8	91.5	90.7	94.1	93.0	90.2	83.9	79.0
7001 - 10000	99.2	91.2	93.0	92.1	95.4	94.3	91.8	85.3	80.7
10000+	99.5	92.3	94.1	93.7	96.2	95.6	93.5	87.8	83.1
Wealth Quintile									
Poorest	98.4	89.2	90.7	90.2	93.8	92.2	89.2	81.7	76.9
Socond	99.2	90.6	93.0	92.2	95.4	94.5	91.3	84.8	79.6
Middle	99.6	91.5	93.5	92.3	95.6	94.8	92.5	86.6	81.2
Fourth	99.5	91.5	92.7	91.3	95.1	93.7	91.3	86.3	82.1
Richest	99.6	92.6	94.1	94.1	96.1	95.6	94.0	88.1	83.7
Bangladesh	**99.3**	**90.9**	**92.6**	**92.0**	**95.1**	**94.1**	**91.6**	**85.5**	**80.7**

Mobile phone is a popular medium of communication in Bangladesh. In CES 2013, valid vaccination coverage by 12 months was examined in relation to the ownership of the mobile phone in households. Full vaccination coverage varied by 3.9 percentage points between the households having a mobile phone and households not having a mobile phone. The valid vaccination coverage was 81.3 percent among the children from households having a mobile phone whereas it was 77.4 percent among the children from households not having a mobile phone. Further analysis of antigen wise coverage suggests that the variation was ranged from 1.1 percentage points for BCG to 3.5 percentage points for measles. Thus, higher valid vaccination coverage by the age of 12 months was observed among children from households having mobile phone in CES 2013.

Figure A6. Valid vaccination coverage by the age of 12 months by ownership of mobile phone



Source : CES 2013

2.4.5 Trends in the Vaccination Coverage

Trends in vaccination coverage can be examined by observing a time series of estimates produced from EPI CESs which have started since 1991. Trends in the vaccination coverage have been shown in Figures A10, A11, and A12. These indicate a significant improvement in the vaccination coverage (crude coverage and valid coverage by the age of 23 months, and valid coverage by the age of 12 months). It is to be noted here that the trend in the valid vaccination coverage by the age of 23 months has been shown from the year 2005. Figure A10 shows the trend in crude coverage, Figure A11 shows the trend of valid vaccination coverage by the age of 23 months, and Figure A12 shows the valid vaccination coverage by the age of 12 months.

Crude coverage: Figure A10 presents the trend in crude vaccination coverage over the past 22 years. During this period, crude vaccination coverage increased by 31 percentage points - 62 percent in 1991 to 93 percent in 2013. In the last decade (1991-2000), the crude vaccination coverage rate increased with a fluctuation up to 7 percentage points. However, the crude coverage rate was almost plateau from 2001 to 2003. A rapid increase in the crude coverage was noticed between 2003 and 2010. It increased from 74 percent in 2003 to 93 percent in 2010. A slight decrease in coverage was revealed in CES 2011 (92 percent). However, compared to CES 2011, crude coverage rate has increased 1 percentage point in CES 2013 (92 percent in 2011 and 93 percent in 2013.

By antigen, BCG coverage has been almost stationary since 1999. It was 95 percent in 1999. However, it increased with fluctuations up to 96 percent in 2005. Again, it increased up to 98

percent in 2006 and became static till 2007. Again, it rose up to 99 percent in 2009 and became stagnant in 2013 (see Figure A10).

In 2013, there was no area-specific variation in the crude coverage rate between rural and urban areas (93 percent in both rural and urban areas). Likewise, by antigen no such differentiation was found between rural and urban areas (see Figure A7).

Valid Vaccination coverage by the age of 23 months: CES 2013 assessed the trend of valid full vaccination coverage by the age of 23 months by using the data derived from the last 6 CESs and the present one. Data is available since 2005. An analysis of the previous CESs data suggests similar trends in the valid vaccination coverage by the age of 23 months. The valid vaccination coverage was 69 percent in 2005 and gradually rose from 2006 to 2009. In 2010, valid vaccination coverage by 23 months was increased by 3 percentage points from the previous CES 2009 and remained unchanged till 2011. However, the figure has risen to 84 percent in 2013 (increased by 1 percentage point).

During the last five years, valid vaccination coverage has increased by 5 percentage points (see Figure A11). The measles coverage rate increased from 78 percent in 2005 to 89 percent in 2013. Similarly, penta3 coverage rose from 78 percent in 2005 to 92 percent in 2013 (see Figure A11).

In CES 2013, urban-rural analysis shows no difference between the children residing in rural and urban areas (84 percent). The urban-rural differentiation among the antigens was also found almost similar to the national data (see Figure A8).

Valid Vaccination coverage by the age of 12 months: Fluctuating trends in the coverage were observed over the period between 1991 and 2000. However, a continuous increasing trend was noticed in this decade (2001-2010). Since the beginning of the last decade (1991-2000), the trend was an almost plateau between 1991 and 1993. A sudden uprising trend was observed in 1994. The coverage increased from 50 percent in 1993 to 62 percent in 1994. Since 1994, the trend fluctuated, but remained almost plateau till 2000. A continuous improvement in the coverage started in 2001. In the last one decade, it increased by 28 percentage points. The coverage was 52 percent in 2001 which increased up to 81 percent in 2013 (see Figure A12).

This improvement in the vaccination coverage might be the influence of the act of administering vaccines by following the recommended vaccination schedule as well as by minimizing the dropout rates for the subsequent doses or antigen. The dropout rate of Penta1- Penta3[1] significantly decreased from 21 percent in 2003 to 2 percent in 2013, and Penta1- measles rate decreased from 15 percent in 2005 to 6 percent in 2013 (see Figure C12). It is to be noted here that the coverage of penta3 increased by 12 percentage points during the years between 2005-2013 (77 percent in 2005 and 92 percent in 2013) and, similarly, measles coverage increased from 71 percent in 2005 to 86 percent in 2013 (see Figure A12).

[1] Currently DPT is included in Pentavalent vaccine along with Hep-B and Hib. Penta1-Penta3 is included in 2011. Before that it was DPT1-DPT3

2.4.6 Divisional Trends in Vaccination Coverage

As has been expected, the national trend in the vaccination coverage is a reflection of the divisional coverage. Similar to the trend in the national coverage, there has also been improvement in the vaccination coverage in all divisions over the last few years. The division-wise trends in crude vaccination coverage and valid vaccination coverage by the age of 23 and 12 months are shown in Figures A13-A33. Individual analysis of the trends in the vaccination coverage of each division is presented below.

Barisal Division

The crude coverage rate in Barisal division fluctuated during the whole period of 9 years, i.e. from 1994 to 2003. It was 72 percent in 1994 which increased up to 86 percent in 1995. A substantial decline in the coverage was observed in 1997. It declined from 86 percent in 1995 to 61 percent in 1997. It again increased up to 84 percent in 1999, and then declined down to 64 percent in 2000. However, it was plateau during the periods between 1998-1999 and 2001-2002. Furthermore, a rapid upward trend in crude coverage was observed since 2003 except in 2011 and 2013. It increased from 60 percent in 2003 to 91 percent in 2013 (see Figure A13).

Likewise, with the exception in 2011 trend in the valid vaccination coverage by the age of 23 months increased since 2005. In 2005, it was 69 percent which increased up to 85 percent in 2010, and further declined down to 78 percent in 2011 (see Figure A14). However, the valid vaccination coverage by the age of 23 months has risen by 2 percentage points in 2013 (80 percent).

Figure A15 shows that since 2003 much elevated trend was there in the coverage by the child's age of 12 months. Before that year, valid coverage rate was found to be fluctuating with the exception in 1994-1995. A sharp decline in the coverage was observed in 1997. The valid coverage rate declined from 70 percent in 1995 to 39 percent in 1997. Since then, the scenario of valid vaccination coverage has changed and was found to be increasing with fluctuation. It increased up to 71 percent in 2006, 78 percent in 2009 and 81 percent in 2010 from 75 percent in 2011. Compared to the percentage in CES 2011, the coverage rate increased by 2 percentage points in 2013 (75 percent in 2011 to 78 percent in 2013).

Chittagong Division

Crude vaccination coverage trend in Chittagong division is presented in Figure A16. According to the Figure A16 there was a sharp increasing trend during the period 1992-1995. The crude coverage rate increased from 53 percent in 1992 to 80 percent in 1995. However, it declined down to 59 percent in 1997, which again increased up to 76 percent in 1999. Except in 2003 a continuous upward trend with fluctuations in crude vaccination coverage started in 2000. Over this period, the crude coverage rate increased by 17 percentage points between 1999 and 2013. Compared to CES 2011, the crude coverage rate in Chittagong division increased in 2013 by 3 percentage points (90 percent in 2011 and 93 percent in 2013, see Figure A16).

Similarly, the trend in full valid vaccination coverage by the age of 23 months also increased from 65 percent in 2005 to 82 percent in 2013. Improvement of the vaccination coverage between 2011 and 2013 was 1 percentage point (81 percent in 2011 and 82 percent in 2013) (see Figure A17).

Likewise, the trend in full valid vaccination coverage by the age of 12 months initially increased in 1993-1995, which declined from 58 percent in 1995 to 44 percent in 1997. The valid coverage rate was almost plateau from 1997 to 2001. With the exception of 2005 and 2009, a continuous improving trend in the valid coverage by the age 12 months started since 2001. The valid coverage rate increased from 47 percent in 2001 to 79 percent in 2013. Compared to that in CES 2011, valid coverage rate increased by 1 percentage points (78 percent in 2011 to 79 percent in 2013) (see Figure A18).

Dhaka Division

The trends in crude vaccination coverage in Dhaka division stepped slowly towards improvement with some fluctuations over the last decade. Crude vaccination coverage increased from 52 percent in 1992 to 84 percent in 1994 which has declined sharply down to 63 percent in 2000. A further rapid boosting up of the coverage was observed in 2001. The record says that the crude vaccination coverage increased from 63 percent in 2000 to 80 percent in 2001; again that declined to 71 percent in 2003. However a continuous rapid upward trend was observed since 2003 except 2009. Between the years 2003 and 2011, crude vaccination coverage rate increased by 21 percentage points. The latest CES shows no such change in the coverage in 2013 (see Figure A19).

Similarly, full valid vaccination coverage by the age of 23 months also increased by 20 percentage points - from 63 percent in 2005 to 83 percent in 2011 and remained stable in 2013 (see Figure A20).

A fluctuating but upward trend started in the valid coverage by the age of 12 months since 1993. A sharp decline in the coverage was observed in 1995. The valid coverage rate declined from 65 percent in 1993 to 39 percent in 1995.The uprising trend of valid vaccination coverage by the age of 12 months in Dhaka division was quite noticeable. The coverage rate increased from 58 percent in 2005 to 78 percent in 2010. However, compared to CES 2009, vaccination coverage increased by 7 percentage points - from 73 percent in 2009 to 80 percent in 2011. Further, compared to that in CES 2011, valid coverage slightly decreased by 1 percentage points in 2013- from 80 percent in 2011 to 79 percent in 2013 (see Figure A21).

Khulna Division

Figure A22 shows that since 2000 there has been a slow escalating trend with fluctuations in the crude vaccination coverage in Khulna division. The crude coverage rate was 75 percent in 2000; it increased up to 88 percent in 2003 and 95 percent in 2010. In contrast, a slight decrease (1 percentage point) was observed in 2011 and the latest CES 2013 (94 percent, see Figure A22).

However, in terms of valid vaccination coverage by the age of 23 months an upward trend with fluctuations was revealed during the period 2005-2010. In 2011, the coverage rate was found to 85 percent while it was 75 percent in 2005. Compare to this in CES 2013, the coverage increased by 2 percentage points (85 percent in 2011 to 87 percent in 2013, see Figure A23).

Likewise, trend in valid vaccination coverage by the age of 12 months in Khulna division was appeared to fluctuating but improving. A much elevated increase in the coverage occurred between 2002 and 2003. It increased from 67 percent in 2002 to 77 percent in 2003.The

fluctuation trend again began with the commencement of 2003 with a variation of 5 percentage points between 2005 and 2006.The rate decreased from 77 percent in 2003 to 72 percent in 2005, which again increased up to 81 percent in 2010 and 83 percent in 2011. Further improvement in coverage was noticed in CES 2013 (from 83 percent in 2011 to 85 percent in 2013, see Figure A24).

Rajshahi Division

The trend in crude vaccination coverage in Rajshahi division is shown in Figure A25. Here crude coverage rate was plateau from 1997 to 2003. However, a remarkable upward trend was observed since 2003. The coverage increased by 21 percentage points - from 75 percent in 2003 to 96 percent in 2010. However, the coverage declined down to 95 percent in 2011 and remained same at 2013 (see Figure A24).

Similarly, the trend in valid vaccination coverage by the age of 23 months in Rajshahi division was found to be increasing since 2005. Over the period 2005-2011, the vaccination coverage increased by 16 percentage points (72 percent in 2005 and 88 percent in 2011). Compared to that in CES 2011, the coverage decreased by 1 percentage points in 2013 (88 percent in 2011 and 87 percent in 2013) (see Figure A26).

Furthermore, valid vaccination coverage by the age of 12 months was almost static during 1994-1997 and 1998-2002. It declined from 62 percent in 1997 to 55 percent in 1998 and remained plateau till 2002. However, a sharp continuous improvement in valid vaccination coverage rate was observed since 2002. It increased by 24 percentage points during the period 2002-2009. The coverage rate was 54 percent in 2002 which increased up to 83 percent in 2010 and 86 percent in 2011. Compared to that in CES 2011, the coverage rate decreased by 1 percentage points in 2013 in Rajshahi division (86 percent in 2011 and 85 percent in 2013)(see Figure A27).

Rangpur Division

Rangpur emerged as a new division in 2010. Before that, it had been under Rajshahi division. Data of Rangpur division derived from CES and in now presented in this report (see Figure A28-A29). Crude coverage by 23 months increased by 2.1 percentage points - from 92 percent in 2011 to 94 percent in 2013 (see Figure A28).

Valid vaccination coverage by the age of 12 months in Rangpur division was observed since 2010. Valid Coverage increased by 3 percentage points from 2010 to 2013 (from 78 percent in 2010 to 81 percent in 2013) (see Figure A30).

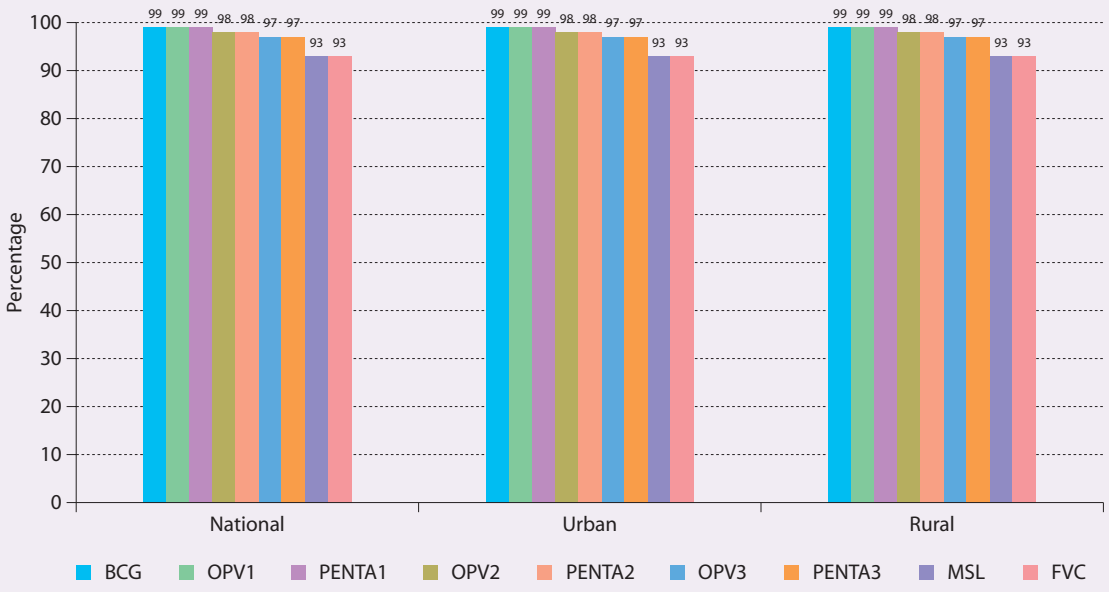
Sylhet Division

In Sylhet division, an increasing trend in crude vaccination coverage was observed since 2001. It was 42 percent in 2001; and it increased up to 83 percent in 2006 and 88 percent in 2011. The crude coverage of Sylhet division has largely increased from 2001 to 2013. The latest CES (2013) also shows an increase from 2011 which is from 88 percent in 2011 to 92 percent in 2013 (see Figure A31).

Similarly, a trend in valid vaccination coverage by the age of 23 months was observed to be improving since 2005. Compared to that in 2005 (59 percent in CES 2005 and 79 percent in 2011), the coverage rate improved by 20 percentage points in 2010. In 2013, the valid coverage increased by 4 percentage points (79 percent in 2011 and 83 percent in 2013) (see Figure A32).

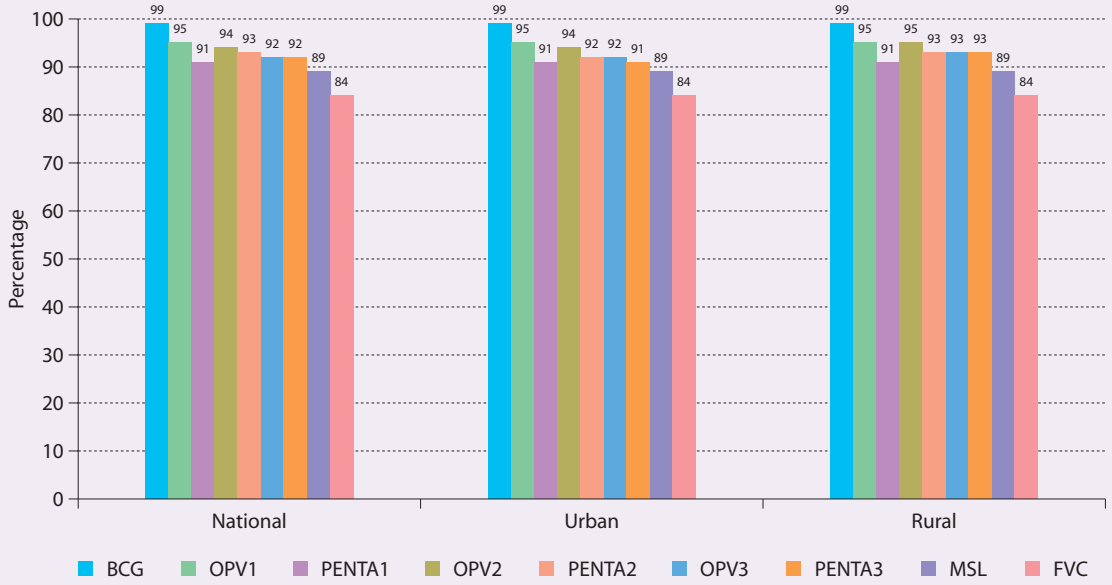
Likewise, time series data on the valid vaccination coverage by the age of 12 months indicates a higher uninterrupted improvement in the coverage since 2001. Vaccination coverage improved by 52 percentage points during the period 2001-2011. The highest improvement occurred in 2002 which was 17 percentage points higher than the coverage rate in 2001. The valid vaccination coverage was 23 percent in 2001. It increased up to 64 percent in 2006 and 81 percent in 2013. Compare to CES 2011, the valid coverage increased by 6 percentage points in 2013. This sort of improvement might be the effect of higher OPV3 and measles coverage as well as the act of administering vaccines at the exact age and interval (see Figure A33).

Figure A7. Crude vaccination coverage by the age of 23 months among 12-23 months old children by national, rural and urban areas in 2013



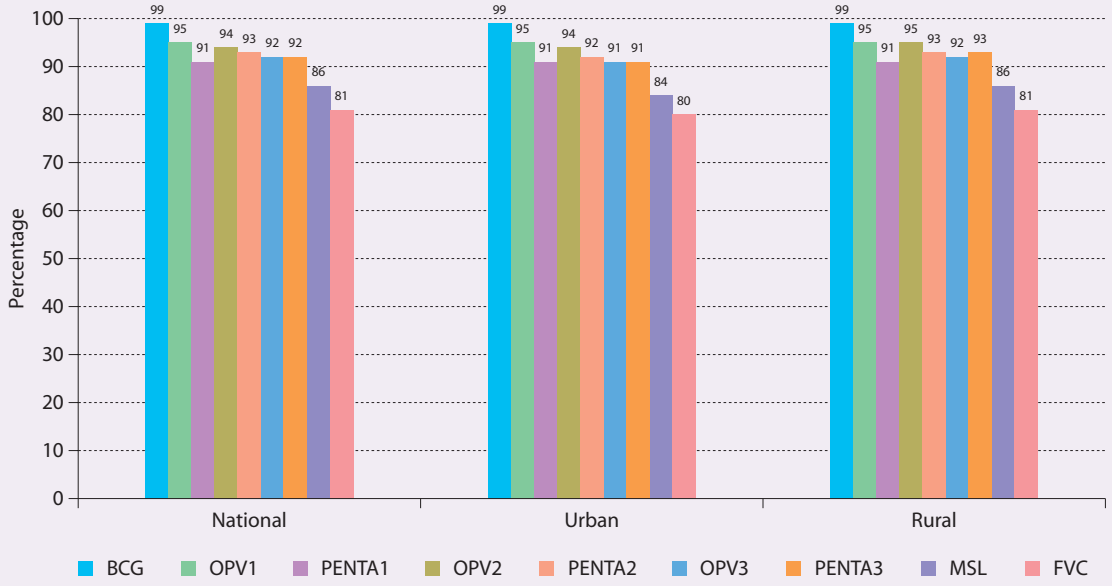
Source : CES 2013

Figure A8. Valid vaccination coverage by the age of 23 months among 12-23 months old children by national, rural and urban areas in 2013



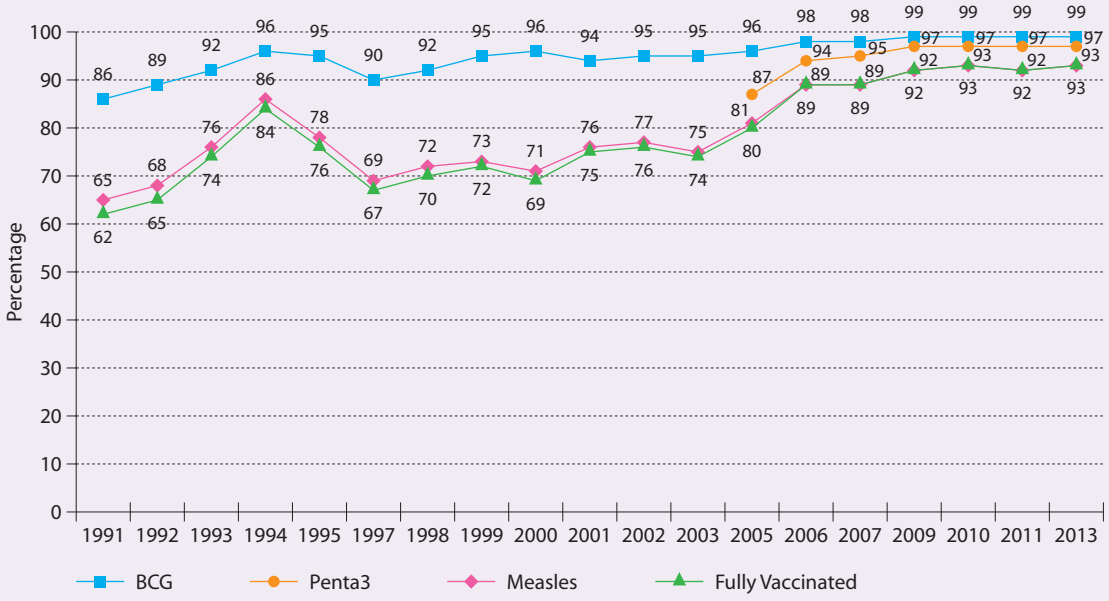
Source : CES 2013

Figure A9. Valid vaccination coverage by age 12 months among 12-23 months old children by national, rural and urban areas in 2013



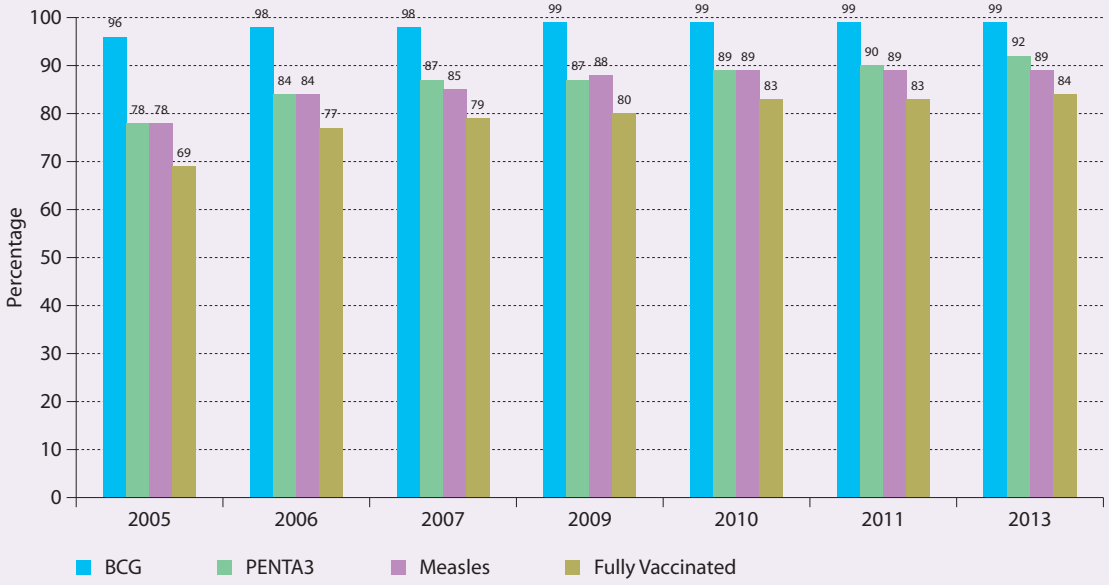
Source : CES 2013

Figure A10. Annual Trend in National Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children from 1991 to 2013



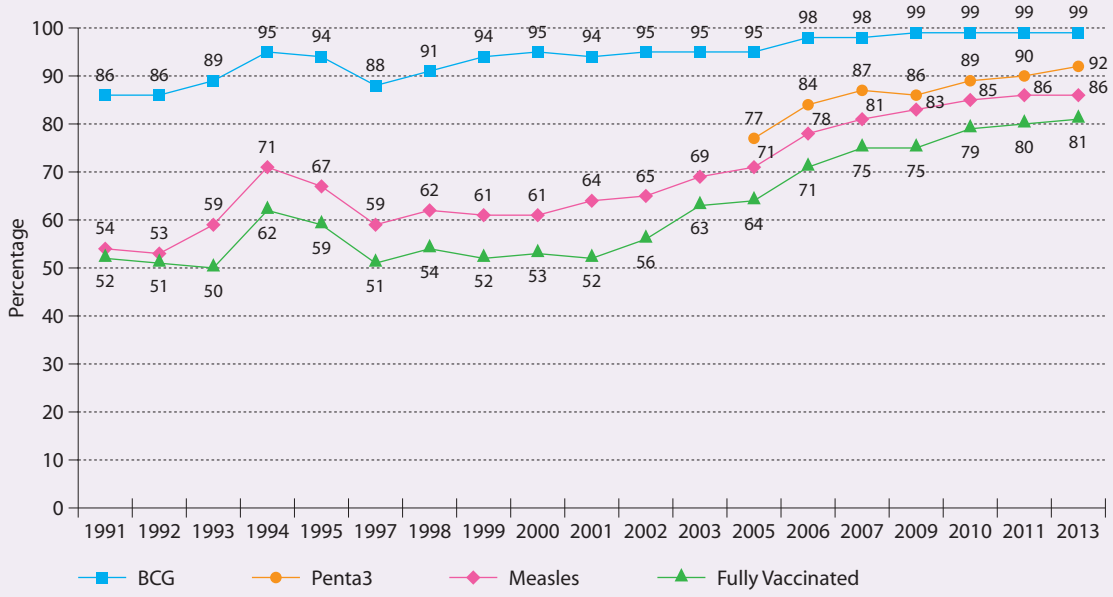
Source : Coverage Evaluation Survey 1991-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A11. Annual trend in national valid vaccination coverage by age 23 months among 12-23 months old children from 2005 to 2013



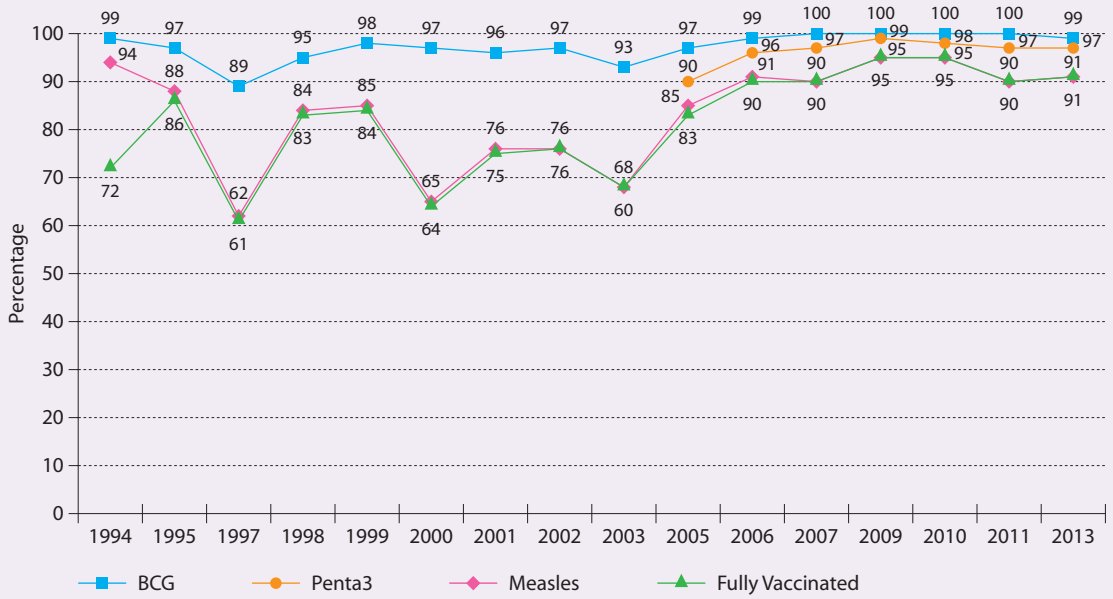
Source : Coverage Evaluation Survey 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A12. Annual trend in national valid vaccination coverage by age 12 months among 12-23 months old children from 1991 to 2013



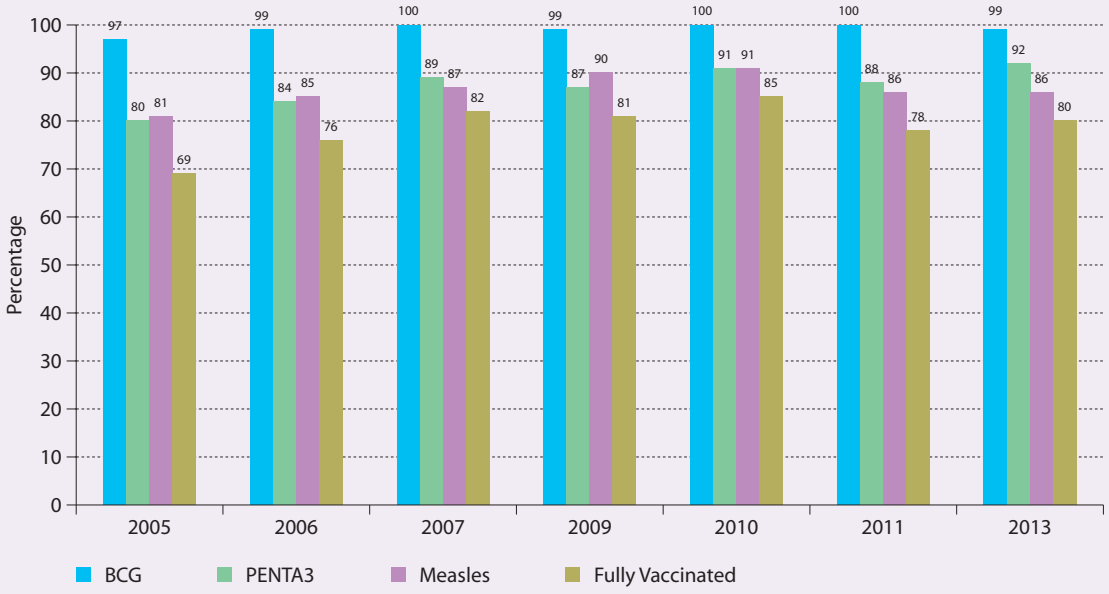
Source : Coverage Evaluation Survey 1991-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A13. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Barisal Division from 1994 to 2013



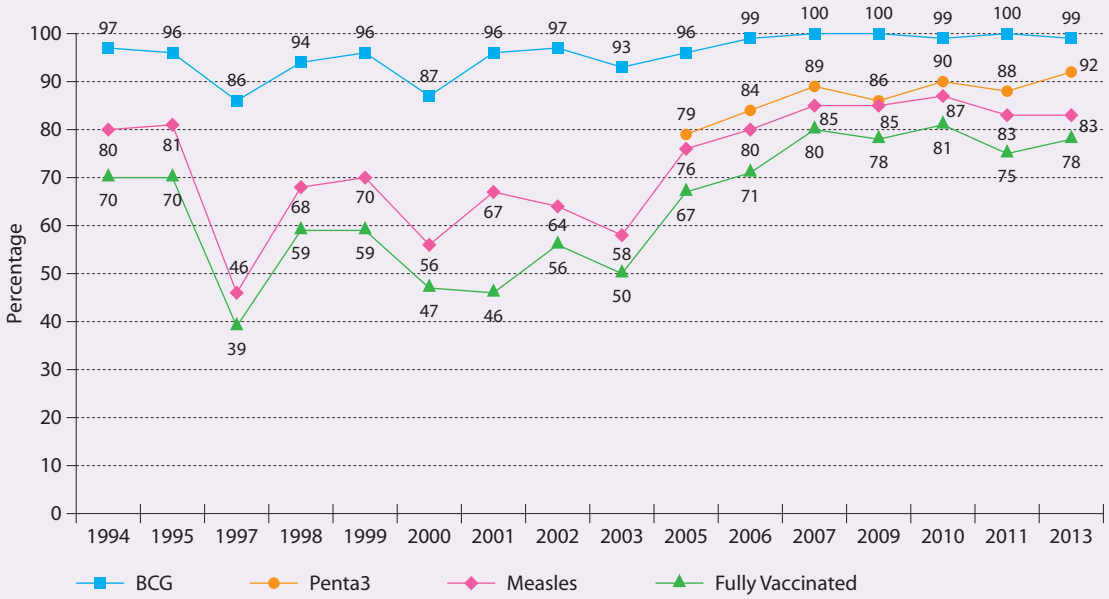
Source : Coverage Evaluation Survey 1994-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A14. Annual Trend in Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children in Barisal Division from 2005 to 2013



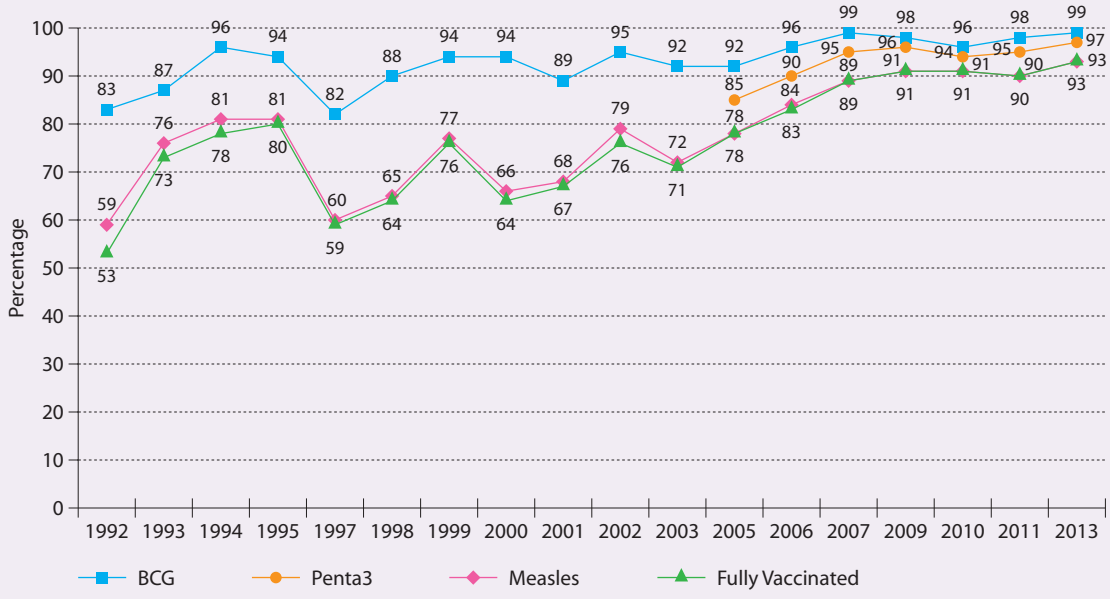
Source : Coverage Evaluation Survey 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A15. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Barisal Division from 1994 to 2013



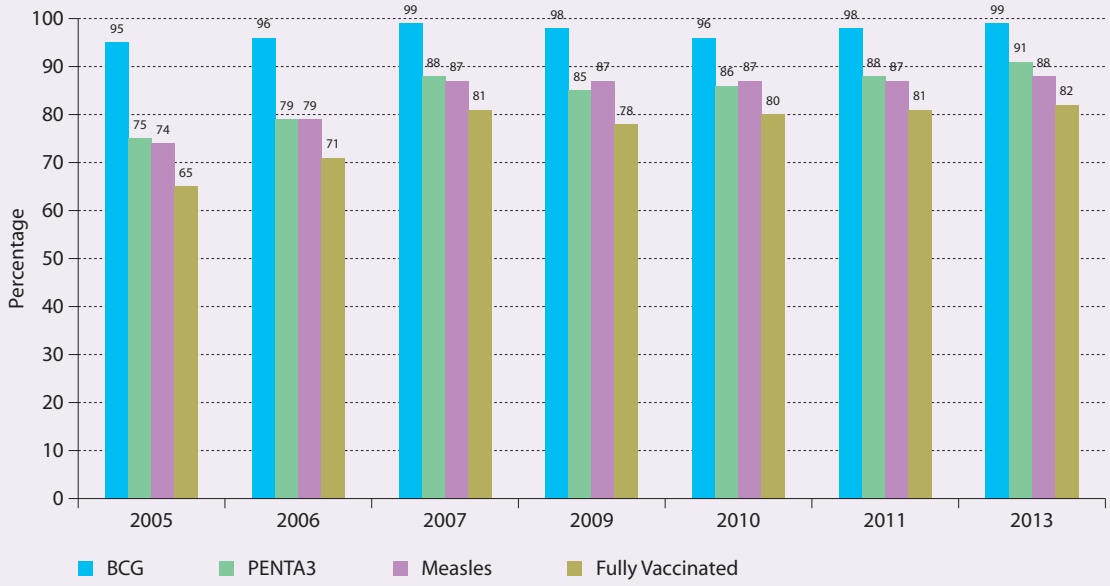
Source : Coverage Evaluation Surveys (CESs) 1994-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A16. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Chittagong Division from 1992 to 2013



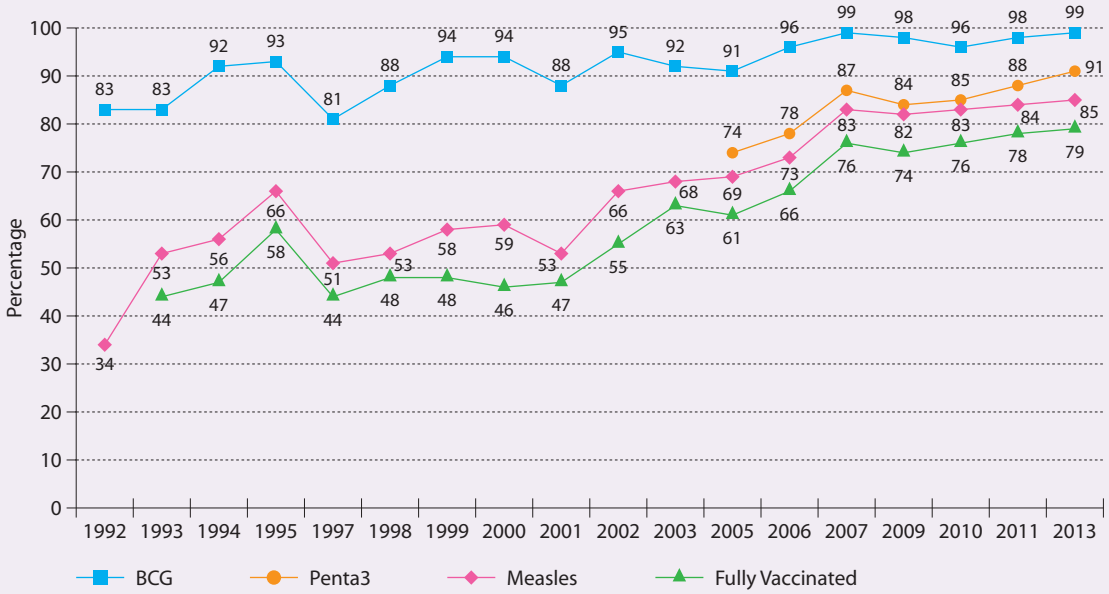
Source : Coverage Evaluation Surveys (CESs) 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A17. Annual Trend in Valid Vaccination Coverage by age 23 months among 12-23 Months Old Children in Chittagong Division from 2005 to 2013



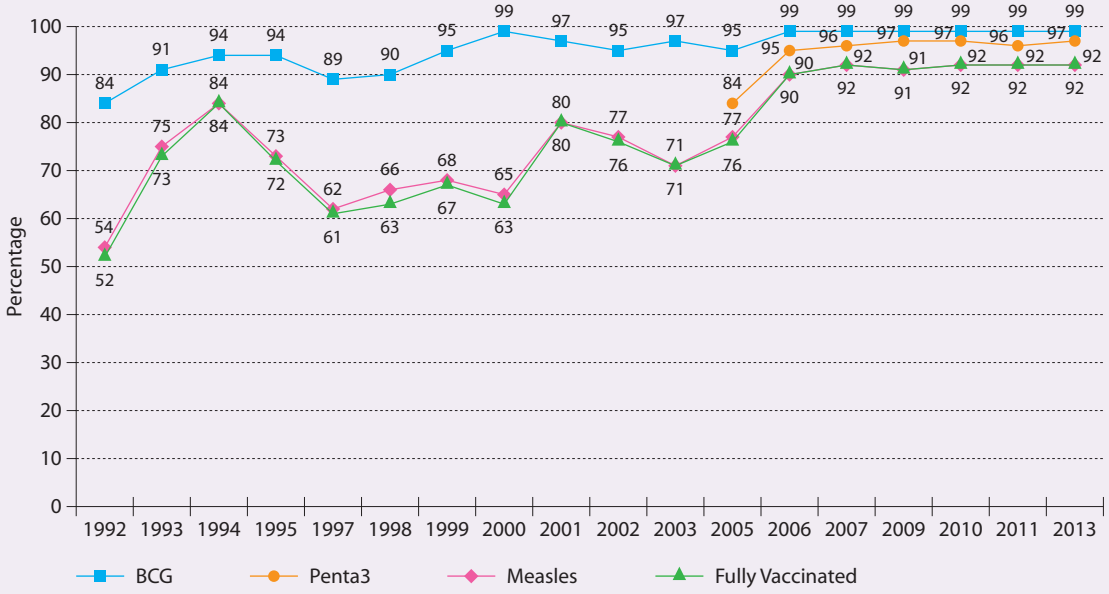
Source : Coverage Evaluation Survey 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A18. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Chittagong Division from 1992 to 2013



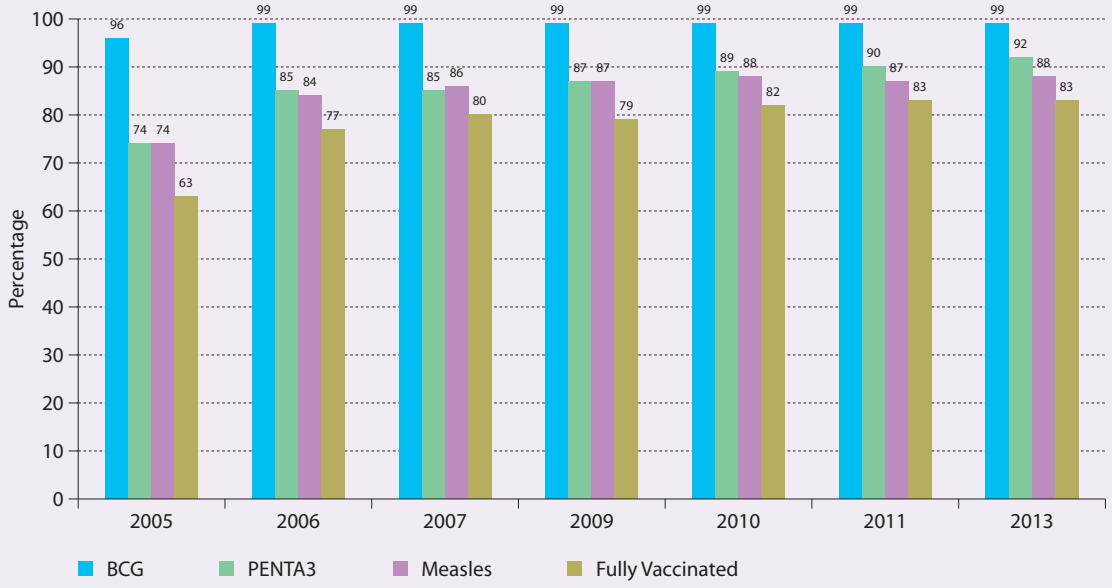
Source : Coverage Evaluation Surveys (CESs) 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A19. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Dhaka Division from 1992 to 2013



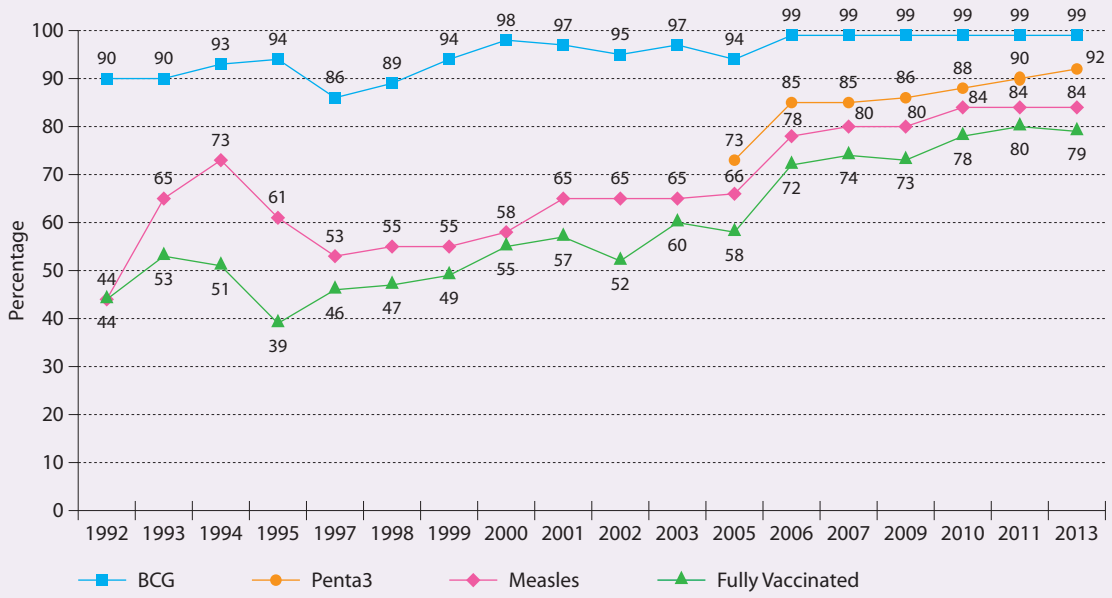
Source : Coverage Evaluation Surveys (CESs) 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A20. Annual Trend in Valid Vaccination Coverage by age 23 months among 12-23 Months Old Children in Dhaka Division from 2005 to 2013



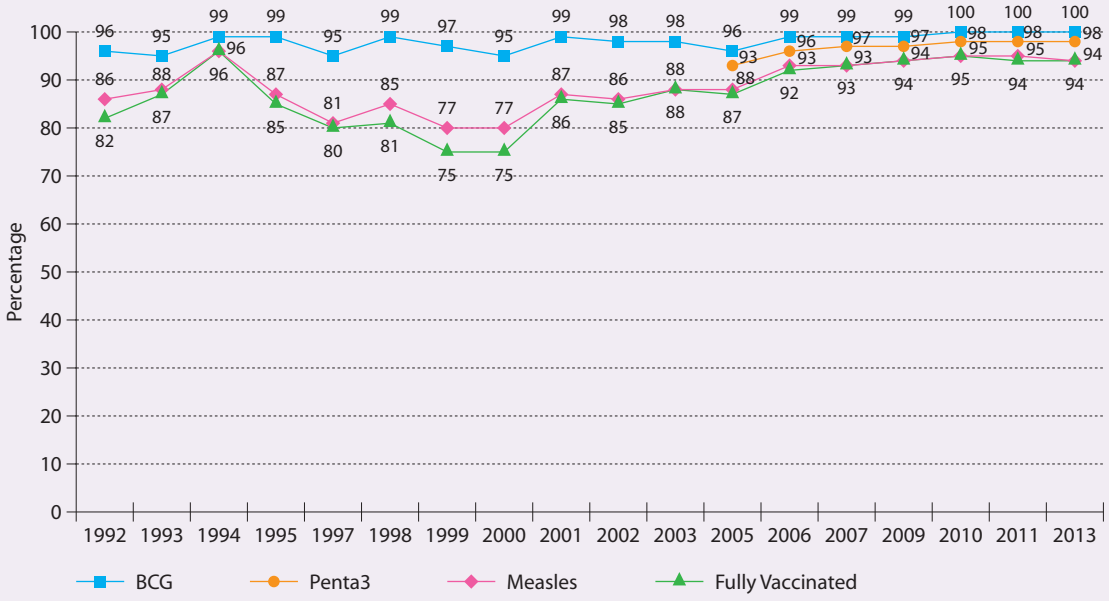
Source : Coverage Evaluation Survey 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A21. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Dhaka Division from 1992 to 2013



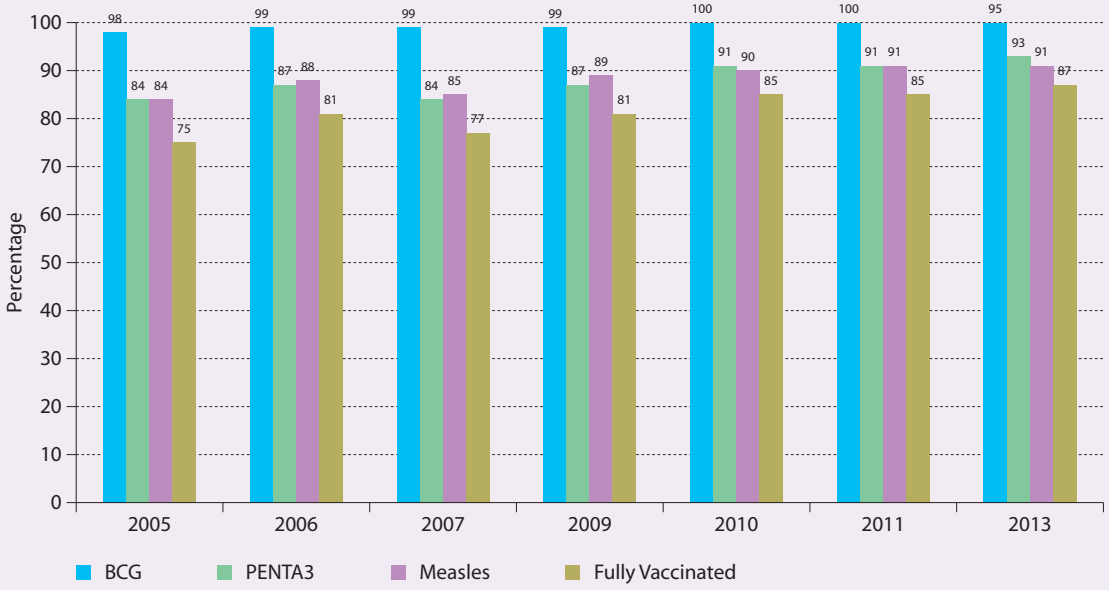
Source : Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A22. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Khulna Division from 1992 to 2013



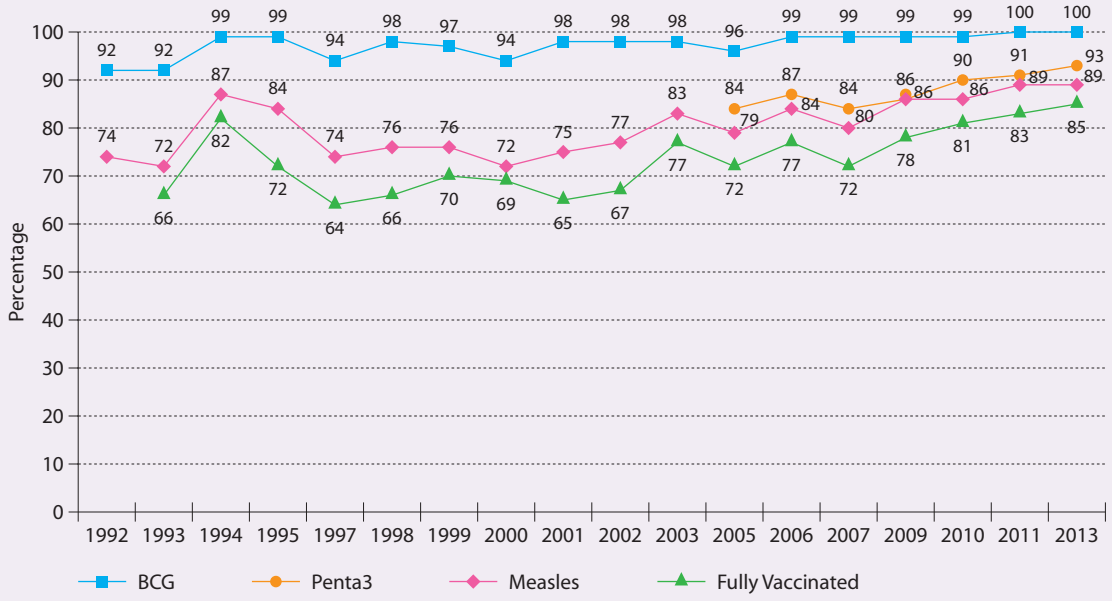
Source : Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A23. Annual Trend in Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children in Khulna Division from 2005 to 2013



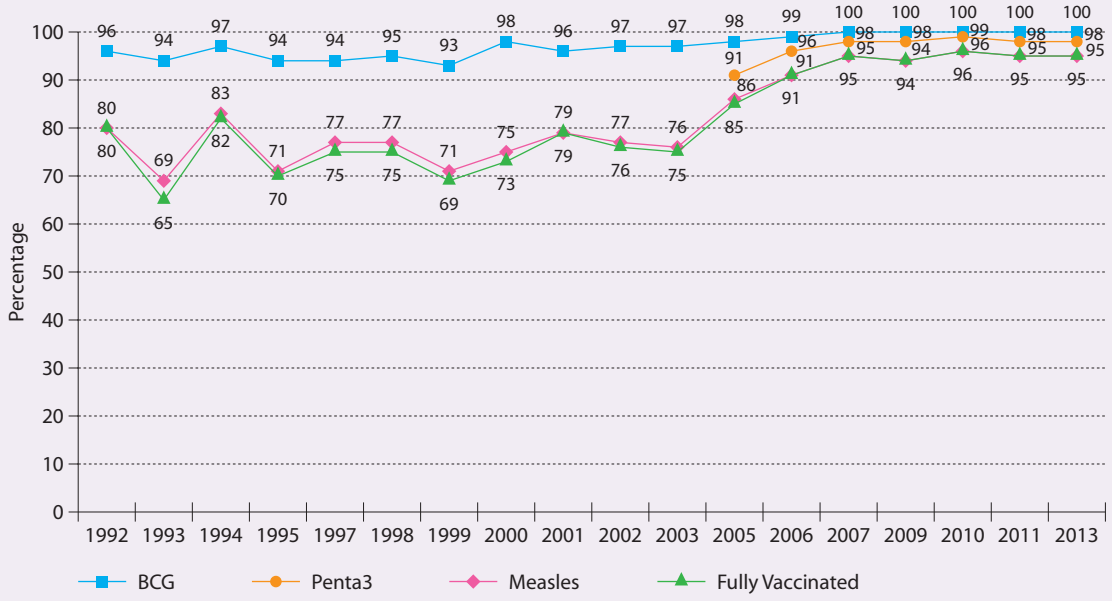
Source : Coverage Evaluation Survey 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A24. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Khulna Division from 1992 to 2013



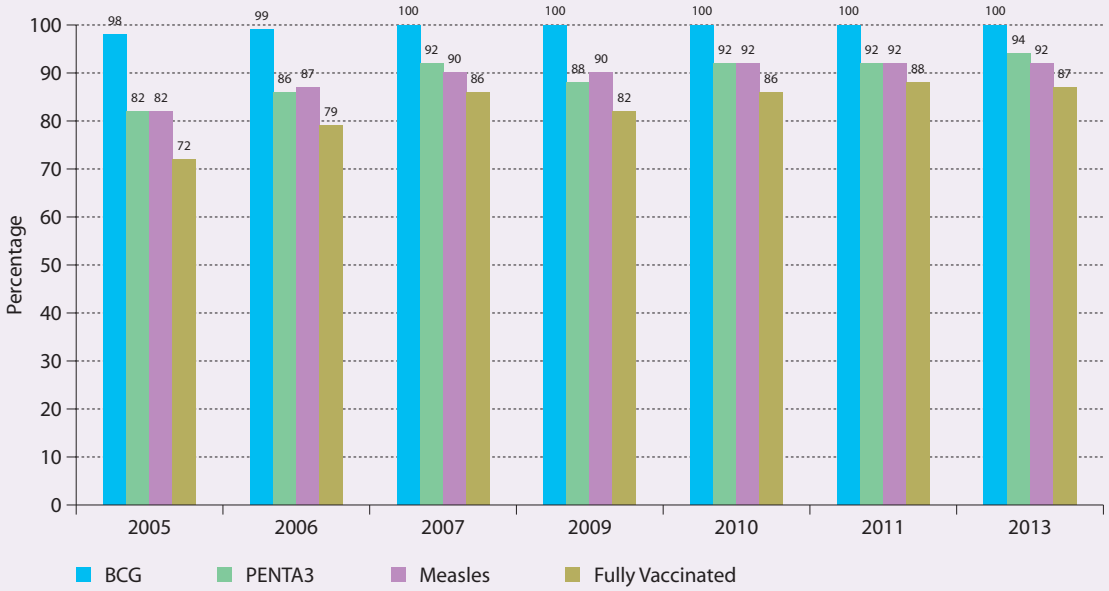
Source : Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A25. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rajshahi Division* from 1992 to 2013



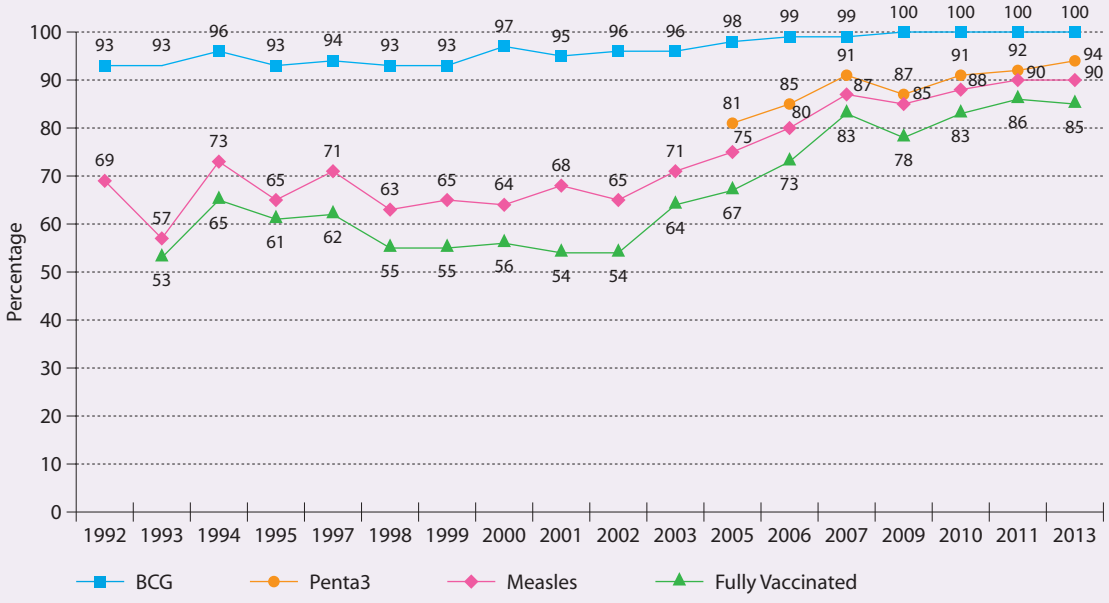
Source : Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013
** Before 2010 Rangpur division was included in Rajshahi division*

Figure A26. Annual Trend in Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children in Rajshahi Division* from 2005 to 2013



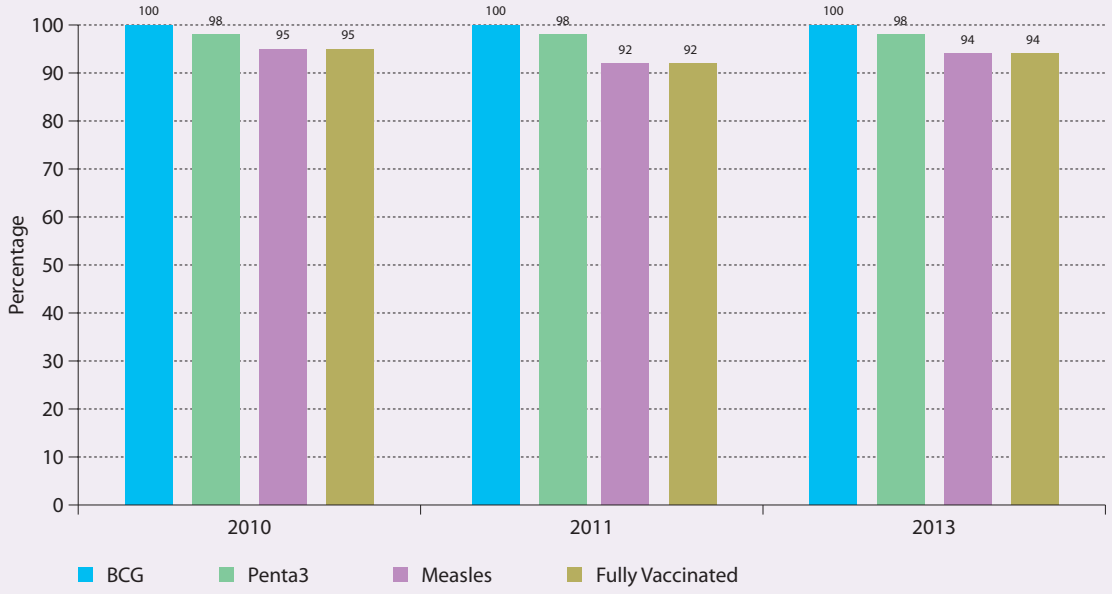
Source : Coverage Evaluation Survey 2005, 2006, 2007, 2009, 2010, 2011 and 2013
** Before 2010 Rangpur division was included in Rajshahi division*

Figure A27. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Rajshahi Division* from 1992 to 2013



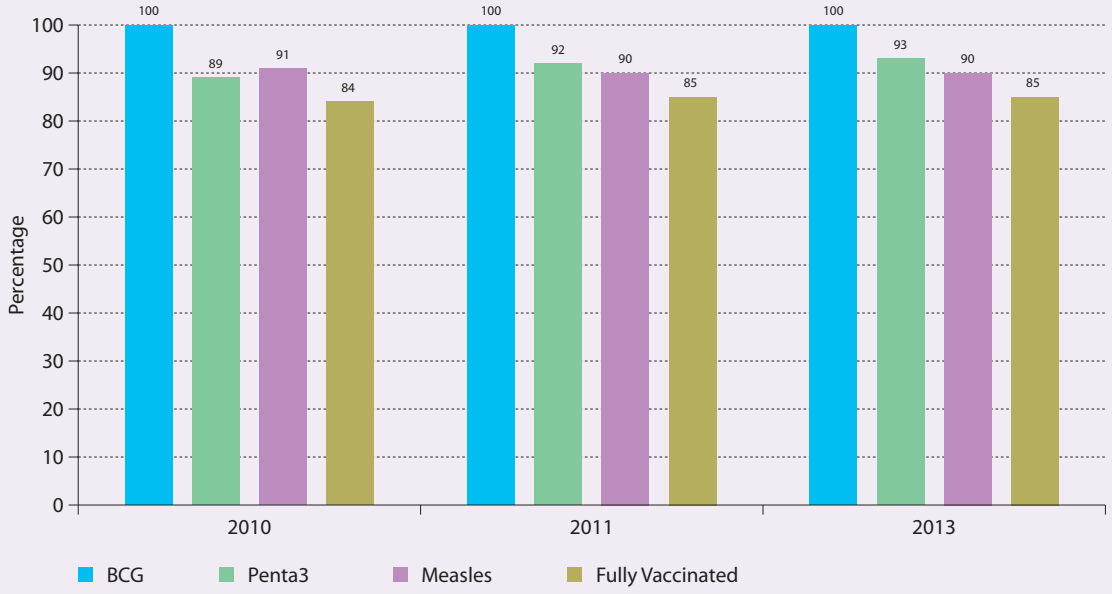
Source : Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013
** Before 2010 Rangpur division was included in Rajshahi division*

Figure A28. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rangpur Division* from 2010 to 2013



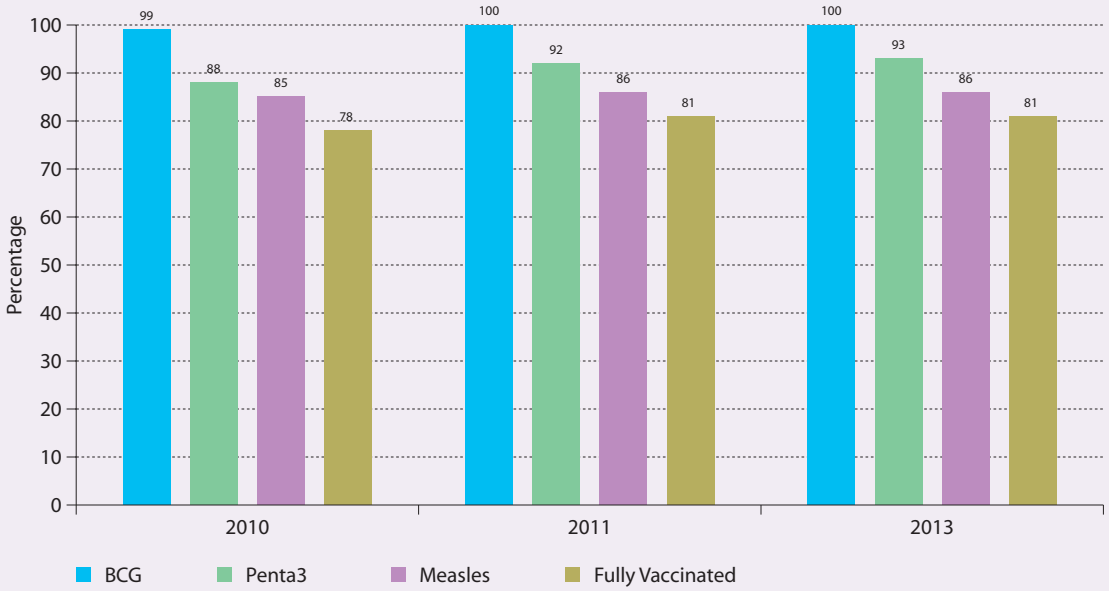
Source : Coverage Evaluation Survey 2010, 2011 and 2013
** Before 2010, Rangpur division was a part of Rajshahi division*

Figure A29. Annual Trend in Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rangpur Division* from 2010 to 2013



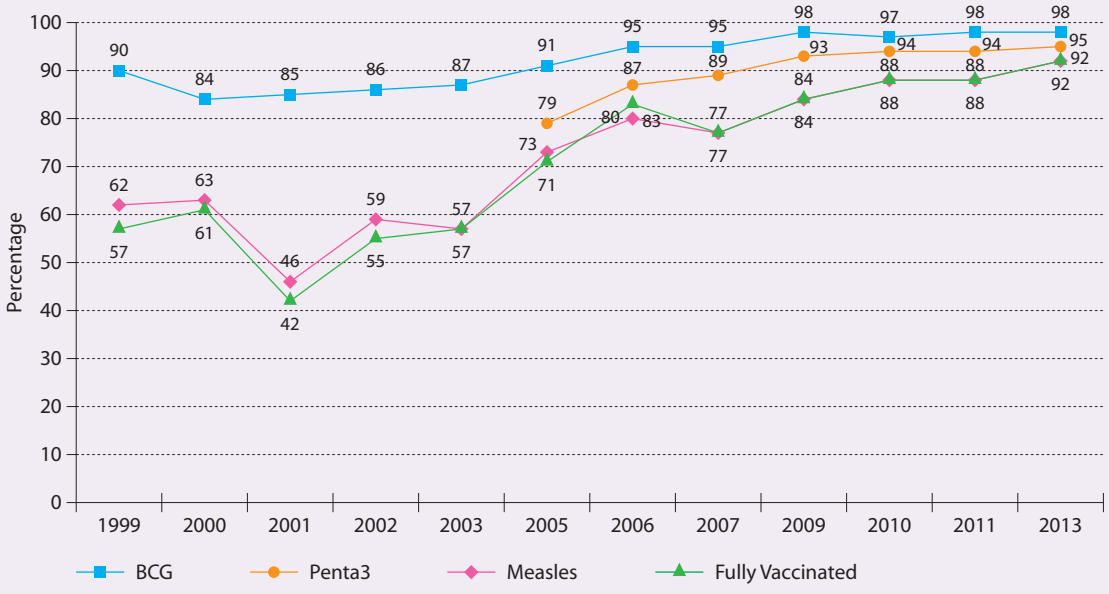
Source : Coverage Evaluation Survey 2010, 2011 and 2013
** Before 2010, Rangpur division was a part of Rajshahi division*

Figure A30. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Rangpur Division* from 2005 to 2013



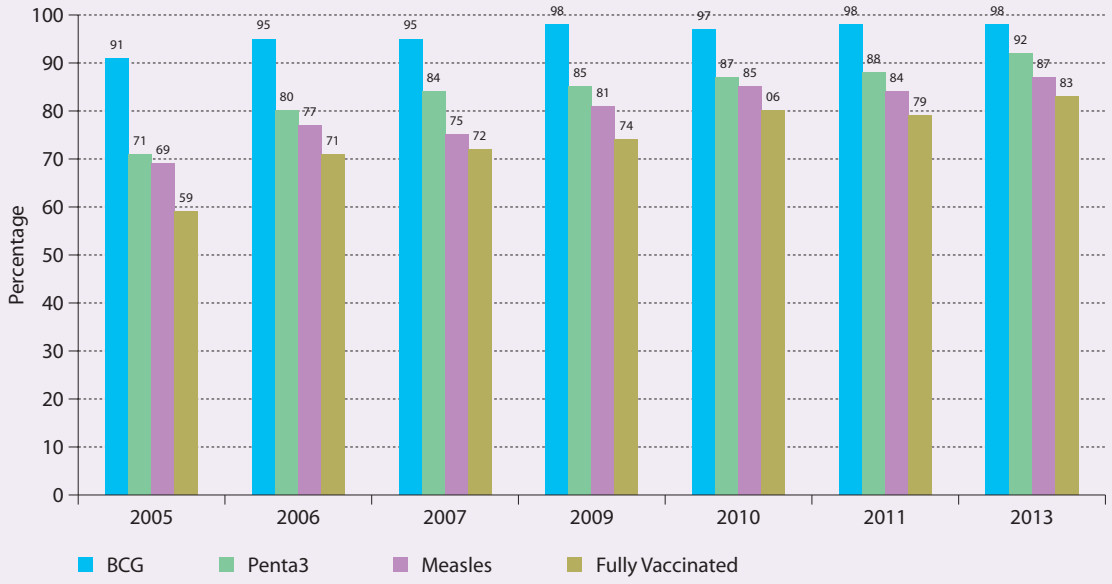
Source : Coverage Evaluation Survey 2010, 2011 and 2013
** Before 2010, Rangpur division was a part of Rajshahi division*

Figure A31. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Sylhet Division* from 1999 to 2013



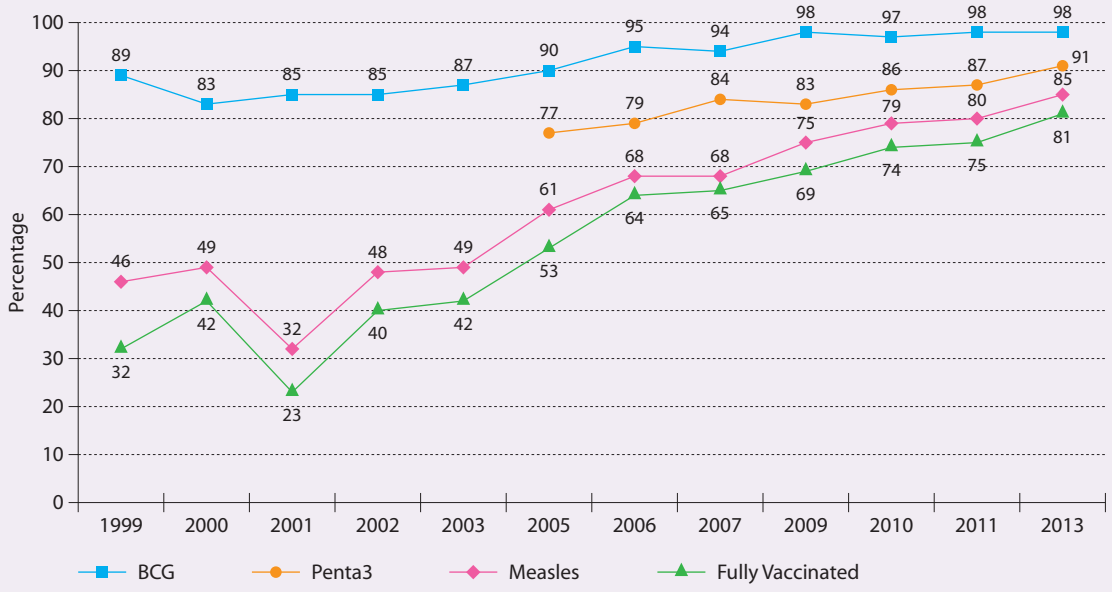
Source : Coverage Evaluation Survey 1999-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure A32. Annual Trend in Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children in Sylhet Division from 2005 to 2013



Source : Coverage Evaluation Survey 2005, 2006, 2009, 2010, 2011 and 2013
** Before 1999, Sylhet division was a part of Chittagong division*

Figure A33. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Sylhet Division from 1999 to 2013



Source : Coverage Evaluation Survey 1999-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

2.4.7 Levels of the Rural Coverage by Division

Levels of rural vaccination coverage are presented in Figures B1-B3. All three types of vaccination coverage - Crude vaccination coverage, valid vaccination coverage by the age of 23 months, and valid vaccination coverage by the age of 12 months - are discussed separately below.

Crude vaccination coverage: Overall, 93 percent of the children in rural areas of Bangladesh were found to be vaccinated with all antigens, irrespective of vaccination schedule. The crude coverage rate was found to be the highest (95 percent) in Rangpur, Rajshahi and Khulna and the lowest (91 percent) in Barisal division. The crude coverage rate was 92 percent for Chittagong and Dhaka division (see Figure B1).

Valid vaccination coverage by the age of 23 months: As it was expected, compared to crude coverage, valid vaccination coverage by the age of 23 months was found to be lower - 84 percent- in rural Bangladesh. Figure B2 shows that the coverage in Khulna division was much higher (87 percent) than those in other divisions. However, a much lower percentage of the children from Barisal division (80 percent) received all the vaccines following the exact age and interval by the age of 23 months. The coverage in other divisions was 86 percent in Rajshahi, 85 percent in Rangpur, 83 percent in Dhaka, 82 percent in Sylhet and Chittagong (see Figure B2).

Valid vaccination coverage by age of 12 months: Valid vaccination coverage by 12 months, i.e. coverage following the exact age and interval of EPI childhood vaccination schedule, was 81 percent in rural Bangladesh. It was found to be the highest (85 percent) in Khulna and the lowest (77 percent) in Barisal division. Coverage in other divisions was intermediary that ranged between 84 percent in Rajshahi, 82 percent in Rangpur, 80 percent in Chittagong, Sylhet and Dhaka (see Figure B3).

Differential to antigens were not more than 2 percentage points. However, coverage of measles was higher in Khulna and Rajshahi (90 percent each) than in Rangpur (87 percent); Chittagong (86 percent), Sylhet, Dhaka and Barisal (84 percent each) (see Figure B3).

2.4.8 Levels of the Urban Coverage by City Corporation

Vaccination coverage in urban areas by City Corporation is presented separately in this section. Estimates of different city corporations are derived from the urban clusters excluding municipalities, which are surveyed under the divisional units. It includes the findings of 30 clusters from each of the city corporations as an independent unit of survey. Besides, estimate of Dhaka and Chittagong City Corporation excludes the slums as the slums of Dhaka and Chittagong city corporations were considered as a separate survey unit in CES. A total of 10 City Corporations was considered in the CES including the newly formed city corporations i.e., DSCC, DNCC, NCC, Com CC and Ran CC.

Crude vaccination coverage: Figure B4 presents the analysis of crude vaccination coverage by City Corporations. The analysis shows that crude vaccination coverage was the highest (97 percent) in RCC and Com CC and the lowest - 89 percent - in BCC. Crude coverage was 94 percent in DNCC, 93 percent in SCC, 93 percent in KCC, 92 percent in DSCC, 92 percent in CCC, 92 percent in NCC, 91 percent in Ran CC.

Valid vaccination coverage by the age of 23 months: A similar scenario was observed for the valid vaccination coverage by the age of 23 months among all the ten city corporations. The performance was again found to be the highest- 92 percent- in KCC and RCC and the lowest - 74 percent - in NCC. The coverage rate in SCC is 90 percent, Com CC is 85 percent, DNCC and Ran CC is 84 percent, DSCC is 81 percent, BCC is 78 and CCC is 75 percent (see Figure B5).

Valid vaccination coverage by the age of 12 months: As regards the valid vaccination coverage by the age of 12 months, it is to be mentioned here that the coverage was found to be the highest (91 percent) in the Rajshahi City Corporation and the lowest (70 percent) in the Chittagong City Corporation. Valid vaccination coverage in other city corporations was intermediary that ranged from 87 percent in KCC, 85 percent in SCC, 82 percent in Com CC, 81 percent in DNCC, 78 percent in Ran CC, 77 percent in BCC, 76 percent in DSCC and 72 percent in NCC (see Figure B6).

2.4.9 Sex Differentials in the Vaccination Coverage

In Bangladesh, boys are culturally more privileged than girls regarding fulfilling their basic needs. CES 2013 analyzes the data by sex with an aim to understand whether there is sex differential in the vaccination coverage. Among all the eligible subjects, the survey covered 52 percent males as against 48 percent females.

Crude Vaccination Coverage: Figure B7 shows that antigen wise coverage was almost same between male and female children except Measles (see Figure B7). The difference was 1 percentage point for measles. Thus, a higher percentage of male children were fully vaccinated than the female children. Nationally, 92 percent of the females and 93 percent of the males received full vaccination.

In terms of place of their residences, no differentiation in the crude coverage was observed between the males and the females in urban and rural areas (see Figure B8-B9).

Valid vaccination coverage by the age of 23 months: In terms of administering vaccines by maintaining the exact age and/ or interval by the age of 23 months, the survey findings show a slight difference between males (84 percent) and females (83 percent). The rural-urban analysis shows a little difference in the coverage. In urban areas, 84 percent of the females received valid doses of all vaccines as against 83 percent of the females in rural areas (see Figures B10-B12).

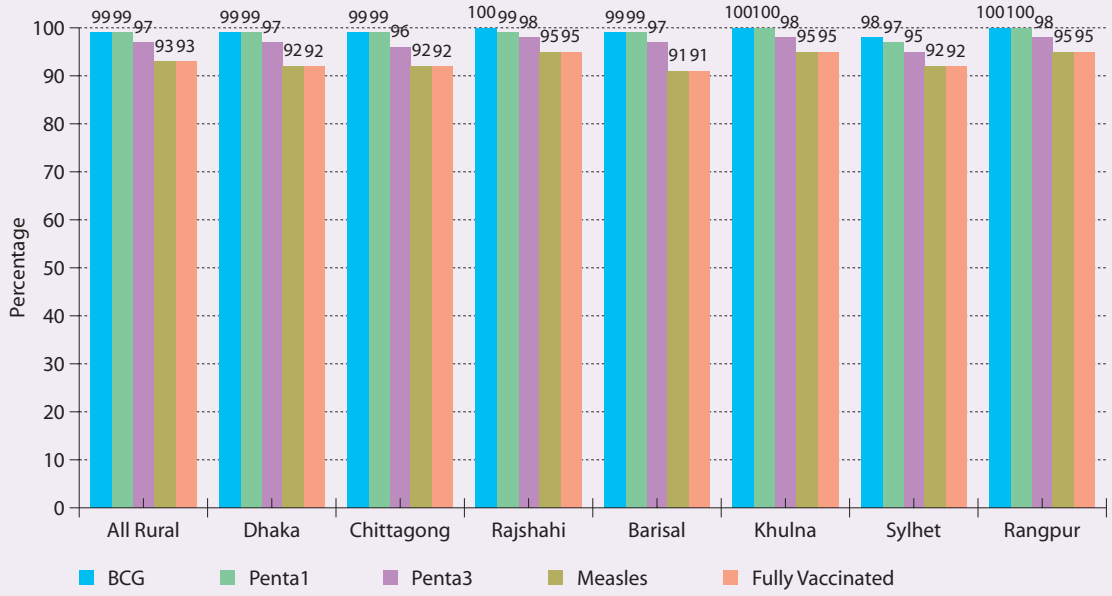
Valid vaccination coverage by the age of 12 months: Sex differential in the vaccination coverage by the age of 12 months is presented in Figure B13. It shows that difference in the vaccination coverage between males and females was 1 percentage point. The valid vaccination coverage by age 12 months was found to be 81 percent and 80 percent for males and females respectively. However, by place of residence, a slightly higher percentage of females (81 percent) in urban areas received all the valid doses as against 80 percent of males (see Figure B14). On the other hand, valid coverage among the males was 82 percent while the coverage of females was 81 percent in rural areas (see Figure B15).

By antigen, the difference in coverage between males and females was observed in the Penta2, OPV3, and measles. Thus the difference in the coverage for all vaccines males and females was 1 percentage point (see Figure B13).

2.4.10 Levels of the Coverage by Survey Unit

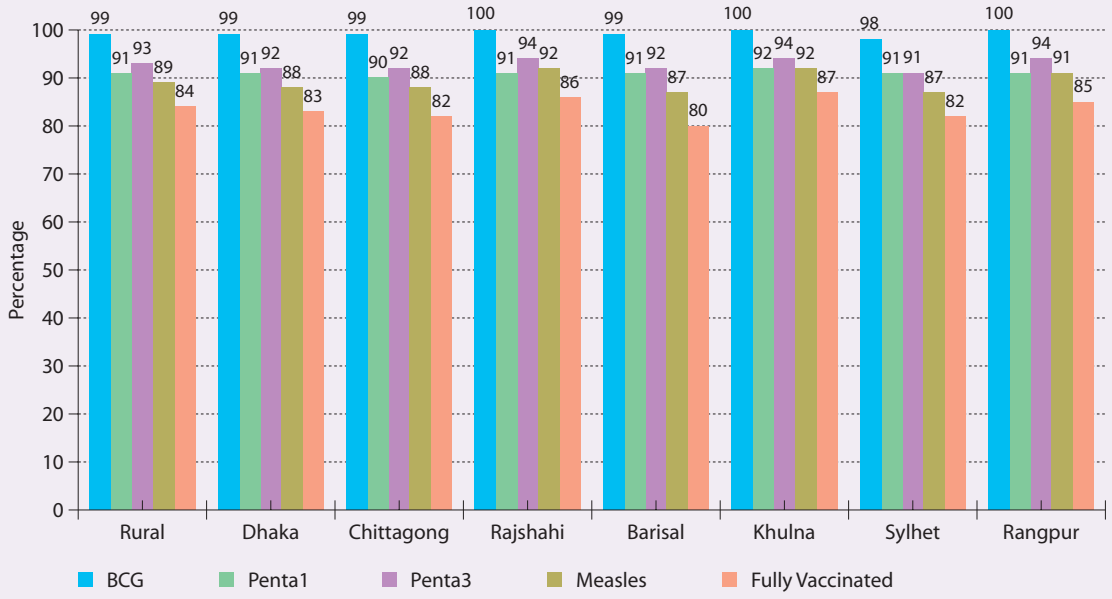
As a ready reference, valid vaccination coverage by the age of 12 months among the children aged 12-23 months by districts and City Corporations are provided in the Appendix. Full vaccination coverage by the age of 12 months by divisions and city corporations is also illustrated in the Appendix.

Figure B1. Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rural Areas by Division in 2013



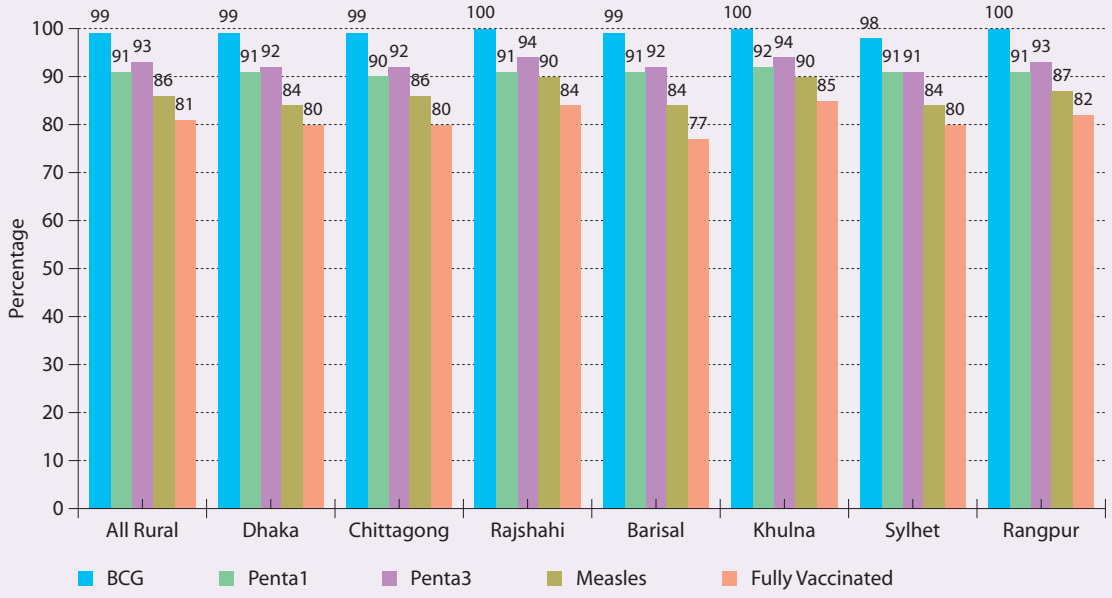
Source : CES 2013
** Before 1999, Sylhet division was a part of Chittagong division*

Figure B2. Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rural Areas by Division in 2013



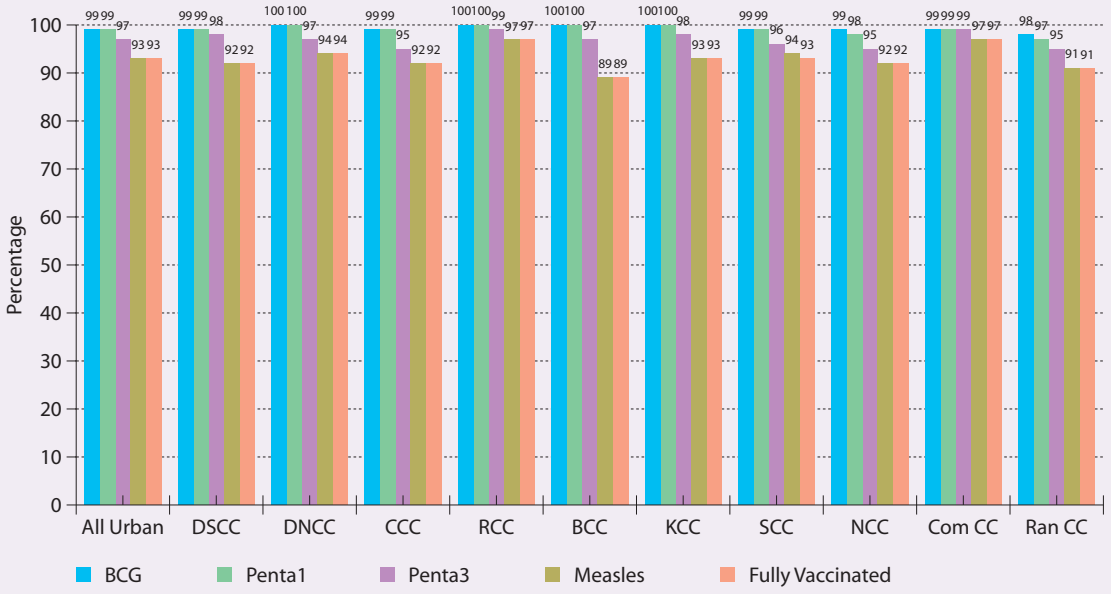
Source : CES 2013

Figure B3. Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Rural Areas by Division in 2013



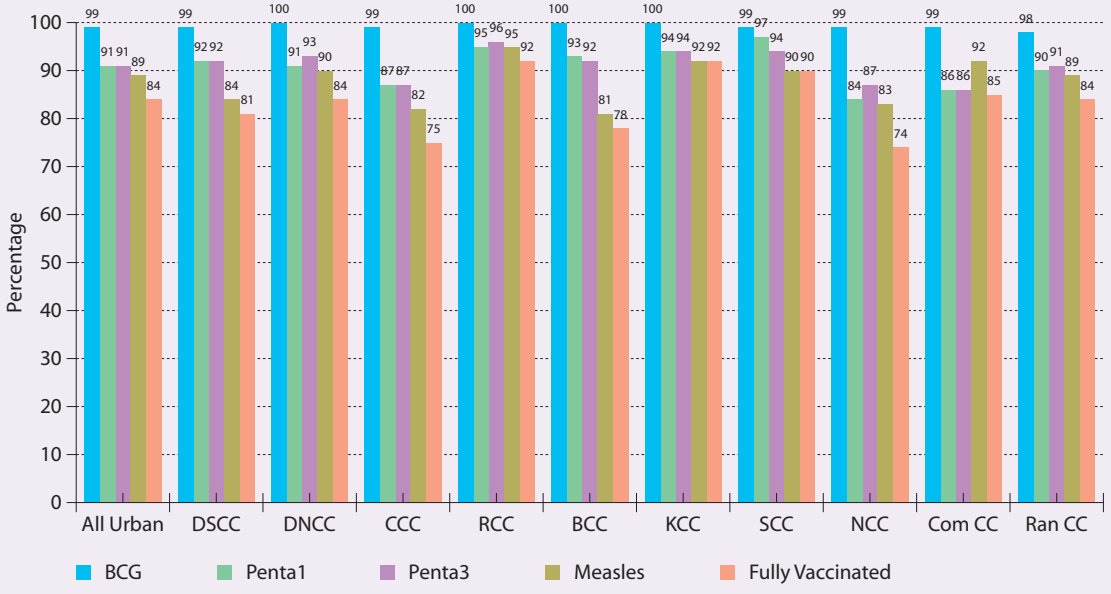
Source : CES 2013

Figure B4. Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Urban Areas by City Corporation in 2013



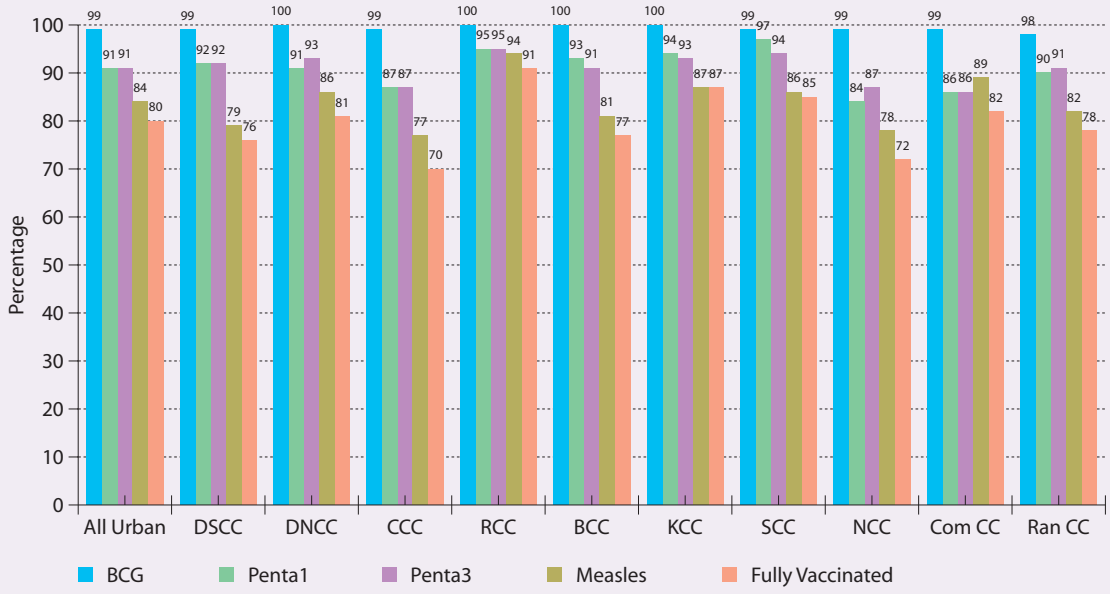
Source : CES 2013

Figure B5. Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Urban Areas by City Corporation in 2013



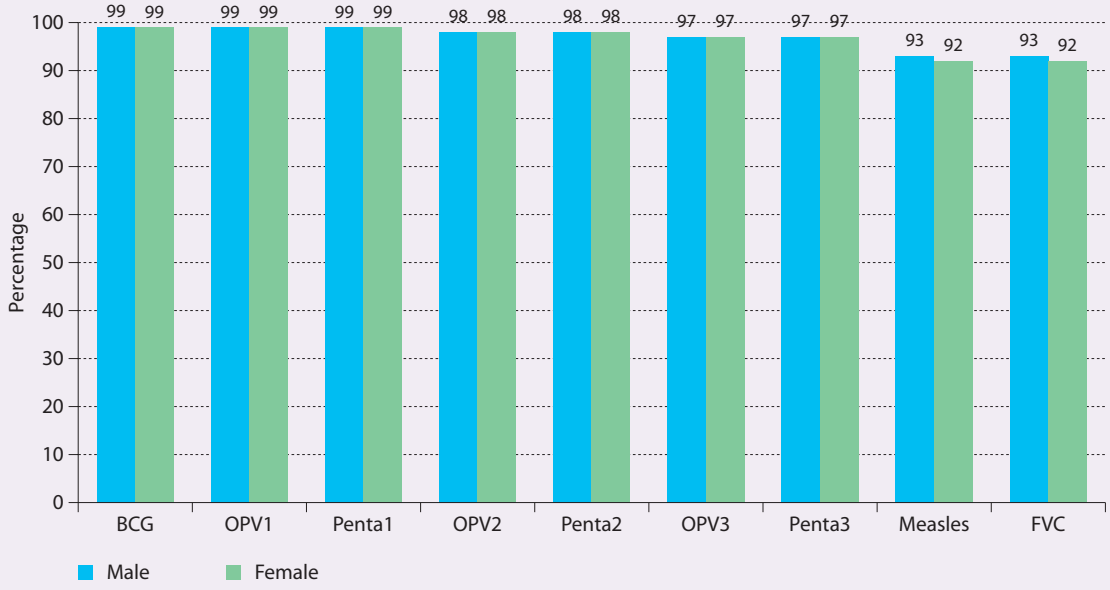
Source : CES 2013

Figure B6. Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Urban Areas by City Corporation in 2013



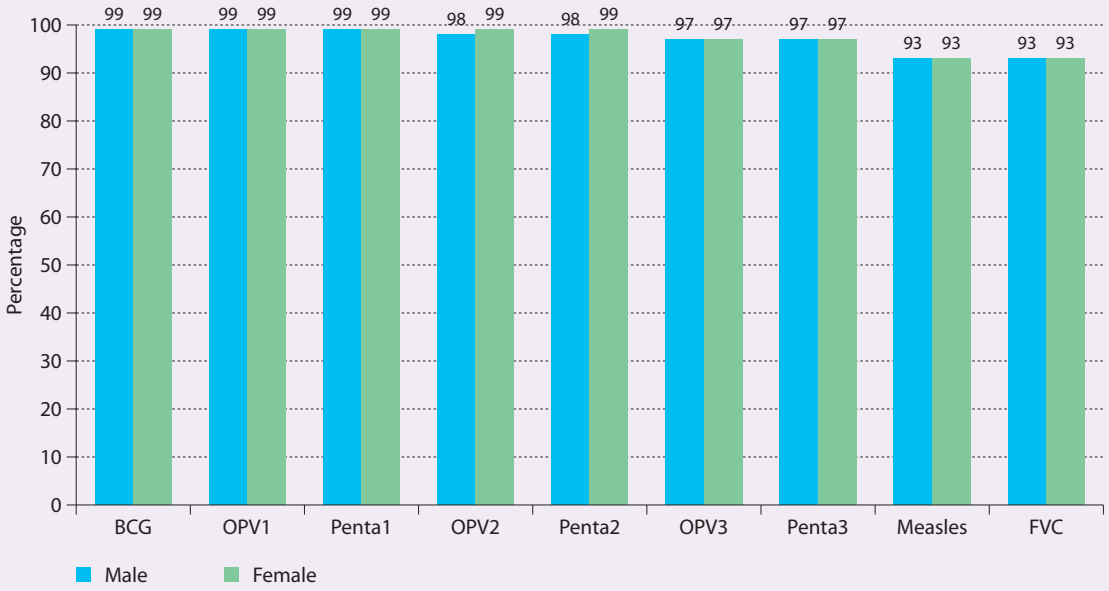
Source : CES 2013

Figure B7. National Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in 2013



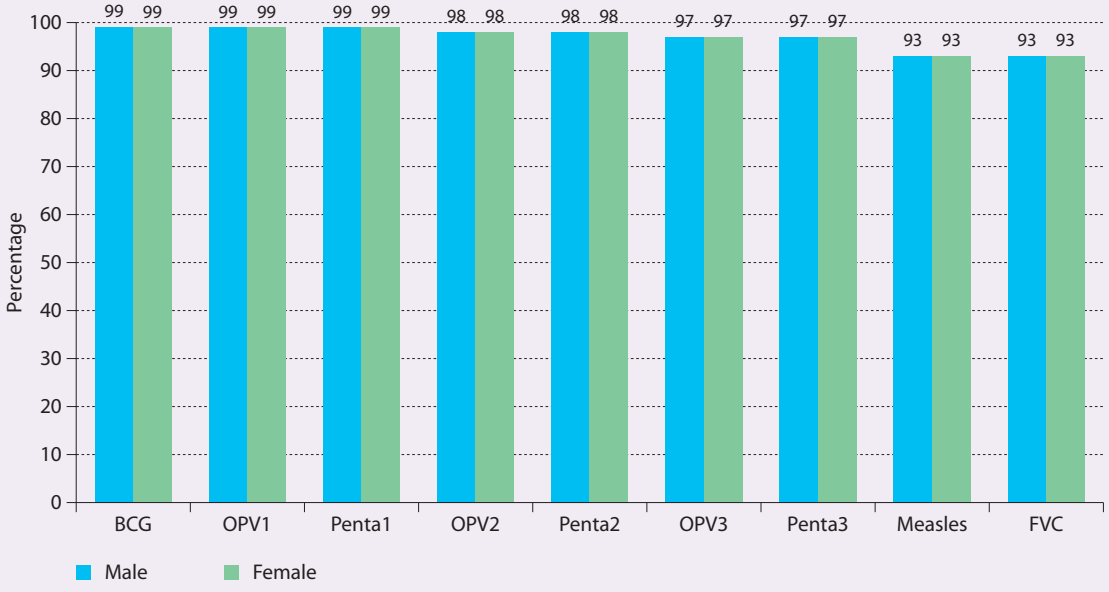
Source : CES 2013

Figure B8. National Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in Urban Areas in 2013



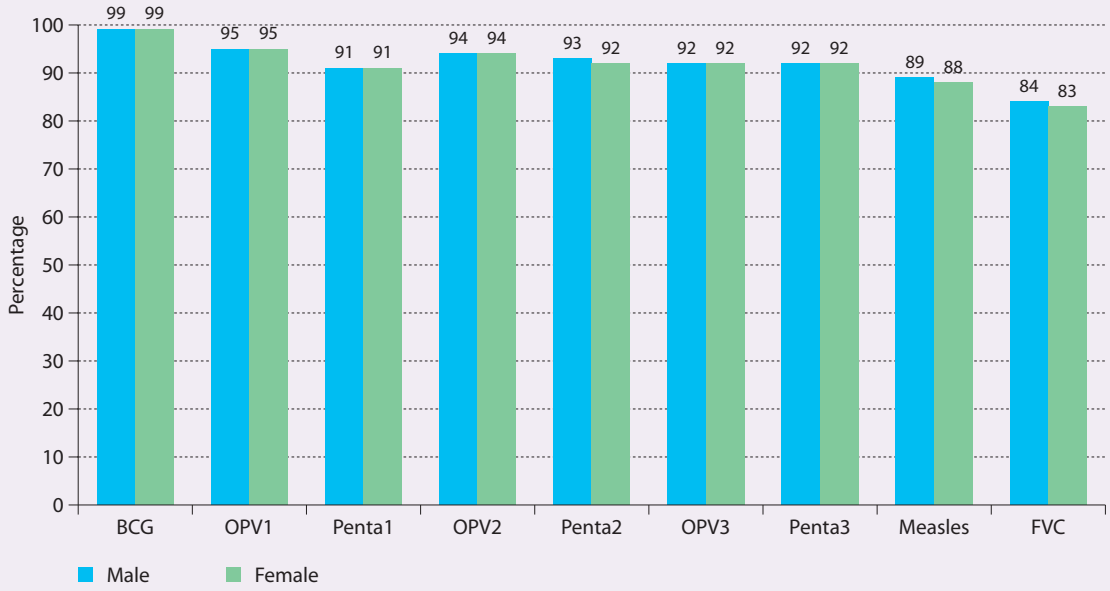
Source : CES 2013

Figure B9. National Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in Rural Areas in 2013



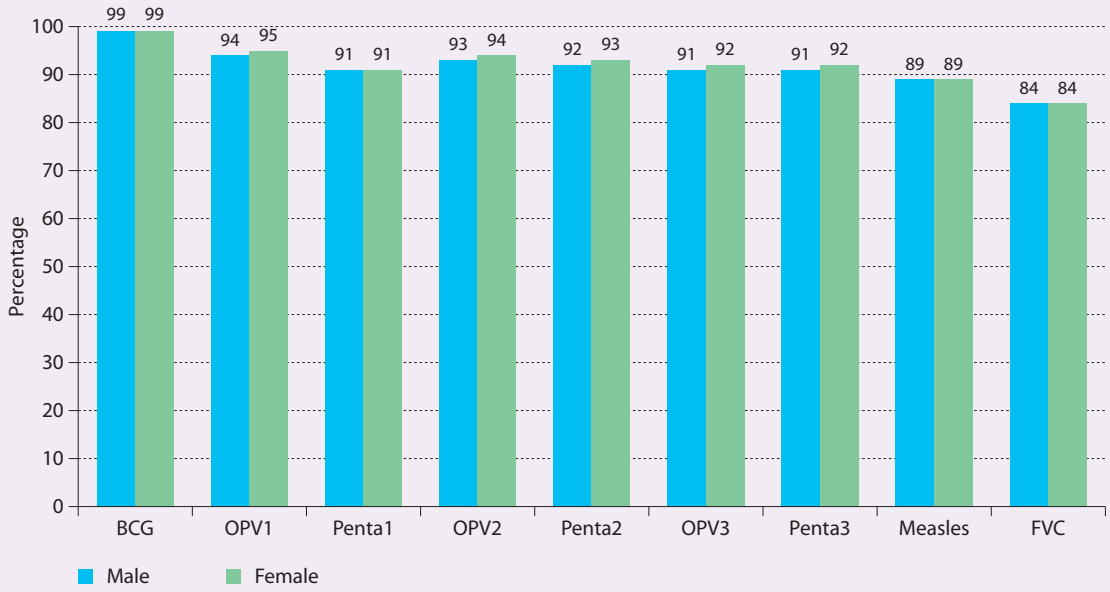
Source : CES 2013

Figure B10. National Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in 2013



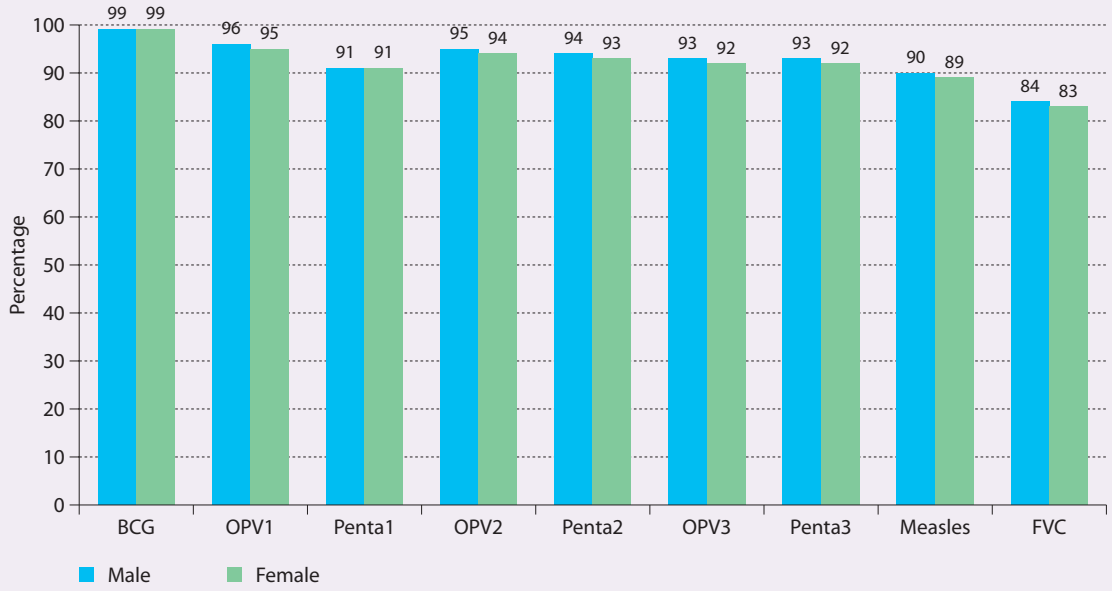
Source : CES 2013

Figure B11. National Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in Urban Areas in 2013



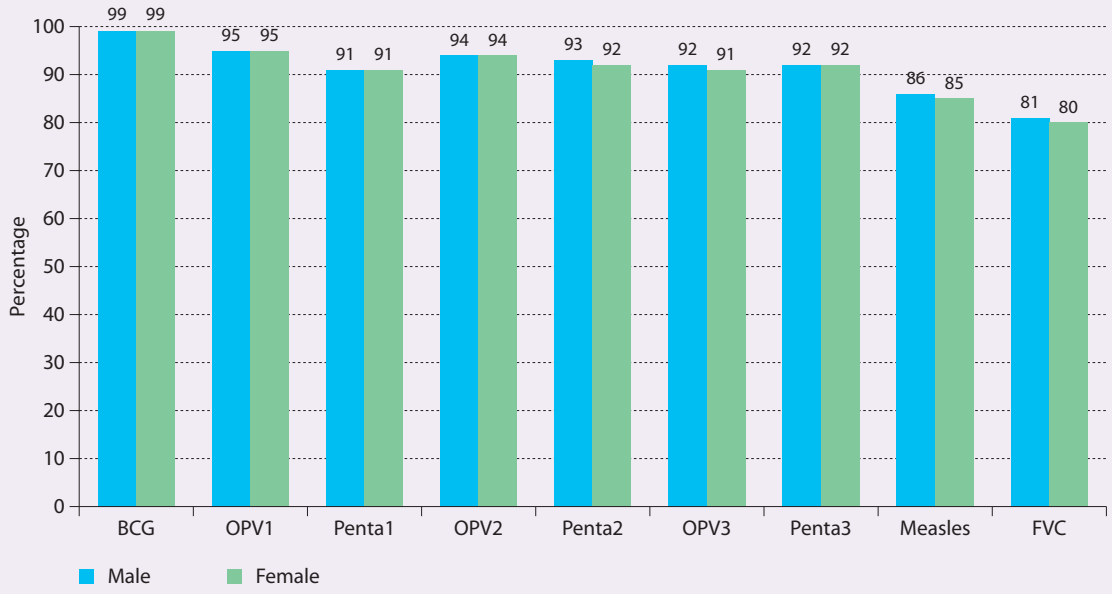
Source : CES 2013

Figure B12. National Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in Rural Areas in 2013



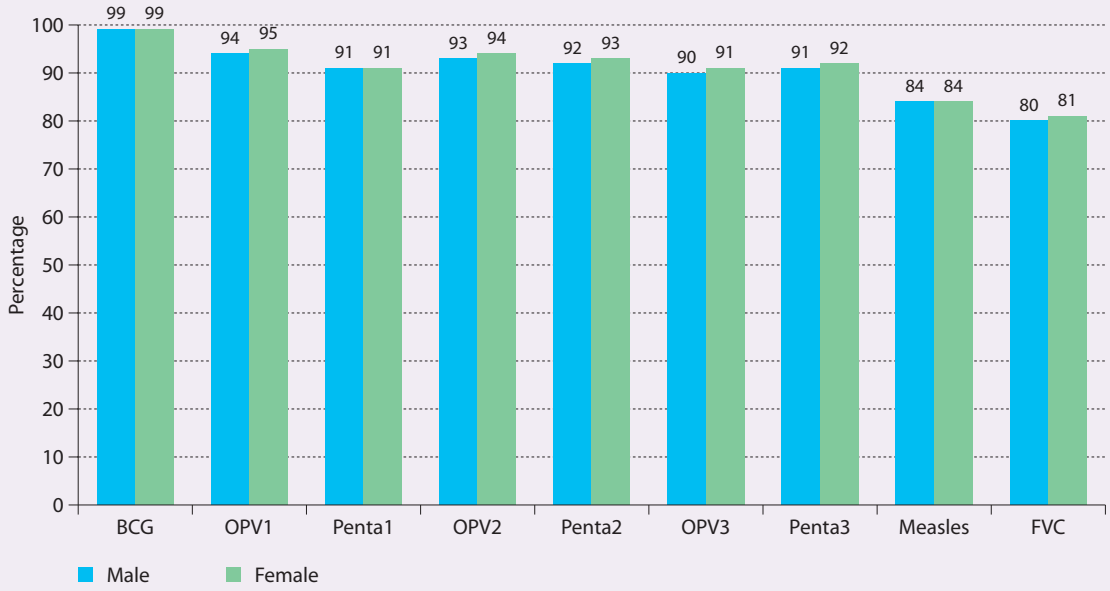
Source : CES 2013

Figure B13. National Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children by Sex in 2013



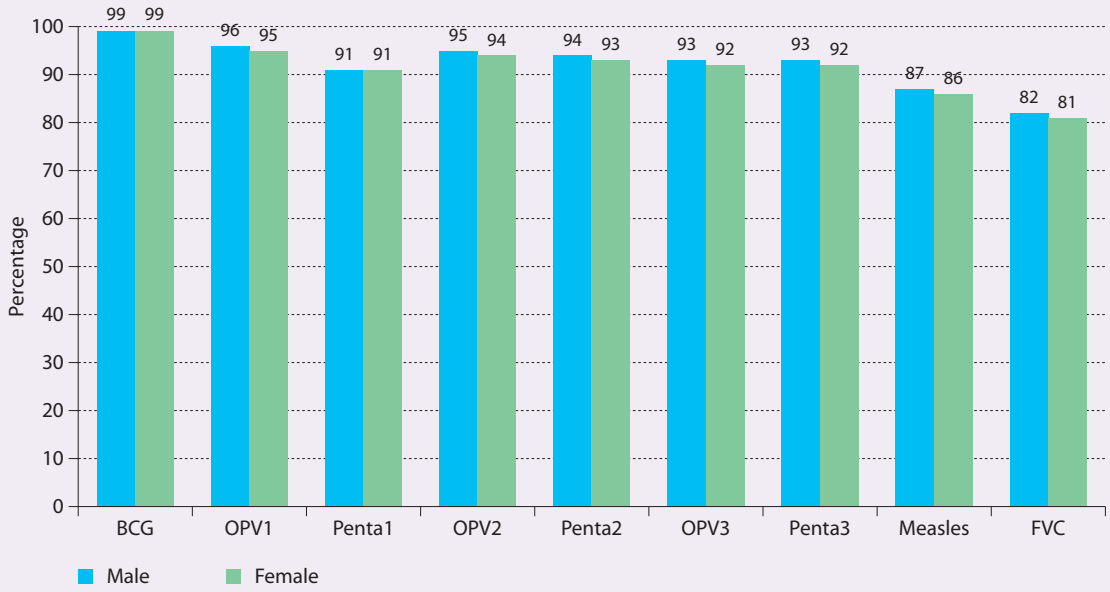
Source : CES 2013

Figure B14. National Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children by Sex in Urban Areas in 2013



Source : CES 2013

Figure B15. National Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children by Sex in Rural Areas in 2013



Source : CES 2013

2.5 Program Quality

The act of administering vaccine following the recommended vaccination schedule ensures better effectiveness of the vaccination. Accordingly, the quality of the EPI services was assessed through the analysis of major indicators - vaccination card retention rates, incidences of invalid doses, vaccination dropout rates, and occurrences of post-vaccination abscesses.

2.5.1 Retention of Vaccination Cards

Vaccination card is an important tool to estimate the vaccination coverage. It is issued when a child is taken to the vaccination center for providing vaccines. The card contains the record of the dates of administering the dose(s) of vaccine. Mothers/caregivers are generally motivated by the health workers to preserve the card carefully. CES 2013 assessed the card retention rate among the surveyed children and presented the findings in Figure C1. It shows that 81 percent of the mothers/caregivers retained the vaccination card across the country. The card retention rate was much higher in rural areas (83 percent), than that in urban areas (76 percent) (see Figure C1). Compare to CES 2011 it was 4 percentage points higher in 2013, where in 2013 the card retention rate is 81 percent, in 2011 it was 77 percent nationally (see Figure C2).

In rural areas by division, relatively higher card retention rate was revealed in Rangpur (89 percent). However, it was found to be much lower in Dhaka division (77 percent). In Sylhet and Rajshahi the card retention rate was 87 percent and in Barisal division the card retention rate stood at 81 percent. In addition, the retention rate was 79 percent and 88 percent for Chittagong and Khulna division respectively (see Figure C3).

Besides such, Figure C4 shows the vaccination card status by the City Corporation. Across the city corporations, the card retention rate was found to be the highest (85 percent) in both RCC and RanCC. In ComCC it was the lowest at 66 percent. Other than these, the card retention rate were 67, 67 70, 70, 72, 74 and 84 percent in CCC, BCC, DSCC, NCC, SCC, KCC and DNCC respectively.

Further, the relationship between vaccination card status and parents' educational level was examined in the survey. Table B1 shows that card retention rate among the illiterate mothers was 81 percent. On the other hand, among literate card retention rate was the highest in mothers who had secondary level education (82 percent). Similarly, card retention rate was 81 percent among the illiterate fathers while the percentage of card retention among fathers with primary and secondary level education was 83 percent and 82 percent respectively. This finding revealed that parents' literacy levels had no such impact on the card retention status of the children.

2.5.2 Incidence of Invalid Doses

As per EPI vaccination schedule, the child could be vaccinated with BCG just after his/her birth. Penta1/OPV1 doses should be administered not before the age of six weeks, and Penta 2/OPV2 doses should be administered at least four weeks after administering Penta1/OPV1. Penta3/OPV3 doses should be administered at least four weeks after Penta 2/OPV2 vaccination and a measles dose after the child is 270 days old. When any dose of any antigen is administered before the recommended age and/or interval, it is treated as an "invalid" dose.

Nationally, 4.4 percent of the total Penta1 doses and 3.8 percent of the total measles doses administered among the surveyed children were found to be invalid in 2013 (see Figure C5). Urban-rural variation in administering invalid Penta1 and measles doses can be noticed in both the cases. In rural parts, 4.5 percent of surveyed children were found to have received invalid Penta1 dose where this is 3.9 percent in urban areas. On the other hand, 3.8 percent of the children in rural and 3.9 percent in urban areas received invalid measles doses (see Figure C5).

Figure C8 reveals the incidence of invalid Penta1, Penta2, and Penta3 in rural areas by division. It shows that a higher percentage of children received invalid Penta1 dose in both Chittagong and Barisal division (5.4 percent), which was being followed by Rangpur (4.9 percent), Rajshahi (4.6 percent), Sylhet and Dhaka (4.1 percent) and Khulna (3.7 percent).

The rate of invalid Penta2 doses was the highest (7.5 percent) in Barisal division, which was being followed by Chittagong (7.2 percent), Rajshahi (6.1 percent), Rangpur (6.0 percent), Sylhet (5.8 percent), Dhaka (5.7 percent) and Khulna (5.1 percent).

Accordingly, the incidence of invalid Penta3 doses was found to be the highest (9.8 percent) in Barisal division and the lowest (6.4 percent) in Khulna division. Other than these, the incidence of invalid Penta3 doses in other divisions were, Chittagong (8.6 percent), Sylhet (7.7 percent), Rangpur and Rajshahi (7.4 percent) and Dhaka (7.2 percent (see Figure C8).

Across the city corporations, 7.7 percent of the Penta1 doses administered were found to be invalid in NCC, which was being followed by 5.8 percent in CCC, 5.2 percent in DSCC, 4.6 percent in DNCC, 3.8 percent in Com CC, 3.4 percent in RCC, 2.9 percent in both Ran CC and BCC, 0.7 in SCC and the lowest 0.6 percent in KCC. Similarly, incidence of invalid Penta2 was the highest in NCC (11.3 percent) and the lowest in KCC (1.3 percent). The incidence rate for other areas was in between the range. It was 8.1, 6.6, 5.9, 5.3, 4.7, 3.7, 3.4 and 3.0 percent for CCC, DNCC, DSCC, Com CC, Ran CC, BCC, RCC and SCC respectively. As it was assumed, invalid Penta3 doses were found to be the highest (14.7 percent) in NCC and the lowest (0.7 percent) in KCC (see Figure C10).

Figure C7 shows the percentage of invalid measles vaccination in rural areas by division. The division-wise analysis shows that a slightly higher percentage of children of Sylhet (5.2 percent), Barisal (4.3 percent), and Dhaka (4.1 percent) divisions received invalid doses of measles, i.e. measles vaccines administered before one's 270 days of birth. The percentage was slightly lower in Rajshahi and Khulna (3.0 percent each), Chittagong (3.6 percent) and Rangpur (3.9 percent).

Likewise, among the city corporations, invalid dose of measles vaccination was the highest (11.4 percent) in CCC, which was being followed by NCC (10.2 percent), DSCC (6.6 percent) and BCC (5.2 percent). The lowest rate compare to the highest one can be seen to be 1.5, 1.8, 2.8, 3.0, 3.0 and 3.5 in KCC, RCC, RanCC, SCC, DNCC and ComCC respectively (see Figure C9).

2.5.3 Vaccination Dropout Rates

For being fully vaccinated, a child should receive all the antigens as per the EPI- recommended vaccination schedule before observing his/her first birthday. When a child fails to receive any dose of the recommended antigens (one dose of BCG, three doses of Penta and OPV, and one dose of measles vaccine), it is interpreted as a dropout case. Since most of the children received OPV along with Penta dose, the analysis highlights the dropout of Penta and measles doses.

Across the country, the dropout rate was found to be 2.2 percent for Penta1- Penta3 and 6.4 percent for Penta1-measles (see Figure C11). The urban-rural variation for penta1-penta3 dropout rate was 0.3 percentage points. In urban part it was 2.3 percent and for rural case it was a bit lower at 2.0 percent. In addition, Penta1-measles dropout rate was 6.1 percent in rural and 6.2 percent in urban areas.

Over the years, national dropout rates have declined substantially, particularly since 2003 for Penta1-Penta3 and since 2005 for Penta1-Measles. The dropout rate for Penta1- Penta3 declined from 21 percent in 2003 to 2.2 percent in 2013 and for Penta1 -measles from 15 percent in 2005 to 6.4 percent in 2013 (see Figure C12).

The analysis by rural division shows that, Penta1-Penta3 dropout rate was at the highest (2.4 percent) in Barisal and the lowest (1.3 percent) in Rajshahi. Similarly, Penta1-measles dropout rate was highest in Barisal (8.0 percent) and the lowest in Rajshahi (4.5 percent). The dropout rate for Penta1-measles in other divisions was - Dhaka (7.4 percent), Chittagong (6.3 percent), Sylhet (5.6 percent) and Khulna and Rangpur (5.0 percent each) (see Figure C13).

Among the city corporations, the dropout rate for Penta1-Penta3 was found to be the highest (3.9 percent) in CCC, which was being followed by DNCC, NCC, BCC and SCC (2.9 percent each), RanCC (2.5 percent), KCC (1.9 percent) and DSCC and RCC (1.4 percent each). It is worth mentioning here that no dropout for Penta1-Penta3 was observed in ComCC. On the other hand, Penta1-measles dropout rate was the highest in BCC (11.0 percent) and the lowest in ComCC (1.9 percent). The measles dropout rates in other city corporations were 6.7 in DSCC, 6.4 in RanCC, 6.3 in CCC, 6.2 in KCC, 5.8 in SCC, 5.7 in DNCC, 5.4 in NCC and 2.9 in RCC (see Figure C14).

Trend in the Dropout Rates

Figure C15- C20 shows a trend in the dropout rates of Penta1- Penta3 and Penta1- measles in all the six divisions except for Sylhet since 1993. A trend of fluctuation in both the dropout rates, Penta1- Penta3 and Penta1-measles were observed in all these divisions during the years 1994-2001.

A considerable decline in the dropout rate was noticed in almost every division since 2002. In Dhaka division, the dropout rate for Penta1- Penta3 went down from 10 percent in 2002 to 2.4 percent in 2013; in Chittagong division from 10 percent to 2.2 percent; in Sylhet division from 22 percent in 2002 to 2.5 percent in 2013; in Rajshahi division from 12 percent in 2002 to 1.3 percent in 2013; in Khulna division from 5 percent in 2002 to 1.7 percent in 2013; and, in Barisal division from 9 percent in 2002 to 2.6 percent in 2013. Although as a whole the trend was found to be decreased during 2002-2010, CES 2011 shows a slight increase in the dropout rate compared to that in CES 2010 in every division but in 2013 the rates have fallen from the 2011 level. The dropout rate decreased by more than 0.1 percentage points in Barisal, 0.4 percentage points in Khulna, 0.6 points in Rajshahi, 1.8 percentage points in Sylhet, 0.9 percentage points in Chittagong and 0.1 percentage points in Dhaka division (see Figures C15 - C20).

Similarly, for Penta1-measles, Dhaka division experienced a decrease in the dropout rate from 19 percent in 2002 to 7.0 percent in 2013; Chittagong division from 17 percent in 2002 to 6.0 percent in 2013; Rajshahi division from 20 percent in 2002 to 1.3 percent; Sylhet division from

30 percent in 2002 to 5.7 percent; Khulna division from 12 percent in 2002 to 5.5 percent; and, Barisal division from 21 percent in 2002 to 8.6 percent in 2013 (see Figures C15 -C20). It is to be noted here that similar to dropout rate of Penta1-Penta3, the dropout rate of Penta1-measles was found to be increasing in CES 2011 compared to that of CES 2010 but it is again found to come down from the 2011 level in CES 2013 for all the divisions except for Khulna. Penta1-measles dropout rate decreased by 0.7 percentage points in Barisal, 1.0 percentage points in Rajshahi, 4.4 percentage points in Sylhet, 2.2 percentage points in Chittagong, and 0.2 percentage points in Dhaka divisions. In Khulna division the dropout rate has increased by 0.4 percentage points.

Although there was a declining trend in the dropout rates of both Penta1- Penta3 and Penta1-measles in all divisions, a noticeable improvement was also observed in the dropout rates of Penta1-Penta3 and Penta1-measles in Chittagong division. In Chittagong, a gradual decreasing trend without any fluctuation was observed since 2002. Penta1- Penta3 dropout rate decreased from 10 percent in 2002 to 2.2 percent in 2013 (see Figure C16). The declining trend in the dropout rate can result due to better monitoring and supervision by the EPI staff at all levels of their work.

2.5.4 Incidence of Post-Vaccination Abscesses

Adverse Events Following Immunization (AEFI) in the form of abscess might have occurred in some cases at the site of parental vaccination. Incidence of abscesses following Penta or measles vaccination was calculated in order to assess the safety of the injections for childhood vaccination. This rate was computed as the proportion of the recipients of Penta/measles vaccine who had an abscess after receiving any of these antigens.

Overall, 1.2 percent of the children who received Penta/measles vaccines reported to have had an abscess after receiving a Penta or the measles vaccine (see Figure C21). Occurrence of abscesses following Penta or measles vaccination was 1.1 and 1.6 percent in rural and urban areas respectively.

In the analysis of rural areas by division, it was found that Dhaka, Sylhet and Rangpur division had the highest (1.7 percent each) incidence of abscesses, which was being followed by Barisal (1.0 percent), Rajshahi (0.8 percent), Khulna (0.6 percent) and Chittagong (0.3 percent) (see Figure C22).

Among the city corporations, incidence of abscesses was higher in BCC (2.4 percent), which was being followed by DSCC (1.0 percent), and NCC and ComCC (0.5 percent each). It is important to mention here that DNCC, CCC, RCC, RanCC, KCC and SCC had no case of abscess (see Figure C23).

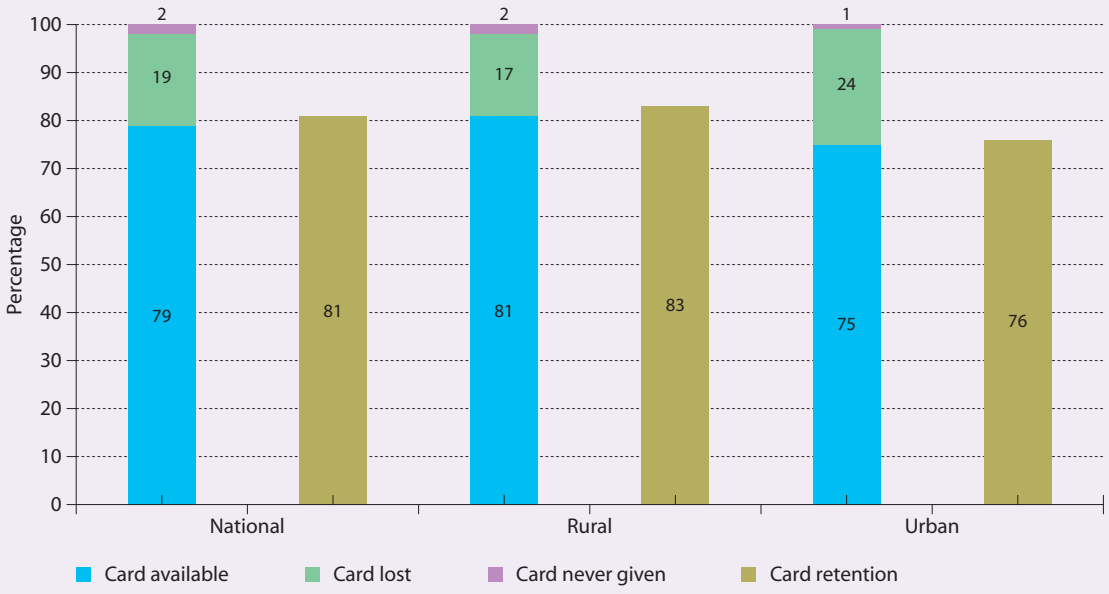
2.5.5 Knowledge about the Common Side-Effects of Vaccination

Children experience minor side-effects after the vaccination. It lasts for a short time and the child recovers soon without any problem. CES 2013 made an assessment of the mothers' knowledge about the common side-effects that occur following the vaccination. All over the country 93 percent of them reported fever as the common side-effect of vaccination. A very small proportion (6 percent) of them mentioned about scar/abscess (see Figure C24).

In rural areas by division, fever was revealed to be the highest reported common side-effect in all divisions. The percentage ranged between 85 percent in the Rangpur division to 97 percent in Chittagong and Sylhet division. In other divisions, it was found to be at the intermediary level (see Figure C25).

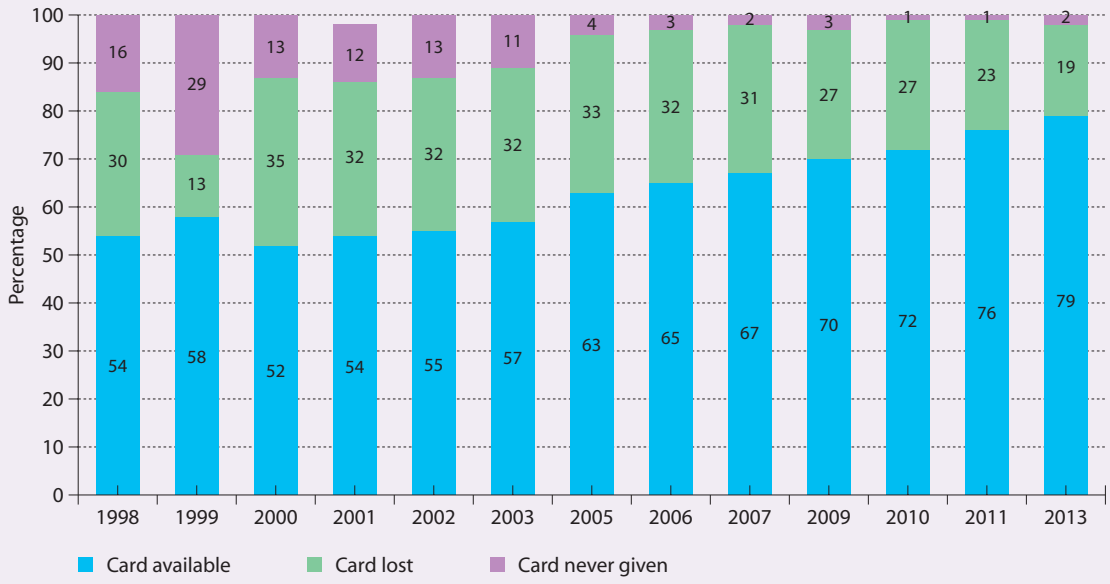
Similarly, in the analysis of the city corporations, once again, fever was revealed to be the highest reported common side-effect. All the mothers/caregivers in ComCC and RanCC, 98 percent of them in DSCC, DNCC, RCC and BCC, 96 percent in NCC and KCC, 90 percent in SCC and 84 percent in CCC reported fever as the common side-effect following vaccination (see Figure C26).

Figure C1. Vaccination Card Status among 12-23 Months Old Children By National, Rural and Urban Areas in 2013



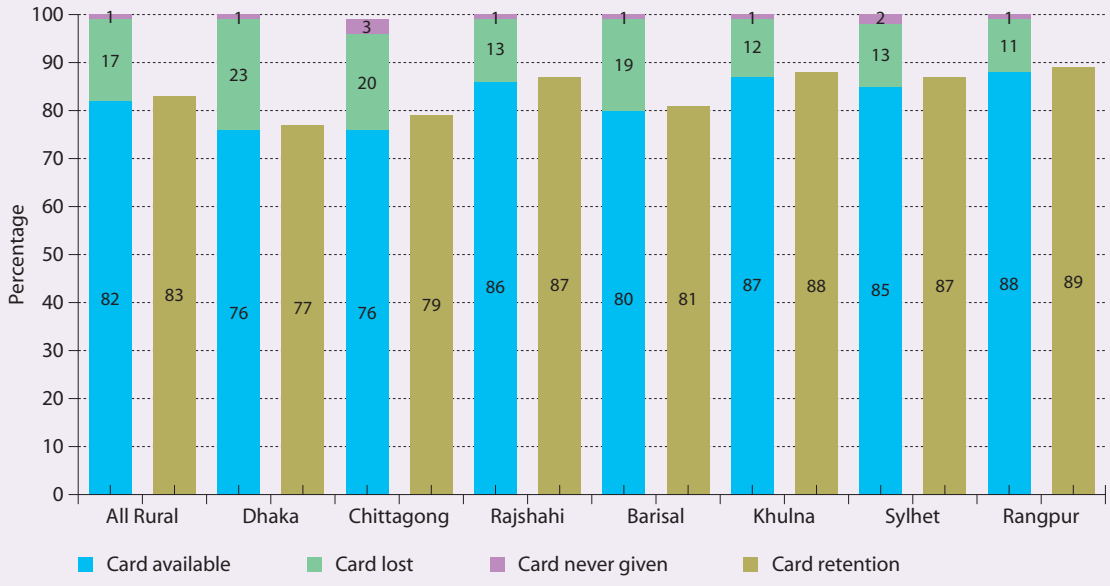
Source : CES 2013

Figure C2. Vaccination Card Status among 12-23 Months Old Children Nationally from 1991 to 2013



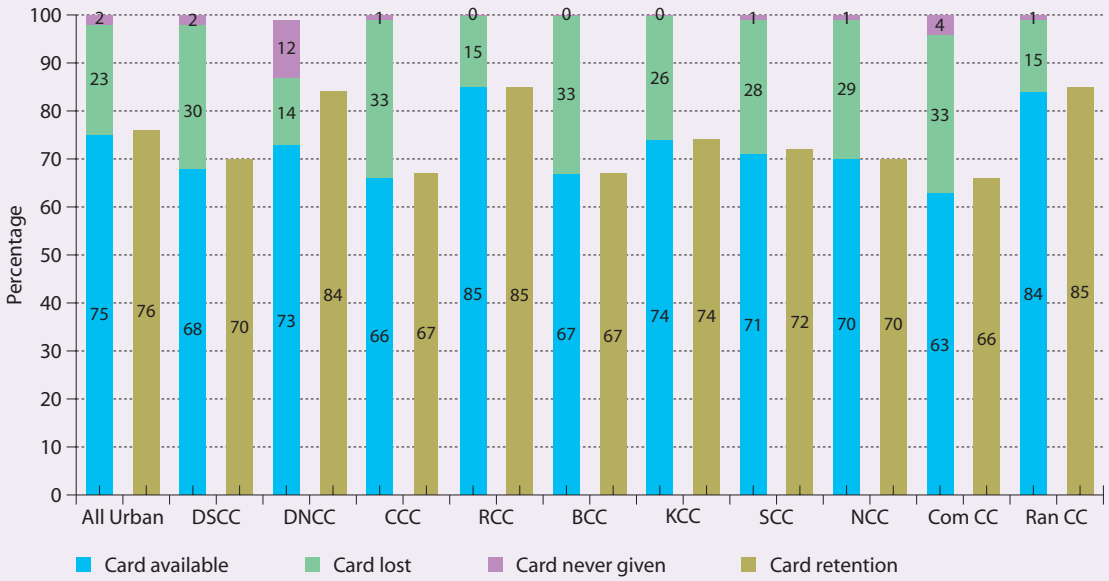
Source : Coverage Evaluation Surveys (CESs) for 1998-2000, 2001, 2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure C3. Vaccination Card Status among 12-23 Months Old Children In Rural Areas by Division in 2013



Source : CES 2013

Figure C4. Vaccination Card Status among 12-23 Months Old Children in Urban Areas by City Corporation in 2013

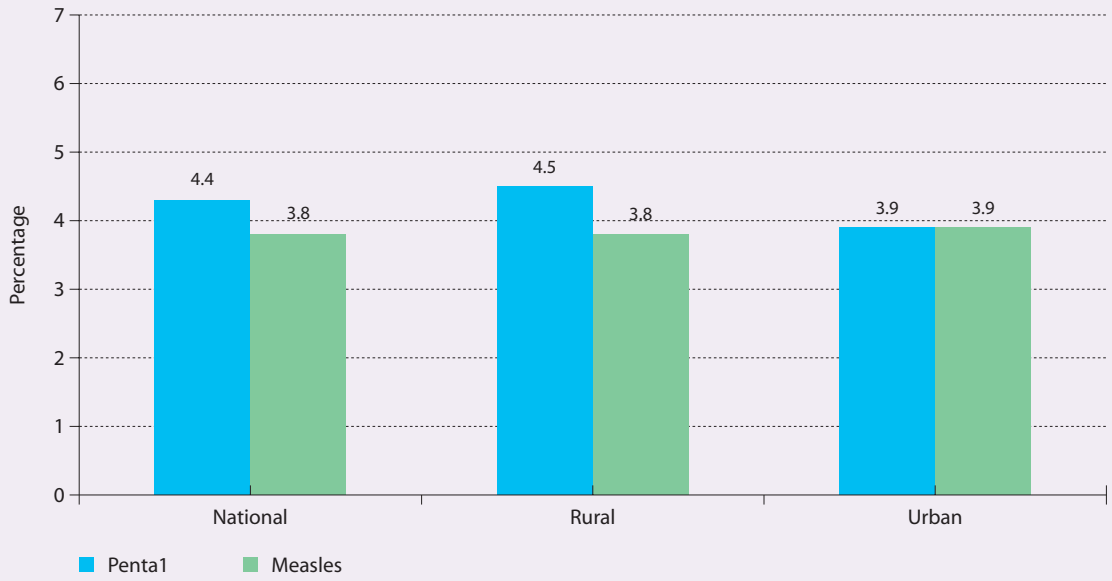


Source : CES 2013

Table B1: Vaccination card status by education level of parents in CES 2013

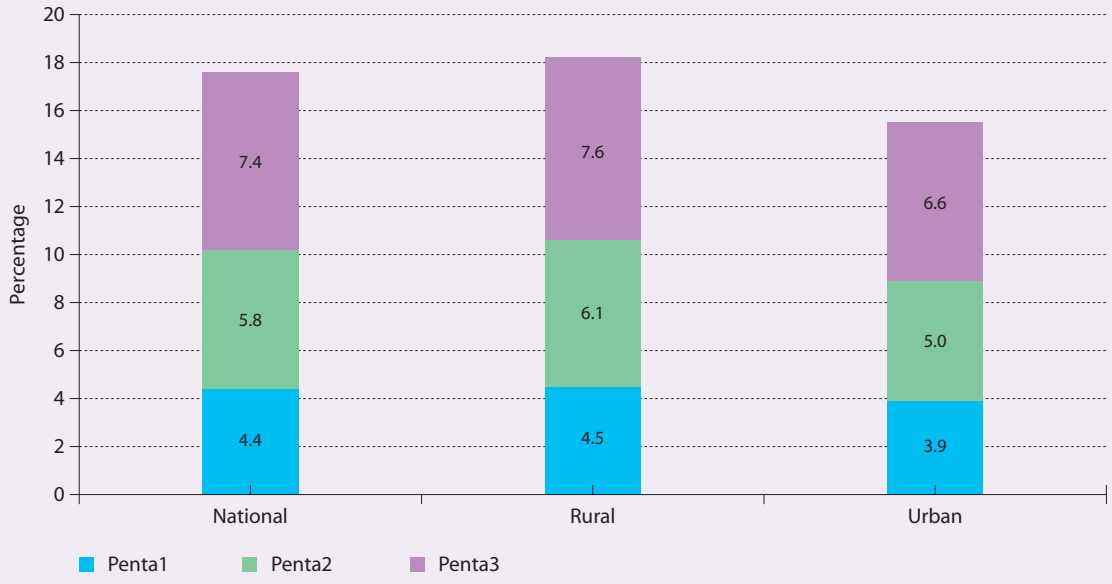
Education level	Vaccination card status	
	Retained	Not retained
Academic qualification of the mother		
Illiterate	81.0	19.0
Primary	81.2	18.8
Secondary	82.1	17.9
SSC/Dakhil/'O' Level	78.4	21.6
HSC/Alim/'A' Level	75.9	24.1
Degree/Fazil	72.0	28.0
Masters/Kamil	71.5	28.5
Academic qualification of the father		
Illiterate	81.0	19.0
Primary	82.6	17.4
Secondary	81.9	18.1
SSC/Dhakil/'O' Level	78.2	21.8
HSC/Alim/'A' Level	75.9	24.1
Degree/Fazil	76.0	24.0
Masters/Kamil	74.0	26.0

Figure C5. Incidence of Invalid Penta1 and Measles Doses by Age 12 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2013 (Card-Only)



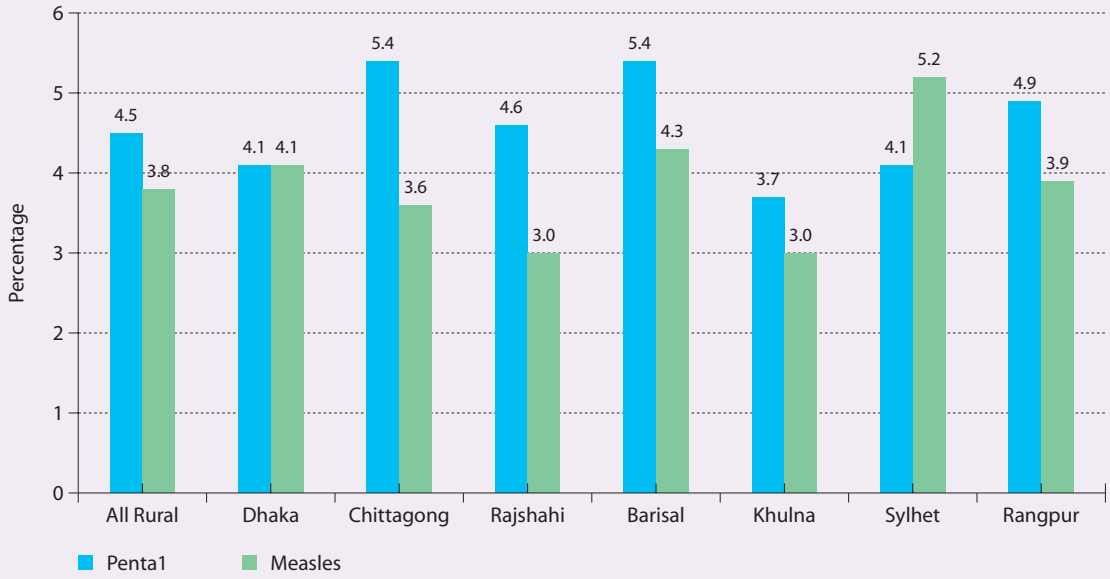
Source : CES 2013

Figure C6. Incidence of Invalid Penta1, Penta2 and Penta3 Doses by Age 12 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2013 (Card-Only)



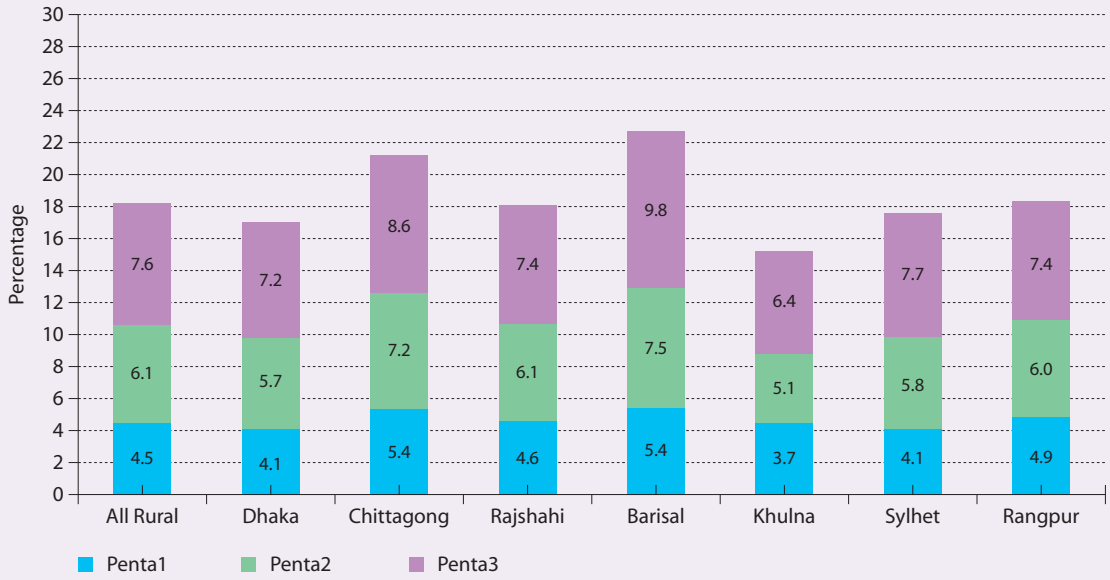
Source : CES 2013

Figure C7. Incidence of Invalid Penta1 and Measles Doses by Age 12 Months among 12-23 Months Old Children in Rural Areas by Division in 2013 (Card-Only)



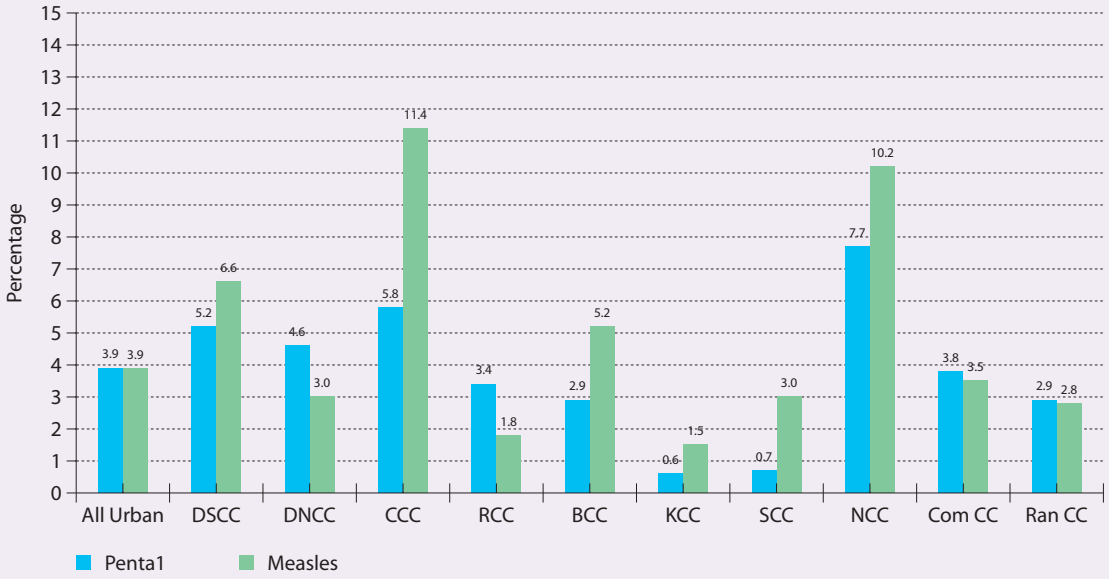
Source : CES 2013

Figure C8. Incidence of Invalid Penta1, Penta2 and Penta3 Doses by Age 12 Months among 12-23 Months Old Children in Rural Areas by Division in 2013 (Card-Only)



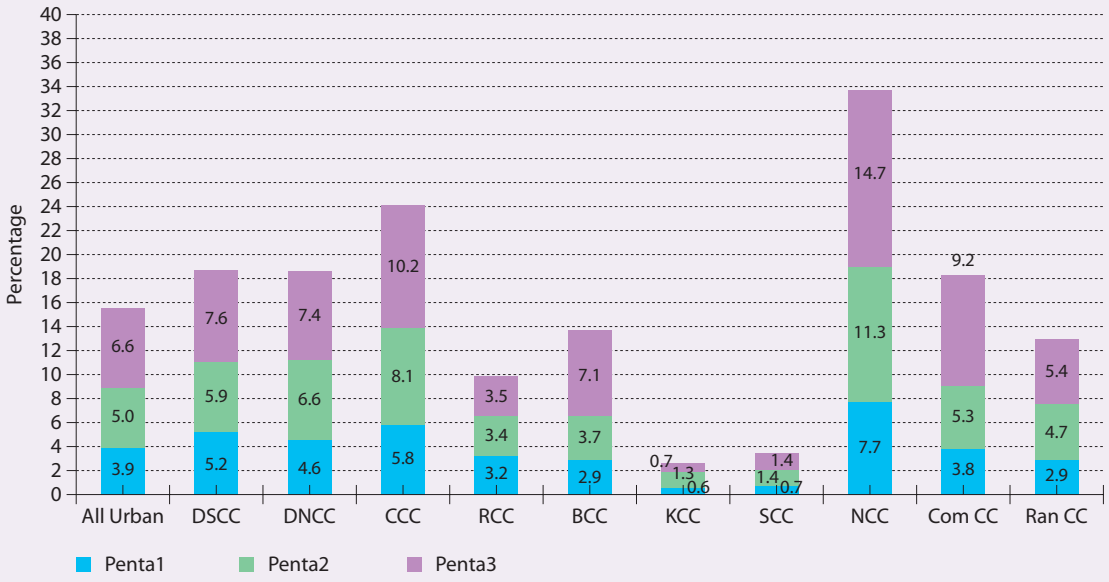
Source : CES 2013

Figure C9. Incidence of Invalid Penta1 and Measles Doses by Age 12 Months among 12-23 Months Old Children in Urban Areas by City Corporation in 2013 (Card - Only)



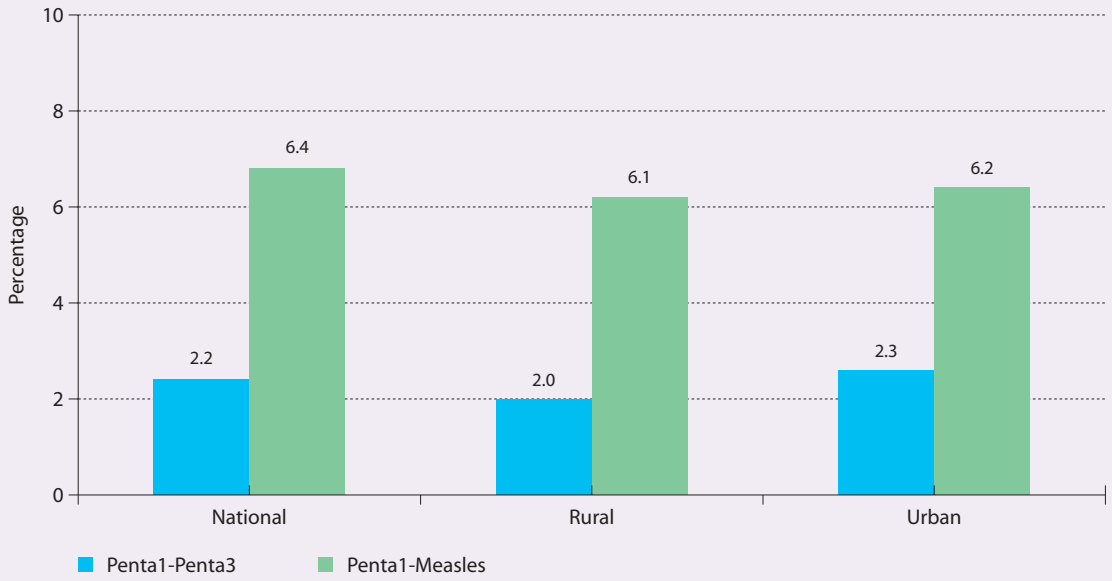
Source : CES 2013

Figure C10. Incidence of Invalid Penta1, Penta2 and Penta3 Doses by Age 12 Months among 12-23 Months Old Children in Urban Areas by City Corporation in 2013 (Card Only)



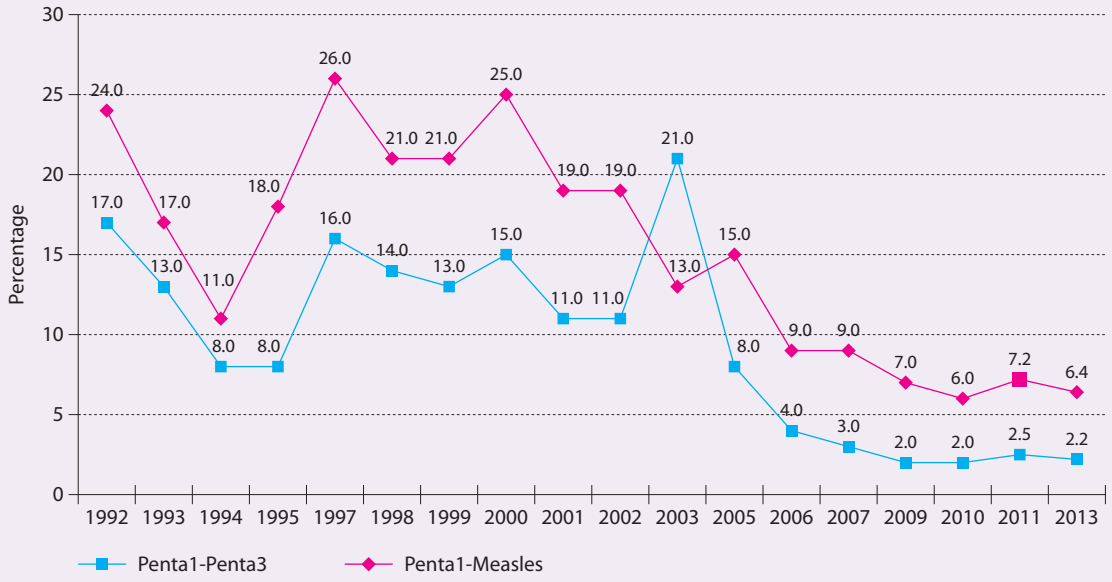
Source : CES 2013

Figure C11. Vaccination Dropout Rates for Penta1-Penta3 and Penta1-Measles among 12-23 Months Old Children in Rural and Urban Areas in 2013



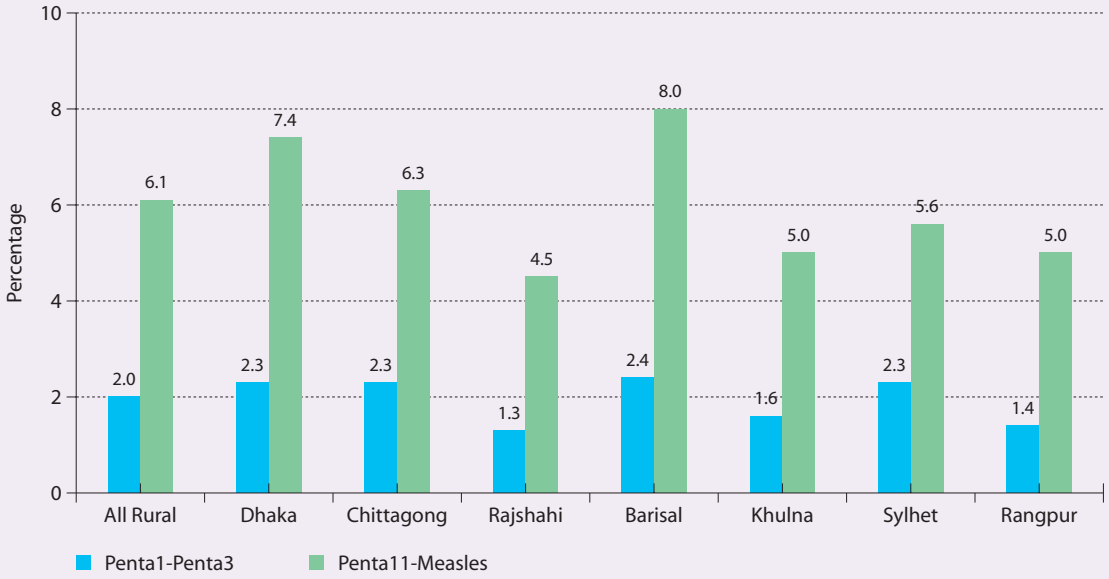
Source : CES 2013

Figure C12. Annual trend in national vaccination dropout rates for penta1-penta3 and penta1-measles among 12-23 months old children from 1992 to 2013



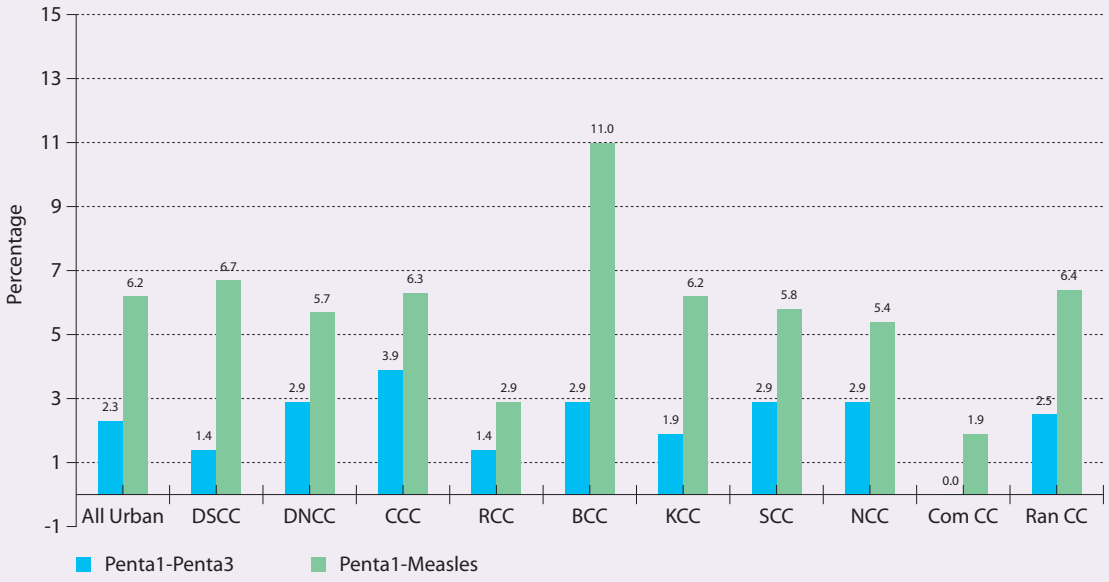
Source : Coverage Evaluation Survey 1992-1995, 1997-2002, 2003 , 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure C13. Vaccination Dropout Rates for Penta1-Penta3 and Penta1-Measles among 12-23 Months Old Children in Rural Areas by Division in 2013



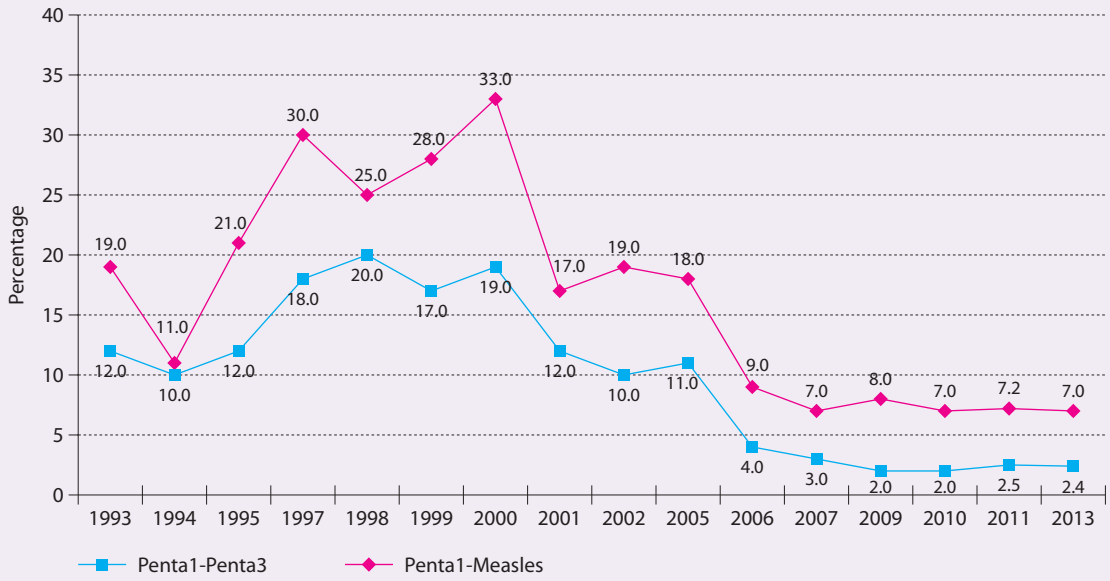
Source : CES 2013

Figure C14. Vaccination Dropout Rates for Penta1-Penta3 and Penta1-Measles among 12-23 Months Old Children in Urban Areas by City Corporation in 2013



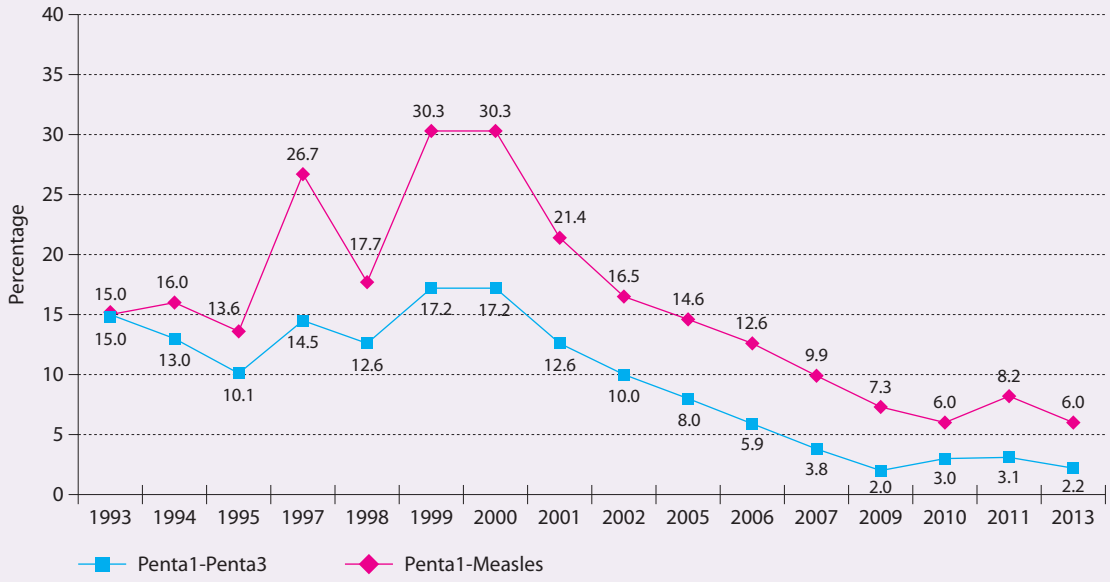
Source : CES 2013

Figure C15. Annual Trend in Vaccination Dropout Rates for Penta1-Penta 3 and Penta1-Measles among 12-23 Months Old Children in Dhaka Division from 1993 to 2013



Source : CES 1993-1995, 1997-2002, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure C16. Annual Trend in Vaccination Dropout Rates for Penta1-Penta3 and Penta1-Measles among 12-23 Months Old Children in Chittagong Division from 1993 to 2013

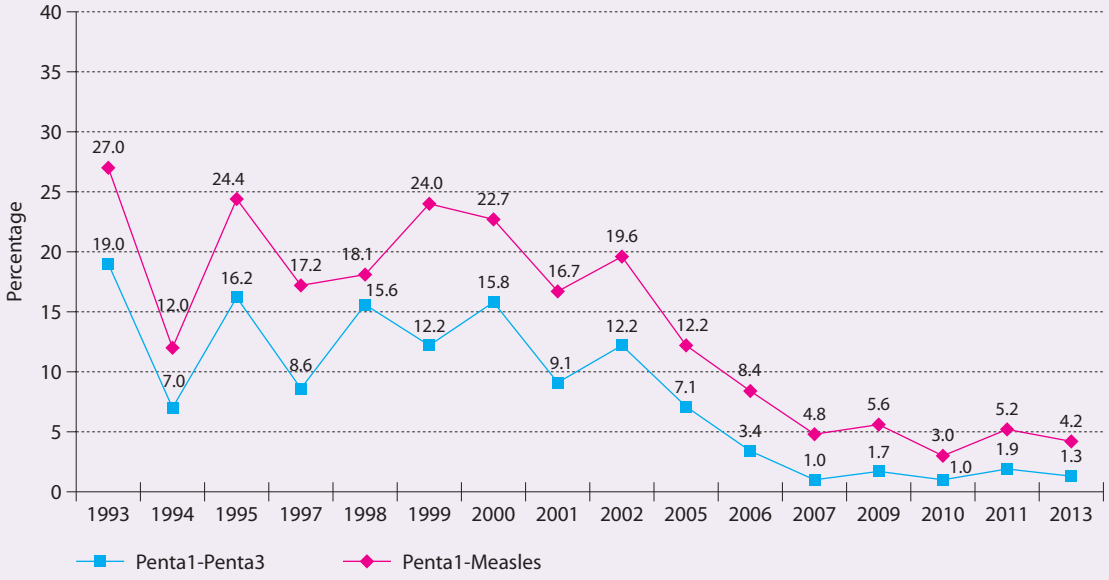


Source : CES 1993-1995, 1997-2002, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure C17. Annual Trend in Vaccination Dropout Rates for Penta1-Penta3 and Penta1-Measles among 12-23 Months Old Children in Sylhet Division* from 1999 to 2013

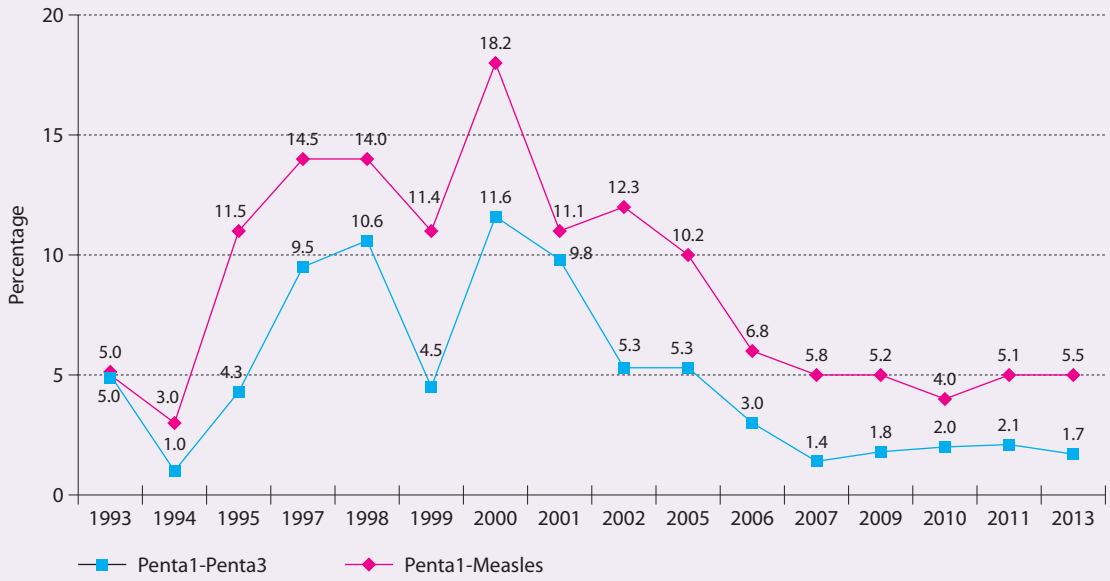
Source : CES 1999-2002, 2005, 2006, 2007, 2009, 2010 and 2013

Figure C18. Annual Trend in Vaccination Dropout Rates for Penata1-Penta 3 and Penta1-Measles among 12-23 Months Old Children in Rajshahi Division* from 1993 to 2013



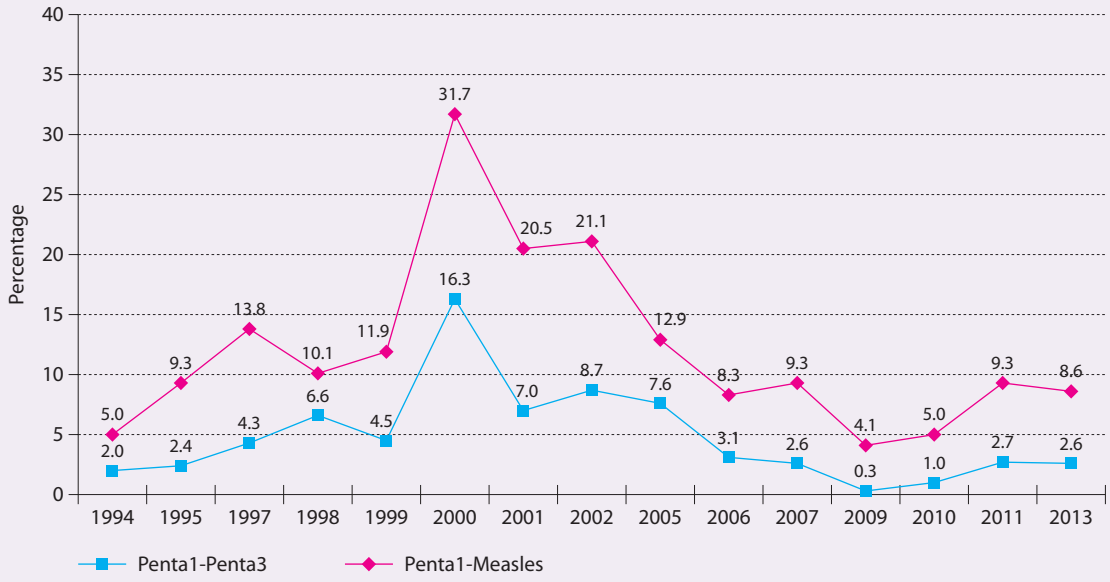
Source : CES 1993-1995, 1997-2002, 2005, 2006, 2007, 2009, 2010 and 2013
** Before 2010 Rangpur division included in Rajshahi division*

Figure C19. Annual Trend in Vaccination Dropout Rates for Penta1-Penta3 and Penta1-Measles among 12-23 Months Old Children in Khulna Division from 1993 to 2013



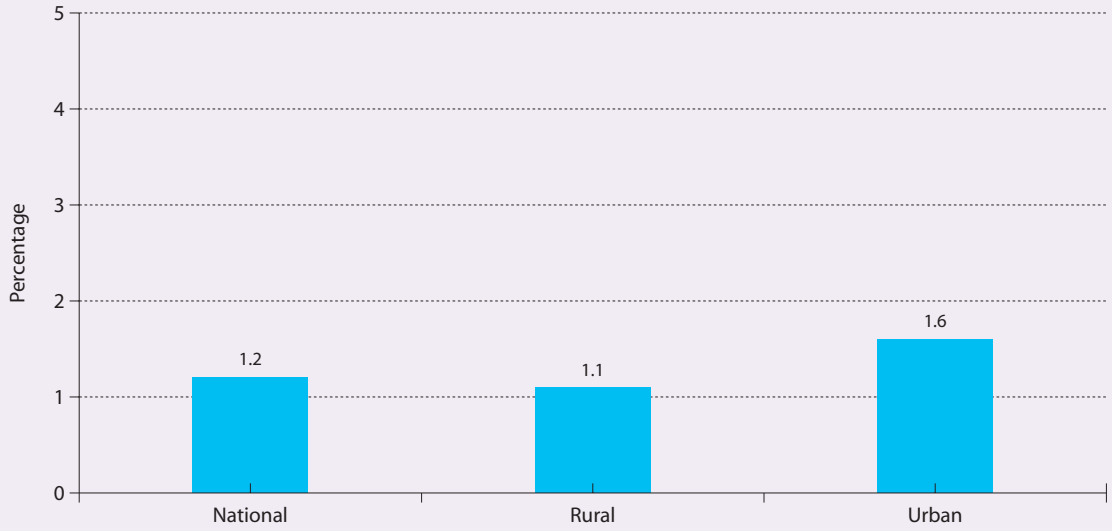
Source : Coverage Evaluation Survey 1993-1995, 1997-2002, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure C20. Annual Trend in Vaccination Dropout Rates for Penta1-Penta3 and Penta1-Measles among 12-23 Months Old Children in Barisal Division from 1994 to 2013



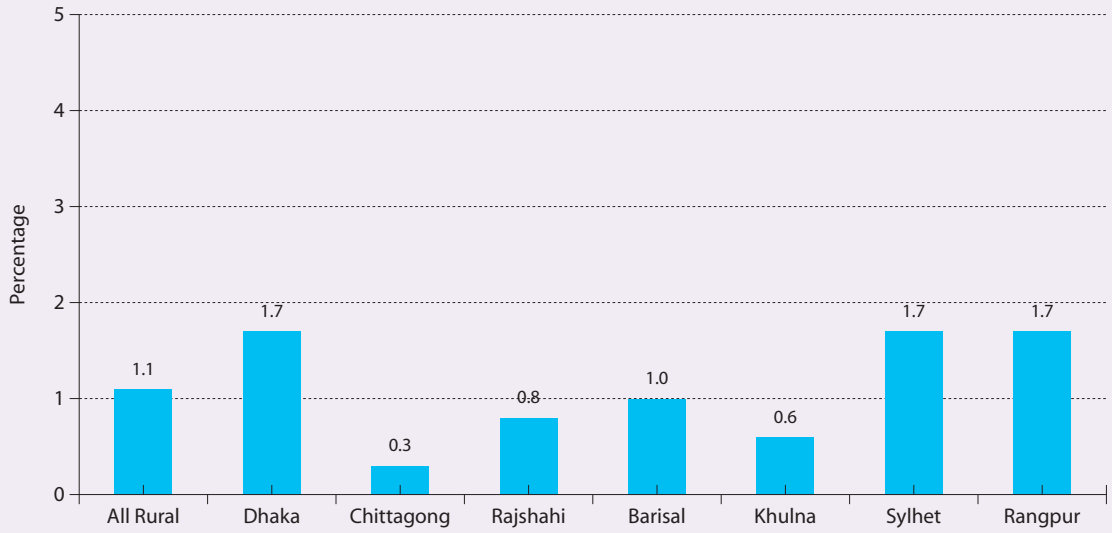
Source :Coverage Evaluation Survey 1994-1995, 1997-2002, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure C21. Incidence of Abscesses Following Pentavalent or Measles Vaccination among 12-23 Months Old Children by National, Rural and Urban Areas in 2013



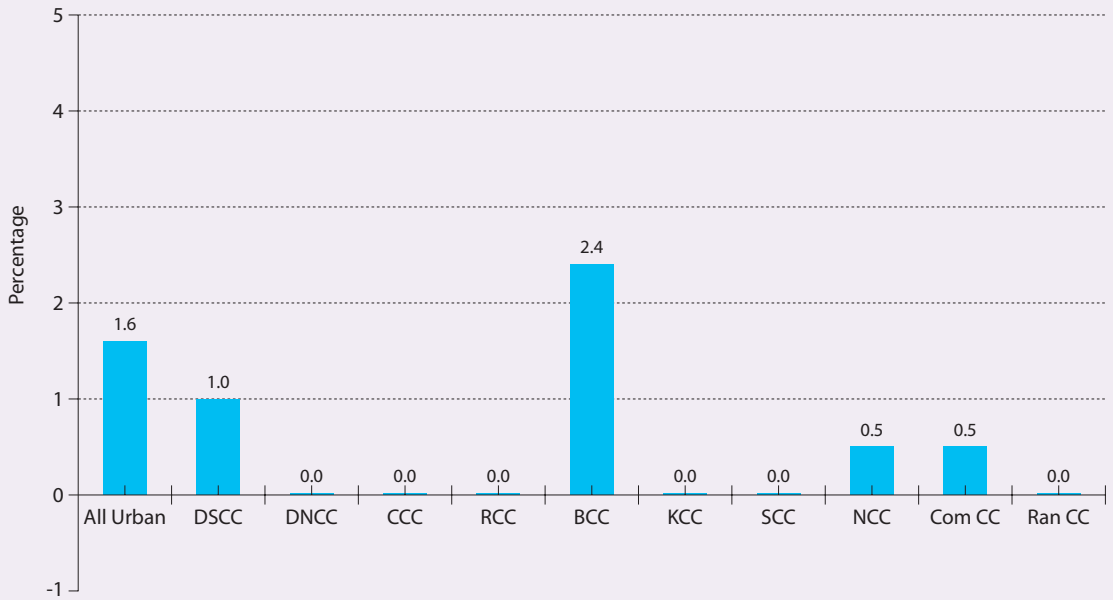
Source : CES 2013

Figure C22. Incidence of Abscesses Following Pentavalent or Measles Vaccination among 12-23 Months Old Children in Rural Areas by Division in 2013



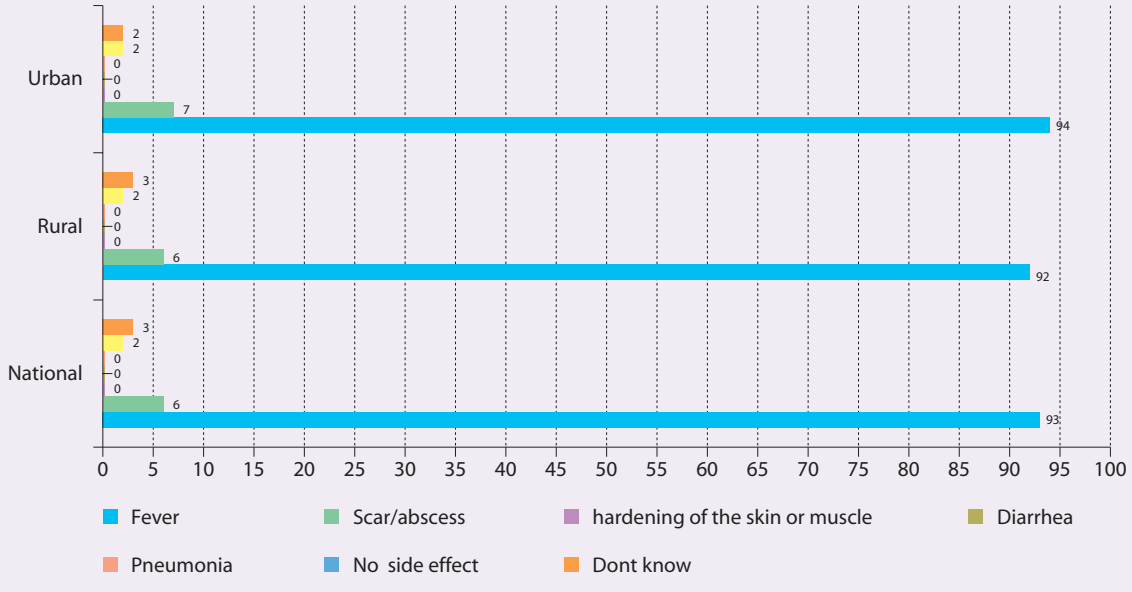
Source : CES 2013

Figure C23. Incidence of Abscesses Following Pentavalent or Measles Vaccination among 12-23 Months Old Children in Urban Areas by City Corporation in 2011



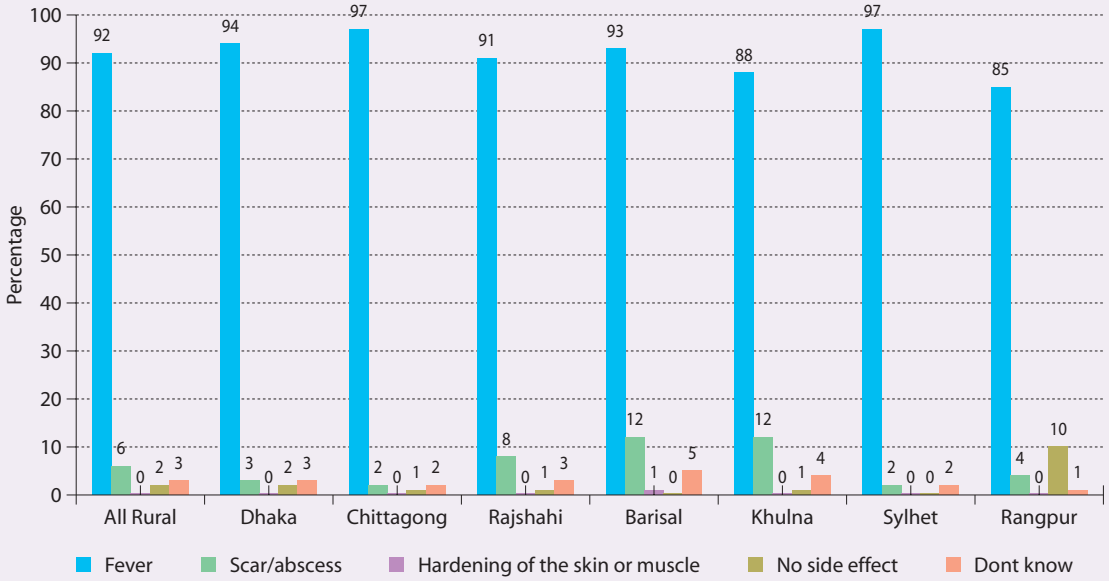
Source : CES 2013

Figure C24. Knowledge on Adverse effects Following Immunization by National, Rural and Urban Areas in 2013



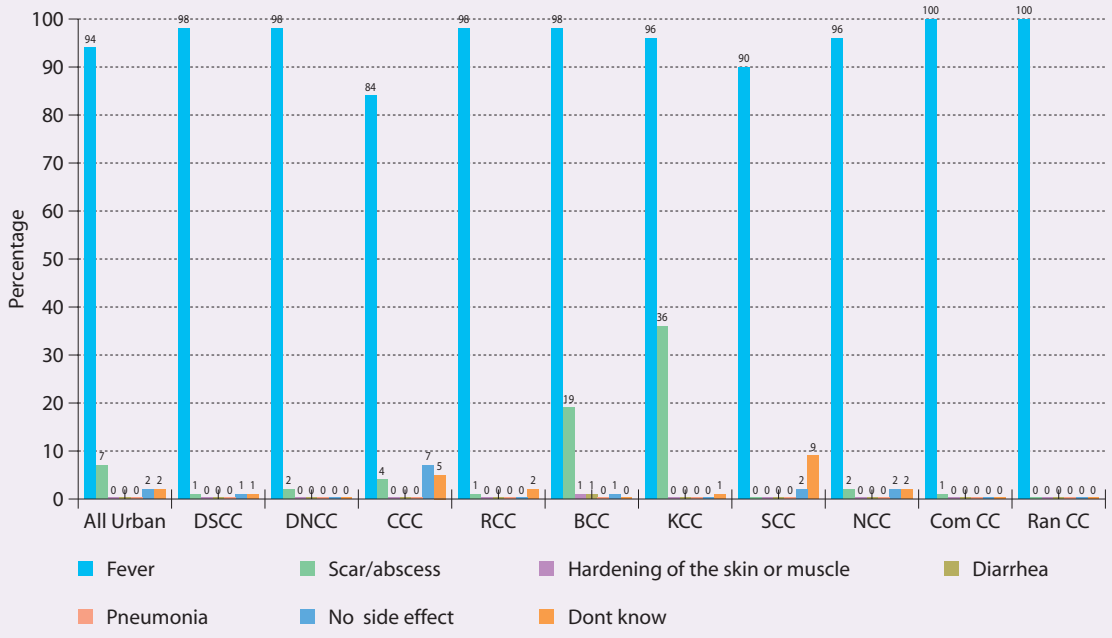
Source : CES 2013

Figure C25. Knowledge on Adverse Events Following Immunization in Rural Areas by Division in 2013



Source : CES 2013

Figure C26. Knowledge on Adverse Event Following Immunization in Urban Areas by City Corporations in 2013**Figure C26. Knowledge on Adverse Event Following Immunization in Urban Areas by City Corporations in 2013**



Source : CES 2013

2.6 Reasons for Never or Partial Vaccination

In order to achieve the objectives of the coverage, information about the reasons for abstaining himself/herself from vaccination is very important. Since the routine administrative data do not provide any accurate information, vaccination coverage is estimated through surveys. The program needs community-based information on the vaccination status as well as needs to identify the reasons for never vaccination with an aim to increase the vaccination coverage rates and implement interventions for the control and elimination of vaccine-preventable diseases. Socio-demographic and socio-economic factors can be important determinants of vaccination coverage rates. Community-based information about the vaccination coverage and reasons for never vaccination can guide the health managers to determine the priorities and plans for implementing interventions with an aim to improve the vaccination coverage and take up strategic plans by using the available sources.

2.6.1 Reasons for Never Vaccination

Mothers whose children were not vaccinated were asked about the reasons of not immunizing their children (see Table C1). Almost one-third of them reported about their fear of side effects (30.8 percent). About Nineteen percent of them do not believe in vaccination where the same percent reported not to take their children to health complex for the vaccine due to child's

sickness. The similar percentage of the respondents informed that they don't believe in vaccination. Seven percent of the mothers admitted that they did not know that the child should be given vaccine. On the other hand, 4.2 percent said that the family planning workers did not give the vaccine to the child for child's sickness. The similar percentage admitted about their idleness in giving their children the vaccine and 3.3 percent said that were busy. Another 3.3 percent reported that their child cries, so they could not give him/her vaccine. Except that the other reasons for never vaccination were rumors, did not know where to go for vaccine etc.

The analysis by rural and urban areas reveals that, fear of side-effects of vaccination was the major reason for no immunization in both urban and rural areas. About eighteen percent of the mothers/caregivers who reside in urban areas reported it as against 35.4 of them living in rural areas. Besides, urban mothers/caregivers were found to be more unaware of the fact that the child should be given vaccine. Eleven percent of them in urban areas didn't vaccinate their children for not knowing about it as against 4.9 percent of the mothers/caregivers who reside in rural areas. Moreover, 19.5 percent of them in rural areas reported that they don't believe in vaccination as against 14.8 percent of them in urban areas. Other common reasons in both urban and rural areas were child's sickness, idleness; child cries, charge etc. (see Table C1).

2.6.2 Reasons for Partial Vaccination

A child is considered as partially vaccinated when s/he fails to receive all the doses or antigen after receiving at least one dose of any antigen. CES 2013 asked mothers/caregivers to know the reason for their children not being fully vaccinated (see Table C4). The finding shows that 16.3 percent of the mothers did not take their children to the health complex for their child's sickness. About fifteen percent of them reported that they didn't know the time of measles. Another 13.9 percent said they were too busy to take their child to the vaccinator for vaccine. Fear of side-effects was reported by 5.8 percent of the mothers/caregivers, while another 4.0 percent did not know that the child should be given vaccine. Moreover, another 3.5 percent of them reported that they went outside for a walk or pleasure trip. This idea was being followed by the fact that family planning worker did not give vaccine as the child was sick (3.3 percent), did not know when to go for the second/ third dose (3.1 percent); will give vaccine in future (3.1 percent); was at father's house (2.7 percent); thought the vaccinator would come home (2.0 percent); did not know where to go for vaccine (1.8 percent); there was no vaccine in the center (1.8 percent), idleness (1.8 percent) and there was no vaccinator in the center (1.6 percent).

The reasons for partial vaccination in rural areas were similar to the national findings. 15.7 percent of the mothers/caregivers in rural areas reported that they did not take their child to the health complex for their child's sickness. This other statements for partial vaccination were: didn't know the time of measles vaccine (17.0 percent); mother/caregivers were busy (12.8 percent), fear of side effects (5.9 percent); did not know child should be given vaccine (3.9 percent); went outside for a pleasure trip (2.8 percent) etc. (see Table C4).

Similarly, in urban areas, the common reasons for children for not being fully vaccinated were: "child was sick" (18.6 percent); "parents was busy" (14.3 percent); "mothers/caregivers didn't know the time for measles vaccine" (10.8 percent); "do not remember" (10.8 percent); "went outside for a walk or pleasure trip" (5.6 percent); "fear of side effects" (4.8 percent); "mothers/caregivers didn't know the child should be given vaccine" (4.3 percent) etc. (see Table C4).

Table C1. Reasons for Never Vaccination among 12-23 Months Old Children by National, Rural and Urban Areas in 2013

Reasons	National	Rural	Urban
Fearing side effects	30.8	35.4	18.5
Don't believe in vaccination	19.2	19.5	14.8
The child was sick, so was not taken to the health complex	19.2	19.5	18.5
Didn't know that my child should be given vaccine	6.7	4.9	11.1
The child was sick, so the worker didn't give vaccine	4.2	2.4	7.4
Due to idleness	4.2	3.7	7.4
Was busy and so couldn't give vaccine to child	3.3	3.7	0.0
The kid cries, so did not give him vaccine	3.3	2.4	7.4
They charge money to take vaccine	1.7	1.2	3.7
Didn't know where to go for vaccine	0.8	0.0	3.7
Rumor	0.8	1.2	0.0
Will give vaccine in future	0.8	1.2	0.0
Don't remember	0.8	1.2	0.0
I thought the vaccinator would come home	0.8	1.2	0.0
Went outside for a walk/for a pleasure trip	0.8	0.0	3.7
My husband forbade	0.8	1.2	0.0
Father-in-law/mother-in-law did not allow	0.8	0.0	3.7
The vaccinator did not give	0.8	1.2	0.0
Number of children never vaccinated	**120**	**82**	**27**

Table C2. Reasons for Never Vaccination among 12-23 Months Old Children in Rural Areas by Division in 2013

Reasons	All Rural	Dhaka	Chittagong	Rajshahi	Barisal	Khulna	Sylhet	Rangpur
Fearing side effects	35.4	29.4	46.4	100.0	25.0	20.0	21.1	0.0
Don't believe in vaccination	19.5	11.8	25.0	0.0	50.0	60.0	0.0	0.0
The child was sick, so was not taken to the health complex	19.5	17.6	0.0	0.0	0.0	20.0	57.9	100.0
Didn't know that my child should be given vaccine	4.9	5.9	3.6	0.0	0.0	0.0	10.5	0.0
Was busy and so couldn't give vaccine to child	3.7	11.8	0.0	0.0	0.0	0.0	5.3	0.0
Due to idleness	3.7	5.9	7.1	0.0	0.0	0.0	0.0	0.0
The child was sick, so the family planning worker didn't give vaccine	2.4	5.9	0.0	0.0	0.0	0.0	5.3	0.0
The kid cries, so did not give him vaccine	2.4	0.0	7.1	0.0	0.0	0.0	0.0	0.0
Rumor	1.2	0.0	3.6	0.0	0.0	0.0	0.0	0.0
Will give vaccine in future	1.2	5.9	0.0	0.0	0.0	0.0	0.0	0.0
Don't remember	1.2	0.0	3.6	0.0	0.0	0.0	0.0	0.0
I thought the vaccinator would come home	1.2	0.0	0.0	0.0	12.5	0.0	0.0	0.0
They charge money to take vaccine	1.2	5.9	0.0	0.0	0.0	0.0	0.0	0.0
My husband forbade	1.2	0.0	0.0	0.0	12.5	0.0	0.0	0.0
The vaccinator did not give	1.2	0.0	3.6	0.0	0.0	0.0	0.0	0.0
Didn't know where to go for vaccine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Went outside for a walk/for a pleasure trip	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Father-in-law/mother-in-law did not allow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Number of children never vaccinated	**82**	**17**	**28**	**4**	**8**	**5**	**19**	**1**

Table C3. Reasons for Never Vaccination among 12-23 Months Old Children in Urban Areas by City Corporation in 2013

Reasons	All Urban	DSCC	CCC	KCC	SCC	NCC	Com CC	Ran CC
Fearing side effects	18.5	0.0	0.0	0.0	0.0	66.7	0.0	0.0
The child was sick, so was not taken to the health complex	18.5	0.0	33.3	0.0	50.0	0.0	50.0	0.0
Don't believe in vaccination	14.8	0.0	0.0	0.0	0.0	0.0	50.0	25.0
Didn't know that my child should be given vaccine	11.1	0.0	0.0	0.0	0.0	33.3	0.0	25.0
The child was sick, so the family planning worker didn't give vaccine	7.4	0.0	0.0	100.0	0.0	0.0	0.0	25.0
Due to idleness	7.4	0.0	33.3	0.0	50.0	0.0	0.0	0.0
The kid cries, so did not give him vaccine	7.4	0.0	0.0	0.0	0.0	0.0	0.0	25.0
Didn't know where to go for vaccine	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
They charge money to take vaccine	3.7	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Went outside for a walk/for a pleasure trip	3.7	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Father-in-law/mother-in-law did not allow	3.7	0.0	33.3	0.0	0.0	0.0	0.0	0.0
Number of children never vaccinated	**27**	**2**	**3**	**1**	**2**	**3**	**2**	**4**

Table C4. Reasons for Partial Vaccination among 12-23 Months Old Children by National, Rural and Urban Areas in 2013

Reasons	National	Rural	Urban
The child was sick, so was not taken to the health complex	16.3	15.7	18.6
Didn't know when to go for vaccine of measles	14.8	17.0	10.8
Was busy and so couldn't give vaccine to child	13.9	12.8	14.3
Fearing side effects	5.8	5.9	4.8
Didn't know that my child should be given vaccine	4.0	3.9	4.3
Went outside for a walk/for a pleasure trip	3.5	2.8	5.6
The child was sick, so the family planning worker didn't give vaccine	3.3	2.7	3.0
Didn't know when to go for the second/third dose	3.1	3.9	0.9
Will give vaccine in future	3.1	3.2	1.7
Was at father's house	2.7	3.6	0.4
I thought the vaccinator would come home	2.0	2.4	1.3
Didn't know where to go for vaccine	1.8	2.2	0.9
There was no vaccine in the center	1.8	1.9	2.2
Due to idleness	1.8	1.2	3.5
There was no vaccinator in the center	1.6	1.6	0.9
The time period for the session was not comfortable	1.6	1.9	0.9
The vaccinator did not give	1.5	1.3	2.6
Faced difficulty after taking vaccine	1.4	1.5	1.3
Mother was sick	1.3	1.3	1.7
Vaccine centre was too far	1.0	1.1	0.9
Lost the card, so did not go to give vaccine	1.0	0.7	2.2
Did not have vaccine card, so did not give vaccine	0.9	0.8	1.3
Don't believe in vaccination	0.7	0.5	1.3
Was severe pain at the place of vaccine	0.7	0.5	1.3
Vaccinator was not friendly	0.6	0.7	0.4
They charge money to take vaccine	0.6	0.0	0.9
Was abscess at the place of vaccine	0.4	0.4	0.0
Rumor	0.3	0.1	0.9
There was a long queue in the vaccination centre	0.3	0.3	0.4
The kid cries, so did not give him vaccine	0.2	0.1	0.0
Don't remember	8.1	7.7	10.8
Number of children partially vaccinated	**1046**	**741**	**231**

Table C5. Reasons for Partial Vaccination among 12-23 Months Old Children in Rural Areas by Division in 2013

Reasons	All Rural	Dhaka	Chittagong	Rajshahi	Barisal	Khulna	Sylhet	Rangpur
Didn't know when to go for vaccine of measles	17.0	15.9	14.5	11.4	15.6	23.4	23.4	19.2
The child was sick, so was not taken to the health complex	15.7	17.2	20.2	5.7	13.5	10.6	14.9	21.8
Was busy and so couldn't give vaccine to child	12.8	12.1	16.1	20.0	3.1	14.9	8.5	15.4
Don't remember	7.7	5.2	5.6	7.1	26.0	1.1	4.3	6.4
Fearing side effects	5.9	7.3	7.3	4.3	2.1	8.5	6.4	2.6
Didn't know that my child should be given vaccine	3.9	5.2	3.2	4.3	2.1	1.1	2.1	7.7
Didn't know when to go for the second/third dose	3.9	4.3	3.2	7.1	0.0	4.3	4.3	5.1
Was at father's house	3.6	3.0	4.0	5.7	3.1	5.3	0.0	3.8
Will give vaccine in future	3.2	2.6	0.8	18.6	0.0	0.0	4.3	2.6
Went outside for a walk/for a pleasure trip	2.8	0.4	3.2	1.4	7.3	3.2	8.5	1.3
The child was sick, so the family planning worker didn't give vaccine	2.7	2.6	3.2	0.0	3.1	4.3	2.1	2.6
I thought the vaccinator would come home	2.4	1.7	0.0	2.9	8.3	2.1	2.1	1.3
Didn't know where to go for vaccine	2.2	3.4	0.8	1.4	0.0	6.4	0.0	0.0
There was no vaccine in the center	1.9	3.4	1.6	1.4	2.1	1.1	0.0	0.0
The time period for the session was not comfortable	1.9	1.3	2.4	1.4	0.0	0.0	6.4	5.1
There was no vaccinator in the center	1.6	3.4	0.8	0.0	1.0	0.0	2.1	1.3
Faced difficulty after taking vaccine	1.5	0.9	0.0	4.3	0.0	3.2	6.4	0.0
Mother was sick	1.3	0.9	1.6	0.0	4.2	0.0	2.1	1.3
The vaccinator did not give	1.3	0.4	4.0	0.0	1.0	3.2	0.0	0.0
Due to idleness	1.2	0.9	1.6	1.4	1.0	2.1	0.0	1.3
Vaccine centre was too far	1.1	0.0	2.4	0.0	3.1	2.1	0.0	0.0
Did not have vaccine card, so did not give vaccine	0.8	0.9	0.8	0.0	2.1	1.1	0.0	0.0
Vaccinator was not friendly	0.7	1.7	0.0	1.4	0.0	0.0	0.0	0.0
Lost the card, so did not go to give vaccine	0.7	0.4	1.6	0.0	1.0	1.1	0.0	0.0

Reasons	All Rural	Dhaka	Chittagong	Rajshahi	Barisal	Khulna	Sylhet	Rangpur
Don't believe in vaccination	0.5	1.3	0.0	0.0	0.0	1.1	0.0	0.0
Was severe pain at the place of vaccine	0.5	1.3	0.0	0.0	0.0	0.0	2.1	0.0
Was abscess at the place of vaccine	0.4	1.3	0.0	0.0	0.0	0.0	0.0	0.0
There was a long queue in the vaccination centre	0.3	0.4	0.0	0.0	0.0	0.0	0.0	1.3
Rumor	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0
The kid cries, so did not give him vaccine	0.1	0.0	0.8	0.0	0.0	0.0	0.0	0.0
They charge money to take vaccine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Number of children partially vaccinated	**741**	**232**	**124**	**70**	**96**	**94**	**47**	**78**

Table C6. Reasons for Partial Vaccination among 12-23 Months Old Children in Urban Areas by City Corporation in 2013

Reasons	All Urban	DSCC	DNCC	CCC	RCC	BCC	KCC	SCC	NCC	Com CC	Ran CC
The child was sick, so was not taken to the health complex	18.6	35.7	16.7	7.7	0.0	21.7	30.8	0.0	7.7	50.0	6.7
Was busy and so couldn't give vaccine to child	14.3	0.0	8.3	7.7	33.3	17.4	7.7	9.1	30.8	25.0	26.7
Didn't know when to go for vaccine of measles	10.8	7.1	25.0	0.0	16.7	26.1	0.0	36.4	7.7	0.0	0.0
Don't remember	10.8	7.1	0.0	30.8	16.7	0.0	23.1	18.2	0.0	0.0	0.0
Went outside for a walk/for a pleasure trip	5.6	7.1	0.0	15.4	0.0	17.4	15.4	0.0	7.7	0.0	0.0
Fearing side effects	4.8	0.0	25.0	0.0	16.7	0.0	7.7	0.0	0.0	25.0	6.7
Didn't know that my child should be given vaccine	4.3	7.1	0.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0	6.7
Due to idleness	3.5	14.3	0.0	7.7	0.0	0.0	0.0	9.1	7.7	0.0	6.7
The child was sick, so the family planning worker didn't give vaccine	3.0	7.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3
The vaccinator did not give	2.6	0.0	0.0	0.0	0.0	8.7	7.7	0.0	7.7	0.0	0.0
There was no vaccine in the center	2.2	0.0	0.0	7.7	0.0	0.0	0.0	0.0	7.7	0.0	6.7
Lost the card, so did not go to give vaccine	2.2	7.1	0.0	0.0	0.0	0.0	0.0	0.0	7.7	0.0	13.3

Reasons	All Urban	DSCC	DNCC	CCC	RCC	BCC	KCC	SCC	NCC	Com CC	Ran CC
Will give vaccine in future	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mother was sick	1.7	0.0	0.0	0.0	0.0	0.0	0.0	9.1	0.0	0.0	0.0
Don't believe in vaccination	1.3	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0	0.0	13.3
Was severe pain at the place of vaccine	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Faced difficulty after taking vaccine	1.3	0.0	0.0	0.0	16.7	8.7	0.0	0.0	0.0	0.0	0.0
I thought the vaccinator would come home	1.3	0.0	16.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Did not have vaccine card, so did not give vaccine	1.3	0.0	0.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Didn't know when to go for the second/third dose	0.9	0.0	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Didn't know where to go for vaccine	0.9	0.0	0.0	0.0	0.0	0.0	0.0	9.1	7.7	0.0	0.0
Rumor	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
There was no vaccinator in the center	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vaccine centre was too far	0.9	0.0	0.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
They charge money to take vaccine	0.9	0.0	0.0	0.0	0.0	0.0	0.0	9.1	0.0	0.0	0.0
The time period for the session was not comfortable	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0
There was a long queue in the vaccination centre	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 0.0	0.0	0.0
Vaccinator was not friendly	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Was at father's house	0.4	7.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Number of partially vaccinated children	**231**	**14**	**12**	**13**	**6**	**23**	**13**	**11**	**13**	**4**	**15**

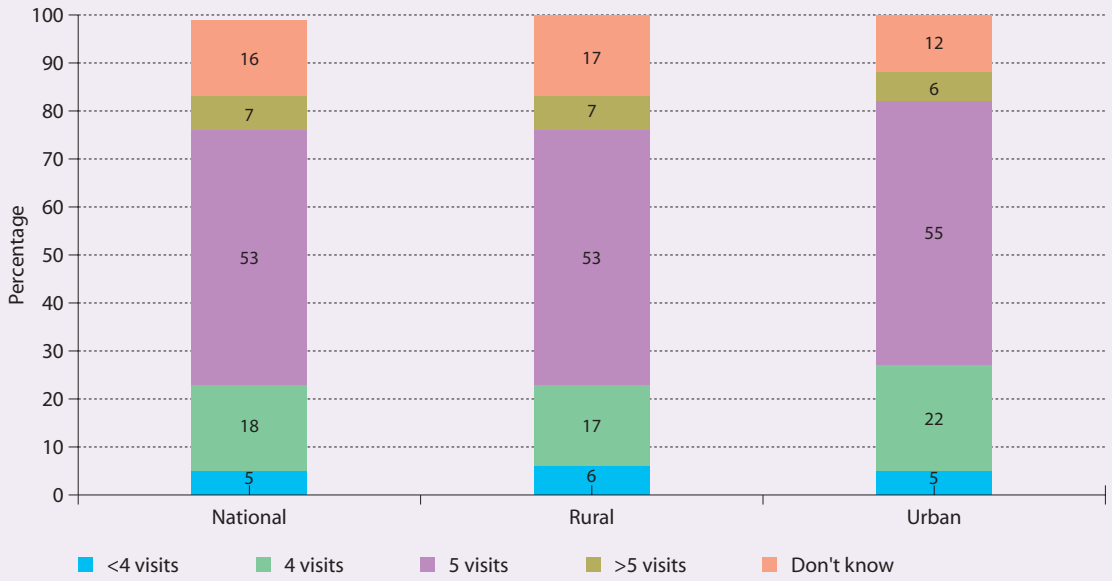
2.7 Knowledge about the Number of Visits Required for Complete Vaccination

CES 2013 assessed mothers'/caregivers' knowledge about the number of visits required for completing all the doses. Nearly one-fourth (23 percent) of them reported less than 4 and exactly 4 visits (see figure D1). Fifty three percent of them mentioned that it would be 5 visits. However, 16 percent of the respondents were found to be unaware of the number of visits. By area type, 23 percent of the mothers in urban areas exactly mentioned about 4 visits as against 17 percent residing in rural areas. Likewise, 53 percent of them mentioned about 5 visits throughout the country with a little variation 53 percent in rural and 55 percent in urban areas (see Figure D1).

In the rural areas by division, the proportion of the mothers/caregivers saying 4 visits to be required for full vaccination was found to be the highest (27 percent) in Barisal division and the lowest (8 percent) in Rangpur division. The percentage of them having proper knowledge about the number of visits required for full vaccination in other divisions was found to be 73 percent in Rangpur, 60 percent in Rajshahi, 54 percent in Dhaka, 53 percent in Sylhet, 48 percent in Chittagong division, 43 percent in Khulna and 42 percent in Barisal (see Figure D2). In contrast, 24 percent of them in Khulna division was found to be unaware about the required number of visits, which was being followed by Sylhet (24 percent), Barisal (18 percent), Dhaka (18 percent), Chittagong (14 percent) and Rajshahi (14 percent).

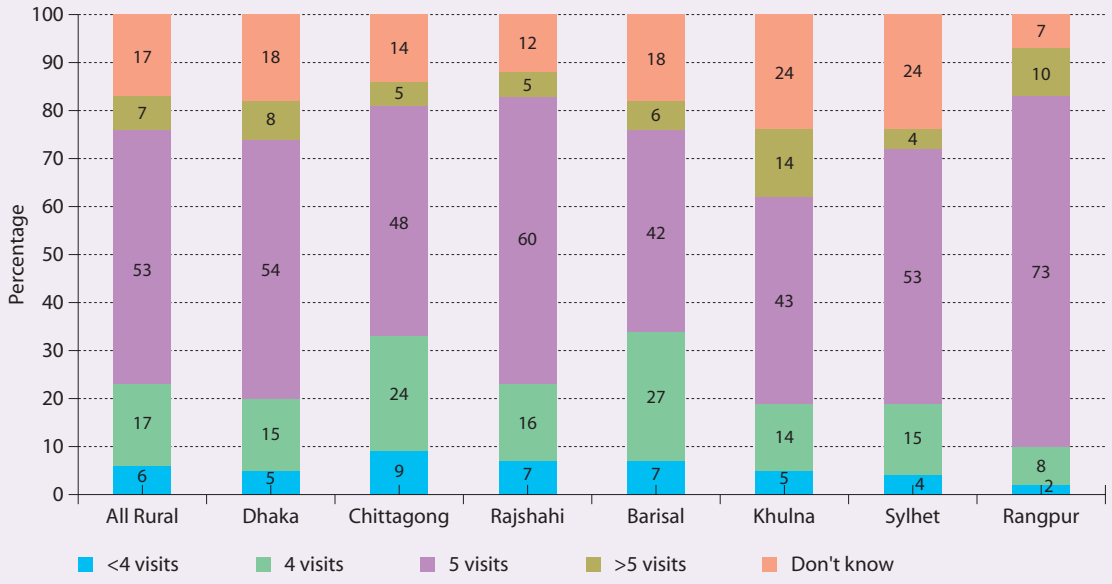
Among the city corporations, correct knowledge about the required number of visits for full vaccination was highly prevalent in DNCC (85 percent), followed by RanCC (74 percent), CCC (63 percent), KCC (59 percent), BCC (53 percent each), RCC (52 percent), DSCC (51 percent), SCC (51 percent), ComCC (41 percent) and NCC (32 percent)(see Figure D3).

Figure D1. Number of Visits Required to Have a Child Fully Vaccinated as Reported by Mothers/Caregivers of 12-23 Months Old Children by National, Rural and Urban Areas in 2013



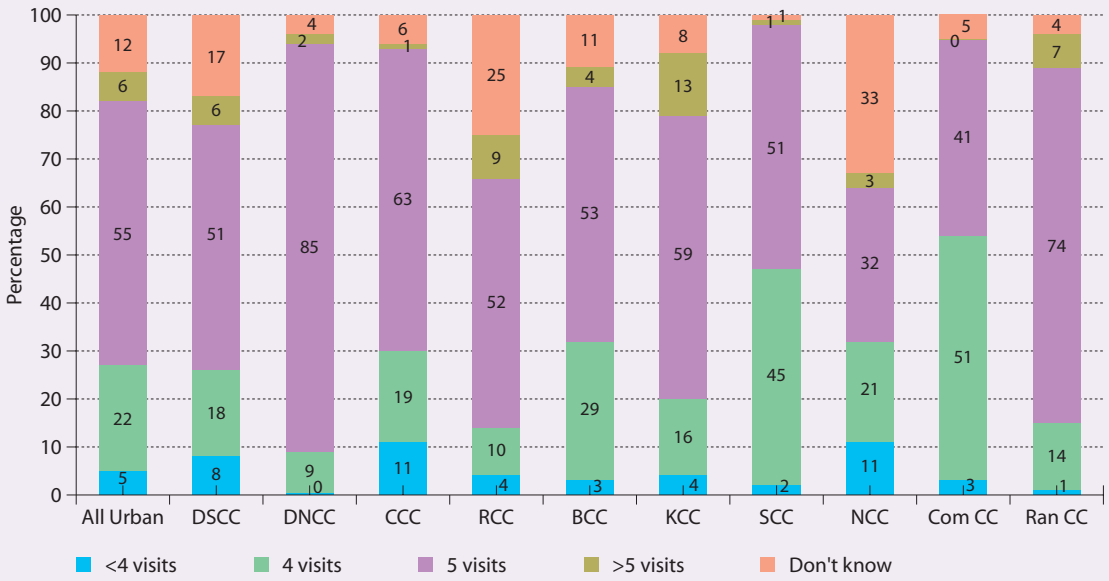
Source : CES 2013

Figure D2. Number of Visits Required to Have a Child Fully Vaccinated as Reported by Mothers/Caregivers of 12-23 Months Old Children in Rural Areas by Division in 2013



Source : CES 2013

Figure D3. Number of Visits Required to Have a Child Fully Vaccinated as Reported by Mothers/Caregivers of 12-23 Months Old Children in Urban Areas by City Corporation in 2013



Source : CES 2013

2.8 Sources of Childhood Vaccination

In CES 2013, respondents were further asked about the source of BCG vaccination. As per the EPI recommended schedule, BCG vaccine should be given right after the child birth (see Table A2). Around three-fifth of the vaccinated children (59.9 percent) received BCG vaccine after 42 days of their birth from GoB Outreach whereas 3.7 percent of the children were vaccinated within 7 days of their birth from the GoB Outreach(see Table D1).

Figure E1 presents the sources of childhood vaccination and shows that the government facilities are the prime sources of providing vaccination services in Bangladesh. Ninety two percent of the surveyed children were vaccinated at the government outreach centers while 5 percent of them in the government hospitals. About 2 percent of the children was vaccinated by NGOs and 1 percent of the children by private health centers/clinics. By the place of residence, government sources emerged as the principal provider of childhood vaccination service both in rural (96 percent) and urban areas (80 percent) of Bangladesh. However, NGOs and private sources were found to be much higher in percentage in urban areas, compared to that in rural areas. Seven percent of the children in urban areas received Penta1 vaccine from NGOs and 2 percent from private service providers.

In the rural areas by division, the government outreach sites were found to be used more widely across the divisions, which ranged from 94 percent in Sylhet and Rajshahi to 99 percent in Rangpur division, while the utilization of the government outreach sites was at an intermediary

level in other divisions - 95 percent in Chittagong, 96 percent in Dhaka, 97 percent in Barisal and 98 percent in Khulna divisions (see Figure E2).

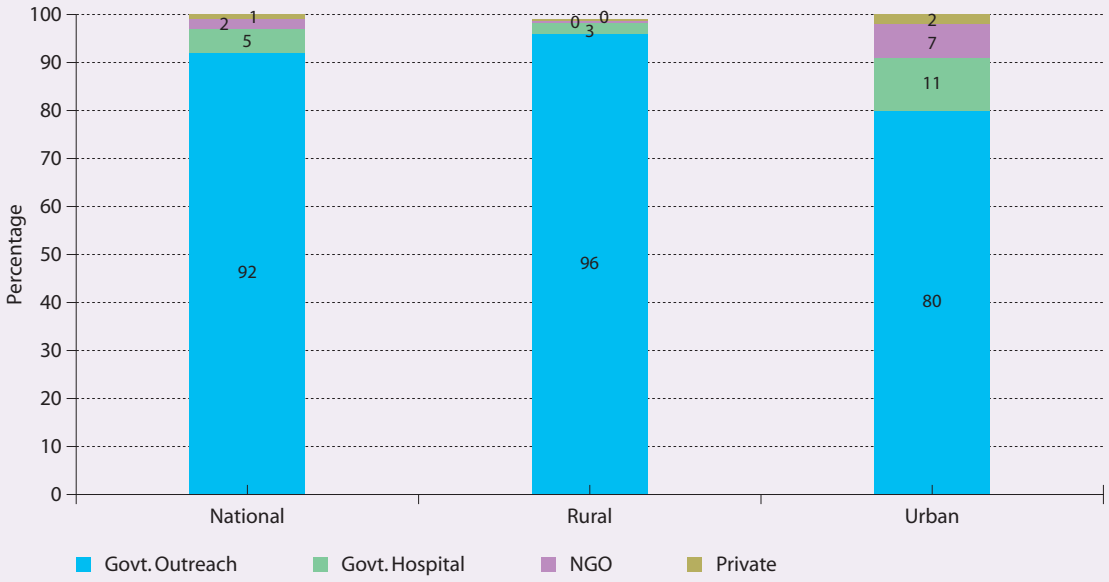
However, among the city corporations, the utilization rate of the government outreach centers was the most prevalent in RCC and RanCC (100 percent each) and the least prevalent in BCC (31 percent). Utilization of government outreach centers was 93 percent in SCC, which was being followed by CCC and ComCC (91 percent), DSCC (84 percent), KCC (67 percent), DNCC (65 percent) and NCC (63 percent) (see Figure E3).

However, vaccination coverage by the NGOs was most discernible in KCC (29 percent), which was being followed by DNCC (27 percent), NCC (22 percent), BCC (16 percent) and DSCC, CCC and Com CC (3 percent each).

Table D1: Source of BCG by the gap of BCG vaccination after the child born

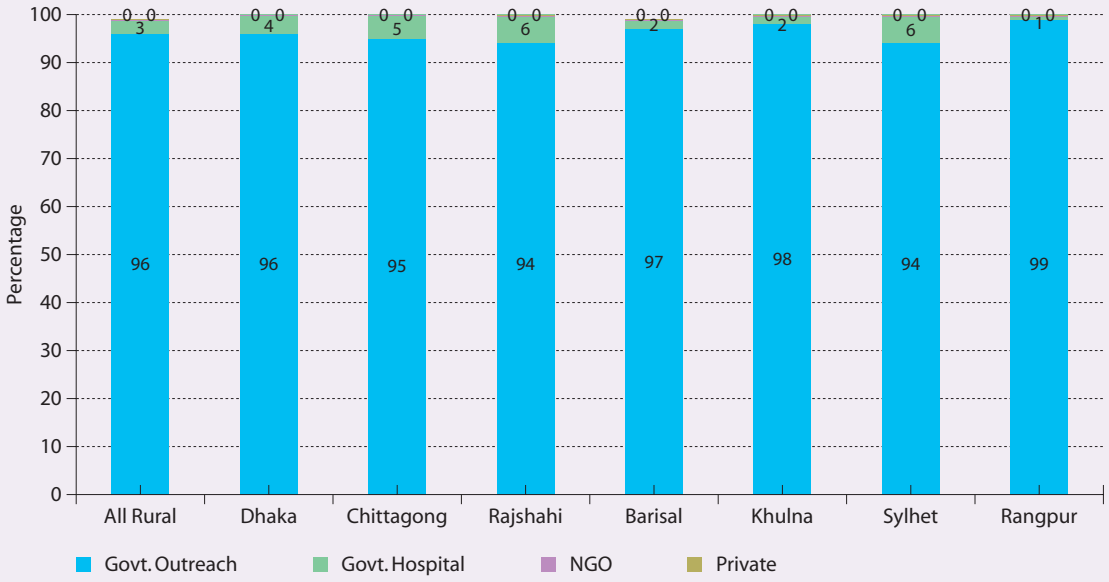
Gap of vaccination from the date of child born	Source of BCG				Total
	GOB Outreach	NGO (Hospital, Clinic, Outreach)	All GOB Hospital	Private (Hospital, Clinic, Chamber)	
Upto 7 days	3.7	6.8	3.3	7.7	3.7
8-42 days	36.4	36.0	28.9	38.5	36
More than 42 days	59.9	57.2	67.9	53.8	60.2
Total	11555	264	675	65	**12,559**

Figure E1. Source of Penta1 Vaccination among 12-23 Months Old Children by National, Rural and Urban Areas in 2013



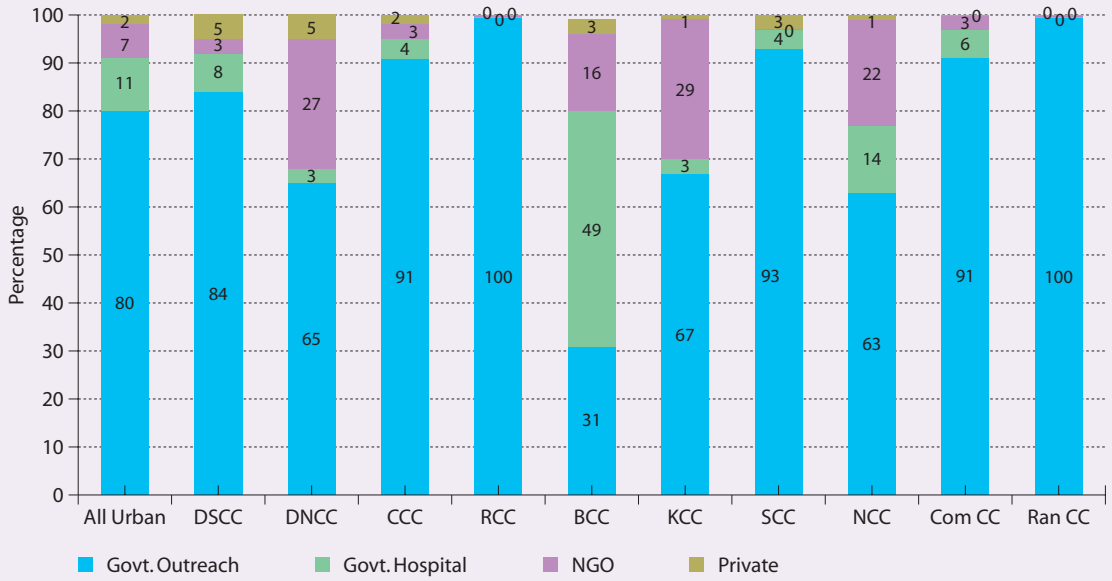
Source : CES 2013

Figure E2. Source of Penta1 Vaccination among 12-23 Months Old Children in Rural Areas by Division in 2013



Source : CES 2013

Figure E3. Source of Penta1 Vaccination among 12-23 Months Old Children in Urban Areas by City Corporation in 2013



Source : CES 2013

Chapter 3

TETANUS TOXOID VACCINATION COVERAGE SURVEY AMONG MOTHERS HAVING 0-11 MONTHS OLD CHILDREN

Neonatal Tetanus (NT) remains a serious problem in countries with low immunization coverage and unclean practices at childbirth. In Bangladesh, most of the deliveries take place at home, often in very poor hygienic conditions - placing the lives of both mother and child at risk. Despite this risk factor of getting "Clostridium tetani", Bangladesh achieved neonatal tetanus elimination status in 2008 through administering two doses of TT vaccine on each pregnant woman and 5 doses of TT vaccine on the women of childbearing age (15-49 years). UNICEF and WHO provided extensive financial and technical support to EPI, Bangladesh to achieve this status. In order to maintain the status EPI in Bangladesh is continuing their support to strengthen its monitoring and supervision system in strong partnership with UNICEF and WHO. Although NT is included in the EPI disease surveillance system, it is formidable to identify the critical areas where the program needs to give special attention or monitor the status of TT during the birth of the last child. In this context, CES is an important mean to give the strategic direction to the program personnel. CES 2013 gathered information and provided an estimate of the children who were protected at birth. All of this information is presented in this chapter. Therefore, along with TT status this chapter provides information about the quality of program, card retention rate, invalid doses and, finally PAB of children.

Objective of TT Survey

Along with the information on the TT status of women with the infants who are 0-11 months old, TT survey had the following objectives:

- TT Vaccination Coverage
- Rates of TT card retention
- Incidence of invalid TT doses
- Sources of TT vaccination
- Proportion of the newborn children who were protected at birth against neonatal tetanus
- Post-partum Vitamin A coverage among mothers having 0-11 months old children

3.1 Selection of Samples

Mothers who gave birth to child between 01-01-2012 and 31-12-2012 were the target samples to evaluate the vaccination status against tetanus as well as post-partum Vitamin A coverage. Samples were selected from the same clusters assigned for other types of survey under CES 2013. At first, mothers who gave birth to a child between 01-01-2012 and 31-01-2012 were identified through visits to every household for making a list. Secondly, a sampling frame was prepared with all the eligible mothers who were identified earlier. Among them, seven mothers were selected randomly to examine their TT vaccination status, card retention rates, and post-partum Vitamin A status through a pre-designed structured questionnaire.

3.2 TT Vaccination

Maternal and Neonatal tetanus is one of the challenges to achieve the MDG goal - reduction of infant mortality and maternal death. Elimination of MNT is a global program of WHO which was launched worldwide in 1989. In 1999, the goal was expanded to include elimination of the maternal tetanus. During that time, there were 59 countries that had still not eliminated MNT. As of May 2013, 31 of these countries had achieved MNT elimination leaving 28 countries those still have not eliminated the disease[2]. MNT elimination in a country is defined as neonatal tetanus rate of less than one case of neonatal tetanus per 1000 live births in every district of the country. As discussed earlier, Bangladesh achieved neonatal tetanus elimination status in 2008. In May 2008, a Lot Quality Assurance (LQA) survey has been conducted in the presence of the experts from abroad. The survey result showed that Bangladesh has achieved neonatal tetanus elimination status.

Complete eradication of tetanus is not possible because tetanus spores are found throughout the world in soil and the stool of people and animals- i.e. tetanus exposure cannot be completely prevented. Therefore, the chance of neonatal tetanus is always high in country like Bangladesh where 60 percent of the deliveries are taking place at home. The best way to prevent neonatal tetanus is to immunize women of childbearing age with TT vaccine and to ensure clean delivery practice.

Tetanus toxoid (TT) vaccine protects against tetanus. When TT is given to women of childbearing age, vaccines that contain Tetanus toxoid (TT) not only protect women against tetanus, but also prevent neonatal tetanus in their newborn infants. When TT vaccine is given to a woman who is or who is going to be pregnant, the antibodies that form in her body pass to her fetus. These antibodies protect the baby against tetanus during birth and for a few months afterwards.

To get an adequate level of antibody against tetanus for her whole reproductive period a woman needs a total of five doses of TT vaccine. All these doses should be administered as per TT vaccination schedule. The first dose of TT vaccine should be administered as soon as she attains the age of 15 years; TT2 - four weeks or more after TT1 is given; TT3 - six months or more after TT2; TT4 - one year or more after TT3; and TT5 - one year or more after TT4.

A single dose of TT vaccine does not ensure any protection against tetanus. It requires two doses of duly administered TT vaccines to ensure protection for 3 years. TT3 ensures protection for 5 years, TT4 for 10 years. After TT5 is administered, a woman gets adequate tetanus antibody in her body to protect her whole reproductive life against tetanus. Table E1 below shows the complete TT vaccination schedule.

2 Source: http://www.who.int/immunization_monitoring/diseases/MNTE_initiative/en/index4.html

Table E1: The TT Vaccination Schedule

TT Doses	Minimum Interval between Doses	Years Protected
TT1	Age of 15 years	No protection
TT2	4 weeks after TT1	3 years after the administration of TT2
TT3	6 months after TT2	5 years after the administration of TT3
TT4	1 year after TT3	10 years after the administration of TT4
TT5	1 year after TT4	Reproductive period

3.3 Levels of the TT Coverage

CES 2013 was conducted to collect information about the TT vaccination from the mothers who had given birth to children between 01-01-2012 and 31-12-2012 with an aim to assess the protective status of the newborn against Tetanus. TT vaccination status of the surveyed mothers was analyzed in two dimensions - crude TT vaccination coverage and valid TT vaccination coverage.

Crude TT vaccination coverage is defined as the vaccination coverage which is estimated without considering the proper interval between the consecutive doses. Crude TT vaccination coverage is displayed in Figure F1, which shows that across the country 58 percent of the mothers completed all the 5 doses of TT vaccine. There was variation in the coverage between urban (57 percent) and rural (58 percent) areas in terms of the access to the vaccination service. Nationally, 98 percent of the mothers received TT1 and 96 percent of them received TT2.

Across the country 96 percent of the mothers received TT2 doses. It decreased down to 88 percent for TT3, 74 percent for TT4, and finally, 58 percent for TT5 dose. A similar trend was observed in both urban and rural areas (see Figure F1). In general, 44 percent of the mothers received all the 5 doses of valid TT vaccination nationally (See Figure F2). However, there was a slight variation between urban (43 percent) and rural (44 percent) areas in this regard. Area wise analysis of valid TT2 dose shows a difference of 1 percentage point between urban and rural areas - where the TT2 coverage in urban areas was 97 percent, it was 96 percent in rural areas.

The valid TT3 coverage was 83 percent nationally. It declined down to 64 percent for TT4 and 44 percent for TT5 doses. Similarly, in urban areas valid TT3 coverage was 84 percent, and TT4 was 63 percent as against 84 percent coverage for TT3 and 64 percent for TT4 in rural areas (see Figure F2).

3.4 Trends in Crude TT2 and TT3 Coverage

The national trend of crude TT2 and TT3 vaccination coverage has been shown in Figure F3. It shows that, since 2000, the coverage of TT3 has escalated rapidly without any fluctuation. It increased from 56 percent in 2000 to 88 percent in 2011 and the same stayed in 2013. Compare to CES 2006, TT3 coverage rate increased by 8 percentage points - 80 percent in 2006 to 88

percent in 2013. However, a slow upward trend in TT2 coverage was observed with fluctuations since 1997 where in 2011 and 2013 the rate remained same. During the last one decade TT2 coverage increased by 6 percentage points - from 89 percent in 2000 to 95 percent in 2010. But, between CES 2011 and CES 2013, TT2 and TT3 coverage remained same (see Figure F3).

Figures F4-F10 shows the trends in the crude TT2 vaccination coverage by division. In Dhaka division, the coverage rate fluctuated during the years 1999-2005 except in 2003 (see Figure F4). However, a plateau rate was observed in CES 2006, CES 2007, and CES 2009. In 2010, it increased to 96 percent which remained same at 2011 and 2013 (see Figure F4). In Chittagong division, the trend fluctuated following an overall increase throughout the period from 1993 to 2013. The coverage increased from 81 percent in 2000 to 95 percent in 2011. Again, it increased up to 96 percent in 2013. TT2 coverage in Chittagong division increased by 1 percentage points - from 95 percent in 2011 to 96 percent in 2013 (see Figure F5).

In Rajshahi division it increased by 9 percentage points - from 89 percent in 2000 to 98 percent in 2013 (see Figure F6). The crude TT2 vaccination coverage of Rangpur division was 97 percent in 2011 and the figure remained same in CES 2013 (see Figure F7). In Barisal division the coverage increased from 88 percent in 2000 to 97 percent in 2013 (see Figure F8). Furthermore, in Khulna division a trend of gradual increase along with fluctuation in the coverage was observed since 1997. TT2 coverage rate was plateau during the years 1998-2000 and 2003-2005. Between CES 2011 and CES 2013, the coverage rate increased by 1 percentage point - 96 percent in 2011 to 97 percent in 2013 (see Figure F9). In Sylhet division, although there was a fluctuation in the coverage, TT2 coverage increased from 77 percent in 2000 to 92 percent in 2013 (see Figure F10). An analysis of the trends shows that, the coverage of Sylhet division decreased in CES 2013 from CES 2011. Compared to CES 2011, TT2 coverage in CES 2013 decreased by 1 percentage points in Sylhet division. However, compared to CES 2011, TT2 coverage increased by 1 percentage points in Chittagong, 1 percentage point in Rajshahi, 1 percentage points in Barisal and 1 percentage points in Khulna.

3.5 Rural Coverage by Division

Figure F11 and F12 show TT vaccination coverage in rural areas by division. Both crude and valid TT vaccination coverage are discussed below:

Crude TT Vaccination Coverage

Crude TT vaccination coverage in the rural areas by division is presented in Figure F11. It shows that access to TT1 vaccination was higher in Rangpur, Khulna, Rajshahi and Barisal divisions (99 percent each) than Dhaka (97 percent), Chittagong and Sylhet (96 percent each) divisions. TT2 coverage was found to be the highest in Rajshahi division (97 percent) and the lowest in Sylhet division (92 percent).

TT3 coverage was found to be the highest in Rajshahi, Khulna and Barisal division (90 percent each) and once again the lowest in Sylhet division (83 percent). Eighty eight percent of the mothers received TT3 in Dhaka and Chittagong division followed by 87 percent in Rangpur division.

As regards to TT4 coverage, 77 percent of the mothers from Barisal, 75 percent from Chittagong

and Dhaka, 74 percent from Rajshahi and Khulna, 71 percent from Rangpur and 70 percent of the mothers from Sylhet division received the vaccine.

TT5 coverage was found to be the highest (62 percent) in Chittagong and the lowest (54 percent) in Rangpur division. It was found to be 59 percent in Barisal, 58 percent in Sylhet and Dhaka, 57 percent in Rajshahi and Khulna and 54 percent in Rangpur division.

Valid TT Vaccination Coverage

A TT vaccination dose is considered valid when it is administered as per the EPI- recommended TT vaccination schedule. Figure F12 presents the valid TT vaccination coverage of rural areas by divisions. It shows that TT1 coverage was at or over 96 percent in all divisions. TT2 vaccination coverage is associated with PAB. A single dose of TT does not confirm any protection against tetanus. To protect the child against tetanus at birth throughout the reproductive period a woman should receive all the 5 doses of TT vaccines following the EPI recommended TT vaccination schedule, or else complete 2 doses of TT by maintaining the exact vaccination schedule at least 1 month prior to the delivery of the child. Findings of CES 2013 revealed that TT2 coverage was the highest in Rajshahi, Sylhet, and Rangpur (97 percent each) and the lowest (92 percent) in Barisal division. It was 96 percent in Khulna and Dhaka and 95 percent in Chittagong division.

Similarly, valid TT3 vaccination coverage was found to be the highest (86 percent) in Rajshahi division and the lowest (80 percent) in Barisal division.

As regards to the TT4 coverage, it was found to be the highest (68 percent) in Khulna and the lowest (62 percent) in Dhaka division, which was being followed by Chittagong (47 percent), Rajshahi and Sylhet (65 percent each) and Barisal and Rangpur (63 percent each). Similarly, TT5 coverage rate was found to be the highest in Khulna (48 percent) and the lowest in Dhaka division (42 percent). It was 47 percent in Chittagong, 46 percent in Barisal, 44 percent in Sylhet, 43 percent in Rajshahi and 42 percent in Rangpur.

3.6 Levels of the Coverage by the Survey Unit

As a ready reference, rates of the valid TT coverage among mother with children 0-11 months old by division/city Corporation are given in Appendix.

3.7 TT Coverage by City Corporation

Figure F13 presents the crude TT vaccination coverage rate by City Corporation. Access to TT1 vaccination was found to be widespread in DNCC and ComCC. Regarding access to TT1 vaccination, no variation was observed in NCC, CCC, RCC, RanCC and BCC. It was 99 percent in these city corporations. The coverage rate of TT1 vaccination was found to be 98 percent in DSCC and KCC and the lowest 94 percent in SCC.

Similar to the TT1, crude TT2 coverage was found to be widespread in DNCC and ComCC and the lowest in SCC (91 percent). TT2 coverage was 99 percent in NCC and RanCC, 98 percent in CCC and RCC and 97 percent in DSCC and BCC. However, TT3 coverage rate was found to be the highest in RCC (95 percent) and the lowest in DSCC and SCC (78 percent). TT3 coverage

rates were 93 percent in RanCC, 92 percent in ComCC and BCC, and 90 percent in NCC. Moreover, the coverage rate of TT4 was the highest (83 percent) in RCC, which was being followed by ComCC (80 percent), RanCC (79 percent), BCC (77 percent) and NCC (75 percent).

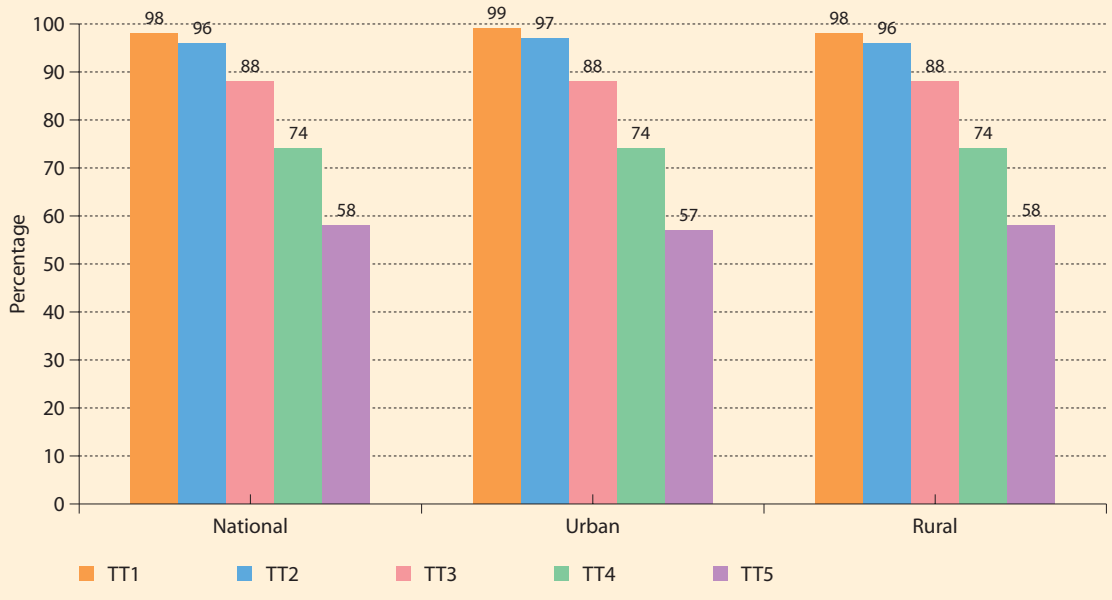
As it was expected, crude TT5 coverage was found to be the highest in RCC (68 percent) and the lowest in SCC (44 percent). TT5 coverage in other city corporations ranged between 50 percent in DSCC and 65 percent in ComCC (see Figure F13).

Figure F14 shows valid TT vaccination coverage. Valid TT2 coverage was found to be widespread in ComCC and lowest in SCC (91 percent). However, TT2 coverage rate was at or above 96 percent in other city corporations.

Among the city corporations, higher percentage of the mothers in RCC (93 percent) received the valid dose of TT3 than those residing in other city corporations. Ninety one percent of the mothers in RanCC received valid TT3 which was being followed by ComCC (89 percent), BCC (88 percent), DNCC (83 percent), NCC (82 percent), KCC (81 percent), CCC (79 percent) and DSCC (75 percent).

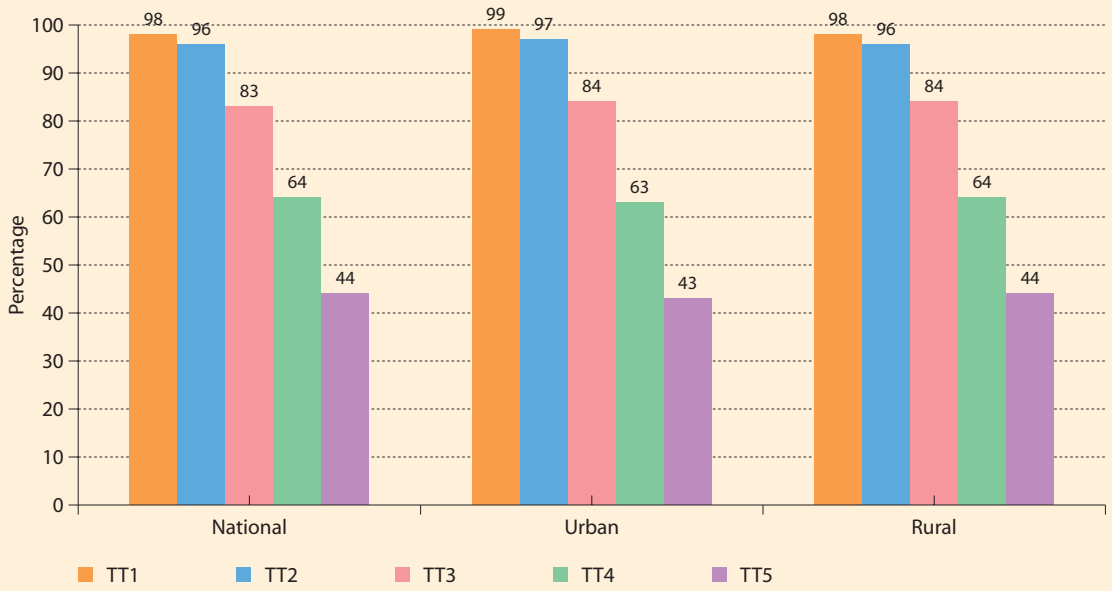
In contrast, TT5 coverage was found to be the highest (61 percent) in RCC and the lowest (33 percent) in DNCC. Over half of the mothers in RanCC (55 percent), ComCC (51 Percent), 44 percent of the mothers in NCC, 41 percent of the mothers in BCC, 40 percent of the mothers in KCC, 38 percent of the mothers in CCC, 36 percent of the mothers in DSCC and 35 percent of the mothers in SCC received 5 doses of valid TT vaccine (see Figure F14).

Figure F1. Crude TT Vaccination Coverage among Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2013 (Card+History)



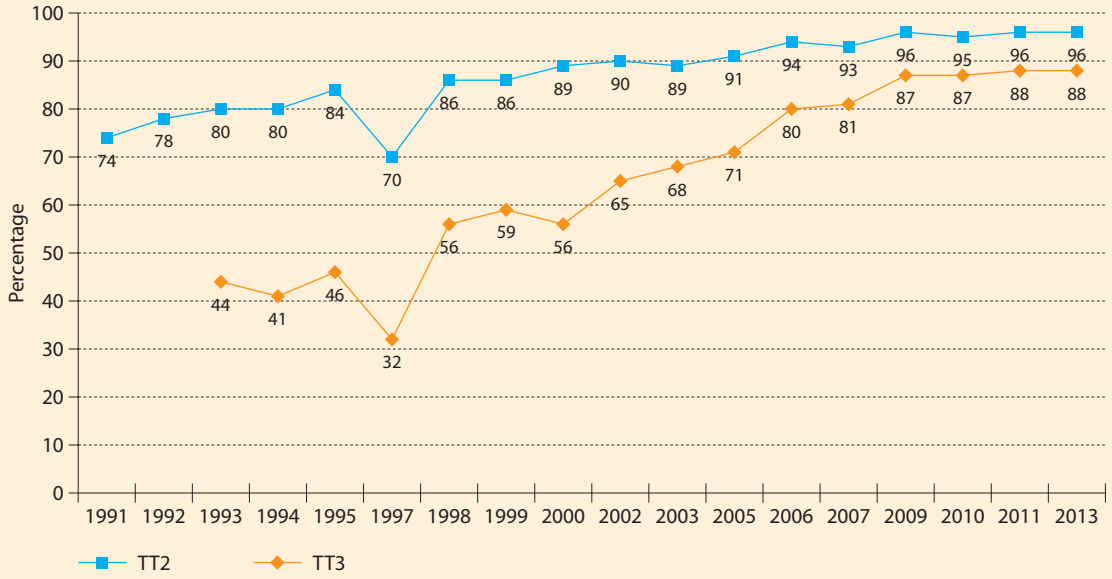
Source : CES 2013

Figure F2. Valid TT Vaccination Coverage among Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2013 (Card+History)



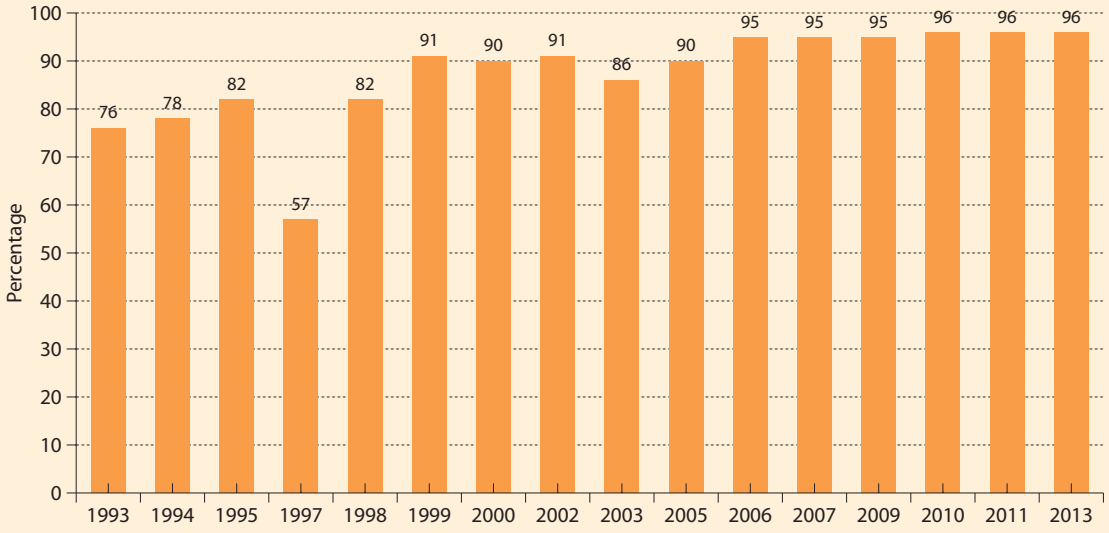
Source : CES 2013

Figure F3. Annual Trend in Crude TT2 and TT3 Vaccination Coverage among Mothers of 0-11 Months Old Children at National Level from 1991 to 2013* (Card+History)



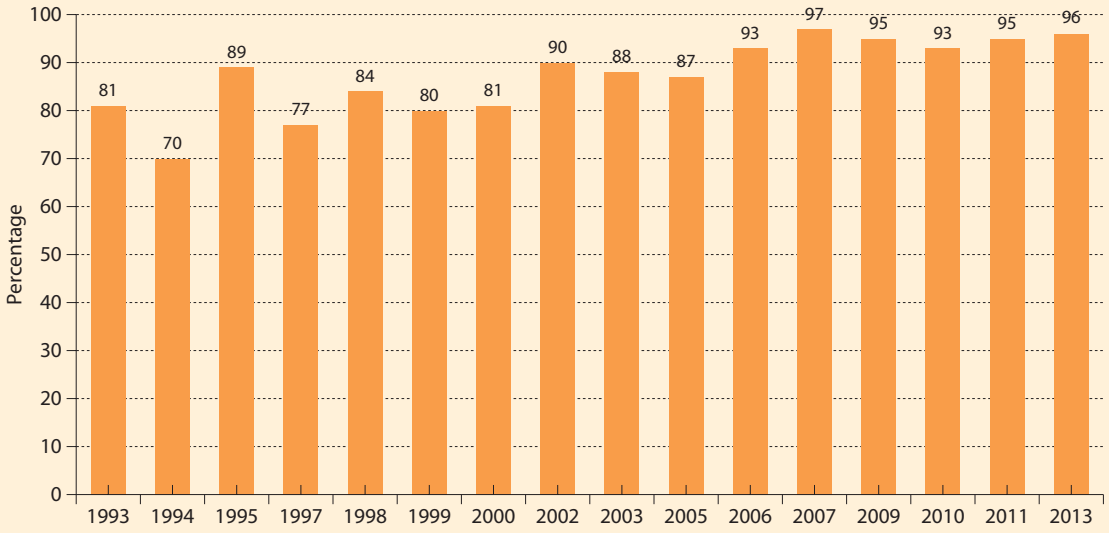
Source : Coverage Evaluation Survey 1991-1995, 1997-200, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013
** Since the TT3 Coverage rate was not available for 1992, it is given from 1993 instead of 1991.*

Figure F4. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Dhaka Division from 1993 to 2013 (Card + History)



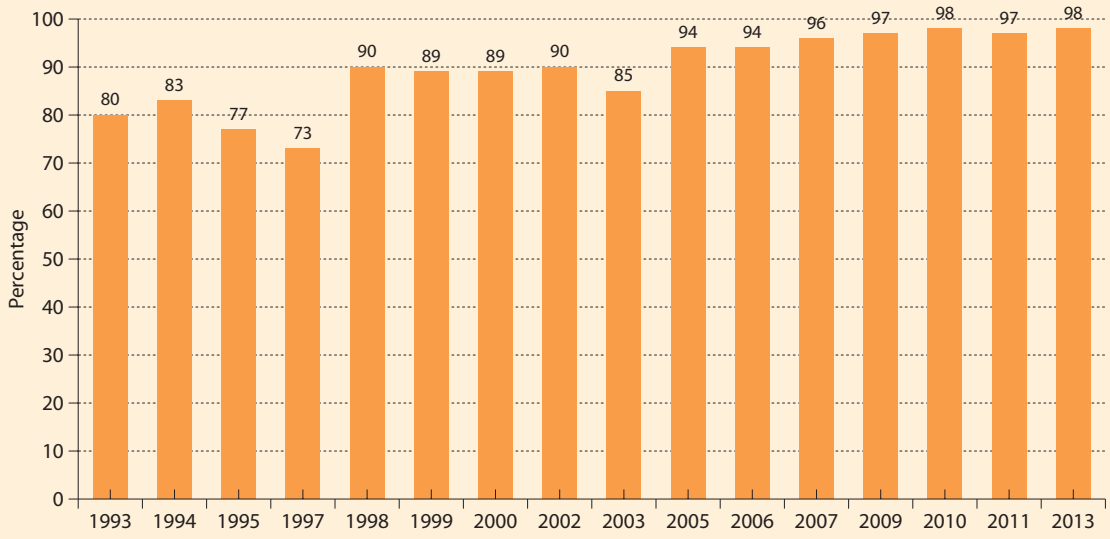
Source : CES 2013

Figure F5. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Chittagong Division from 1993 to 2013 (Card + History)



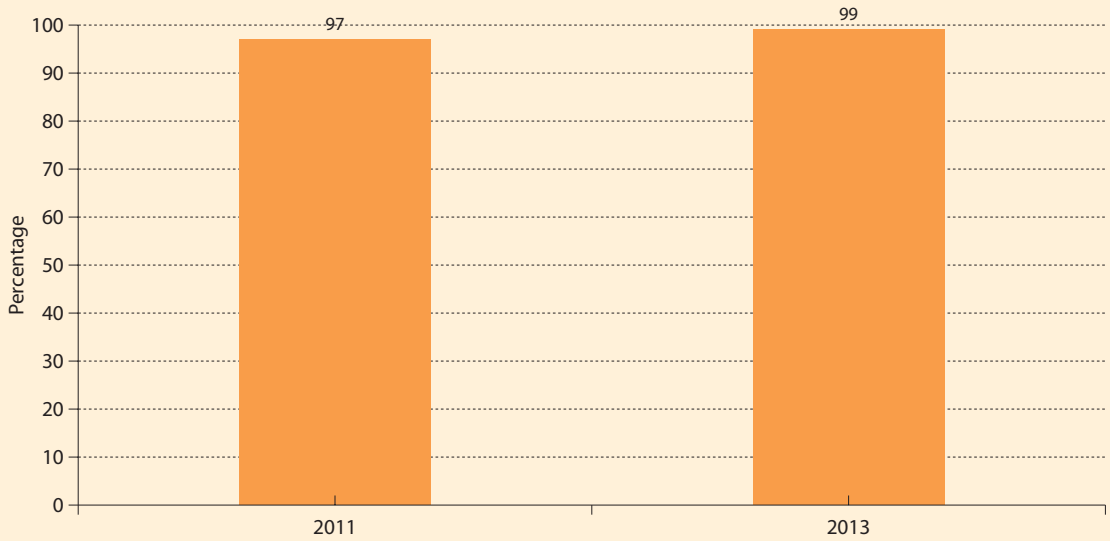
Source : CES 2013

Figure F6. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Rajshahi Division* from 1993 to 2013 (Card + History)



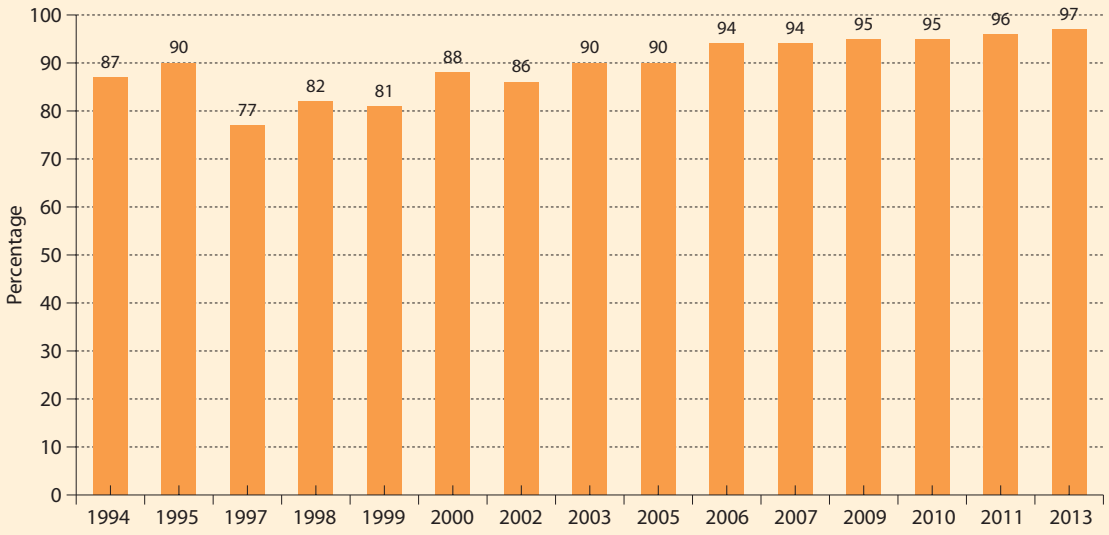
Source : CES 2013
** Till the CES 2010 Rangpur division was under Rajshahi division*

Figure F7. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Rangpur Division* from 2011 to 2013 (Card + History)



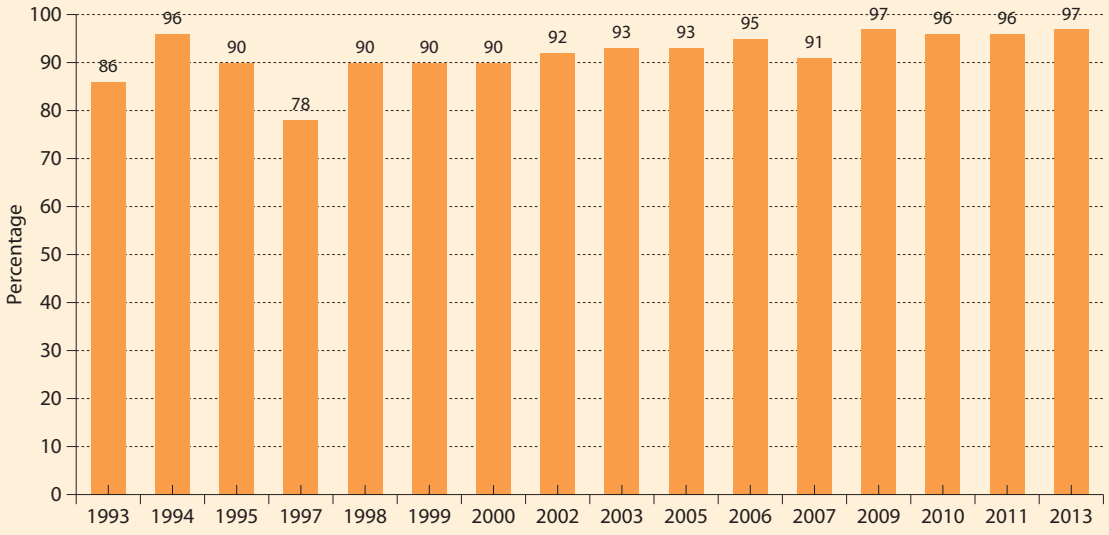
Source : CES 2013
** Till the CES 2010, Rangpur division was under Rajshahi division*

Figure F8. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Barisal Division from 1994 to 2013 (Card + History)



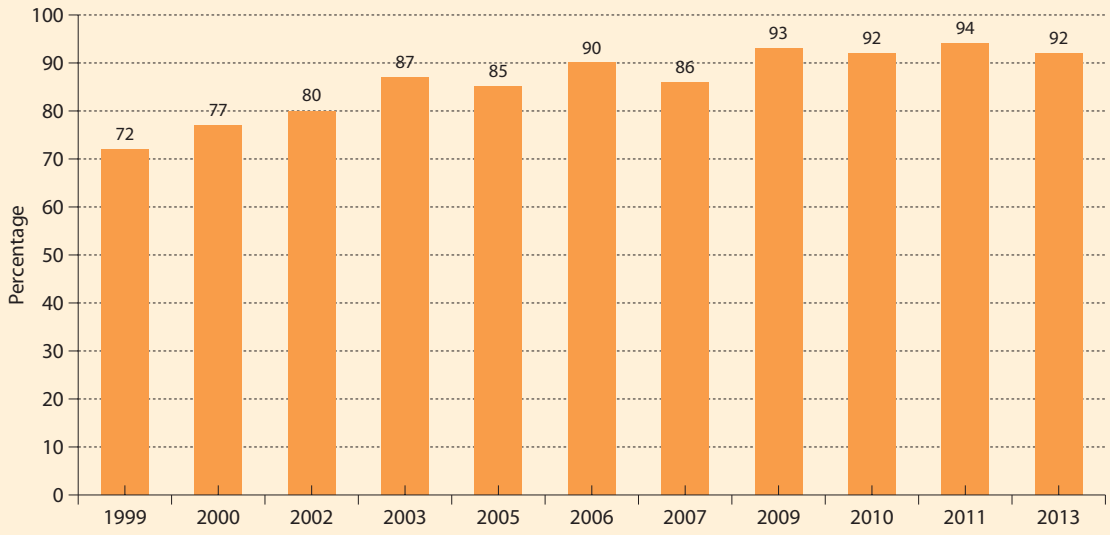
Source : CES 2013

Figure F9. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Khulna Division from 1993 to 2013 (Card + History)



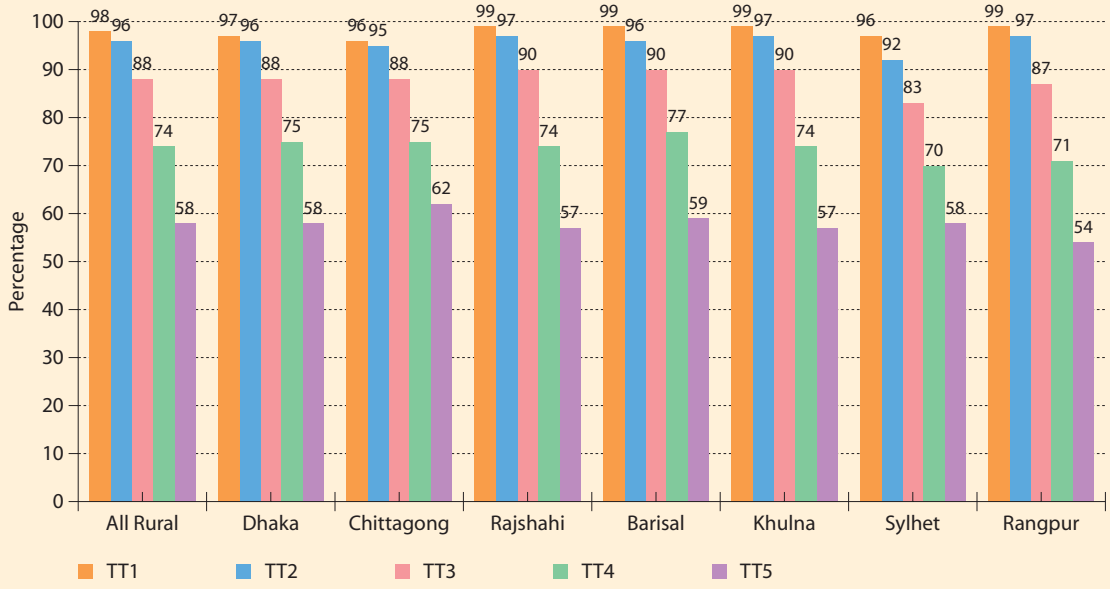
Source : CES 2013

Figure F10. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Sylhet Division from 1999 to 2013 (Card + History)



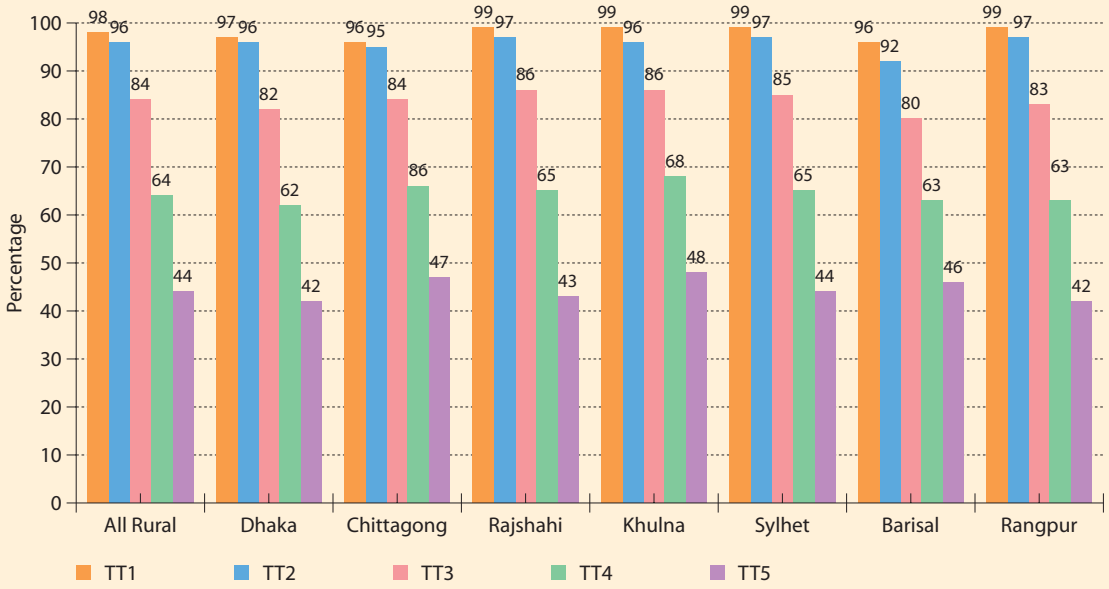
Source : CES 2013
Note : Before 1999, Sylhet division was a part of Chittagong division
Source : Coverage Evaluation Surveys (CESs) for 1994-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure F11. Crude TT Vaccination Coverage among Mothers of 0-11 Months Old Children in Rural Areas by Division in 2013 (Card + History)



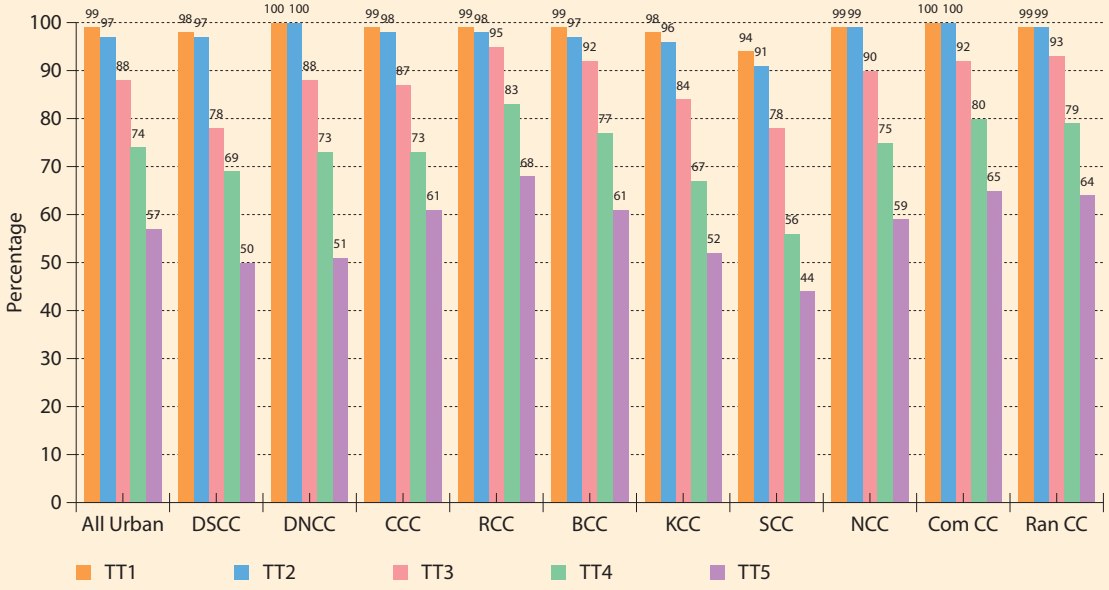
Source : CES 2013

Figure F12. Valid TT Vaccination Coverage among Mothers of 0-11 Months Old Children in Rural Areas by Division in 2013 (Card + History)



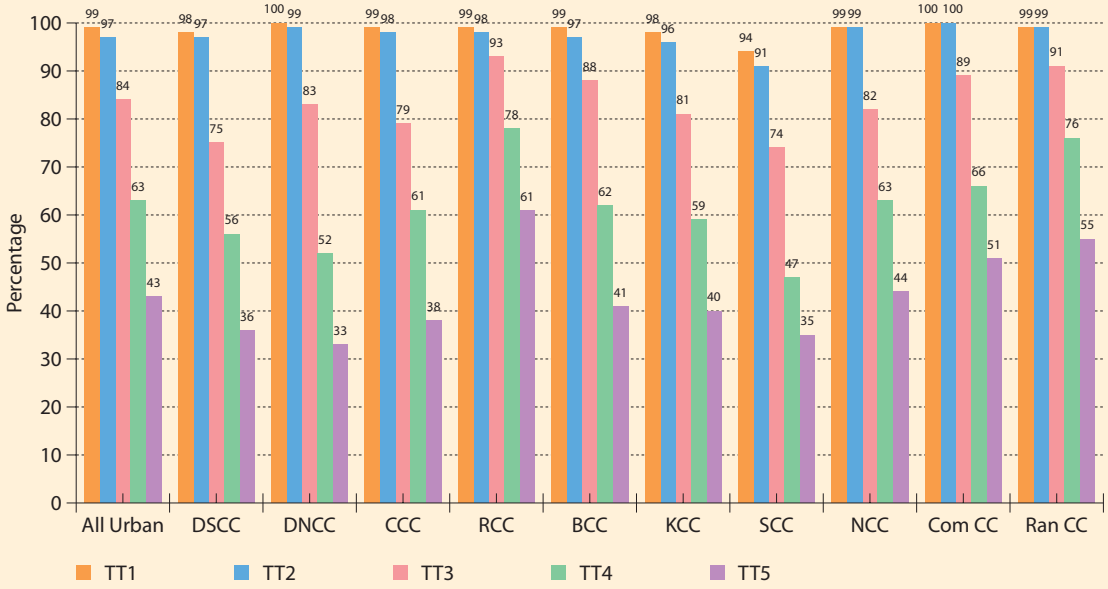
Source : CES 2013

Figure F13. Crude TT Vaccination Coverage among Mothers of 0-11 Months Old Children In Urban Areas by City Corporation in 2013 (Card + History)



Source : CES 2013

Figure F14. Valid TT Vaccination Coverage among Mothers of 0-11 Months Old Children In Urban Areas by City Corporation in 2013 (Card + History)



Source : CES 2013

3.8 TT Card Status among the Mothers

To assess the status of TT vaccination card, respondents were asked whether they had TT vaccination card. A little over one-third (37 percent) of the mothers reported that they had the card. However, 55 percent mentioned that they lost it. Fifty nine percent of the mothers residing in urban areas and 53 percent of them in rural areas lost the card. Likewise, card retention rate was found to be 40 percent across the country with 6 percentage points difference between urban (36 percent) and rural (42 percent) areas (see Figure G1).

By rural division, card retention rate was the highest (53 percent) in Rajshahi division and the lowest (31 percent) in Dhaka. The intermediary rates ranged from 51 percent in Khulna, 47 percent in Sylhet, 46 percent in Rangpur, 42 percent in Barisal to 37 percent in Chittagong (see Figure G2).

Among the city corporations, card retention rate was found to be the highest (59 percent) in RCC and the lowest (16 percent) in DSCC. In other city corporations, the rates were 42 percent in RanCC, KCC and SCC, 35 percent in BCC, 28 percent in CCC, 27 percent in ComCC, 26 percent in NCC and 19 percent in DNCC (see Figure G3).

The rural-urban analysis shows that card retention rate was 6 percentage points higher in rural areas compared to that in urban areas. Hence, the card retention in urban areas as compared to rural areas needs more attention from the program personnel to motivate mothers living in the city corporations along with other divisions to retain the card. As a whole more than half (60 percent) of the mothers were found to be not retaining it throughout the country.

3.9 Incidence of Invalid Doses

Figure G4 shows the incidence of invalid TT doses among the surveyed mothers. The survey findings indicate that the incidence was more prevalent for TT3 and that the incidence rate decreased for the subsequent doses. Thirteen percent of the total surveyed mothers received invalid doses of TT3 across the country. The incidence rate of invalid doses for TT4 was 12 percent across the country - 12 percent in rural and urban areas as well. However, for TT5 the rate was 11 percent, nationally. It was also 11 percent in rural and urban areas.

In rural areas by division, 16 percent of the mothers were found to have received invalid TT3 in Dhaka division (see Figure G5). The rate of invalid TT3 was the lowest in Barisal and Sylhet division (9 percent respectively). It was 15 percent in Chittagong, 12 percent in Rajshahi, 11 percent in Khulna and Rangpur division.

As regards to the incidence of invalid TT4 dose, it was found to be the highest (15 percent) in Dhaka and the lowest (9 percent) in Rangpur division. Furthermore, invalid doses of TT4 were 13 percent in Chittagong, 11 percent in Barisal, Khulna and Rajshahi and 10 percent in Sylhet (see Figure G5).

By City Corporation, the highest rate (20 percent) of invalid TT3 dose was revealed in NCC and CCC and the lowest (3 percent) in RCC (see Figure G6). Sixteen percent of the mothers in ComCC and BCC, 10 percent in KCC and DSCC, 9 percent in SCC and 5 percent in RanCC received invalid TT3 doses. On the contrary, 21 percent of the mothers in DNCC, 17 percent in

DSCC, 14 percent in ComCC and BCC, 13 percent in KCC, 12 percent in CCC, 8 percent in SCC, 6 percent in RCC and 3 percent in RanCC received invalid TT4 doses.

However, 23 percent of the mothers in CCC received invalid TT5 dose. The incidence of invalid TT5 dose was 17 percent in BCC which was being followed by 12 percent in DNCC, 11 percent in ComCC, 10 percent in DSCC, 9 percent in KCC, and 8 percent in SCC (see Figure G6).

The analysis of the invalid TT2 dose shows that no mother in any of the rural divisions had received it, except for 1 percent of the mothers from Rajshahi division. Incidence of invalid TT2 dose was similar in all city corporations except for DSCC, DNCC, CCC, ComCC, RanCC and RCC. The highest invalid dose for TT3-TT5 can be minimized through increasing card retention rate as well as by refraining oneself from administering unnecessary dose when the newborn baby is already protected. EPI program can save a huge number of vaccines through an effective communication program.

3.10 Screening the TT Vaccination of Mothers

Screening the TT status of the mothers is an important means to increase TT vaccination coverage among the 15-49 years old women. Children were mostly accompanied by their mothers while they were vaccinated. Across the country, 99 percent of the children aged between 12-23 months had an access to vaccination service. This data shows the opportunity to vaccinate mothers further for the subsequent doses.

Mothers were asked whether the vaccinator screened their TT status while the health workers visited the site to vaccinate their children. Nationally, 44 percent of the mothers reported that their TT status was screened. A slightly higher percentage of the mothers in rural areas were screened compared to the mothers in urban areas (42 percent in urban and 45 percent in rural areas) (see Figure G7).

In rural areas by division, the proportion of the screened mothers was found to be the highest (57 percent) in each of Barisal and Rangpur division and the lowest (37 percent) in Rajshahi division. The proportion in other divisions ranged between 51 percent in Sylhet to 39 percent in Chittagong division (see Figure G8).

Among the city corporations, the proportion of the screened mothers was found to be the highest (71 percent) in KCC which was being followed by BCC (69 percent), RanCC (62 percent), RCC (60 percent), DSCC (54 percent), ComCC (50 percent), NCC (33 percent), SCC (30 percent), CCC (20 percent) and DNCC (11 percent) (see Figure G9).

3.11 Children Protected at Birth (PAB) against Tetanus

Protection at birth (PAB) of the newborn baby in order to reduce neonatal death is the ultimate outcome of TT vaccination. The percentage of PAB is estimated by dividing the number of infants protected by the total number of births. EPI CES 2013 estimated the PAB of newborn babies through examining the time of receiving TT doses against the recommended TT vaccination schedule (shown in Table E1). In the country, 91 percent of the children were found to be protected at birth against tetanus. The rural-urban variation was 2 percentage points (91 percent in rural and 93 percent in urban areas) (see Figure G10). The national trend of PAB is

shown in Figure G11. It shows a slow but gradual increase with some minor fluctuations in PAB since 1999. PAB against tetanus increased by 10 percentage points - from 83 percent in 1999 to 93 percent in 2011. A further change from the CES 2011 to 2013 showed a 2 percent decrease in PAB (from 93 percent to 91 percent).

Among the rural divisions, PAB against tetanus was found to be the highest (93 percent) in Rajshahi and the lowest (83 percent) in Barisal. Ninety two percent of the children were protected at birth against tetanus in Khulna and Rangpur which was being followed by Dhaka and Chittagong (91 percent each) and Sylhet (89 percent). (see Figure G12).

In contrast, the proportion of the children protected at birth against tetanus was found to be the highest (99 percent) in DNCC and ComCC and the lowest (80 percent) in SCC. Ninety six percent of the children were protected at birth in NCC, RCC and Ran CC, which was being followed by CCC (95 percent), DSCC (93 percent) and BCC and KCC (90 percent) (see Figure G13).

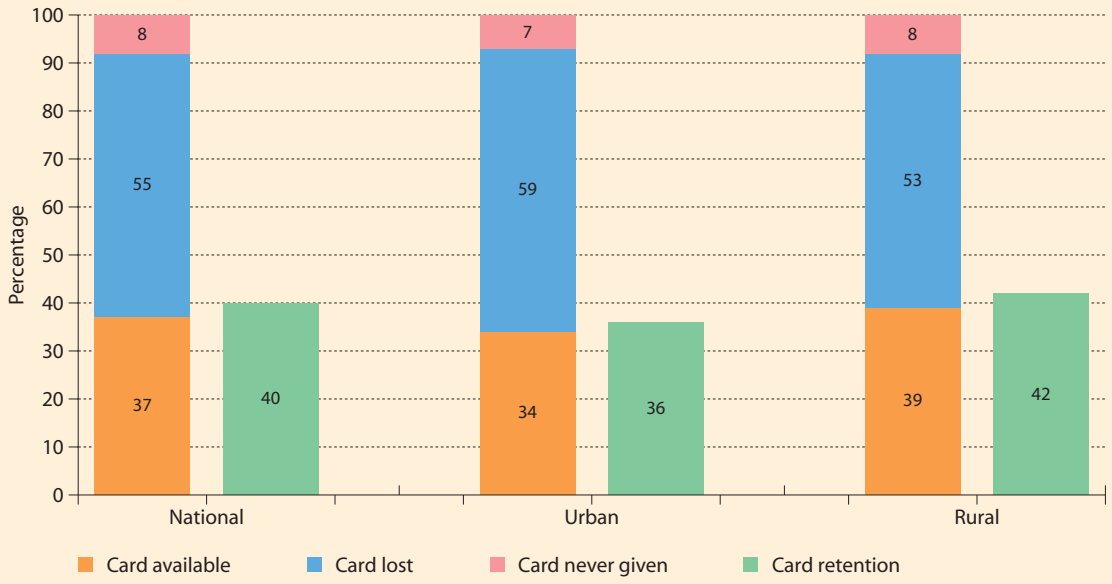
3.12 TT2 Coverage and PAB Status

TT2 coverage and PAB status are mostly related to each other. Figures from G14 to G16 show the TT2 coverage and PAB status by age. Figure G14 shows that across the country, 91 percent of the newborn babies were protected at birth against 90 percent protected by TT2 coverage. Analysis by age reveals that, differences between PAB and TT2 coverage were more at the age of 30 and above. Seventy six percent of the newborn babies whose mothers' age were 40 and/or above were protected at birth against tetanus with 94 percent coverage of TT2 dose. However, the difference was found to be smaller among the lower age groups. (See Figure G14).

A similar trend was observed in both the coverage rate and PAB status between the rural and the urban areas. A gradual trend of decrease in the PAB status against the coverage rate of TT2 dose with the higher age groups was observed in both the rural and the urban areas (see Figure G15 and G16).

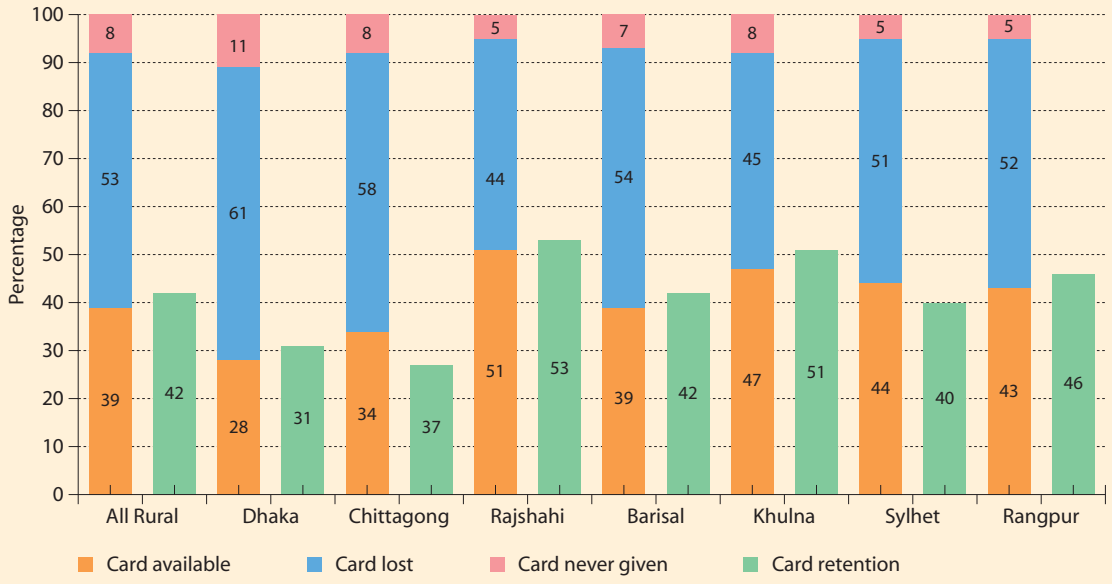
It is important to mention here that, the coverage rate of TT2 dose and PAB status is not related in all the cases. For example, a mother can give birth after 4 years of receiving TT2 dose. She can receive the 3rd dose of TT during her pregnancy period. Then the newborn is protected in relation to TT3 dose, but not in relation to TT2 dose because TT2 protects one woman only for a three year period. In contrast, she may not have received any TT dose during her pregnancy period. In that case, as per the EPI recommended TT vaccination schedule, her TT2 dose is valid, but, in relation to TT2 the child is not protected at birth.

Figure G1. TT Vaccination Card Status among Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2013



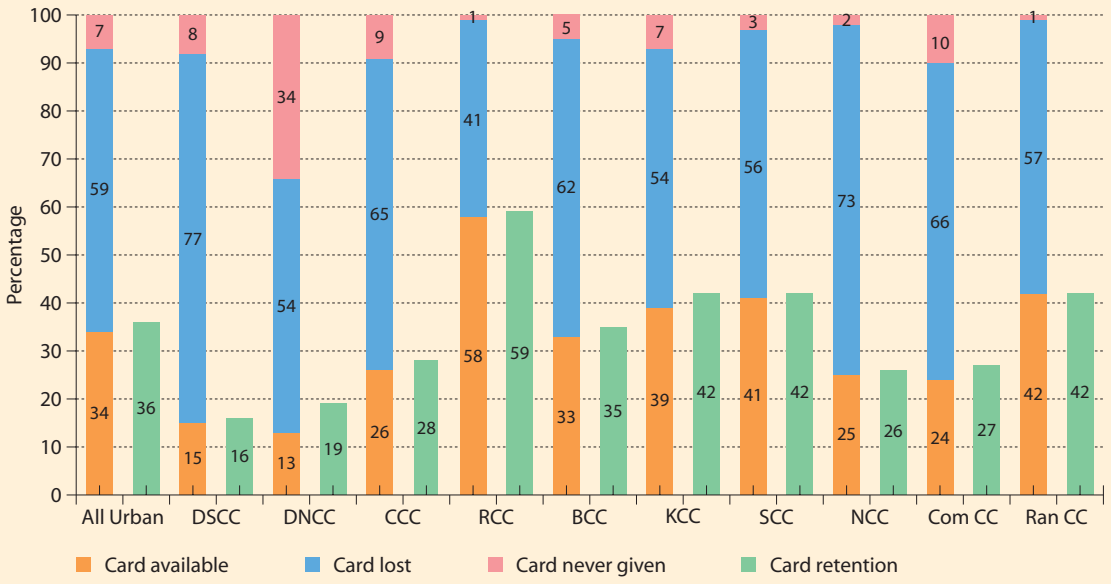
Source : CES 2013

Figure G2. TT Vaccination Card Status among Mothers of 0-11 Months Old Children in Rural Areas by Division in 2013



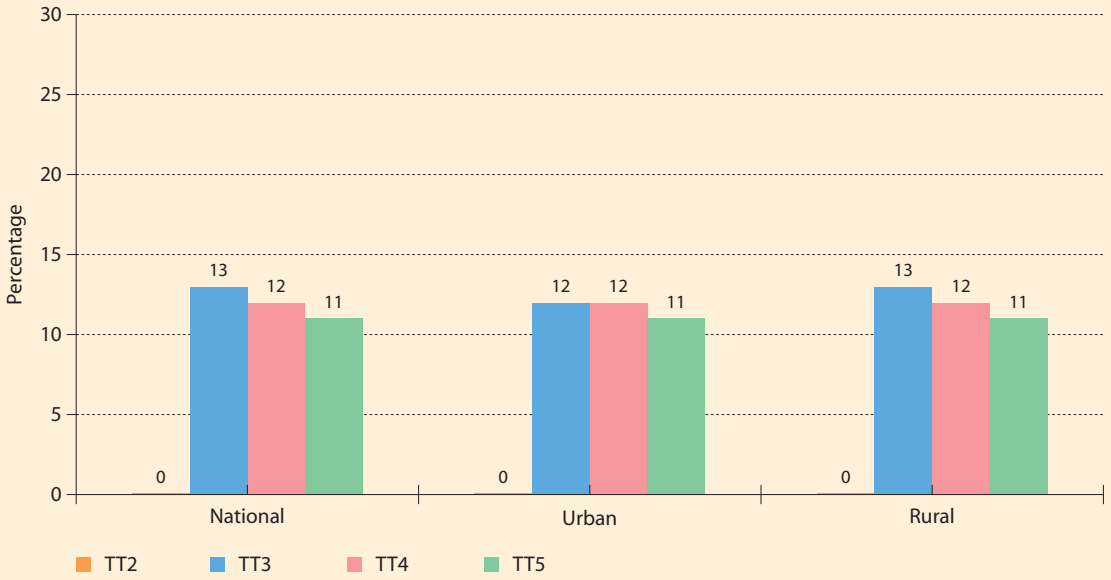
Source : CES 2013

Figure G3. TT Vaccination Card Status among Mothers of 0-11 Months Old Children in Urban Areas by City Corporation/Municipality in 2013



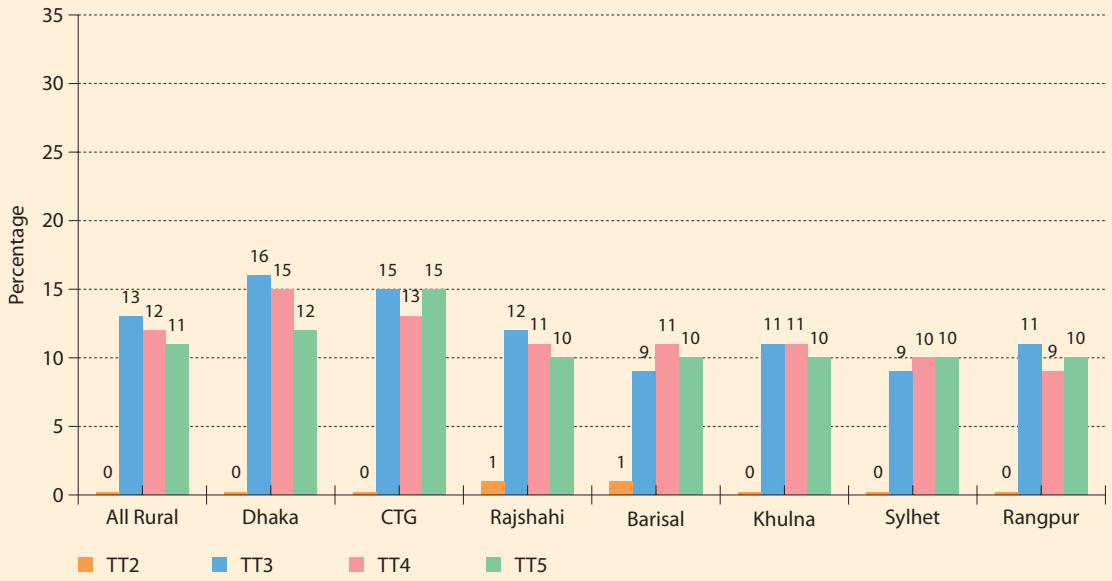
Source : CES 2013

Figure G4. Incidence of Invalid TT Doses among Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2013 (Card + History)



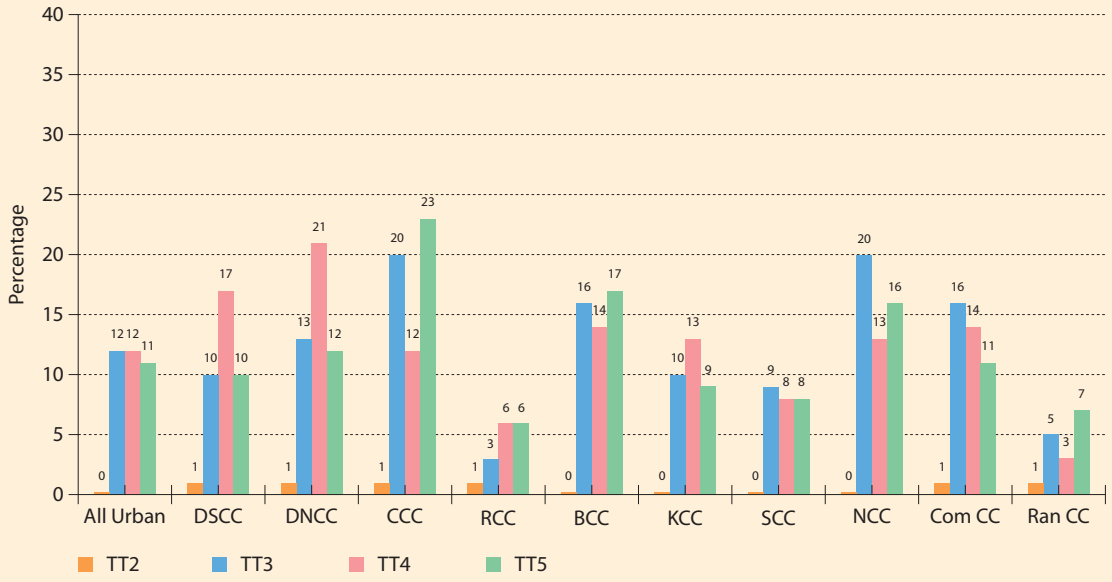
Source : CES 2013

Figure G5. Incidence of Invalid TT Doses among Mothers of 0-11 Months Old Children in Rural Areas by Division in 2013 (Card + History)



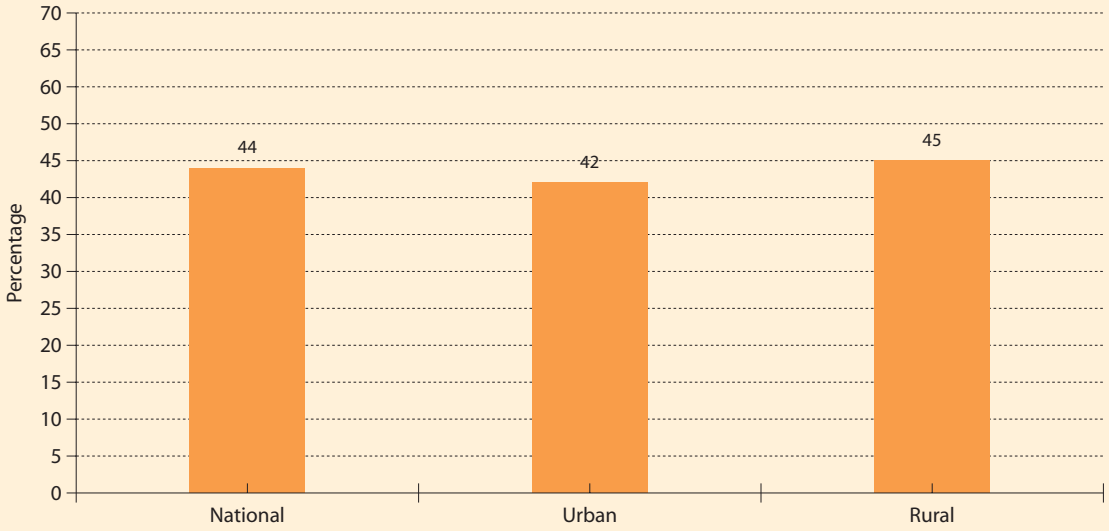
Source : CES 2013

Figure G6. Incidence of Invalid TT Doses among Mothers of 0-11 Months Old Children in Urban Areas by City Corporation/Municipality in 2013 (Card+History)



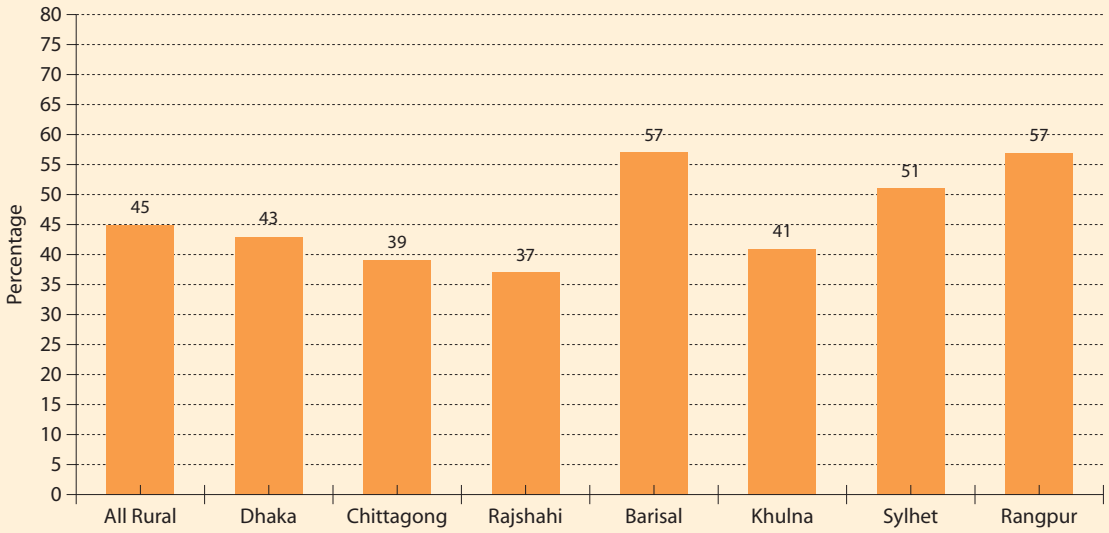
Source : CES 2013

Figure G7. Percentage of Mothers of 0-11 Months Old Children Screened for TT Status during Child's Vaccination by National, Rural and Urban Areas in 2013



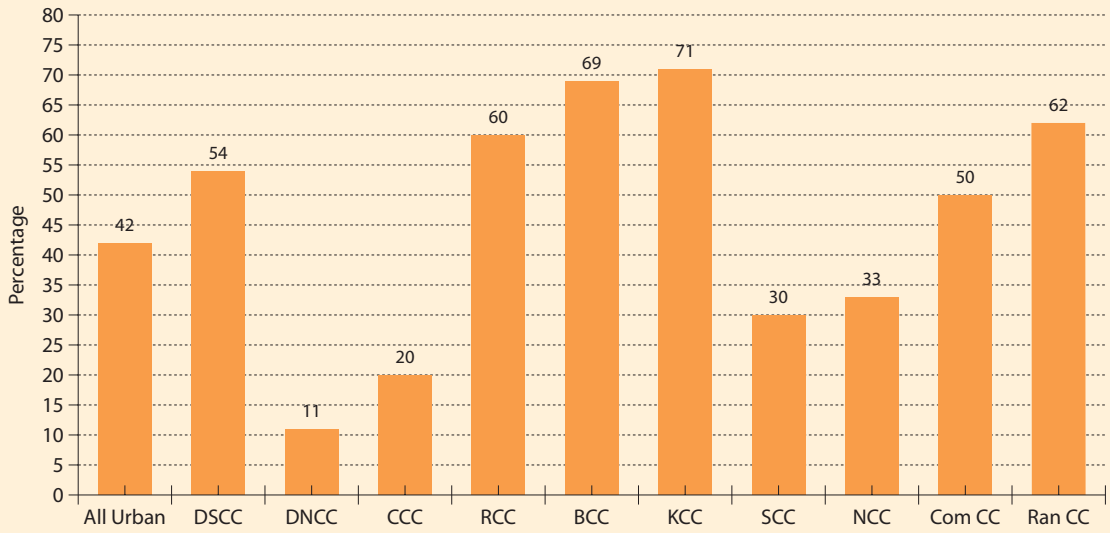
Source : CES 2013

Figure G8. Percentage of Mothers of 0-11 Months Old Children Screened for TT Status during Child's Vaccination in Rural Areas by Division in 2013



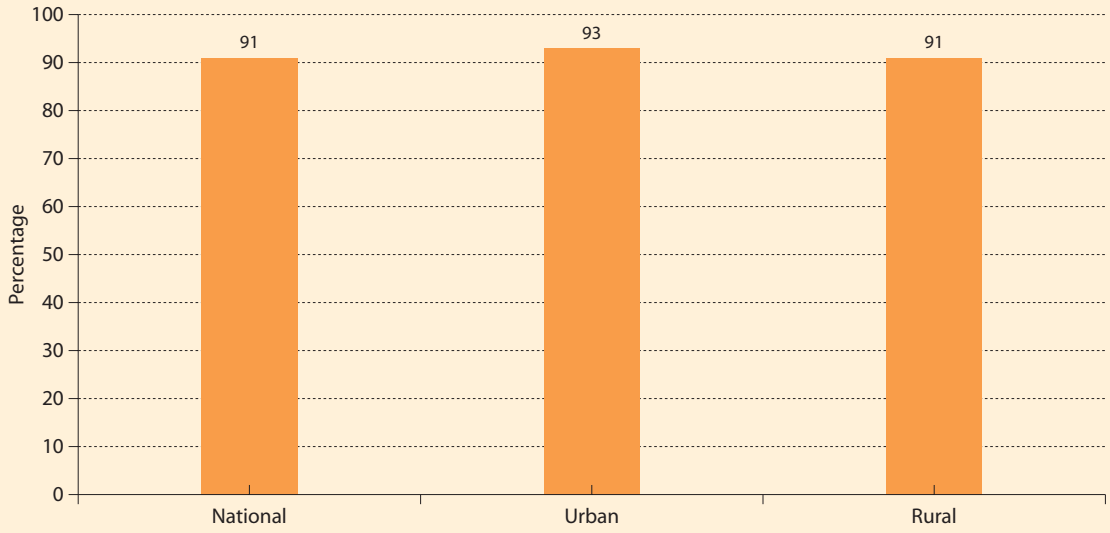
Source : CES 2013

Figure G9. Percentage of Mothers of 0-11 Months Old Children Screened for TT Status during Child's Vaccination in Urban Areas by City Corporation/Municipality in 2013



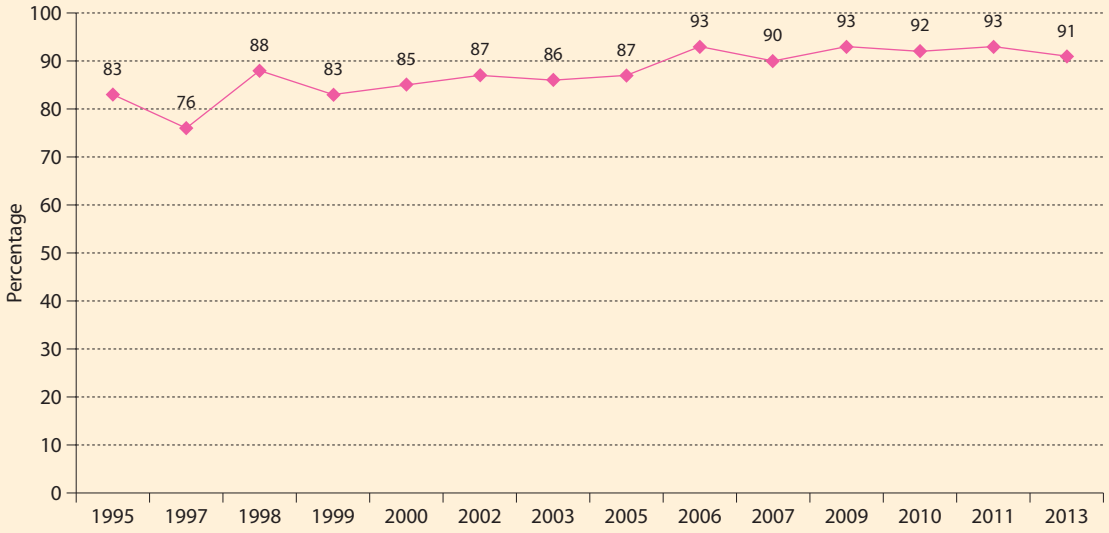
Source : CES 2013

Figure G10. Percentage of Newborns Protected at Birth (PAB) against Tetanus by National, Rural and Urban Areas in 2013



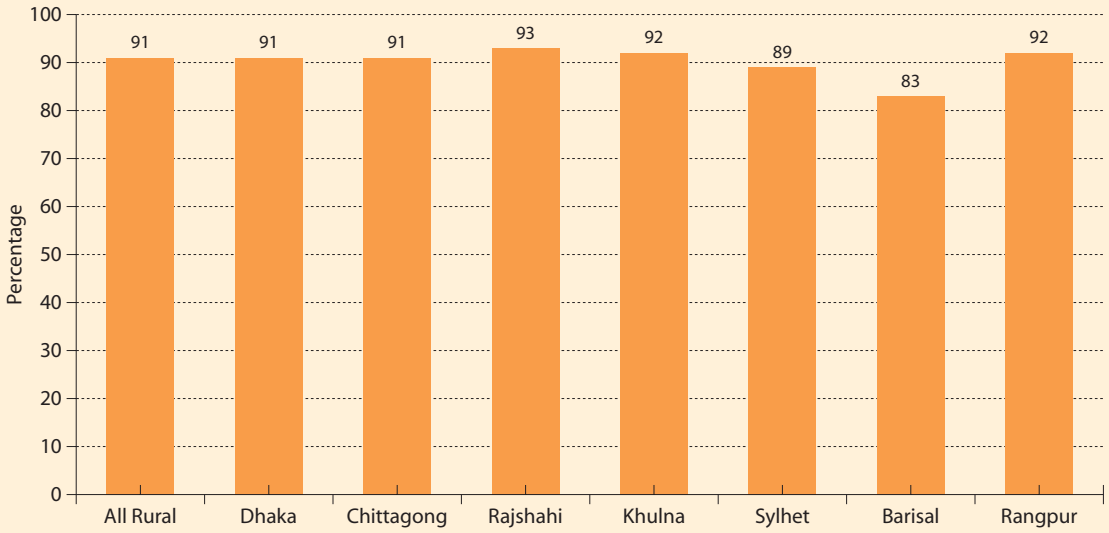
Source : CES 2013

Figure G11. Percentage of Newborns Protected at Birth against Tetanus at National Level from 1995 to 2013



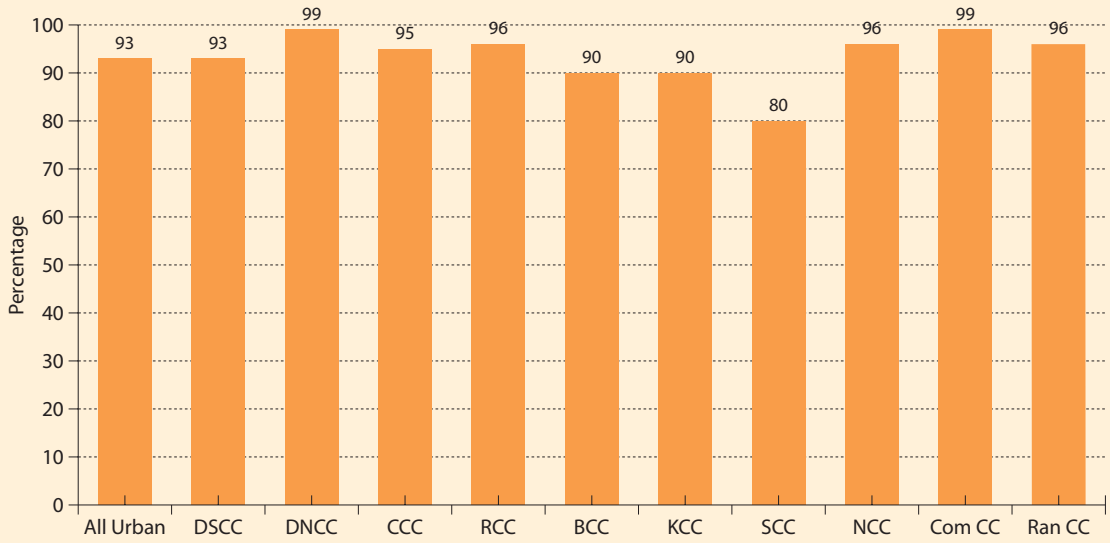
Source : Coverage Evaluation Survey (CESs) for 1995, 1997, 1998, 1999, 2000, 2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure G12. Percentage of Newborns Protected at Birth against Tetanus in Rural Areas by Division in 2013



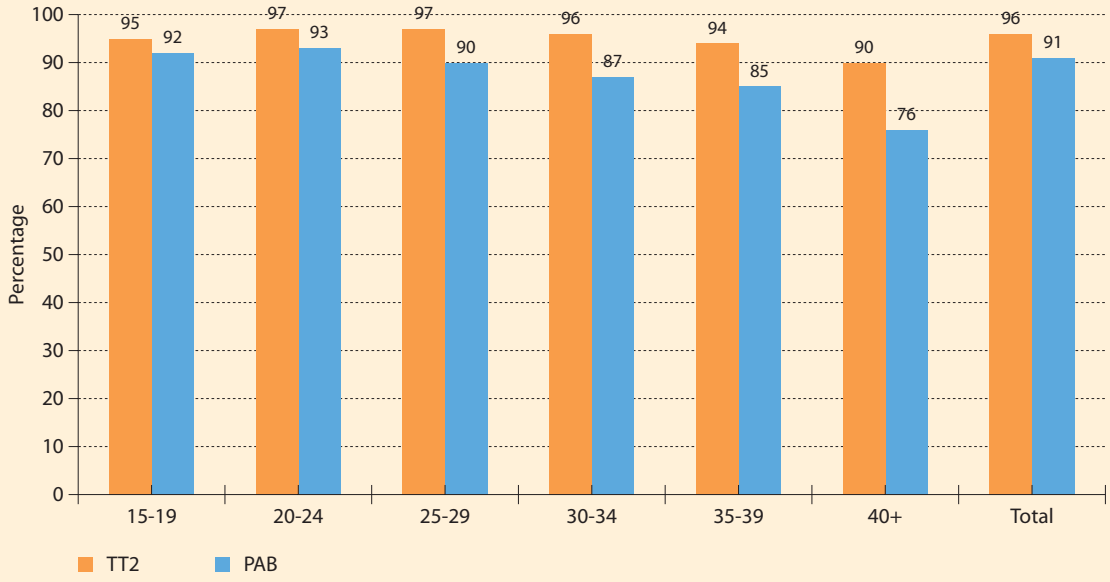
Source : CES 2013

Figure G13. Percentage of Newborns Protected at Birth against Tetanus in Urban Areas by City Corporation/Municipality in 2013



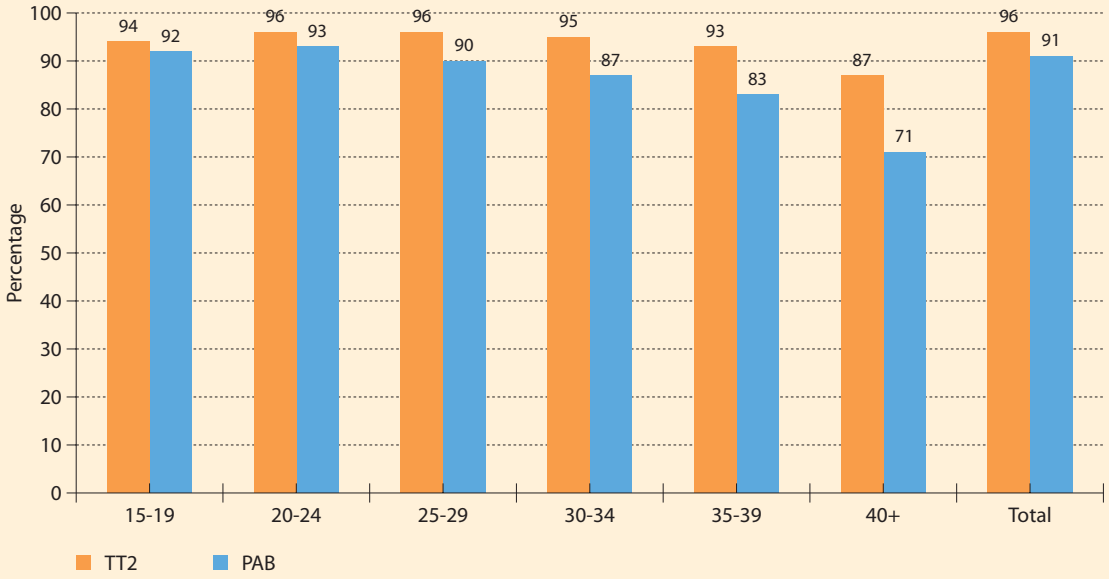
Source : CES 2013

Figure G14. Nationally Percentage of Mother Received TT2 and Percentage of New Born Protected at Birth by Age Group of Mother in 2013



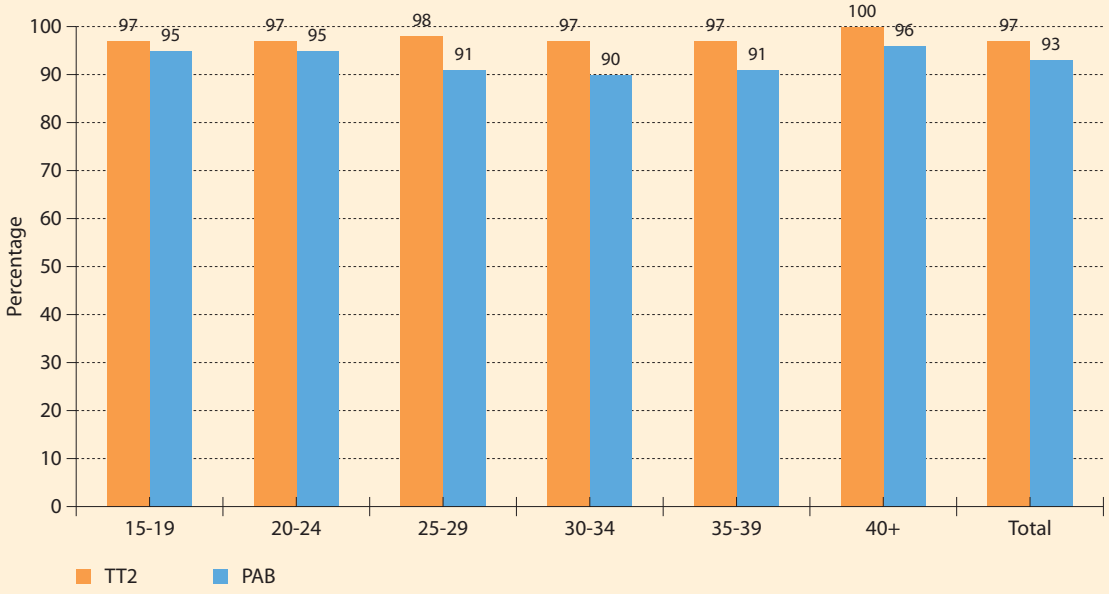
Source : CES 2013

Figure G15. Percentage of Mother Received TT2 and Percentage of New Born Protected at Birth by Age Group of Mother in Rural Areas in 2013



Source : CES 2013

Figure G16. Percentage of Mother Received TT2 and Percentage of New Born Protected at Birth by Age Group of Mother in Urban Areas in 2013



Source : CES 2013

3.13 Mothers' Knowledge about TT Vaccination

In total a woman requires 5 doses of TT vaccine for gaining lifetime tetanus antibody. EPI CES 2013 made an assessment of the mothers' knowledge about the number of doses required. It was done by asking them the question as to how many doses of TT vaccine a woman should receive to get full protection against tetanus for her reproductive life. More than half (64 percent) of the mothers mentioned about 5 doses of TT Vaccine. However, analysis shows a 6 percent difference between the mothers' living in urban areas and those belonging to rural areas. Sixty nine percent of them from urban areas mentioned about 5 doses against 63 percent of rural mothers (see Figure H1).

In rural areas by division, 74 percent of mothers in Rajshahi, 68 percent in Rangpur, 63 percent in Dhaka, 62 percent in Khulna, 60 percent in Chittagong, 59 percent in Sylhet and 49 percent in Barisal division reported about 5 doses of TT vaccine for gaining lifetime tetanus antibody (see Figure H2).

Among the city corporations, the percentage of mothers having correct knowledge about the number of TT doses was found to be the highest in RanCC (82 percent) and lowest in KCC (53 percent). The percentages were 79 percent in RCC, 78 percent in SCC, 76 percent in DNCC, 68 percent in BCC, 65 percent in ComCC, 63 percent in DSCC, 61 percent in NCC and 58 percent in CCC (see Figure H3).

Overall, 29 percent of the mothers across the country reported that they were unaware of the number of TT doses. In an analysis of area type it was found that, compared to those residing in urban area mothers in rural areas were found to be less aware of it (29 percent in rural areas and 25 percent in urban areas). Proper knowledge about the number of doses is important for both; the proper use of TT vaccine as well as for the PAB of the newborn baby. To increase the knowledge of mothers, more Behavioral Change Communication activities such as courtyard meeting, interpersonal communication, and counseling in the EPI session needs to be ensured.

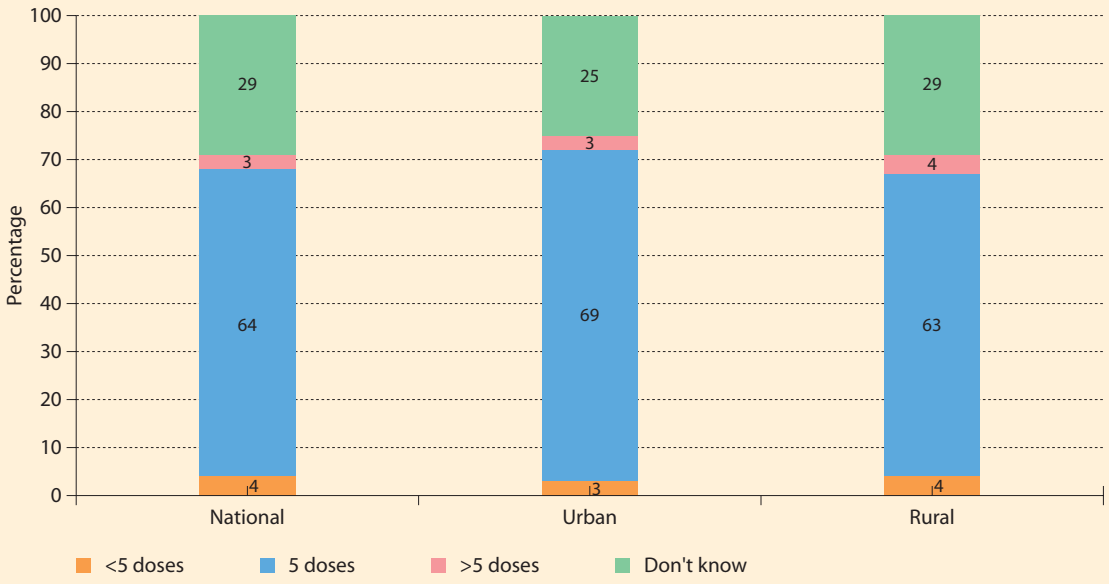
3.14 Sources of TT Vaccination

Sources of TT1 vaccination were investigated in EPI CES 2013. Throughout the country, an overwhelming majority (95 percent) of the mothers reported about the government outreach centers while 3 percent of them referred to the government hospitals (see Figure I1). A small percentage of respondents (1 percent) reported about NGOs while none of them have mentioned about private health facilities. However, sources varied a little by type of areas. Ninety seven percent of the mothers in rural areas received TT1 from government sources as against 88 percent in urban areas. Five percent of the mothers in total reported about NGOs and private sources in urban areas. However, no mothers in rural areas reported about NGOs and private clinic/hospitals (see Figure I1).

Similar to the national findings, at or above 95 percent of the mothers received TT1 vaccine from the government outreach centers in the rural areas of all divisions. The utilization rate of government outreach centers was 96 percent in Barisal. Rural areas of Rangpur division had the highest utilization rate of government outreach centers (99 percent). The percentage of women received TT1 vaccine from NGO sources was found to be almost nil in every division except for Khulna (see Figure I2).

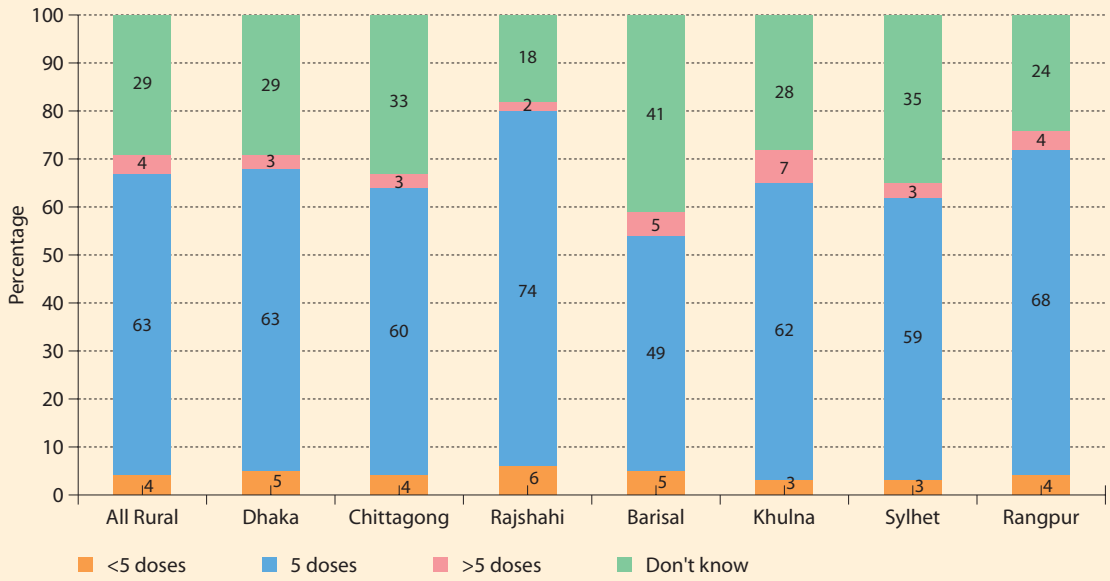
Among the city corporations, the government outreach centers were used entirely in RCC. These outreach centers were used by 99 percent of the mothers in Com CC, 98 percent in CCC and by 98 percent of the mothers in RanCC and SCC. On the contrary, the government hospitals/clinics were mostly utilized in BCC (28 percent) and there was no utilization of government hospitals/clinics in RCC and RanCC. Furthermore, delivery of vaccination services by NGOs was most prevalent in KCC (26 percent) and there was no utilization of NGO services in ComCC and RCC (see Figure I3).

Figure H1. Number of TT Doses Required During Reproductive Period for Protection against Tetanus as Reported by Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2013



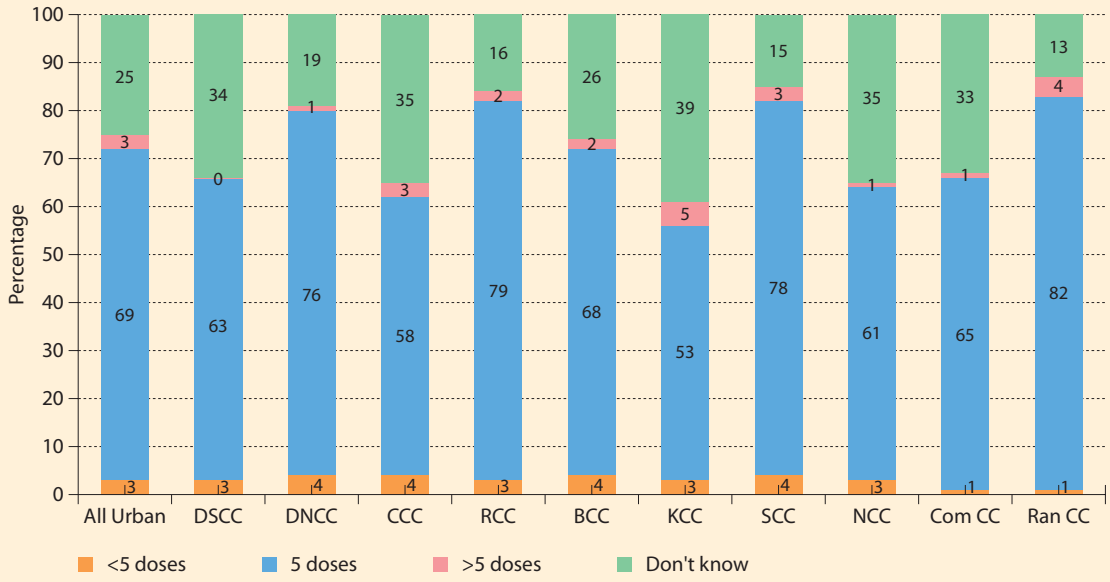
Source : CES 2013

Figure H2. Number of TT Doses Required During Reproductive Period for Protection against Tetanus as Reported by Mothers of 0-11 Months Old Children in Rural Areas by Division in 2013



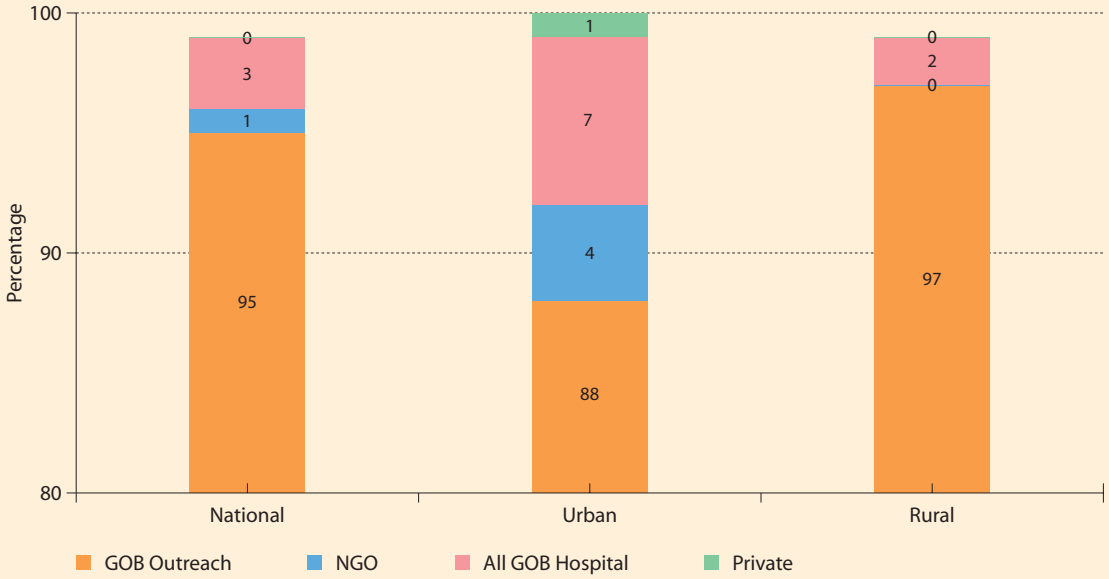
Source : CES 2013

Figure H3. Number of TT Doses Required During Reproductive Period for Protection against Tetanus as Reported by Mothers of 0-11 Months OldChildren by City Corporation in 2013



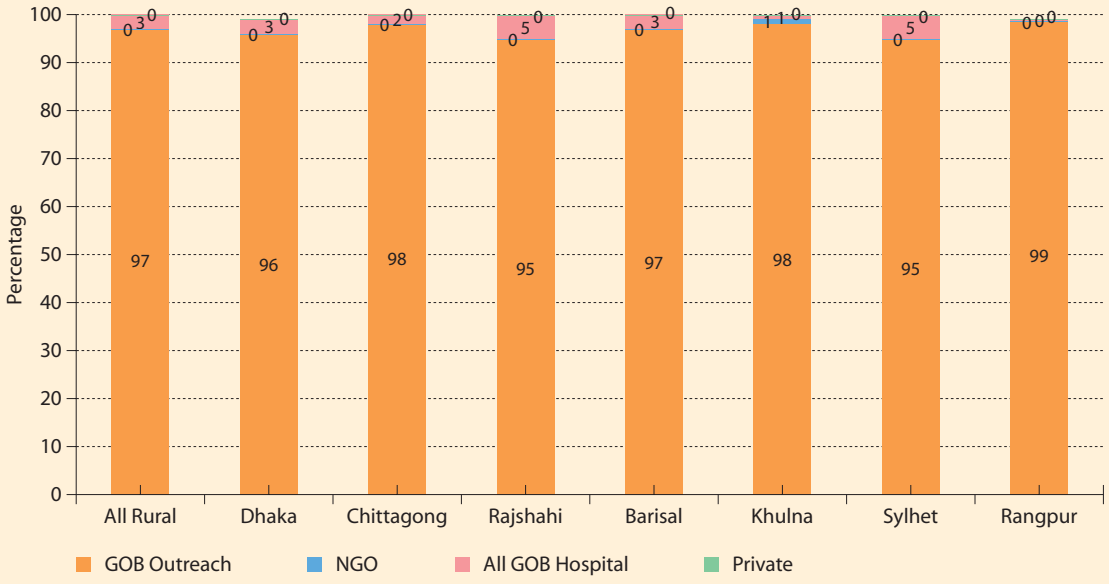
Source : CES 2013

Figure I1. Sources of TT1 Vaccination among Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2013



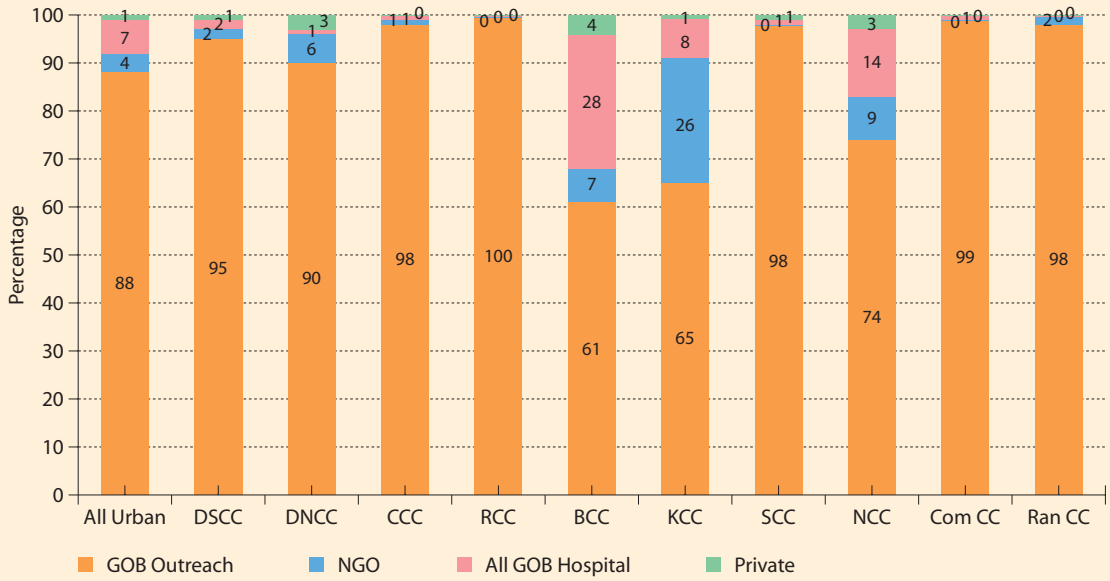
Source : CES 2013

Figure I2. Sources of TT1 Vaccination among Mothers of 0-11 Months Old Children in Rural Areas by Division in 2013



Source : CES 2013

Figure I3. Sources of TT1 Vaccination among Mothers of 0-11 Months Old Children in Urban Areas by City Corporation/Municipality in 2013



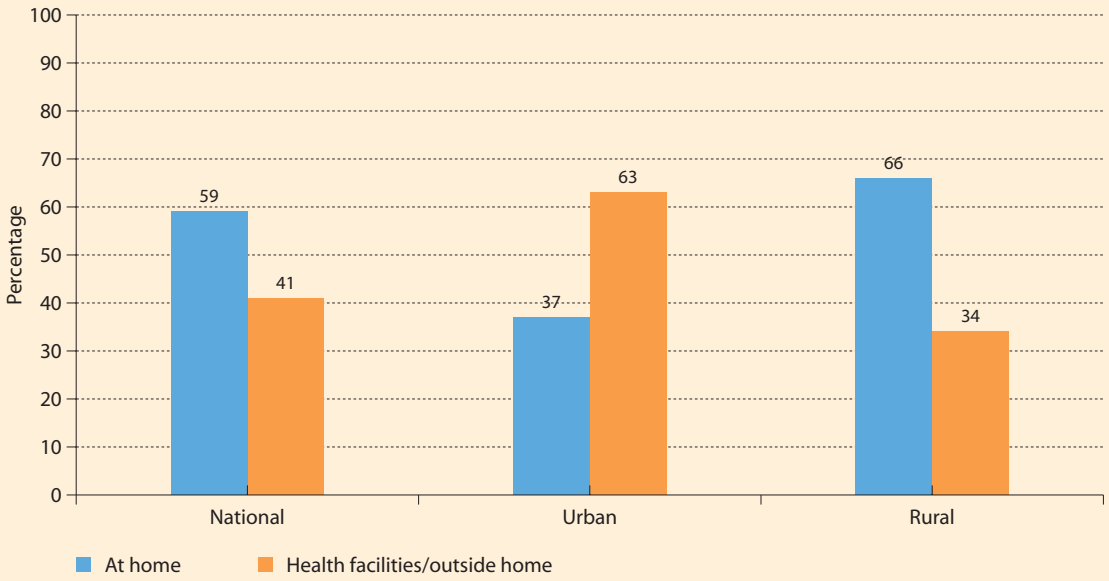
Source : CES 2013

3.15 Place of Delivery

In CES 2013, women who gave birth to a child in the preceding year (2012) were asked about the delivery place of their last born child. Figure I4 on the percent distribution of place of birth of the last born child by areas reveals that nationally 59 percent of the children were born at home against 41 percent were born at health facilities or outside of home. The urban-rural variation in delivery place of the last born child was found to exist, where in urban areas more than half of the children were born at the health complex or outside of home (63 percent), the opposite can be seen in rural areas where the majority of the children were found to have born at home (66 percent).

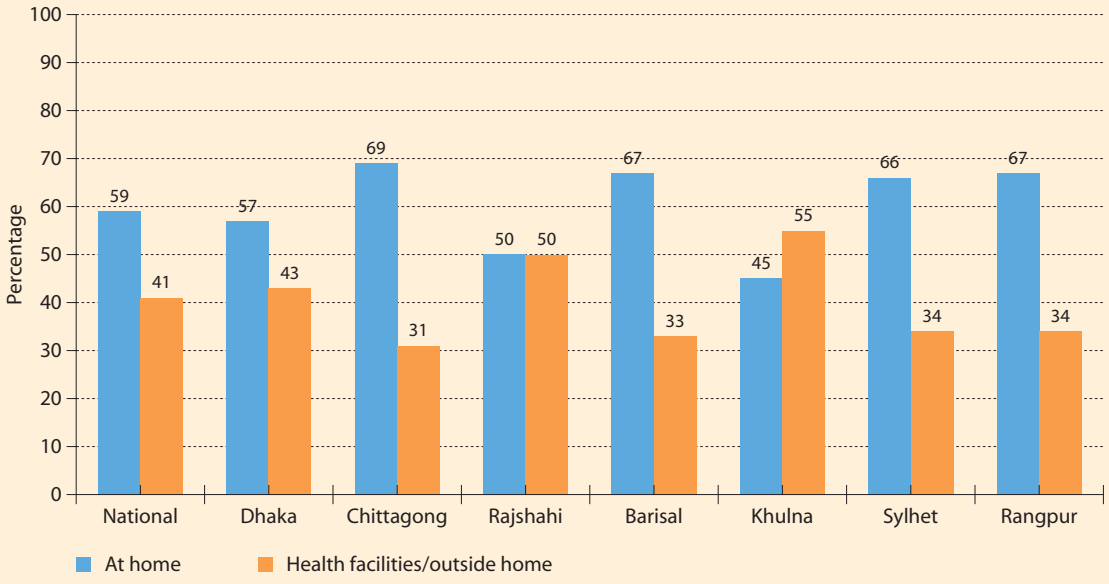
Figure I5 shows that percent of children born in the health complex or outside of home were the highest in Khulna (55 percent) and the lowest in Chittagong (31 percent). In the other divisions, the percentages of children born in health complex or outside of home were: Rajshahi (50 percent), Dhaka (43 percent), Sylhet (34 percent), Rangpur (34 percent) and Barisal (33 percent).

Figure I4. Place of birth of the last born child by areas in CES 2013 (%)



Source : CES 2013

Figure I5. Place of birth of the last born child by division in CES 2013 (%)



Source : CES 2013

Chapter 4

TETANUS TOXOID VACCINATION COVERAGE SURVEY AMONG THE WOMEN AGED BETWEEN 18-49 YEARS

As part of reaching Maternal and Neonatal Tetanus (MNT) elimination target, EPI-Bangladesh takes steps to immunize the women of childbearing age with TT vaccine before reaching the age of 18. By maintaining the exact EPI recommended TT vaccination schedule, two years and seven months is required to complete all the 5 doses of TT vaccine. In that case, if a woman starts it at the age of 15 and maintains the exact interval, she would be able to complete all the required doses before the age of her marriage and she would be protected against tetanus for her whole reproductive life. In EPI program, irrespective of marital and pregnancy status, TT vaccines are being provided to all women aged between 15-49 years. CES is undertaken to estimate the number of women aged between 18-49 years who have completed 5 doses of TT. This chapter provides an analysis of the 18-49 years women to see coverage of 5 doses of TT along with checking the sources of TT vaccination, program quality, reasons for not receiving TT vaccine and card retention rate.

Objectives of the TT Vaccination Coverage of the Women Aged between 18-49 Years

Tetanus toxoid (TT) survey was undertaken to attain the following objectives:

- TT vaccination coverage among women aged between 18-49 years
- Rates of TT card retention among these women
- Sources of TT vaccination for these women
- Reasons for not having TT by these women

4.1 Selection of Samples

Similar to Child and TT survey, samples of TT5 survey were selected from the same clusters assigned to the child at the age of 12-23 months which followed the WHO 30 clusters sampling technique. At first, women who were 18-49 years old and belonged to the childbearing age (CBA) were searched at every household for making a list. Secondly, a sampling frame with all the eligible women was made. Finally, seven women were selected randomly to examine their TT vaccination status through a pre-designed structured questionnaire.

Similar to Child and TT survey, samples of TT5 survey were selected from the same clusters assigned for the Child (12-23 months) Survey which had followed the WHO 30 clusters sampling technique. At first, women who were 18-49 years old and belonged to the childbearing age (CBA) were searched at every household for making a list. Secondly, a sampling frame with all the eligible women was prepared. Finally, seven women were randomly selected to examine their TT vaccination status through a pre-designed structured questionnaire.

4.2 Levels of TT Vaccination Coverage

Two types of TT vaccination coverage, crude and valid, among the women with childbearing age (18-49 years) were assessed in CES 2013. Crude coverage is defined as the act of administering TT vaccines without following EPI-recommended vaccination schedule. Figure

J1indicates that 50 percent of the women had received all the 5 doses of TT vaccines across the country with a slight variation in the coverage among the women residing in rural and urban areas (50 percent in rural and 51 percent in urban areas).

Regarding the subsequent doses, a gradual decreasing trend in the coverage was observed in the findings. Among the surveyed women, 92 percent of the women received TT1 followed by TT2 (89 percent), TT3 (80 percent), and TT4 (65 percent). A similar declining trend was observed both in rural and urban areas. Crude TT1 vaccination coverage was found to be equal in both urban and rural areas of Bangladesh (92 percent) (see Figure J1). Besides that, TT2 coverage rate was 89 percent, TT3 80 percent, and TT4 65 percent in rural areas against the coverage rate of 89 percent for TT2, 80 percent for TT3, and 66 percent for TT4 in urban areas (see Figure J1)

Figure J2 illustrates the valid TT vaccination coverage. It indicates that about one-third (32 percent) of the total surveyed women received 5 doses of TT vaccine across the country - 32 percent in rural and 33 percent in urban areas. The valid coverage of TT2 was 89 percent nationally and no variation was found in urban and rural areas. A decreasing trend in the coverage of TT3 and TT4 was observed irrespective of the areas. In such case, as a whole, 74 percent of the surveyed women received TT3 and more than half of them (52 percent) received TT4.

The findings above show that, compared to the urban areas, vaccination status against tetanus was slightly lower in rural areas. EPI program should increase IEC activities through field workers to create awareness on the importance of early completion of 5 doses of TT vaccine.

4.3 TT Vaccination Coverage by Rural Division

Crude TT Vaccination Coverage

Figure J3 illustrates crude vaccination coverage in rural areas by division. Across the divisions, 50 percent of the women received 5 doses of TT vaccine. In such case, Rajshahi division had the highest (95 percent) crude TT1 vaccination coverage and Barisal had the lowest crude coverage (88 percent). It was found to be 94 percent in Khulna, 93 percent in Rangpur, 92 percent in Chittagong, 90 percent in Dhaka and 89 percent in Sylhet division.

Likewise, the highest TT2 coverage was observed in Rajshahi (92 percent) which was being followed by Khulna (91 percent), Chittagong (89 percent), Rangpur (89 percent), Dhaka (88 percent), Sylhet (86 percent) and Barisal (85 percent).

As it was expected, TT3 coverage was lower compared to that in TT2 in all divisions, the highest TT3 coverage rate was in Rajshahi division (83 percent) and the lowest was in Rangpur division (76 percent). The coverage rates in other divisions were: 82 percent in Chittagong, 81 percent in Khulna, 79 percent in Dhaka and 78 percent in Sylhet and Barisal divisions.

TT4 coverage was found to be the highest in Chittagong (69 percent) and the lowest in Rangpur (59 percent). Rural areas of Rajshahi division had 68 percent of TT4 coverage which was being followed by Sylhet (65 percent), Khulna (65 percent), Dhaka (64 percent) and Barisal (63 percent).

TT5 vaccination coverage was the highest in Chittagong (57 percent) and the lowest in Rangpur (42 percent). TT5 coverage rates were 53 percent in Sylhet, 51 percent in Rajshahi, 50 percent in Khulna and 49 percent in Barisal and Dhaka (see Figure J3).

Valid TT Vaccination Coverage

Valid vaccination coverage in terms of TT vaccination is defined as the coverage of vaccination after following the EPI-recommended TT vaccination schedule. Findings of valid coverage in rural areas by divisions are presented in Figure J4. It shows that TT1 vaccination coverage was at and over 90 percent in all the divisions except in Barisal (88 percent) and Sylhet (89 percent).

The lowest TT1 coverage rate was revealed in the rural areas of Barisal division (88 percent). It should be mentioned here that, TT1 dose indicates the entry of a woman in TT vaccination service but it doesn't give complete protection against tetanus.

Likewise, TT2 coverage was 92 percent in Rajshahi, 91 percent in Khulna, 89 percent in Chittagong, 88 percent in Rangpur and Dhaka, 86 percent in Sylhet and 85 percent in Barisal.

TT3 is administered at least 6 months after administering TT2. More than three-quarter of the women (78 percent) received TT3 vaccine in Rajshahi division followed by Chittagong (77 percent), Khulna (75 percent), Dhaka (73 percent), Sylhet (72 percent), Rangpur (71 percent) and Barisal (69 percent).

The final goal of TT vaccination is to ensure the desired immune status of the recipients against tetanus for their whole reproductive life by giving them 5 doses of TT vaccines. Hence, the valid TT5 coverage indicates that a woman achieved immunity against tetanus for her entire reproductive life. Figure J4 shows that, compared to those residing in other divisions, higher percentage of women in Sylhet division (36 percent) received all the five doses of TT vaccine. The lowest TT5 coverage was revealed in Barisal division (25 percent) which was being followed by Dhaka and Khulna (31 percent), Rangpur (32 percent) and Chittagong and Rajshahi division (35 percent), Khulna (31 percent), and Rangpur division (32 percent).

4.4 Levels of the Coverage by the Survey Unit

As a ready reference, rates of the valid TT coverage among the women aged between 18-49 years by the division / City Corporation are given in the Appendix.

4.5 TT Vaccination Coverage by City Corporation

Similar to the assessment of TT vaccination coverage in rural areas by division, CES 2013 analyzed the data by City Corporation with an aim to make an assessment of the coverage of six city corporations separately. The results are presented in Figure J5-J6. Figure J5 shows crude TT vaccination coverage and Figure J6 focuses on valid vaccination coverage.

Crude TT Vaccination Coverage

Figure J5 shows crude TT vaccination coverage of all doses. TT1 dose indicates the entry in TT vaccination service. Ninety seven percent women in RCC and DNCC received TT1 against the lowest 81 percent in Sylhet City Corporation (SCC). However, 96 percent of the women in Ran CC, 94 percent in BCC, 91 percent in Com CC, CCC and DSCC, 90 percent in KCC and NCC had received TT1 vaccine.

As per EPI vaccination schedule, women can receive TT2 at least 28 days after receiving TT1. As it was expected, TT2 coverage was found to be lower than TT1 in most of the city corporations. Among the 10 city corporations, TT2 coverage was seen to be the highest in DNCC (97 percent) and the lowest in Sylhet City Corporation (76 percent).TT2 coverage rate in other city corporations were intermediary which ranged between 95 percent in RCC and 85 percent in NCC.

TT3 coverage rate was found to be the highest in RCC (89 percent) and the lowest in SCC (67 percent). A similar feature was found in TT4 coverage. The TT4 coverage was the highest in RCC (78 percent) and the lowest in SCC (56 percent).

Among the surveyed women, crude TT5 coverage was found to be the highest in RCC (61 percent). The lowest TT5 coverage rate was noticed in Khulna (43 percent). TT5 coverage rates in other city corporations ranged between 44 percent in SCC and 56 percent in Com CC (see Figure J5).

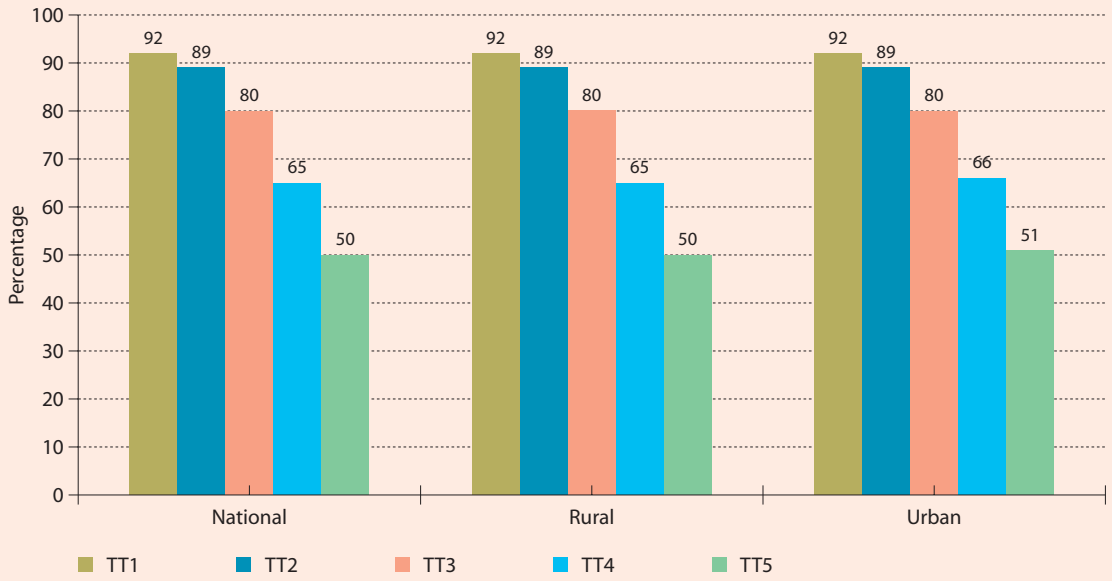
Valid TT Vaccination Coverage

Valid TT vaccination coverage is shown in Figure J6. TT2 coverage was found to be the highest in DNCC and RCC (97 percent) and the lowest in SCC (81 percent). Coverage in other city corporations was intermediary that ranged from 91 percent in CCC and ComCC to 96 percent in RanCC.

As it was expected, compared to TT2, Coverage of TT3, TT4 and TT5 lowered down in all the city corporations. The coverage of TT5 is the ultimate goal of TT vaccination in EPI program. This coverage rate was the highest in RCC (52 percent) and the lowest in KCC (24 percent).

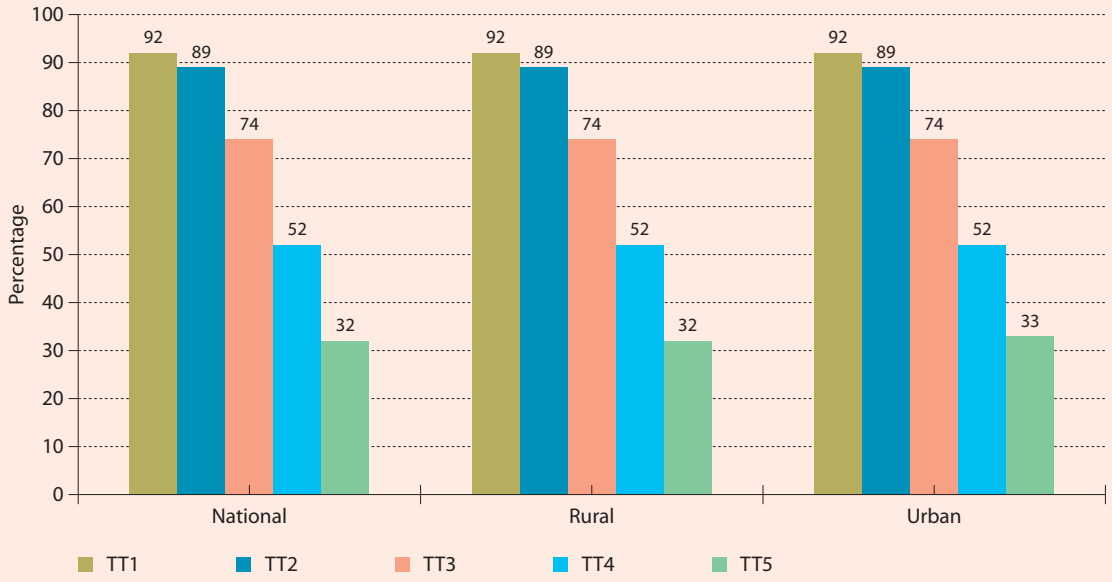
The coverage rates in other city corporations were 36 percent in Ran CC, 34 percent in DNCC, 31 percent in CCC, 30 percent in DSCC and SCC, 29 percent in Com CC, 27 percent in NCC and 26 percent in BCC.

Figure J1. Crude TT Vaccination Coverage among Women Aged 18-49 Years Old by National, Rural and Urban Areas in 2013 (Card + History)



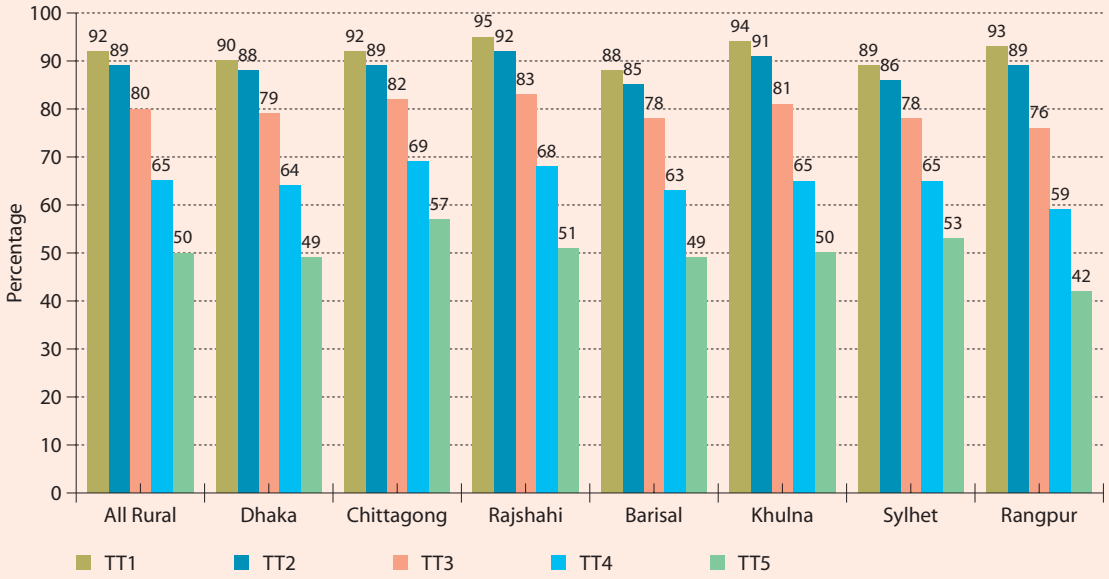
Source : CES 2013

Figure J2. Valid TT Vaccination Coverage among Women Aged 18-49 Years Old by National, Rural and Urban Areas in 2013 (Card + History



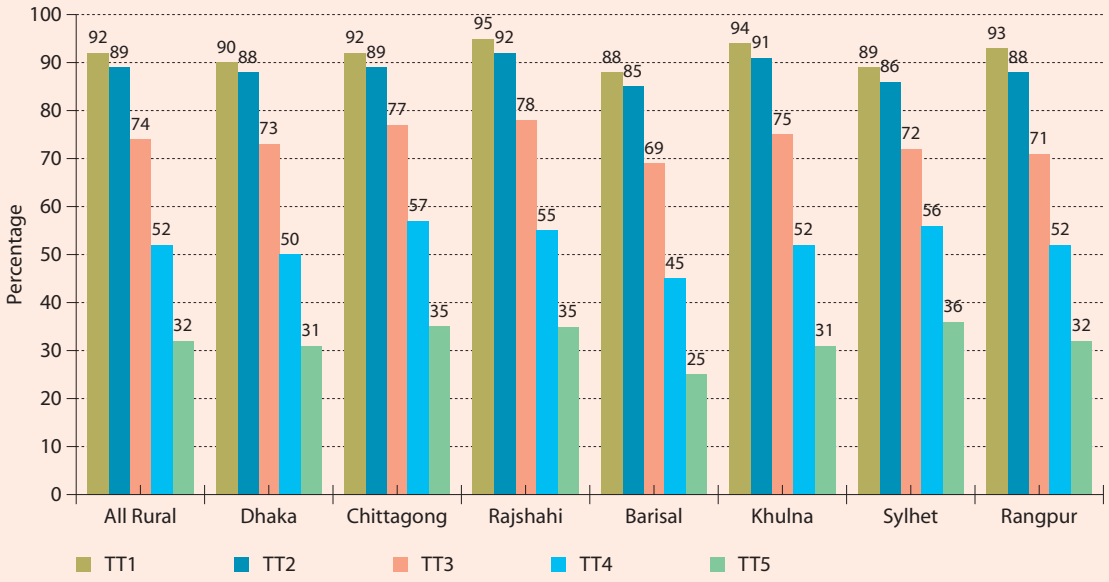
Source : CES 2013

Figure J3. Crude TT Vaccination Coverage among Women Aged 18-49 Years Old in Rural Areas by Division in 2013 (Card + History)



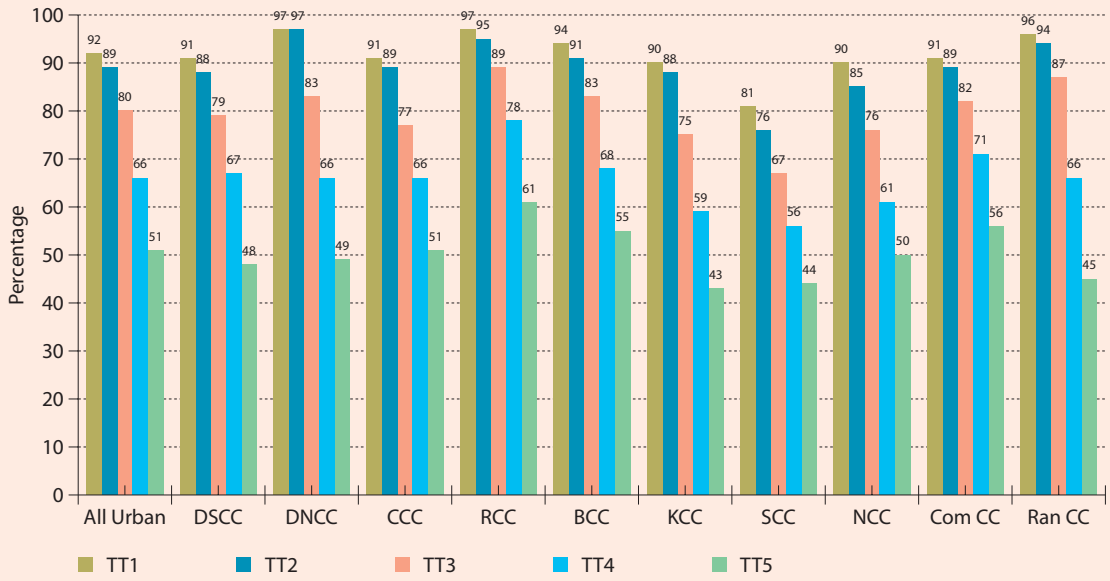
Source : CES 2013

Figure J4. Valid TT Vaccination Coverage among Women Aged 18-49 Years Old in Rural Areas by Division in 2013 (Card + History)



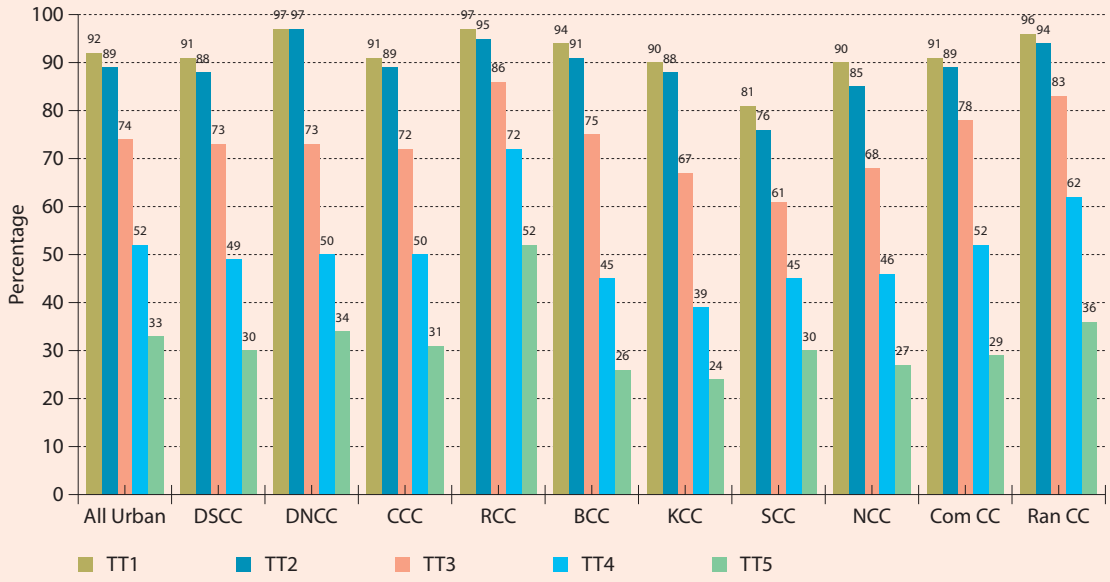
Source : CES 2013

Figure J5. Crude TT Vaccination Coverage among Women Aged 18-49 Years Old in Urban Areas by City Corporation/Municipality in 2013 (Card + History)



Source : CES 2013

Figure J6. Valid TT Vaccination Coverage among Women Aged 18-49 Years Old in Urban Areas by City Corporation/Municipality in 2013 (Card + History)



Source : CES 2013

4.6 Status of retention of TT card by Women

Retention of the TT vaccination card is important for avoiding the act of administering unnecessary doses as well as saving TT vaccines. During the survey, women were asked whether they had vaccination cards. The analysis of the data is shown in Figure K1.

Thirty-two percent of the women reported of having the vaccination card. However, availability of cards in rural areas was higher (34 percent) than urban areas (26 percent). In terms of card retention, nationally the rate stayed at 35 percent with a certain level of variation between urban and rural areas. Rural women (38 percent) were found retaining their vaccination cards, compared to those residing in urban areas (27 percent).

Likewise, in rural areas by division, card retention rate was found to be the highest in Rajshahi division (51 percent) and the lowest in Barisal division (19 percent) (see Figure K2).

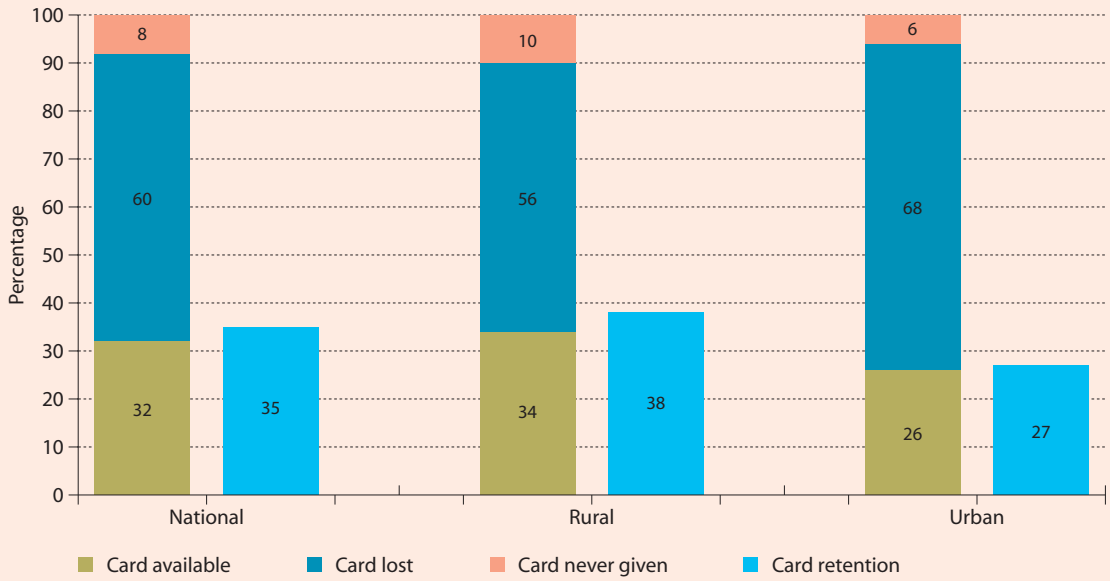
By City Corporation, card retention rate was the highest in RCC (61 percent) and the lowest in DSCC (11 percent) .The second highest card retention rate was found in Ran CC (32 percent) which was being followed by SCC and KCC (25 percent), DNCC (21 percent), NCC and CCC (20 percent), BCC (16 percent) and Com CC (14 percent).

4.7 Incidence of Invalid Doses

As has been mentioned in Chapter 3, TT vaccine should be administered following the exact interval as per the EPI-recommended TT vaccination schedule. If a woman receives any subsequent dose of TT vaccine before the minimum interval period recommended by EPI, the dose of the vaccine would be considered as invalid. An estimate of invalid TT doses was made through the analysis of the gap between the consecutive doses which has been presented in Figure K4. It shows that the incidence was more prevalent in case of TT3 dose. Nineteen percent of the total surveyed women received invalid dose of TT3 across the country. A higher percentage of rural women (20 percent) received invalid TT3 doses than the women residing in urban areas (18 percent). However, across the country, the incidence rates of invalid doses of TT4 and TT5 were 15 percent and 16 percent respectively.

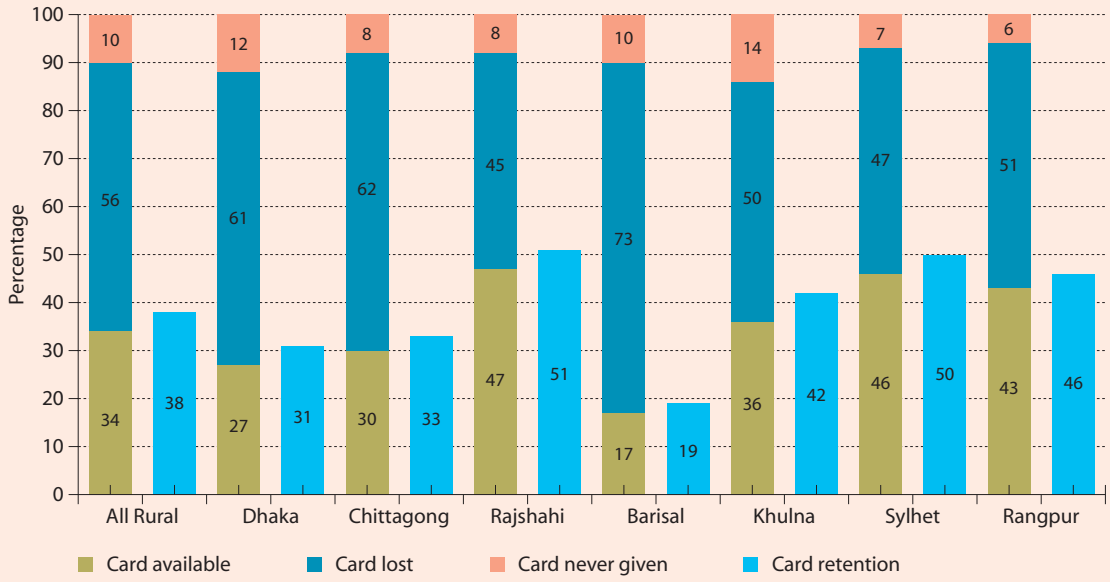
Similar to the national findings, the incidence rate of invalid TT3 was higher than those of TT4 and TT5 in all the divisions. Among the divisions, invalid TT5 dose was the highest in Barisal (28 percent) which was being followed by Chittagong (23 percent), Khulna and Dhaka (15 percent), Sylhet (13 percent), Rajshahi (12 percent) and Rangpur division (7 percent) (see Figure K5). Out of the 10 city corporations the rate of invalid TT3 dose was the highest in BCC (28 percent) and the lowest in RanCC (5 percent) (see Figure K6).

Figure K1. TT Vaccination Card Status among 18-49 Years Women by National, Rural and Urban Areas in 2013



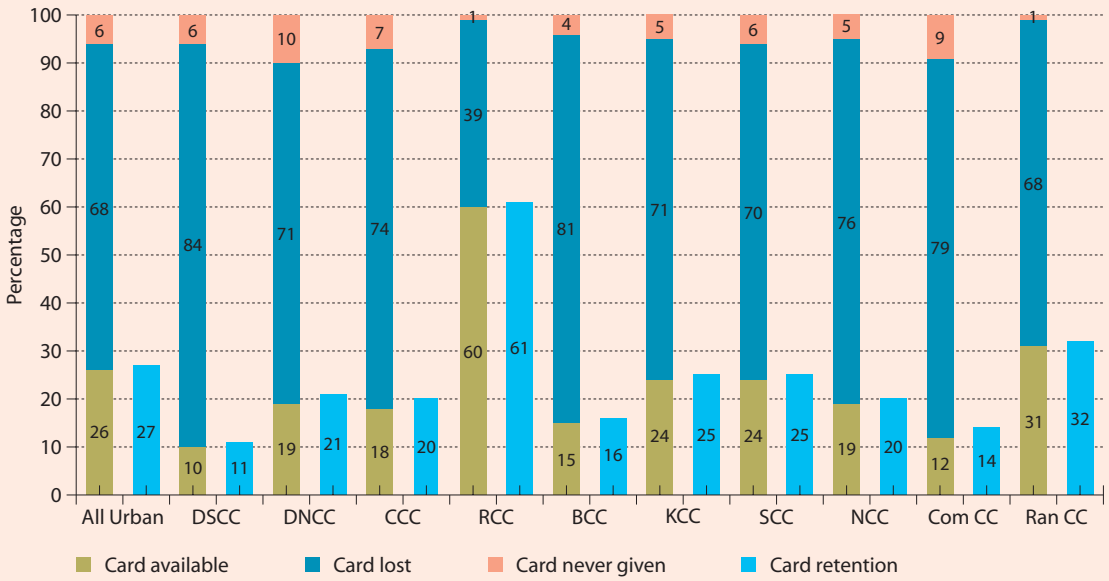
Source : CES 2013

Figure K2. TT Vaccination Card Status among Women Aged 18-49 Years Old by Rural Areas by Division in 2013



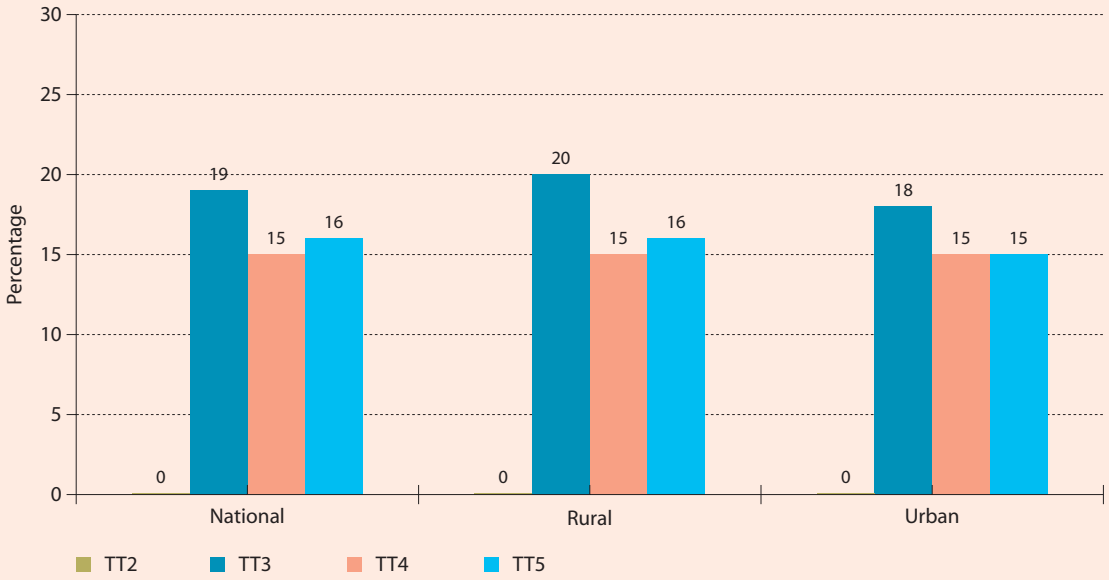
Source : CES 2013

Figure K3. TT Vaccination Card Status among Women Aged 18-49 Years Old by Urban Areas by City Corporation/Municipality in 2013



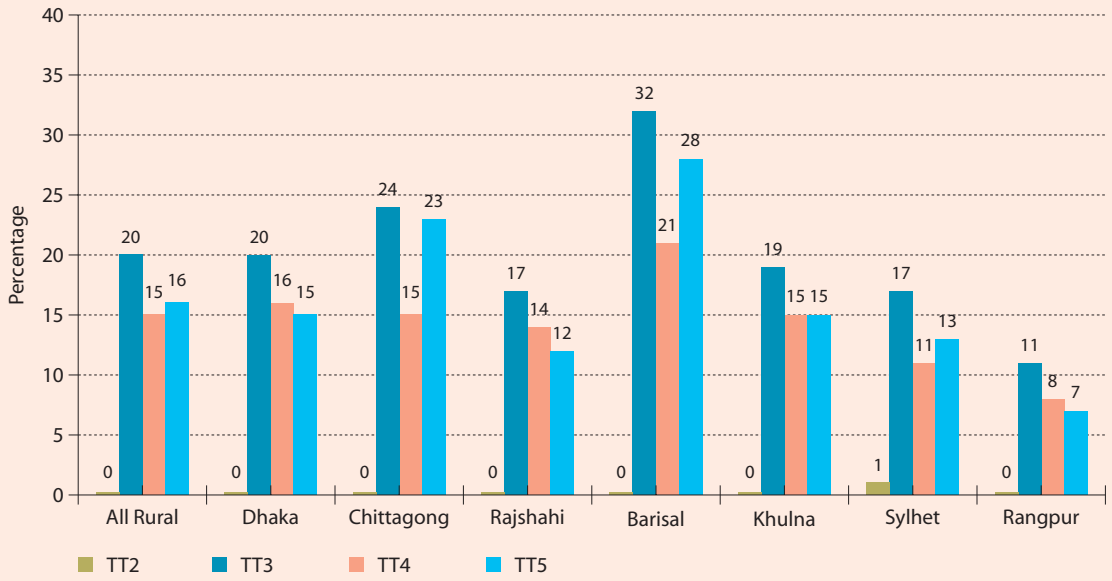
Source : CES 2013

Figure K4. Incidence of Invalid TT Doses among Women Aged 18-49 Years Old by National, Rural and Urban Areas in 2013 (Card + History)



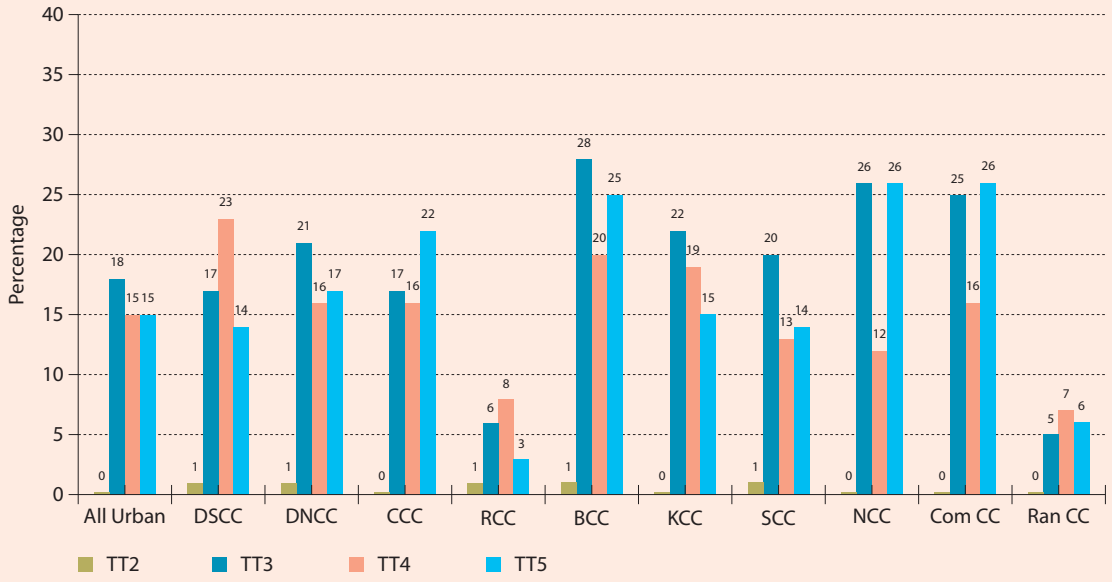
Source : CES 2013

Figure K5. Incidence of Invalid TT Doses among Women Aged 18-49 Years Old in Rural Areas by Division in 2013 (Card + History)



Source : CES 2013

Figure K6. Incidence of Invalid TT Doses among Women Aged 18-49 Years Old in Urban Areas by City Corporation/Municipality in 2013 (Card + History)



Source : CES 2013

4.8 Women's Knowledge about TT doses

Proper knowledge about the required number of TT vaccine is important for both the service providers and the recipients as well as for the programmatic aspect. The act of administering unnecessary dose is both wastage of time and money. According to EPI program, a woman should receive 5 doses of TT vaccine for gaining an adequate amount of lifetime protective antibody against tetanus. EPI CES 2013 made an assessment of the women's knowledge about the number of doses a woman requires for protective antibody against tetanus for the whole reproductive life. Women were asked regarding how many TT vaccines are required by a childbearing aged woman to protect herself from tetanus for her entire reproductive life.

More than half of the respondents (53 percent) reported about 5 doses of TT vaccine. As it was expected, percentage of women who had proper knowledge was 4 percent higher in urban areas (56 percent) than in rural areas (52 percent). However, across the country more than one-third of the mothers (37 percent) reported that they were not aware of the required number of TT doses. By residence, a slight variation between women living in urban (35 percent) and those in rural areas (37 percent) was observed in the finding who did not know about the required number of TT doses (see Figure L1).

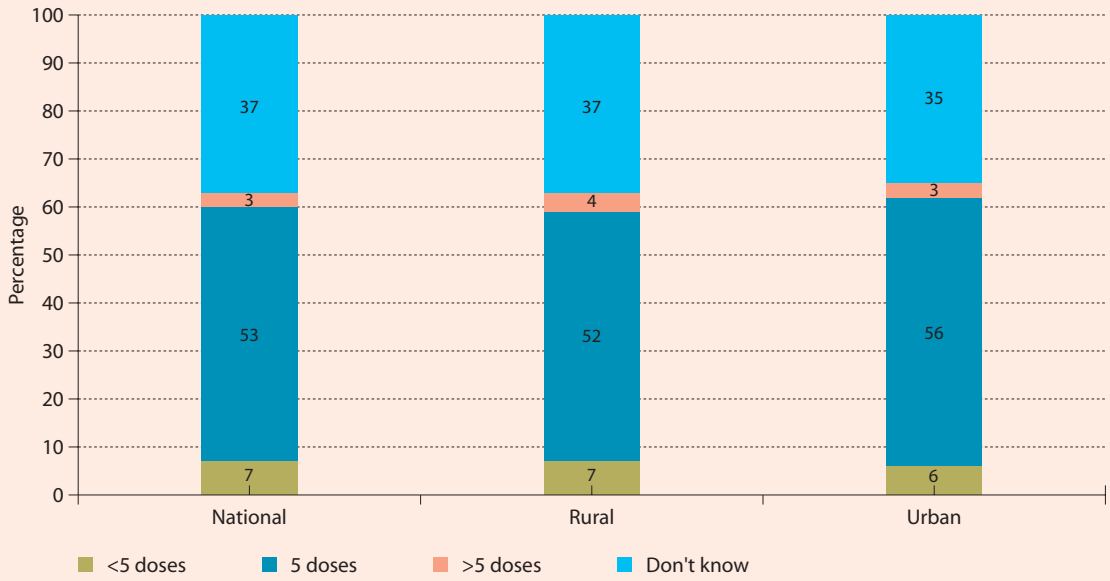
In the rural areas by division, the percentage of the women with knowledge of 5 doses of TT vaccine was found to be the highest in Rangpur division (64 percent) and the lowest in Barisal division (35 percent) (see Figure L2). Overall, 37 percent of the women residing in rural areas were not aware of the number of TT doses required for a woman to protect herself against tetanus (see Figure L2).

4.9 Sources of TT Vaccination

Sources of TT1 vaccine were also investigated in CES 2013. Women of CBA who received TT1 were asked from where they have received it. Across the country, 94 percent of them reported about the government outreach centers. The urban-rural difference was 11 percentage points in this regard. Compared to 86 percent of urban women 97 percent of the rural women received TT1 from the government outreach centers (see Figure M1).

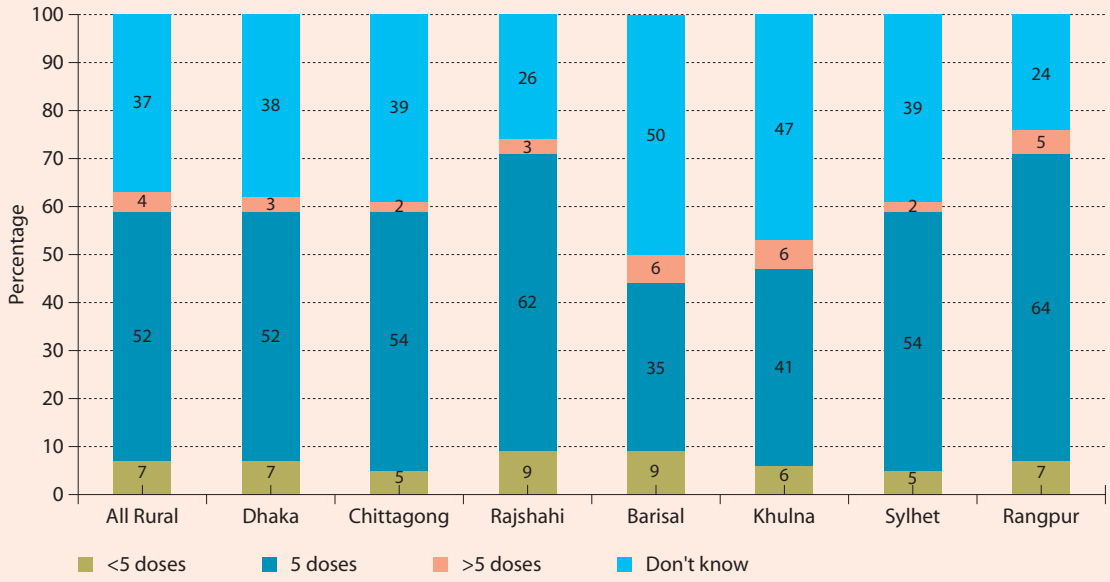
Similar findings were observed while analyzing the data of rural areas by division. Although the findings varied from one division to another, the government was found to be the prime service provider (see Figure M2). Among the city corporations, the utilization rate of the government outreach centers was the highest in RCC (99 percent) and the lowest in KCC (49 percent) (see Figure M3).

Figure L1. Number of TT Doses Required During Reproductive Period for Protection against Tetanus as Reported by Women Aged 18-49 Years Old by National, Rural and Urban Areas in 2013



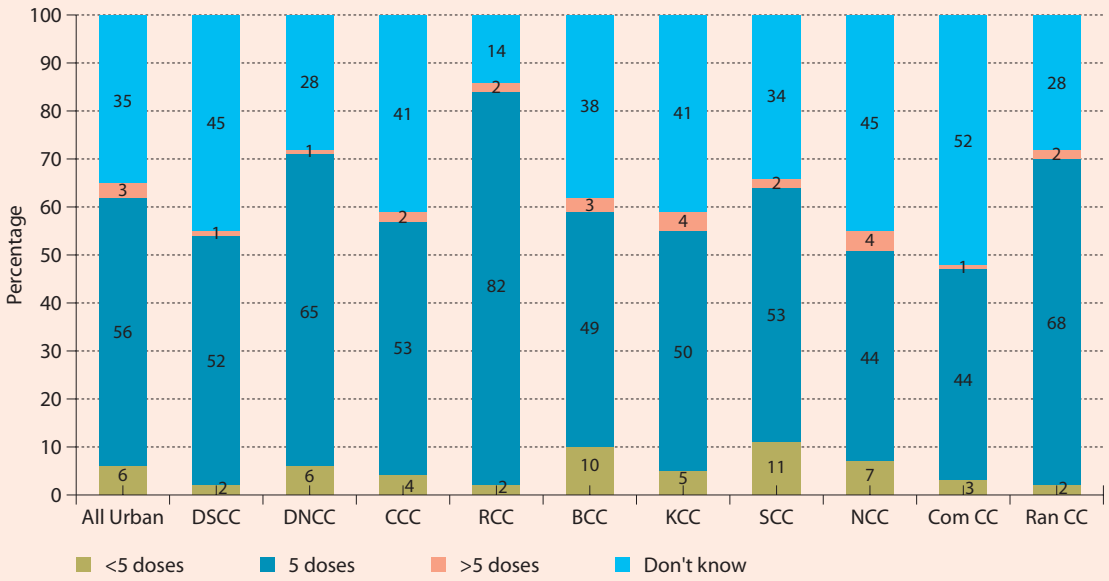
Source : CES 2013

Figure L2. Number of TT Doses Required During Reproductive Period for Protection against Tetanus as Reported by Women Aged 18-49 Years Old in Rural Areas by Division in 2013



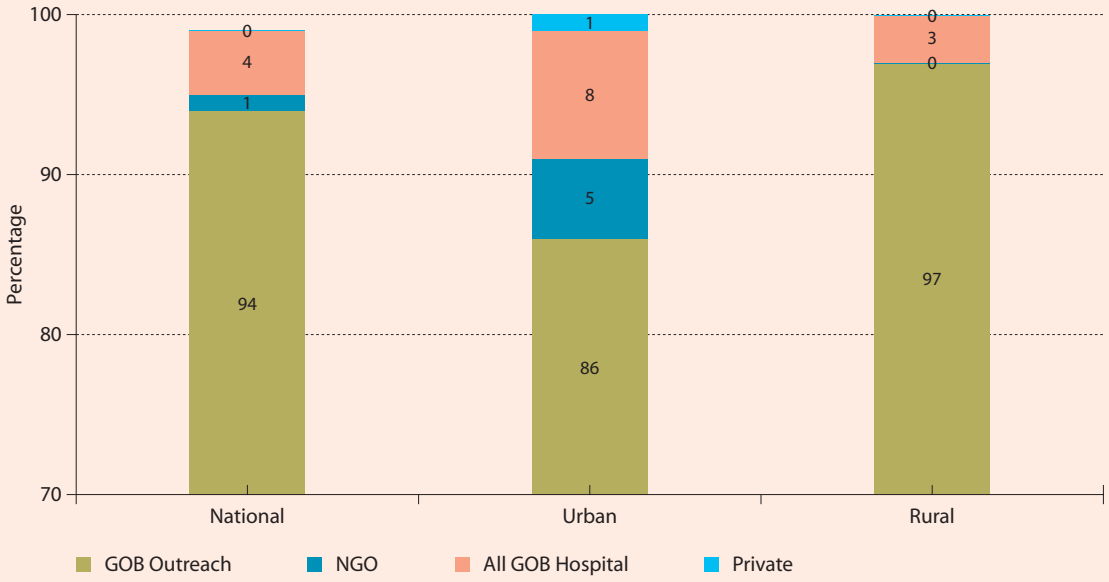
Source : CES 2013

Figure L3. Number of TT Doses Required During Reproductive Period for Protection against Tetanus as Reported by Women Aged 18-49 Years Old by City Corporation/Municipality in 2013



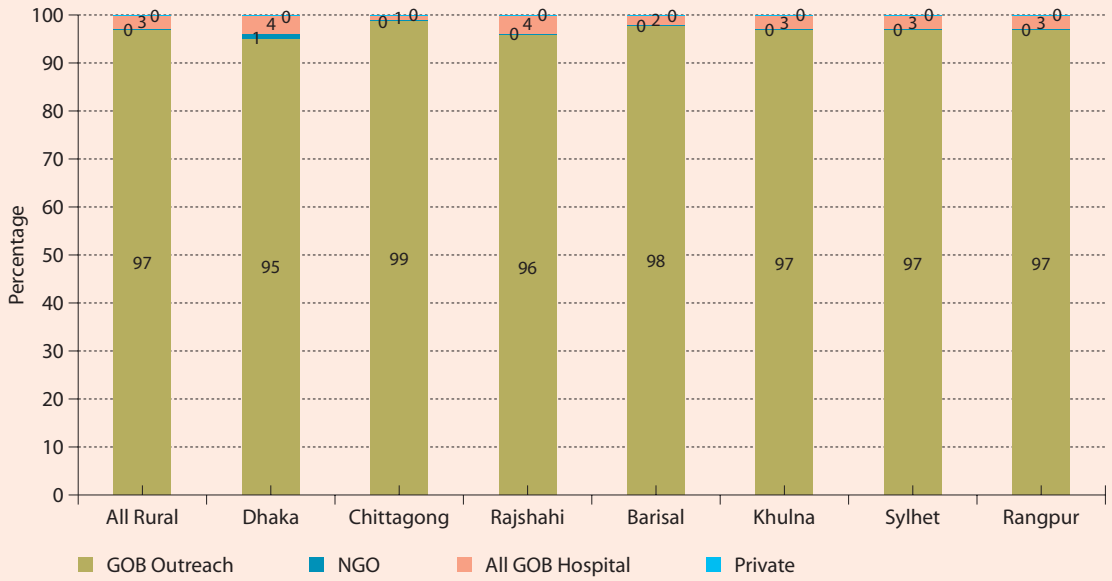
Source : CES 2013

Figure M1. Sources of TT1 Vaccination among Women Aged 18-49 Years Old by National, Rural and Urban Areas in 2013



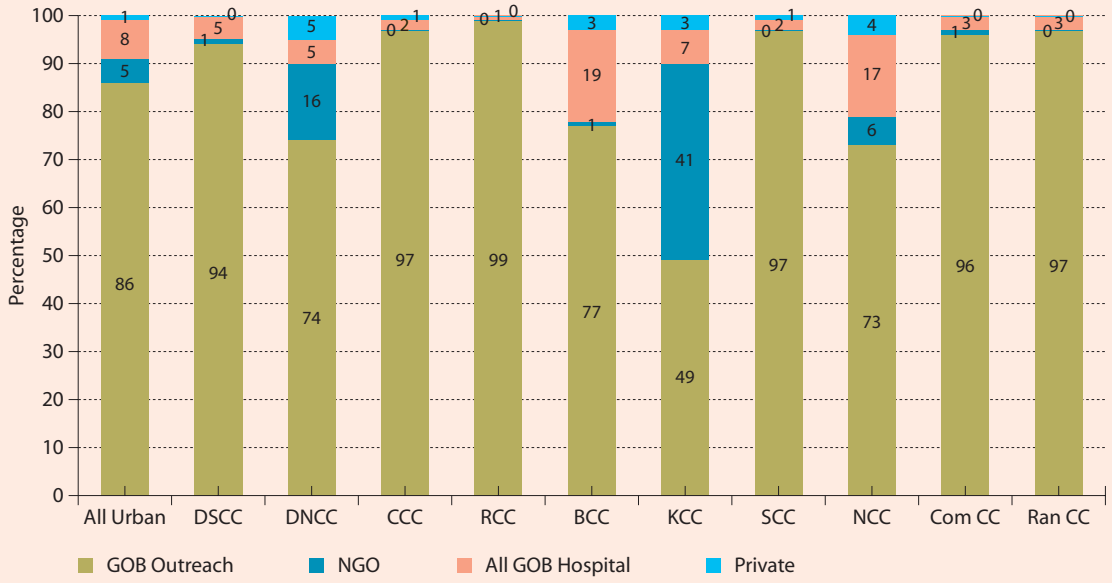
Source : CES 2013

Figure M2. Sources of TT1 Vaccination among Women Aged 18-49 Years Old in Rural Areas by Division in 2013



Source : CES 2013

Figure M3. Sources of TT1 Vaccination among Women Aged 18-49 Years Old in Urban Areas by City Corporation/Municipality in 2013



Source : CES 2013

Chapter 5

OPV COVERAGE DURING 20th NIDS

This chapter provides information on OPV coverage during 20th NIDs among children 0-59 months old along with reasons for not receiving OPV which has been obtained through CES 2013. In order to present the national OPV coverage during 20th NIDs as well as for an understanding about the methodology and findings of the 20th NID Survey, a brief description of NIDs is provided in the following. It describes the purposes of NIDs as a supplementary immunization strategy, how they are conducted in Bangladesh and how child-to-child search activity is carried out to identify and vaccinate the children who are left out from vaccination at the NID fixed-site.

Objectives of the 20th NIDs survey

The survey on 20th NID was carried out as part of CES 2013 with a view to achieve the following objectives:

- OPV coverage among 0-59 months old children
- To know the reasons for not having OPV vaccination

5.1 NIDs as a Supplementary Strategy

The Government of Bangladesh has made tremendous progress in eradicating polio. The last case of polio was the result of wild polio virus importation from a neighboring country in January 2006. Since 22nd November 2006, Bangladesh has once again become Polio free. Such achievement is the result of combined efforts of the Government of Bangladesh and its partners to implement the global polio eradication strategy. This strategy includes strengthening of the routine EPI, surveillance for Acute Flaccid Paralysis cases amongst children aged less than 15 years old and conducting National Immunization Days for under-five children. As the neighboring countries are still not polio free or have had some new outbreaks of imported polio, they are presenting the risk of new wild poliovirus importation to Bangladesh.

As a part of SIAs, the Government decided to observe the 20th National Immunization Day to prevent the importation of polio virus. All children aged 0-5 years were given two drops of the polio vaccine on 7th January and 11th February, 2012, immediately followed by the special search for those who may have missed the doses. The Government of Bangladesh (GOB) with support from UNICEF, WHO, Rotary International and the Centers for Disease Control and Prevention (CDC, Atlanta), immunized 2.2 million under-5 children with two drops of polio across the country. Along with OPV Vitamin "A" capsule was given to the children of 12-59 months and Albendazole tablet were given to the children aged 24-59 months during 20th NID held on 7th January and 11th February, 2012 respectively.

5.1.1 Organizing the NIDs

Observing NID throughout the country is challenging and it requires several months of careful planning. The government of Bangladesh conducts NIDs in collaboration with UNICEF, WHO, Rotary International and other partners.

Before conducting the National Immunization Day (NIDs) wide publicity is carried out using all types of available communication channels, including the mass media, i.e. television, radio, press, miking (mobile and mosque), posters and banners.

In Bangladesh, people observe this event in a festive mood along with the spontaneous participation of parents of the target children in particular. On the eve of NIDs, banners, posters and flags are shown particularly in and around the vaccination sites, thus highlighting the importance of immunization/NIDs and urging the parents/caregivers to get their 0-59 months old children vaccinated at the vaccination sites. Mobile & mosque mikes are also used to remind the parents about taking their eligible children to the vaccination sites.

To observe the NIDs around 140,000 vaccination sites are set up across the country, thus ensuring an easy access for all people in every place so that parents/caregivers face no difficulties in bringing their children to the site for vaccination.

Along with the 68,000 government health and family planning workers, other semi-government and NGO workers, about 650,000 community volunteers from every place worked as vaccinators in the 20th NIDs. The volunteers represented participation from a cross-section of people, including teachers, students, religious personalities, women's groups, members of the community-based micro-finance organizations, members of the Village Defense Party (VDP) and organizations of many indigenous groups.

5.1.2 Child-to-Child Search

Child-to-child search is undertaken to identify and vaccinate OPV to those children who could not be reached or vaccinated during the day of NID. A four-day house-to-house search followed in order to make sure that no child was left out. The workers visited every household in their respective Ward/Mahalla and looked for the left-out children to provide OPV as they had missed it at the fixed site.

5.2 Selection of Samples

The survey on 20th NIDs was implemented over a representative national NID sample of 0-59 months old children which was drawn from the cluster samples of CES 2013 in the following manner. While visiting all households in every cluster the interviewers listed all the eligible children (aged between 0-59 months) of that cluster to make the sampling frame. Then seven children were selected randomly from the sampling frame to administer the questionnaires.

5.3 OPV Coverage

Ninety six percent of the children aged between 0-59 months were vaccinated with OPV during the first round of 20th NID held on 7th January, 2012. However, in this regard there was a slight variation between urban (97 percent) and rural (96 percent) areas. Similarly, urban-rural variation in OPV coverage was observed in the second round of 20th NID. During the second round, 96 percent of the children in urban areas and 94 percent of the children in rural areas received OPV (see Figure N1). Regarding the source of OPV vaccination it was found that 99 percent of the children received OPV from the fixed site in both the rounds of 20th NID (see

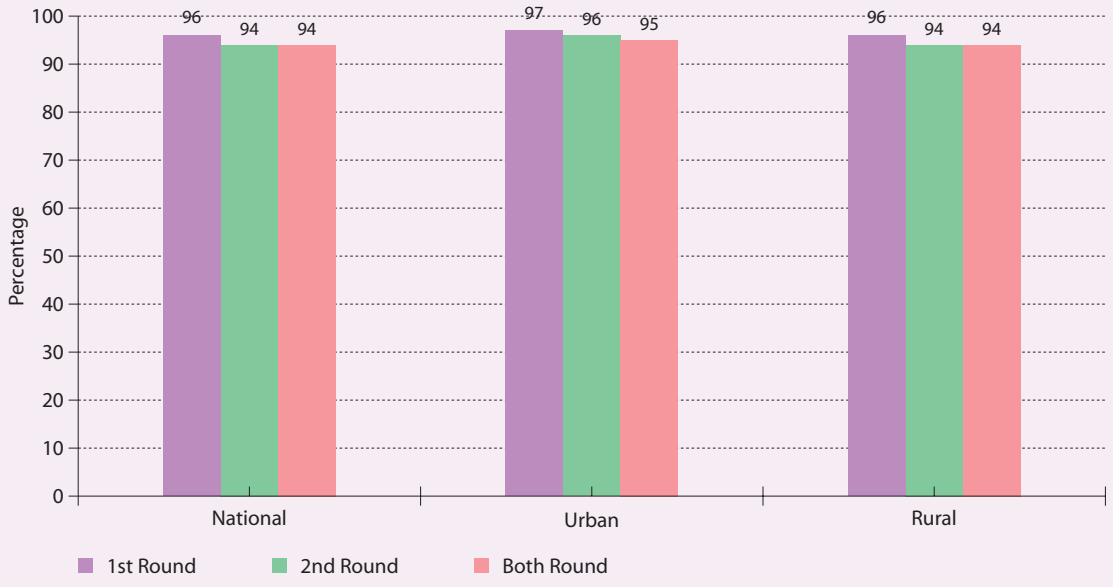
Figure N2). The rest of the children received vaccine during the child- to- child search (0.8 percent in 1st round and 0.5 percent in 2nd round) and from mobile centers (0.3 percent in 1st round and 0.2 percent in 2nd round).

Across the country, 94 percent of the children received OPV in both the rounds (see Figure N1). The urban-rural variation in OPV coverage was 1 percentage point. In urban areas it was 95 percent and in rural areas it was 94 percent (see Figure N1).

As was mentioned earlier, 94 percent of the rural children received OPV during 20th NIDs in both the rounds. By rural divisions OPV coverage was the highest in Rangpur (98 percent) and the lowest in Dhaka division (91 percent). The second highest OPV coverage was found in Khulna and Rajshahi (96 percent) which was being followed by Barisal (94 percent), Chittagong (92ssss percent) and Sylhet division (91 percent) (see Figure N4).

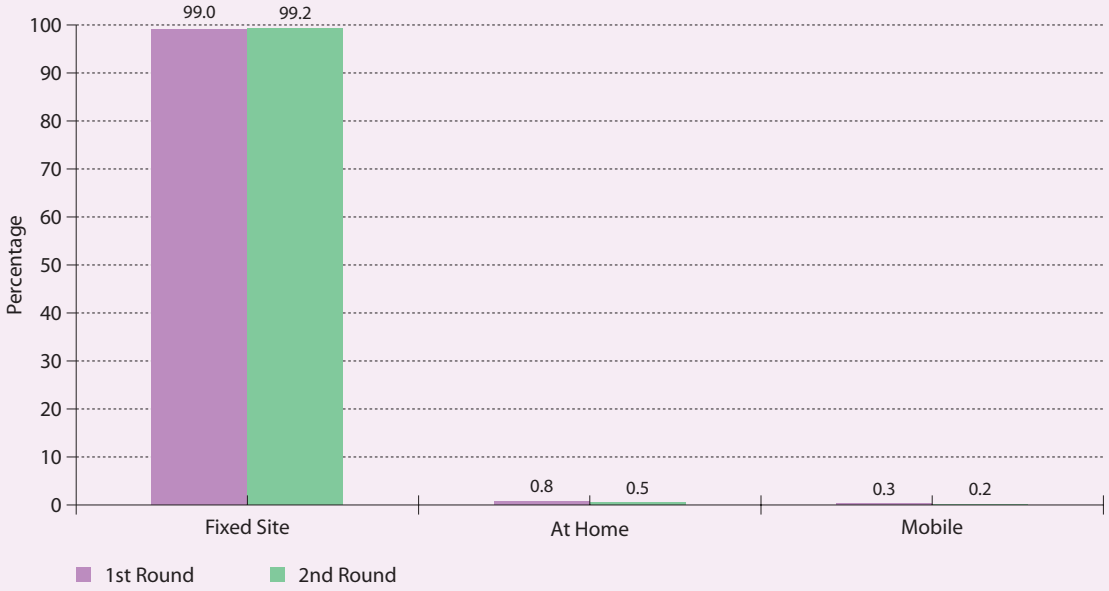
Likewise, in the city corporation areas, Rajshahi City Corporation had 100 percent OPV coverage in both the rounds. The second highest OPV coverage in both the rounds was in DNCC, CCC and SCC (99 percent) which was being followed by Com CC and Ran CC (98 percent), BCC (97 percent), KCC (96 percent), DSCC (95 percent) and NCC (88 percent) (see Figure N5).

Figure N1. OPV Coverage among 0-59 Months Old Children during 20th NIDs by National, Rural and Urban Areas in 2013



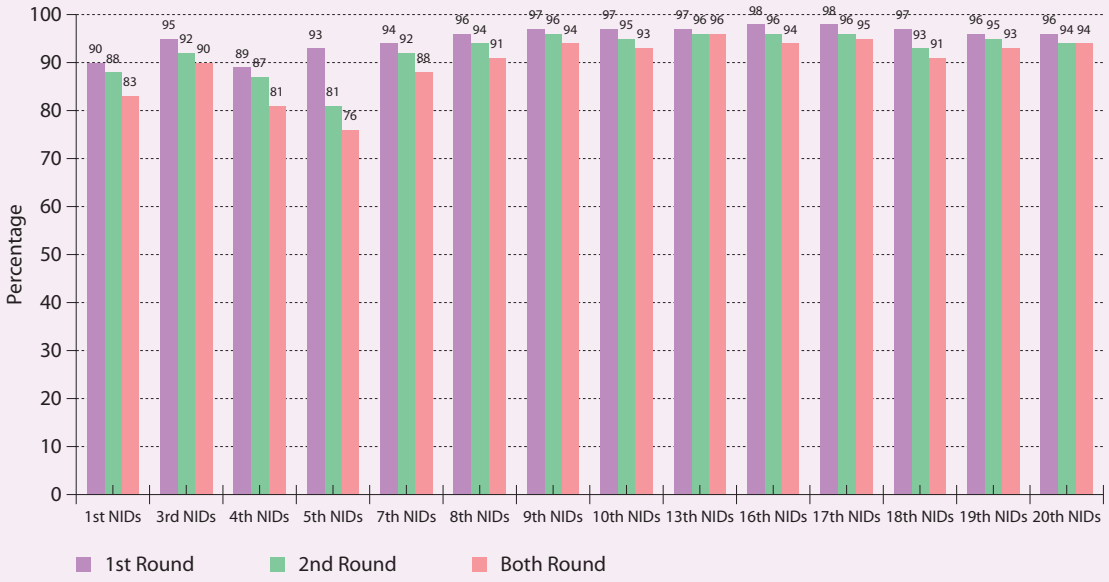
Source : CES 2013

Figure N2. Sources of Receiving OPV during 20th NIDs



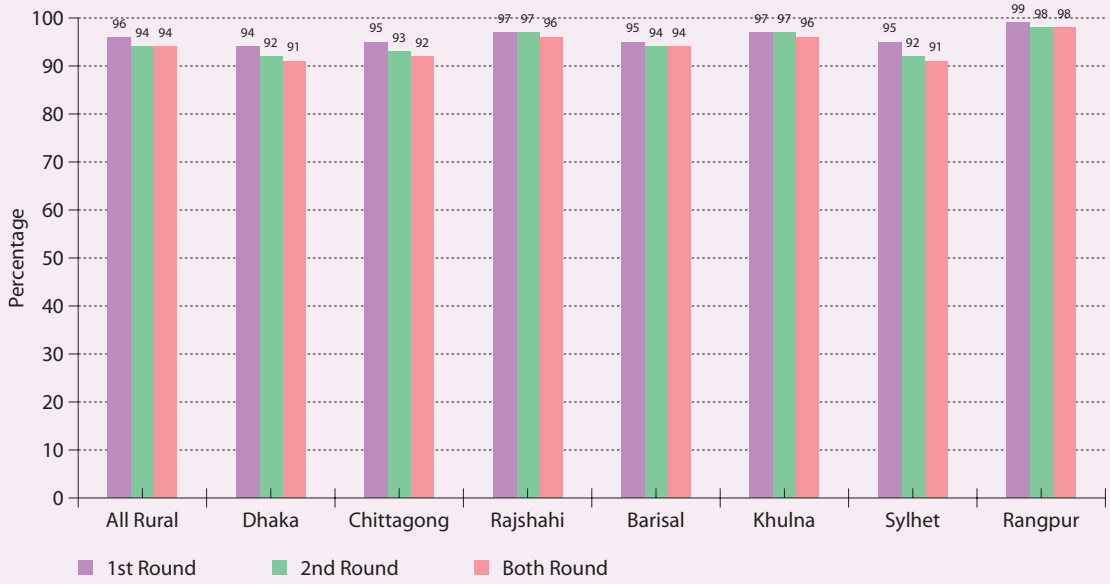
Source : CES 2013

Figure N3. OPV Coverage among 0-59 Months Old Children by NIDs from 1995 to 2013



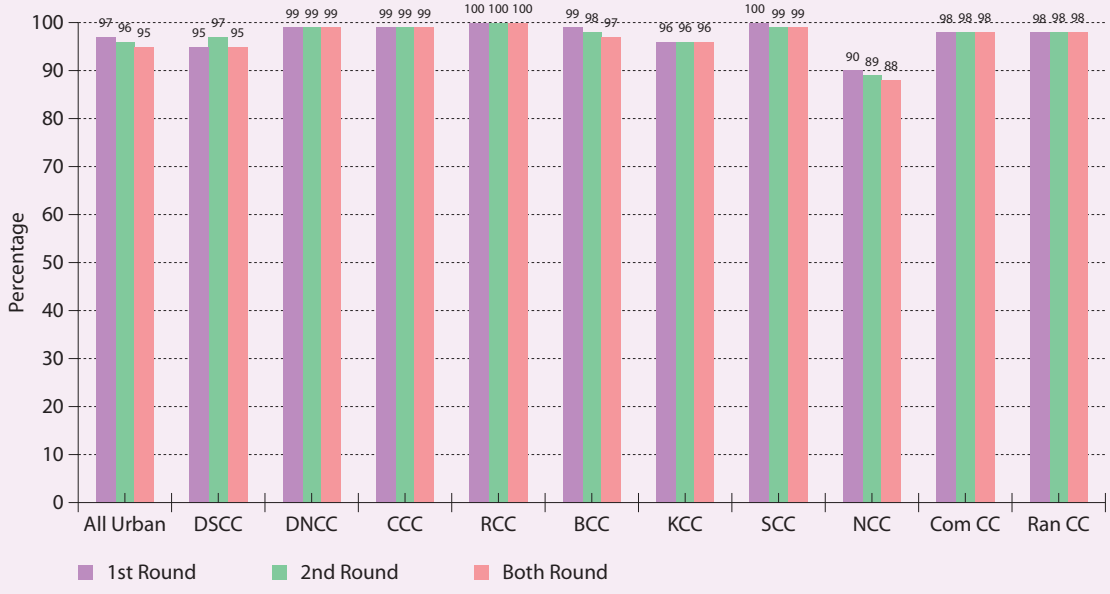
Source : CES 2013

Figure N4. OPV Coverage among 0-59 Months Old Children in 20th NIDs in Rural Areas by Division in 2013



Source : CES 2013

Figure N5. OPV Coverage among 0-59 Months Old Children in 20th NIDs in Urban Areas by City Corporation in 2013



Source : CES 2013

5.4 Reasons for not having Children Vaccinated at the Fixed Sites

Specific reasons for children not being vaccinated were investigated in CES 2013. Mothers/ caregivers were asked about the reasons for their children not being vaccinated with OPV at the fixed site or not being vaccinated at all. Half of the respondents (50.7 percent) reported that they did not know about the campaign (see Table F1). Around 17 percent of them stated that they were very busy at the time of campaign while one in ten mothers/caregivers (10 percent) reported that they were not at home while NID was conducted. The other reasons were: mothers/caregivers were travelling (6.7 percent), the vaccination center was too far (3.2 percent) and fear of side effects (2.8 percent) etc. (see Table F1).

The cause for not receiving OPV in the 2nd round was - nearly three-fifth of the respondents (57.3 percent) reported that they were unaware about the campaign. The other most common causes were: mothers/caregivers were busy (11.9 percent), were not at home (9.8 percent) and were travelling (5.6 percent) (see Figure F2).

5.5 Sources of Information about 20th NIDs

Mothers/ caregivers were asked about the sources of information regarding 20th NIDs. Nearly half of the respondents (47 percent) mentioned about the visit of GoB health field workers. Nearly one-third (29 percent) of the mothers/caregivers mentioned about Mosque Miking and 28 percent of the respondents mentioned about Family members, neighbors and friends as the source of NID information. Mobile Miking was mentioned by 21 percent of the respondents which was being followed by Television (18 percent) and other Health Worker visit (9 percent) (see Figure F1).

Likewise, in rural areas, the most common sources of information were: GOB FW visit (53 percent), Mosque Miking (33 percent), Family/neighbor/friends (25 percent), Mobile Miking (18 percent) and Television and Health workers visit (11 percent). On the other hand, in the urban areas common sources of information were: Television (42 percent), Family/neighbor/friends (32 percent), Mobile Miking (30 percent), GOB FW visit (29 percent) and Mosque Miking (16 percent).

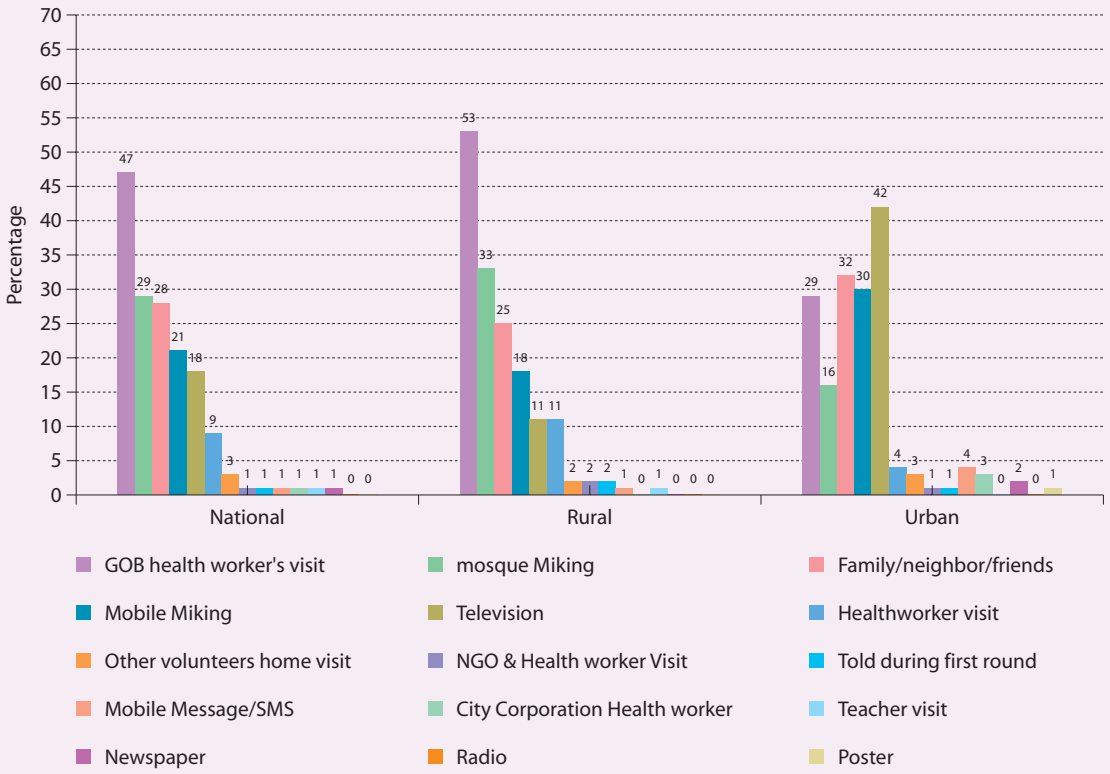
Table F1: Reasons as to why Children did not receive OPV during 1st Round of 20th NID in 2013 by National, Rural and Urban Areas

Reasons	National	Location		
		Rural	Urban	Slum
Didn't know	50.5	53.9	40.0	36.8
Was very busy	16.8	16.0	20.6	10.5
Was not at home	10.0	10.1	9.7	10.5
Went on traveling	6.7	6.5	8.0	0.0
The centre was too far	3.2	2.4	6.3	0.0
Fear of side effect	2.8	2.4	3.4	10.5
Doesn't believe in vaccine	2.4	1.8	2.3	21.1
Waited for home visit	1.1	1.1	1.1	0.0
The child was fed in the previous time	1.0	1.1	0.6	0.0
The child was sick, so he/she was not taken	1.0	0.8	1.1	5.3
No Vaccine	0.7	0.8	0.6	0.0
Lives in another ward, that's why the vaccinator did not give vaccine	0.6	0.7	0.6	0.0
The child did not want to take	0.5	0.5	0.6	0.0
The child was sick, so vaccine was not given	0.4	0.2	0.6	5.3
No Vaccinator	0.4	0.5	0.0	0.0
Time was inconvenient	0.4	0.3	0.6	0.0
Vaccinator came home and gave the vaccine	0.4	0.0	1.7	0.0
The Doctor did not fed	0.4	0.3	0.6	0.0
Religious/Social obstacles	0.2	0.2	0.6	0.0
Child was not aged enough	0.2	0.2	0.6	0.0
There was a long queue	0.1	0.2	0.0	0.0
Number of Children who didn't receive OPV	**808**	**614**	**175**	**19**

Table F2: Reasons as to why Children did not receive OPV during 2nd Round of 20th in 2013 by National, Rural and Urban Areas

Reasons	National	Location		
		Rural	Urban	Slum
Didn't know	57.3	58.7	54.0	36.4
Was very busy	12.0	11.1	13.2	31.8
Was not at home	9.8	11.2	5.3	0.0
Went on traveling	5.6	5.1	8.5	0.0
The centre was too far	2.7	1.9	6.3	0.0
Fear of side effect	2.5	2.1	3.2	9.1
Doesn't believe in vaccine	2.1	1.6	2.1	18.2
The child was fed in the previous time	1.7	2.0	0.5	0.0
Waited for home visit	1.7	1.9	1.1	0.0
No Vaccine	0.7	0.9	0.0	0.0
The Doctor did not fed	0.7	0.7	1.1	0.0
The child was sick, so he/she was not taken	0.6	0.5	1.1	0.0
Forgot	0.5	0.3	1.6	0.0
The child was sick, so vaccine was not given	0.4	0.3	0.5	4.5
Time was inconvenient	0.3	0.3	0.5	0.0
Religious/Social obstacles	0.3	0.3	0.5	0.0
Child was not aged enough	0.3	0.4	0.0	0.0
The child did not want to take	0.3	0.3	0.5	0.0
No Vaccinator	0.2	0.3	0.0	0.0
Number of Children who didn't receive OPV	**960**	**749**	**189**	**22**

Figure O1. Sources of Information of 20th NIDs by National, Rural and Urban Areas in 2013



Source : CES 2013

Chapter 6

VITAMIN A AND ANTHELMINTIC COVERAGE DURING VITAMIN A PLUS CAMPAIGN

The National Vitamin "A" Plus Campaign-2012 was held on 2nd June, 2012 for enhancing the growth and immune system of the children. At all immunization centers across the country Vitamin "A" capsules were administered to the children aged between one and five years while de-worming tablets were given to the children aged between two to five years. Public Health Nutrition Institute, under the Ministry of Health and Family Welfare, in collaboration with the Expanded Programme on Immunization (EPI) conducted the campaign. The campaign was supported by UNICEF, WHO and the Micronutrient Initiative.

About 19 million children aged one to five years were given lifesaving Vitamin A capsules while about 17 million children aged between two to five years were given anti-worm tablets under this program. The government of Bangladesh estimated coverage of Vitamin A through its own monitoring mechanism. In addition, Vitamin "A" plus survey was conducted along with EPI CES 2013 to estimate the actual coverage across the country. The findings of the survey are presented in this chapter.

6.1 Objectives of the Vitamin A Coverage Survey

Vitamin "A" Coverage survey was carried out as part of CES 2013 with a view to achieve the following objectives:

- Vitamin A coverage among infants aged 6-11 months and children aged 12-59 months
- To assess Anthelmintic coverage
- To know reasons for not having Vitamin A and Anthelmintic

6.2 Vitamin A Supplementation Coverage among the Infants, Postpartum women and Children

Vitamin A deficiency (VAD) is a major contributor to child mortality. Sustained control of VAD is essential to meet the Millennium Development Goal (MDG) for reduction of child mortality. In 2012, the Government of Bangladesh conducted National Vitamin A Plus campaign on June 2 with support from UNICEF, WHO and Micronutrient Initiative. Through this campaign the Government of Bangladesh has provided a high potency Vitamin A capsule (200,000 IU) among the children aged between 12-59 months. Vitamin A (200,000 IU) is given to the children (12-59 months old) during the national Vitamin A Plus campaign; an infant (6-11 months) receives one vitamin A capsule (100,000 IU) and postpartum mothers receive one vitamin A capsule (200,000 IU) (within 6 weeks of delivery) through routine EPI.

Vitamin A Coverage

In 2012, 84 percent of the infants aged between 6-11 months and 93 percent of the infants aged between 12-59 months received Vitamin A across the country. Vitamin A coverage was higher in urban areas compared to the rural areas. Eighty seven percent of the infants aged between 6-11 months received Vitamin A in urban areas. The proportion of infants aged between 6-11 months who received Vitamin A in rural areas was 83 percent. Vitamin A coverage for the

infants aged between 12-59 months in urban and rural areas were 94 percent and 92 percent respectively.

In rural areas by division, coverage of Vitamin A supplementation among the infants (6-11 months) was found to be highest in Sylhet (91 percent) and the lowest in Chittagong and Barisal division (79 percent). VAS coverage in other divisions ranged from 86 percent in Dhaka to 82 percent in Rangpur, Khulna and Rajshahi divisions. On the other hand, VAS coverage among the infants aged between 12-59 months were 93 percent in Rangpur, Dhaka, Khulna and Rajshahi, 91 percent in Sylhet and Chittagong and 90 percent in Barisal division (see Figure P2).

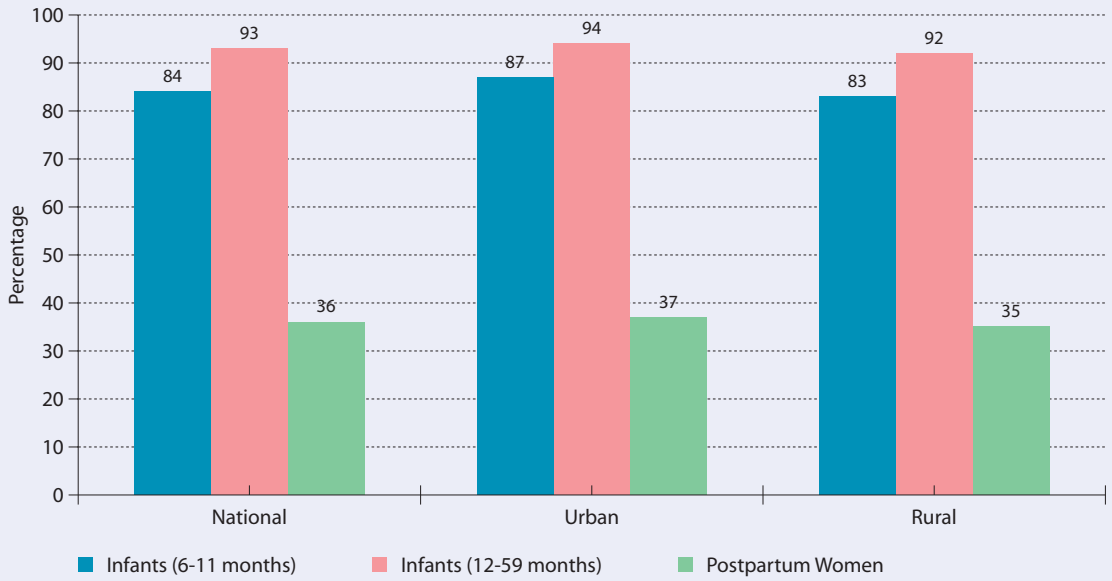
However, in city corporations, VAS coverage for the infants aged between 6-11 months ranged from the lowest - 58 percent in NCC to the highest 99 percent in CCC (see Figure P3). VAS coverage among the infants aged between 12-59 months was the highest in CCC (100 percent) and the lowest in NCC (87 percent).

Sex differential in the coverage of VAS was also examined in the survey. The findings show no marked differences in the coverage of VAS between the male and female children. However, a higher percentage of males aged between 6-11 years (94 percent) in urban areas received Vitamin A than males (92 percent) in rural areas (see Figure P4). Similarly, 95 percent of the females aged between 6-11 years in urban areas received Vitamin A against 93 percent of females in rural areas (see Figure P4). Among the 12-59 aged infants, Vitamin A coverage was lower among males (92 percent in rural and 94 percent in urban areas) than their female counterparts (93 percent in rural and 95 percent in urban areas) (see Figure P5).

In part of analysis of Vitamin A supplementation coverage by rural areas, it can be seen that for infants of 6-11 months the coverage was the highest in Sylhet division (91 percent) and the lowest in Chittagong and Barisal division (79 percent). The coverage in the other divisions were: Dhaka (86 percent) and Khulna, Rajshahi and Rangpur (82 percent). In case of infants aged between 12-59 months the coverage was the highest in Dhaka, Rajshahi, Sylhet and Rangpur division (93 percent). It was the lowest in Barisal division (90 percent) (see Figure P6).

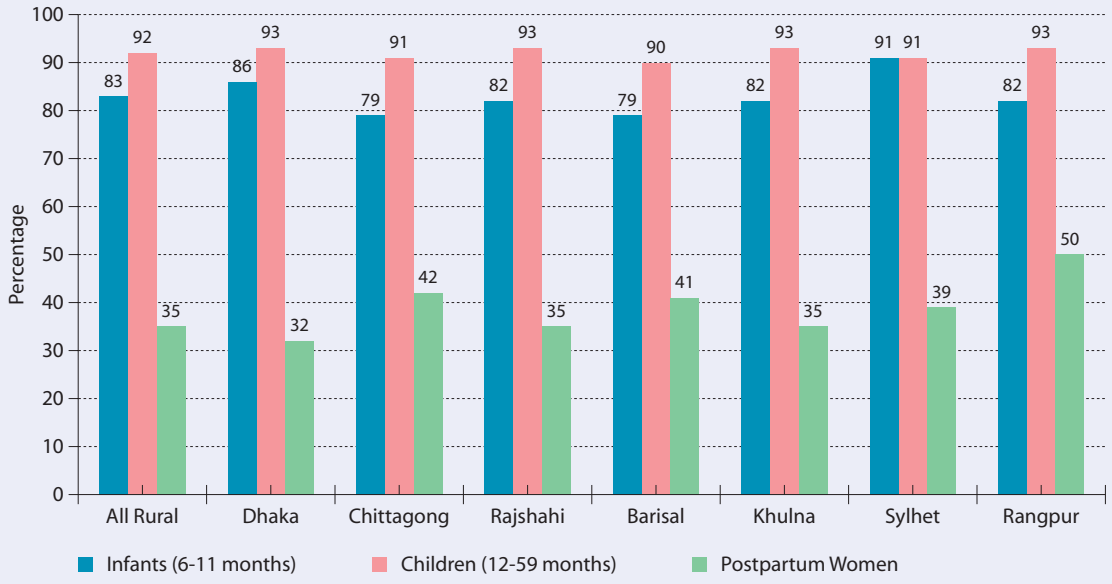
Figure P7 shows the coverage of Vitamin A supplementation by City Corporation. For the infant aged between 6-11 months, the coverage was the highest in CCC (99 percent) which was being followed by Ran CC (98 percent), DNCC and SCC (96 percent), Com CC (95 percent), KCC (94 percent), DSCC (92 percent), BCC (91 percent), RCC (72 percent) and NCC (58 percent). For the infant between 12-59 months the highest coverage was in CCC (100 percent) and the lowest in BCC (94 percent).

Figure P1. Vitamin A Supplementation Coverage among infants aged 6-11 & 12-59 months during Vitamin A Plus Campaign and Vitamin A Coverage among Postpartum Women in TT Survey by areas



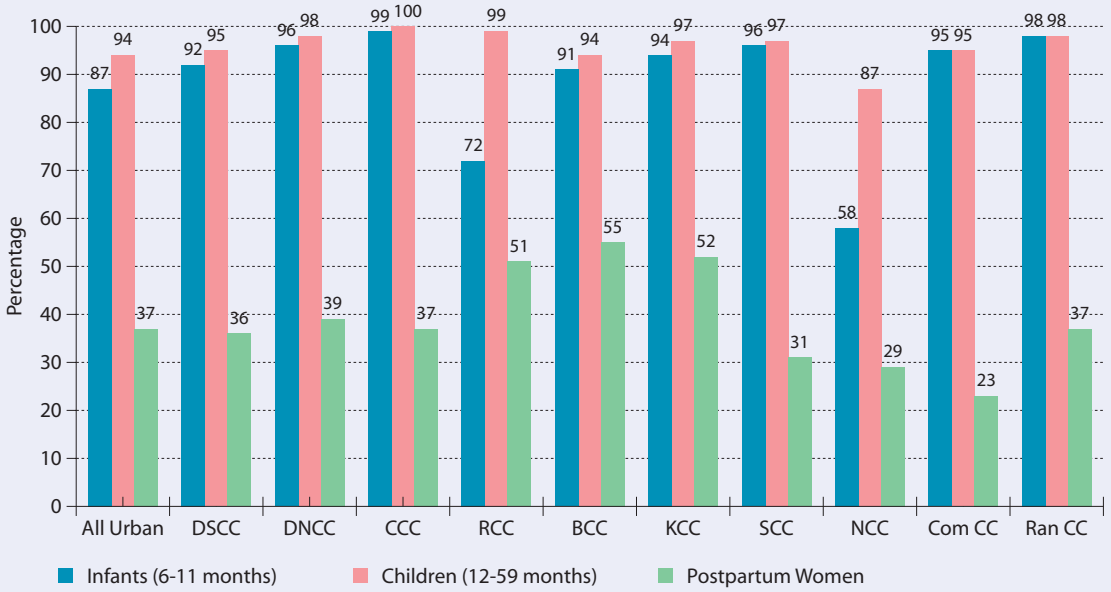
Source : CES 2013

Figure P2. Vitamin A supplementation Coverage during Vitamin A Plus Campaign among infants aged 6-11 months, Children aged 12-59 months, and postpartum women in Rural Areas by Division in 2012



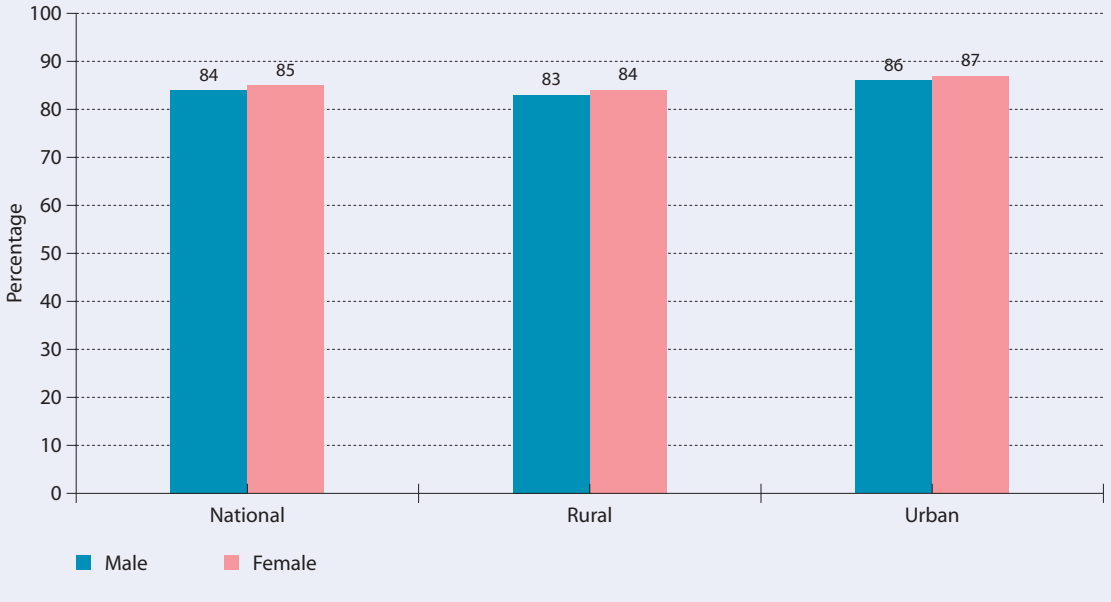
Source : CES 2013

Figure P3. Vitamin A supplementation Coverage during Vitamin A Plus Campaign among Infants aged 6-11 months, Children aged 12-59 months, and Postpartum Women in Urban Areas by City Corporation in 2012



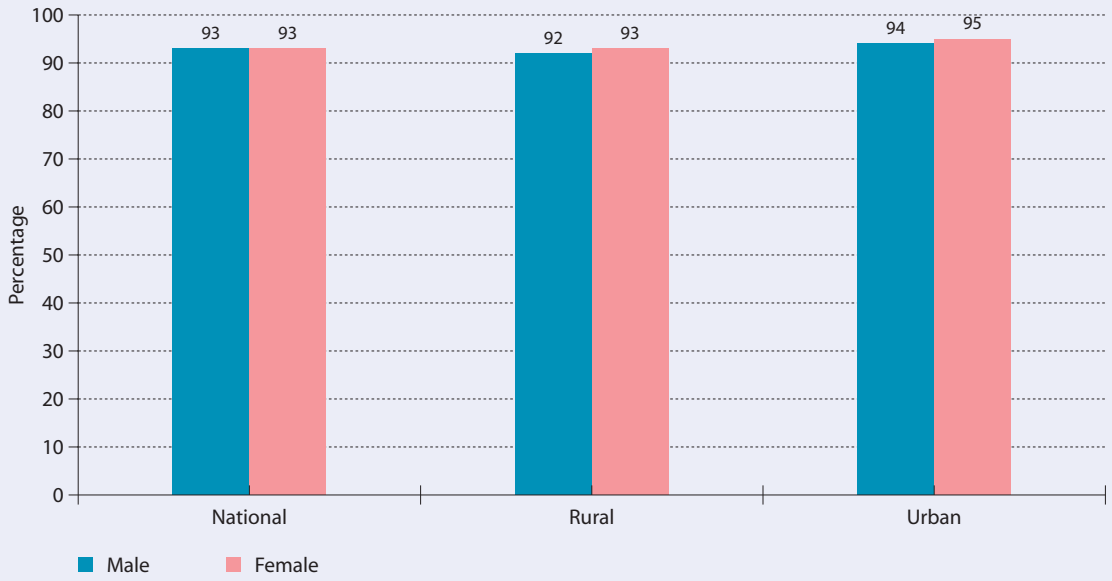
Source : CES 2013

Figure P4. Vitamin A supplementation Coverage during Vitamin A Plus Campaign among Infants Aged 6-11 Months by Region and Sex in 2012



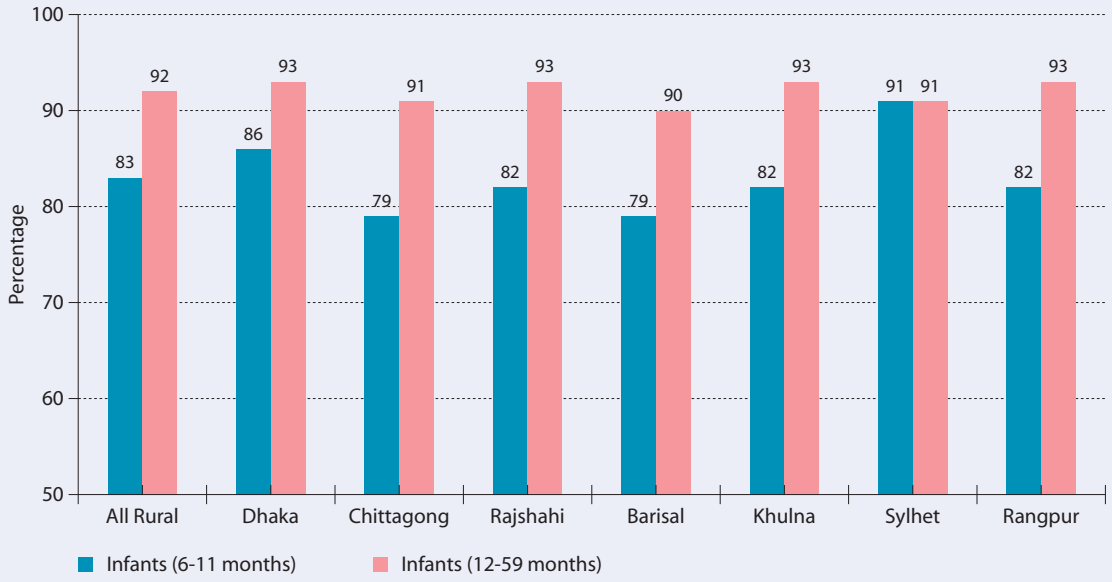
Source : CES 2013

Figure P5. Vitamin A Supplementation Coverage among Children aged 12-59 months during Vitamin A Plus Campaign by Region and Sex in 2012



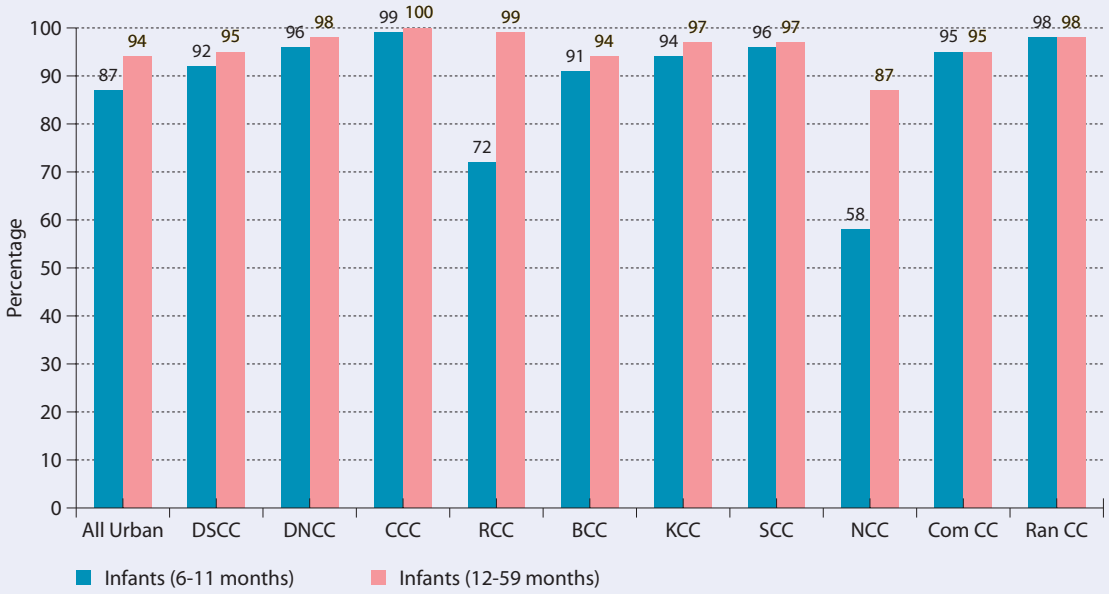
Source : CES 2013

Figure P6. Vitamin A Supplementation Coverage among infants aged 6-11 months and children aged 12-59 Months during Vitamin A Plus Campaign in Rural Areas by Divisions in 2012



Source : CES 2013

Figure P7. Vitamin A Supplementation Coverage among infants aged 6-11 months and children aged 12-59 Months during Vitamin A Plus Campaign in Urban Areas by City Corporation in 2012



Source : CES 2013

6.2.1 Reasons for Children not receiving VAC during Vitamin A Plus Campaign

In CES 2013, mother/caregivers of children aged between 6 months to 5 years were asked about the reasons for not vaccinating their children in the Vitamin A Plus campaign. Nationally, 65.9 percent of the respondents reported that they did not know about the campaign while 9.7 percent of the respondents were not at home. Findings revealed that lack of awareness about the Vitamin A Plus campaign was the most common cause for not receiving VAC in both rural (65.8 percent) and urban areas (67.7 percent) (see Table G1).

In rural areas by division, the percentage of children who did not receive VAC due to the lack of awareness was the highest in Rangpur division (77.8 percent). It was being followed by Rajshahi (69.7 percent), Dhaka (69.5 percent), Barisal (68.6 percent), Khulna (64.1 percent), Sylhet (58.8 percent) and Chittagong (53.3 percent) (see Table G2).

Table G1: Reasons as to why Children did not receive Vitamin A Supplement during Vitamin A Plus Campaign in 2012 by National, Rural and Urban Areas

Reasons for not receiving Vitamin A	National	Rural	Urban
Didn't know	65.9	65.8	67.7
Was not at home	9.7	10.3	7.0
Lives in another ward,That's why the vaccinator did not give vaccine	4.6	4.9	4.0
Was very busy	4.5	3.5	6.9
Went on traveling	3.0	3.1	2.5
Fear of side effect	1.7	1.5	2.7
No Vitamin A	1.4	1.5	1.0
Child was not aged enough	1.2	1.4	0.6
Doesn't believe in Vitamin A	1.1	1.0	1.3
The Doctor did not fed	1.1	1.1	0.6
The child was fed in the previous time	1.0	1.2	0.0
The child was sick, so he/she was not taken	1.0	0.9	1.3
Number of Children Who did not receive Vitamin A	**3709**	**2972**	**668**

Table G2: Reasons as to why Children did not receive Vitamin A Supplement during Vitamin A Plus Campaign in 2012 in rural areas by Division

Reasons for not receiving Vitamin A	All Rural	Dhaka	Chittagong	Rajshahi	Barisal	Khulna	Sylhet	Rangpur
Didn't know	65.8	69.5	53.1	69.7	68.6	64.1	58.8	77.8
Was not at home	10.3	10.5	9.4	7.9	14.0	8.0	14.9	11.5
Lives in another ward, That's why the vaccinator did not give vaccine	4.9	1.1	17.9	3.0	0.3	3.9	0.0	0.5
Was very busy	3.5	4.2	4.0	3.0	4.4	2.2	6.8	1.8
Went on traveling	3.1	4.3	1.5	2.7	3.3	3.9	4.1	2.1
No Vitamin A	1.5	1.4	1.7	2.2	0.6	1.3	1.4	2.1
Fear of side effect	1.5	2.2	2.5	0.5	1.9	0.6	1.4	0.3
Child was not aged enough	1.4	0.9	0.2	1.6	2.2	3.0	0.0	1.6
The child was fed in the previous time	1.2	0.2	0.3	1.1	0.3	5.6	2.0	0.0
The Doctor did not fed	1.1	0.5	2.5	2.2	0.0	0.4	0.7	1.3
Doesn't believe in VITAMIN A	1.0	0.8	1.9	0.5	1.4	0.6	0.7	0.5
Number of Children Who did not receive Vitamin A	**2968**	**650**	**593**	**366**	**363**	**465**	**148**	**383**

6.2.2 Sources of Receiving Information for Vitamin A Plus Campaign

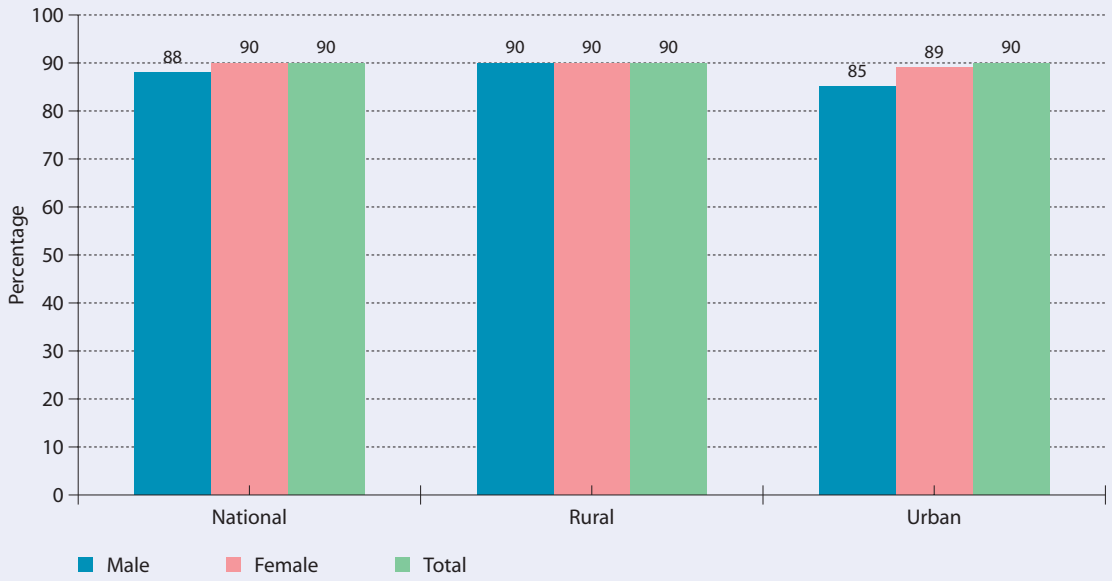
CES 2013 investigated the sources of receiving information about Vitamin A Plus campaign. Overall, in Bangladesh, the most common source of information was GoB Field workers (47.3 percent) which was being followed by Mosque Miking (26.7 percent), Family/neighbor/friends (23.7 percent), Mobile Miking (17.8 percent), Television (17.5 percent), Health workers visit (7.5 percent) etc. (see Table H4).

6.3 Anthelmintic Coverage among Children

Albendazole tablet as an Anthelmintic was given to the children aged between 24-59 months during Vitamin A Plus campaign held on June 2, 2012. Figure Q1 shows that 90 percent of the children received Anthelmintic treatment during Vitamin A Plus campaign. The coverage was 2 percentage points higher among the female children (90 percent) than the male children (88 percent). There was no difference between urban-rural coverage.

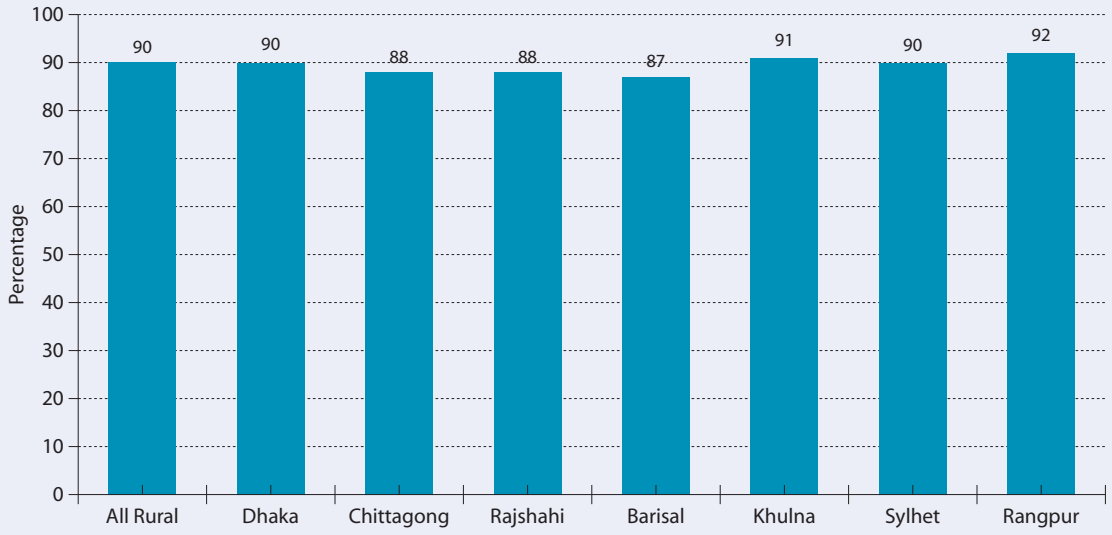
In rural areas by divisions, the coverage of Anthelmintic treatment was the highest in Rangpur division (92 percent) and the lowest in Barisal division (87 percent). Ninety percent of the children received Albendazole tablet in urban areas. In case of City corporation the coverage was highest in CCC (97 percent) which was being followed by DNCC, RanCC and KCC (96 percent), BCC (93 percent), DSCC (91 percent), RCC (90 percent), SCC (87 percent), Com CC (86 percent) and NCC (79 percent) (see Figure Q3).

Figure Q1. Anthelmintic Coverage among Children Vitamin A Plus Camapign in 2012 by National, Rural and Urban Areas



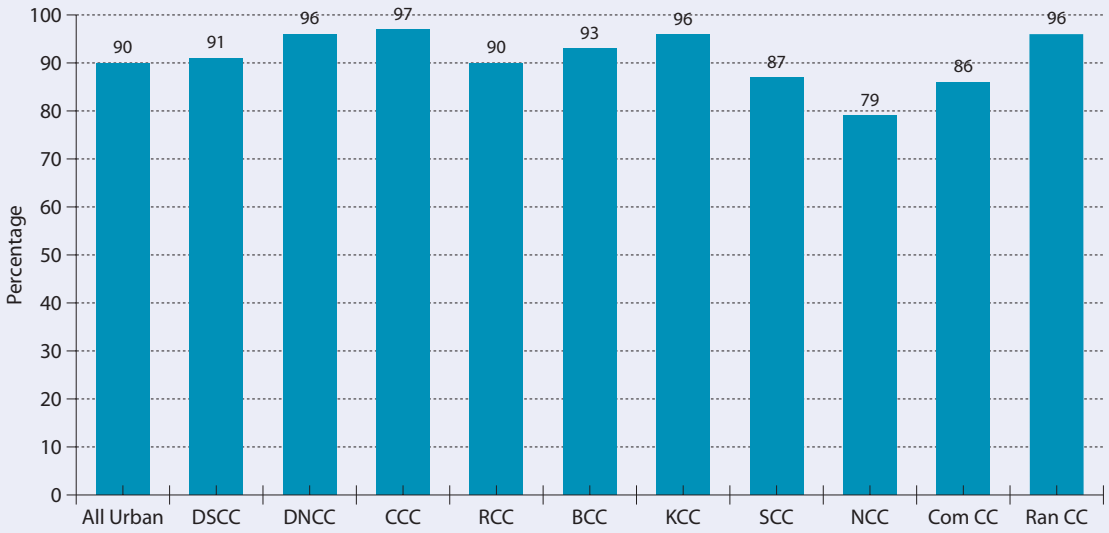
Source : CES 2013

Figure Q2. Anthelmintic Coverage among Children during Vitamin A Plus Campaign in 2012 in Rural Areas by Division



Source : CES 2013

Figure Q3. Anthelmintic Coverage among Children during Vitamin A Plus Campaign in 2012 in Urban Areas by City Corporation



Source : CES 2013

6.3.1 Reasons for not receiving Anthelmintic

Mothers/caregivers, whose children didn't receive Anthelmintic treatment during Vitamin A Plus Campaign were asked about the reasons for not giving it to the children. Table H1 shows that 46.3 percent of the respondents did not know about the campaign while 11.1 percent reported that their children have received the tablet before. Urban-rural analysis revealed that the respondents in rural areas (50.6 percent) were less aware than the respondents in urban areas (34 percent) (see Table H1).

Table H1: Reasons as to why Children did not receive Anthelmintic during Vitamin A Plus Campaign in 2012 by Region

Reasons for not receiving Anthelmintic	National	Rural	Urban
Didn't know	46.3	50.6	34.0
The child was fed in the previous time	11.1	9.3	16.2
Was not at home	8.0	8.4	7.2
Was very busy	5.7	5.0	7.2
Fear of side effect	5.4	4.2	9.6
Doesn't believe in Anthelmintic Tablet	3.6	2.4	6.9
Lives in another ward, That's why the vaccinator did not give vaccine	3.4	3.9	2.1
The child did not want to take	2.9	2.4	4.3
Went on traveling	2.5	2.9	1.3
Child was not aged enough	2.0	1.7	2.4
The Doctor did not fed	1.9	1.8	2.4
No Anthelmintic Tablet	1.8	1.8	1.9
The child was sick, so he/she was not taken	1.5	1.5	1.1
The child was sick, so vaccine was not given	1.3	1.1	1.6
Number of Children who did not receive Anthelmintic tablet	**1677**	**1250**	**376**

Table H2: Reasons as to why Children did not receive Anthelmintic during Vitamin A Plus campaign in 2012 in Rural Areas by Division

Reasons for not receiving Anthelmintic	All Rural	Dhaka	Chittagong	Rajshahi	Barisal	Khulna	Sylhet	Rangpur
Didn't know	50.6	51.5	52.5	49.4	50.7	44.8	51.9	53.8
The child was fed in the previous time	9.3	8.3	8.9	2.9	10.3	17.2	15.2	5.1
Was not at home	8.4	5.6	6.8	6.9	15.1	9.2	10.1	11.1
Was very busy	5.0	6.8	7.2	2.9	5.5	1.1	6.3	3.4
Fear of side effect	4.2	4.6	3.4	5.7	4.8	5.2	1.3	1.7
Doesn't believe in Anthelmintic Tablet	2.4	1.2	5.5	1.7	2.7	0.6	0.0	4.3
Lives in another ward,That's why the vaccinator did not give vaccine	3.9	3.1	4.2	5.2	0.7	6.9	1.3	5.1
The child did not want to take	2.4	2.5	1.7	4.0	0.7	4.0	1.3	1.7
Went on traveling	2.9	3.4	0.4	2.3	3.4	4.6	3.8	3.4
Child was not aged enough	1.7	1.5	0.0	6.9	1.4	0.0	0.0	1.7
The Doctor did not fed	1.8	2.2	1.7	5.7	0.7	0.0	0.0	0.0
No Anthelmintic Tablet	1.8	1.9	1.7	1.7	0.0	1.7	2.5	4.3
The child was sick, so he/she was not taken	1.5	2.2	0.8	1.7	0.7	1.1	2.5	1.7
The child was sick, so vaccine was not given	1.1	2.2	0.8	0.6	0.7	1.1	0.0	0.9
Number of Children who did not receive Anthelmintic tablet	**1250**	**324**	**236**	**174**	**146**	**174**	**79**	**117**

Table H3: Reasons as to why children did not receive anthelmintic during vitamin A plus campaign in 2012 in urban areas by City Corporation

Reasons for not receiving Anthelmintic	All Urban	DSCC	DNCC	CCC	RCC	BCC	KCC	SCC	NCC	Com CC	Ran CC
Didn't know	34.0	35.0	37.5	16.7	23.8	53.3	25.0	7.4	29.5	20.7	25.0
The child was fed in the previous time	16.2	25.0	25.0	33.3	9.5	6.7	0.0	37.0	20.5	24.1	25.0
Fear of side effect	9.6	0.0	25.0	16.7	33.3	20.0	12.5	0.0	18.2	6.9	25.0
Was very busy	7.2	10.0	0.0	0.0	0.0	6.7	12.5	3.7	15.9	6.9	12.5
Was not at home	7.2	5.0	12.5	0.0	0.0	6.7	0.0	0.0	2.3	6.9	12.5
Doesn't believe in Anthelmintic Tablet	6.9	5.0	0.0	33.3	0.0	0.0	0.0	14.8	4.5	27.6	0.0
The child did not want to take	4.3	0.0	0.0	0.0	4.8	0.0	12.5	11.1	6.8	3.4	0.0
Child was not aged enough	2.4	5.0	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.0	0.0
The Doctor did not fed	2.4	0.0	0.0	0.0	4.8	6.7	12.5	7.4	0.0	0.0	0.0
Lives in another ward,That's why the vaccinator did not give vaccine	2.1	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
No Anthelmintic Tablet	1.9	0.0	0.0	0.0	0.0	0.0	0.0	11.1	2.3	0.0	0.0
The child was sick, so vaccine was not given	1.6	0.0	0.0	0.0	0.0	0.0	0.0	7.4	0.0	0.0	0.0
Went on traveling	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0
The child was sick, so he/she was not taken	1.1	0.0	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0
Time was inconvenient	0.8	0.0	0.0	0.0	4.8	0.0	12.5	0.0	0.0	0.0	0.0
The centre was too far	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waited for home visit	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Religious/Social obstacles	0.3	0.0	0.0	0.0	0.0	0.0	12.5	0.0	0.0	0.0	0.0
Number of Children who did not receive Anthelmintic tablet	**376**	**20**	**8**	**6**	**21**	**15**	**8**	**27**	**44**	**29**	**8**

Table H4: Sources of Information about Vitamin A Plus Campaign by National, Rural and Urban Areas in 2012

Sources	National	Rural	Urban
GOB FW visit	47.3	54.3	27.9
Mosque Miking	26.7	30.7	16.5
Family/neighbor/friends	23.7	20.8	29.0
Mobile Miking	17.8	15.2	25.4
Television	17.5	9.9	39.6
Health worker visit	7.5	8.8	3.9
Other volunteers Visit	3.1	3.2	3.4
NGO worker Visit	1.9	1.7	2.5
Told during previous round	1.7	1.7	1.9
City Corporation FW visit	1.4	0.9	3.4
Through mobile message	1.3	0.9	3.0
Poster	0.7	0.7	0.7
Newspaper	0.7	0.3	1.8
Teacher visit	0.5	0.6	0.1
Radio	0.3	0.4	0.2
Banner	0.3	0.0	1.1
School	0.1	0.1	0.1
Watchman	0.0	0.0	0.0
Don't know	0.0	0.0	0.0

Chapter 7

DISCUSSION AND PROGRAMATIC IMPLICATIONS

7.1 Discussion and Programmatic Implication

Coverage Evaluation Survey 2013 was conducted in 76 survey units as a part of regular monitoring activities of EPI program in Bangladesh. The survey followed WHO 30 clusters sampling technique. Seven groups of survey respondents were covered under five types of survey in CES 2013. Survey results were discussed separately in the previous chapters of this report. This chapter discusses the findings of the CES 2013 from an analytic point of view considering the strength and weakness of the EPI program.

Under the childhood vaccination survey, coverage was estimated based on information recorded on vaccination card. When the vaccination card was not available the history from the mothers/caregivers was collected. Two types of coverage: crude and valid, were estimated and presented in the report.

The findings show that 80.7 percent of the children received all the antigens with valid doses by the age of 12 months while crude coverage was 92.8 percent. Compared to CES 2011, valid coverage increased by 0.7 percentage point in 2013 (80 percent in 2011 and 80.7 percent in 2013). Gap between two types (crude and valid) of coverage was 12.1 percentage points. The gap between access to vaccination (BCG vaccination) and the crude vaccination coverage was 6.5 percentage points.

Administered invalid doses make such differences between valid and crude coverage. Across the country, invalid Penta3 was found to be 7.4 percent and measles 3.8 percent. Moreover, noting down the gap between BCG and crude coverage is also important. Access to vaccination service of BCG was nationally found to be 99.3 percent. The gap between the crude coverage and access to vaccination service was 6.5 percentage points, which indicated that around 7 percent of the children were nationally dropped from vaccination service after receiving BCG.

In case of the analysis of the vaccination coverage by area, valid coverage was found to be slightly higher in rural areas (81.2 percent) compared to that in urban areas (80.4 percent). There was also difference between male and female children's access to vaccination services. Irrespective of EPI vaccination schedule, it was found to be slightly higher among the males (93 percent) compared to the females (92 percent). Similarly, difference was observed between the males and females in terms of valid coverage (81 percent for males and 80 percent for females).

Among the administrative divisions, crude coverage was found to be the highest in Rajshahi (95 percent) and the lowest in Barisal divisions (91 percent). Crude coverage was 94 percent in Rangpur and Khulna, 93 percent in Chittagong and 92 percent in Dhaka and Sylhet divisions.

Across the divisions, the highest percentage of full vaccination coverage by the age of 12 months was in Rajshahi division (85.2 percent) whereas the lowest percentage of coverage was in Barisal division (77.5 percent). This was being followed by Khulna (84.8 percent), Rangpur (81.5 percent), Sylhet (80.7 percent), Dhaka (79.0 percent) and Chittagong (79.3 percent).

Among the divisions, the highest valid vaccination coverage was revealed in Rajshahi (85.2 percent) with the least gap of 10 percentage points between the crude and the valid coverage. The act of administering vaccine by following the exact age and interval contributes in lowering the gap between crude and valid coverage. Invalid Penta1 doses were 4.2 percent in Rajshahi division as against 5.3 percent in Chittagong division. Moreover, invalid Penta3 doses were 6.3 percent and invalid measles dose was 2.7 percent in Rajshahi division.

Regarding access to vaccination service of BCG, it was found to be highest in Rajshahi, Rangpur and Khulna division (99.7 percent), and the lowest (97.9 percent) in Sylhet division. Access to vaccination services indicates how many children are still out of vaccination service. More than 2 percent of the children in Sylhet, 1.3 percent in Chittagong and nearly 1 percent in Dhaka, Barisal, Rangpur, Rajshahi and Khulna division didn't receive any vaccine.

Dropout rate was the highest (8.9 percent) in Barisal division. It was 7.1 percent in Dhaka, 6.0 percent in Chittagong, 5.8 percent in Sylhet, 5.6 percent in Khulna and Rangpur, and 4.5 percent in Rajshahi division.

Although an escalating trend in the vaccination coverage was observed across the country, dissimilarities in full vaccination coverage were found across the divisions. Coverage in some of the divisions were below the national coverage (80.7 percent), which was the result of low performance in some of the districts under those divisions. Across the division, the highest percentage of full vaccination coverage by the age of 12 months was in Rajshahi division (85.2 percent) whereas the lowest percentage of coverage was in Barisal division (77.5 percent). This was being followed by Khulna (84.8 percent), Rangpur (81.5 percent), Sylhet (80.7 percent), Dhaka (79.0 percent) and Chittagong (79.3 percent).

The survey findings suggested that low performance of some of the districts could be attributed to lower vaccination coverage by the age of 12 months in Chittagong, Dhaka and Barisal divisions.

Among the districts, lower percentages of valid coverage by the age of 12 months were observed in Rangamati (68.1 percent), Mymensingh (71.4 percent), Patuakhali (72.1 percent), Noakhali (72.6 percent), Madaripur (73.0 percent), Shariatpur (73 percent), Netrokona (74.3 percent), Gazipur and Narayanganj (74.6 percent), B.Baria (74.9 percent), Bhola (76.2 percent), Barguna (76.6 percent), Jhalokati (76.7 percent), Sylhet (76.8 percent) and Kushtia (76.9 percent). However, valid coverage was high in Bagerhat (91.0 percent), Lakshmipur (88.8 percent), Jhenaidah (88.4 percent), Khulna (88.3 percent) and Nilphamari (88.0 percent).

Despite the progress in vaccination service and increase in the national coverage, coverage in many districts remained lower than the previous CES. Survey analysis has identified three main reasons for such result - a) high dropout rate, b) the act of administering vaccines before the EPI-recommended interval and c) the act of administering the measles vaccine beyond 12 months of age. Dropout rate of Penta1-Penta3 was high in Mymensingh(6.8 percent), Bhola (5 . 9 percent), Rangamati (5.6 percent), Netrokona (5.3 percent), Gazipur (4.8 percent), Sylhet (4.5 percent), Noakhali (4.4 percent) and Bogra (4.3 percent). Invalid doses of Penta 1 was high in Panchagarh (9.3 percent), Serajganj (8.9 percent), Patuakhali(8.7 percent), Narayanganj (7.6 percent), Kustia (7.2 percent), Rangamati (7.1 percent), Noakhali (7.1 percent), Feni (7.1 percent), Rangpur (6.9 percent), Bandarban (6.6 percent), Sylhet (6.4 percent), Comilla (6.3 percent) and Rajshahi (6.1 percent).

Dropout resulted from the mothers'/caregivers' lack of awareness about the importance of vaccination, distance of the vaccination center and the vaccine-recipient's home, lack of proper information about the vaccination day by the field workers and migration. In order to achieve the coverage target, all these issues should be given due attention. Higher dropout rates also attributed to lower vaccination coverage rate. EPI program should ensure EPI-recommended vaccination schedule all over the country, irrespective of the residences of the target population.

In case of the TT survey, that the mothers of 0-11 months old children were considered as the focus of the survey. It was found that 44 percent of the mothers received all the 5 doses of valid TT vaccination nationally. However, there was a slight variation between urban (43 percent) and rural (44 percent) areas in this regard. Area wise analysis of valid TT2 dose shows difference of 1 percentage point between urban and rural areas - where the TT2 coverage in urban areas was 97 percent, it was 96 percent in rural areas. Nationally, crude TT5 coverage was found to be 58 percent and a large gap between the valid coverage and crude TT5 coverage can be seen. One of the reasons of this gap might be lower card retention rate of the mothers. In most cases, mothers were found to have lost their vaccination cards so; the health workers could not get information on the TT status of the mothers. As a result, they administered vaccines to those mothers who actually did not need those at all.

The valid TT3 coverage was nationally found to be 83 percent. It declined down to 64 percent for TT4 and 44 percent for TT5 doses. Similarly, in urban areas valid TT3 coverage was 84 percent and TT4 coverage was 63 percent compare to 84 percent coverage for TT3 and 64 percent for TT4 in rural areas. There was variation in the coverage between urban (57 percent) and rural (58 percent) areas in terms of the access to the vaccination service. Nationally, 98 percent of the mothers received TT1 and 96 percent of them received TT2. Across the country 96 percent of the mothers received TT2 doses. It decreased down to 88 percent for TT3, 74 percent for TT4 and finally, 58 percent for TT5 dose. A similar trend was observed in both urban and rural areas.

Moreover, 55 percent of the mothers mentioned that they lost the TT card. Fifty nine percent of the mothers residing in urban areas and 53 percent of them in rural areas lost the card. Likewise, card retention rate was found to be 40 percent across the country with 6 percentage points difference between urban (36 percent) and rural (42 percent) areas. Thirteen percent of the total surveyed mothers received invalid doses of TT3 across the country. The incidence rate of invalid doses for TT4 was 12 percent nationally - 12 percent in both the rural and urban areas. However, for TT5 the rate was 11 percent nationally. It was also 11 percent in rural and urban areas.

Furthermore, knowledge about the number of TT doses is an important issue to avoid administering the doses which is not necessary for a person. In the country, 36 percent of the mothers didn't know about the total number of doses. Analysis shows, regarding the knowledge of the total doses there was 6 percent difference between the mothers' living in urban areas and those belonging to rural areas. Sixty nine percent of the mothers from urban areas mentioned about 5 doses against 63 percent of rural mothers.

On the other hand, NID is one of the Supplementary Immunization Activities (SIA) of EPI programme which is usually held twice a year. According to the survey findings, 96 percent of the children aged between 0-59 months were vaccinated with OPV during the first round of 20th NID held on 7th January, 2012. However, there were a slight variation between urban (97 percent) and rural (96 percent) areas in this regard. Similarly, urban-rural variation in OPV coverage was observed in the second round of 20th NID. During the second round, 96 percent of the children in urban areas and 94 percent of the children in rural areas received OPV. Regarding the source of OPV vaccination, it was found that 99 percent of the children received OPV from the fixed site in both the rounds of 20th NID. Rest of the children received vaccine during the child- to- child search (0.8 percent in 1st round and 0.5 percent in 2nd round) and from mobile centers (0.3 percent in 1st round and 0.2 percent in 2nd round).

As a part of reintegrated strategy, Vitamin A plus Campaign was held on June 2, 2012. CES 2013 assessed the coverage and found that 84 percent of the infants aged between 6-11 months and 93 percent of the infants aged between 12-59 months received Vitamin A across the country. Ninety percent of the children received Anthelmintic treatment during Vitamin A Plus campaign. The coverage was 2 percentage points higher among the female children (90 percent) than the male children (88 percent). There was no difference between the urban-rural coverage. In such place, more effective communication campaign, including the involvement of the local elites, should be ensured throughout the country to achieve 100 percent coverage in such campaigns. Reasons for not receiving Anthelmintic treatment were analyzed in CES 2013 and the survey found that 46.3 percent of the mothers/caregivers did not know about the campaign. Other reasons were: mothers were not in home at the time of campaign, they were busy, fear of side effects etc.

In the light of the discussion above, the following issues need particular attention:

- Child vaccination cards should be carefully maintained specially during various natural disasters
- Ways to preserve TT vaccination cards
- Ways to minimize the dropouts from BCG to Penta1 and Penta1 to Penta3. Missing Penta1 or Penta3 will discourage mothers to visit EPI center for the next vaccination because then they will not give importance to it.
- Dropout rates from BCG to Penta1 and Penta3 are high in many districts. These districts need regular supervision and monitoring to minimize the dropout rates.
- Dropout rate from BCG to Penta3 and Penta3 to measles is high among the children which requires strong supervision and monitoring targeting to eliminate the dropouts. This can also ensure improvement of EPI vaccination coverage rate automatically.
- There is a large gap between the overall vaccination coverage and the valid coverage. The main challenge for the EPI program management is to develop strategies so that the gaps can be reduced.
- Overall, the success of EPI Program depends on three important factors: 1) preservation of the vaccination card and minimizing the dropout rates in case of multi-doses vaccines, 2) strict maintenance of the recommended dose schedule of vaccines to avoid invalid doses, thus ensuring reduction of the gap between overall/total coverage and valid coverage. If EPI program management could improve these three factors, valid coverage will increase significantly.
- EPI program should ensure access of vaccination to all the migrant children irrespective of their locality and children in hard-to-reach areas. Vaccination services should be available at the vaccination centers, where they find it convenient.

The immediate step of the EPI management is to visit the low performing divisions/districts and identify the real causes for such failures. To improve the EPI coverage appropriate measures should be taken on the basis of facts and findings. The management may need to discuss the matter with EPI workers, mothers, and community members for finding out the reasons for losing

vaccination cards and for their failure to bring the child for the next vaccination. Furthermore, health workers should follow the EPI-recommended vaccination schedule strictly so that incidence of invalid dose doesn't occur at all. The national and local level workshops with district and Upazila level manager might be helpful to find out the appropriate strategies aiming at reducing the incidence of invalid doses. Reaching Every Community (REC) strategy could be one of the options to achieve the vaccination target in EPI. Moreover, the most effective strategies or interventions adapted in the high performing districts towards achieving the high vaccination coverage should be replicated in other districts, particularly in the low performing districts, by taking into account the geographical and other area-specific issues at the same time.

Appendix A

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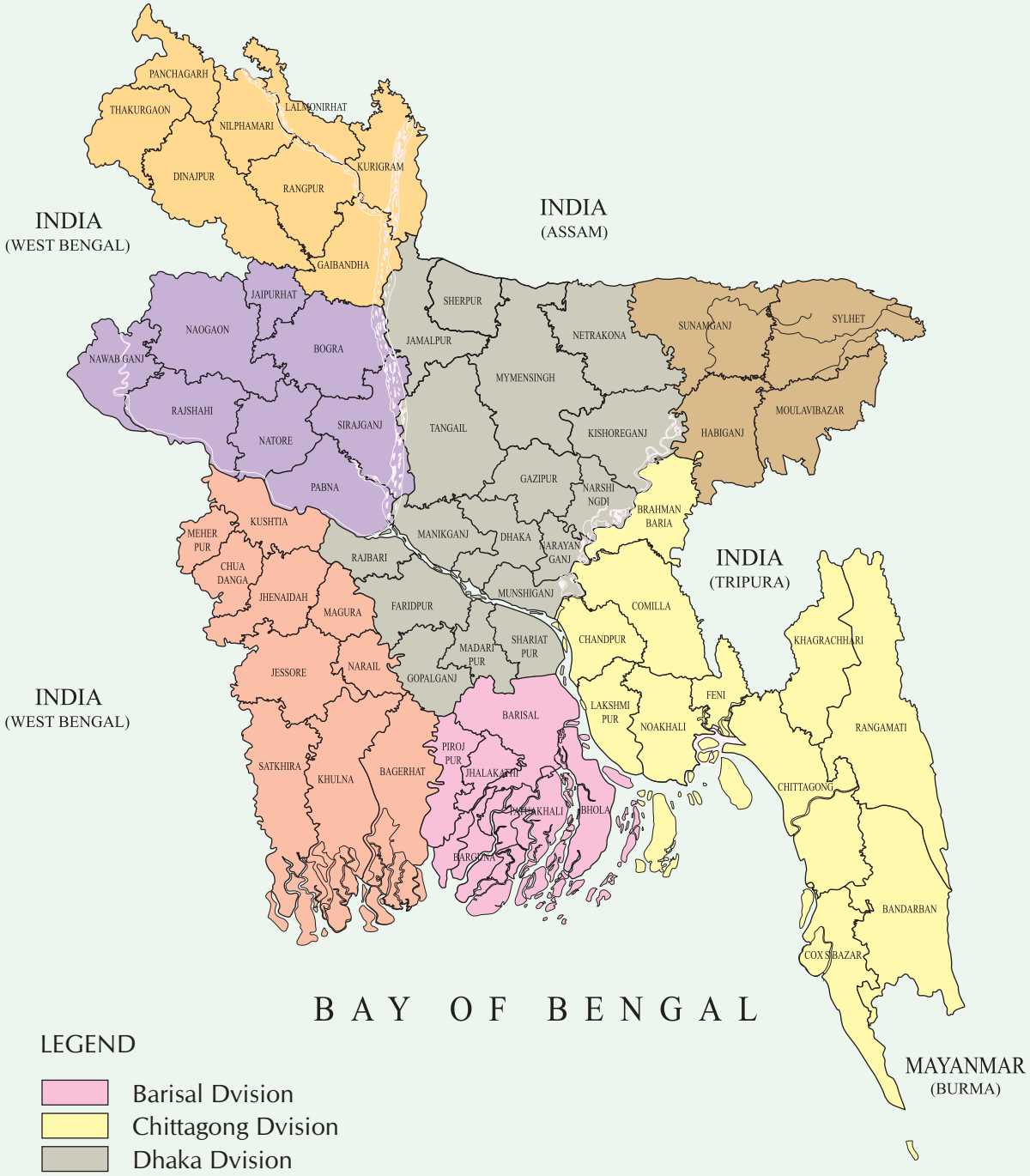
Appendix B

VACCINATION COVERAGE BY SURVEY UNIT

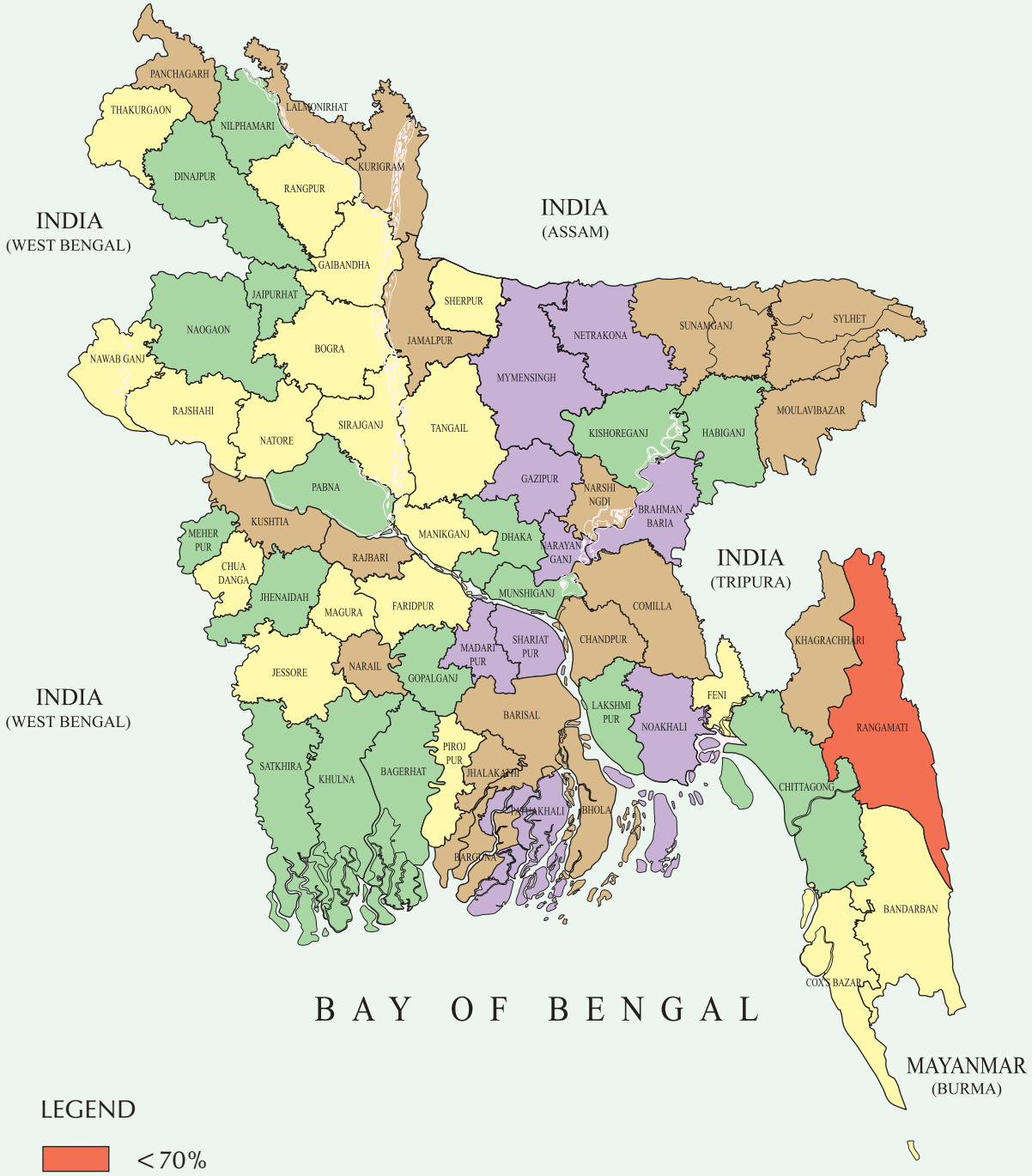
EPI COVERAGE SURVEY 2013
SURVEY UNITS



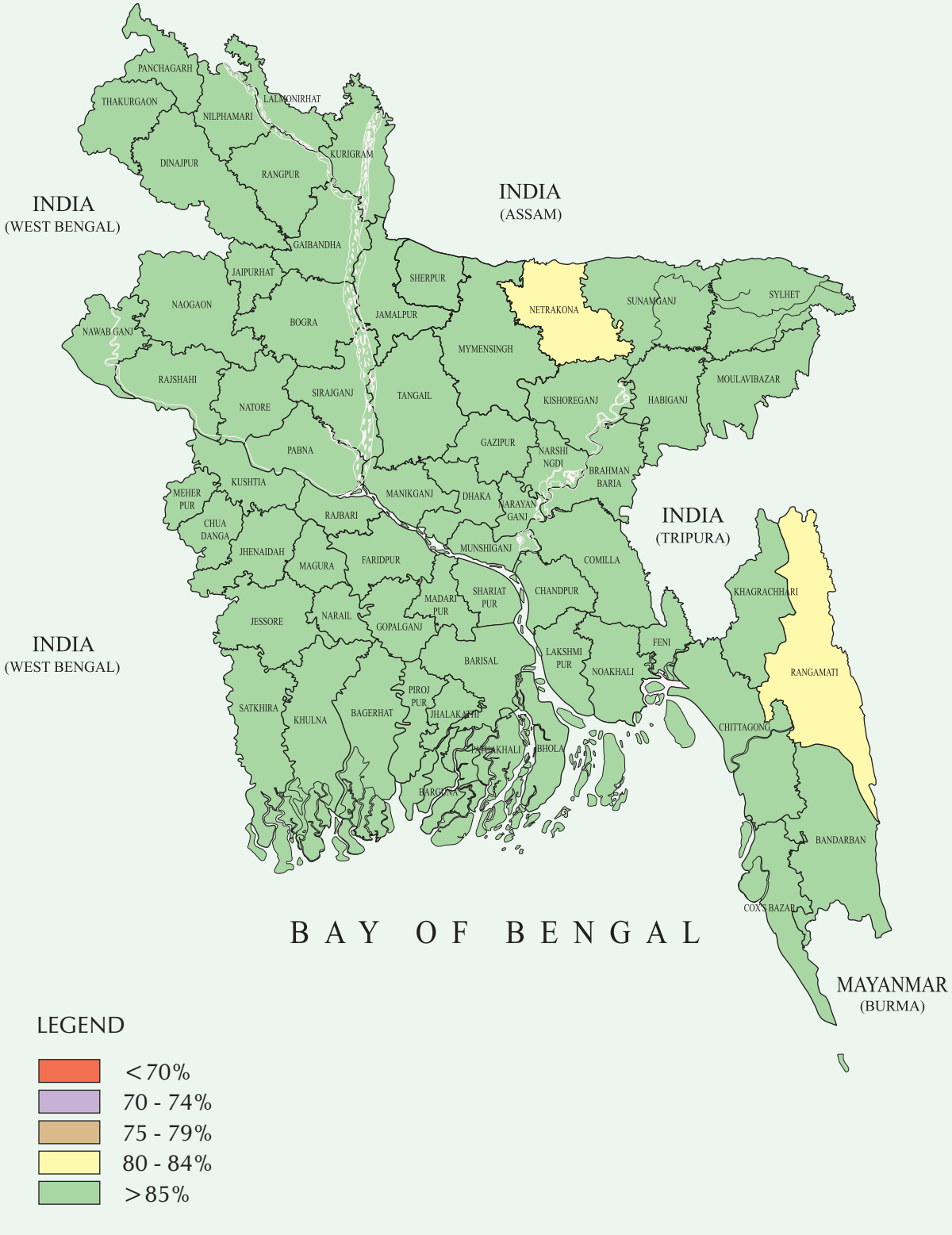
LEGEND

- Barisal Dvision
- Chittagong Dvision
- Dhaka Dvision
- Khulna Dvision
- Rajshahi Dvision
- Sylhet Dvision
- Rangpur Dvision

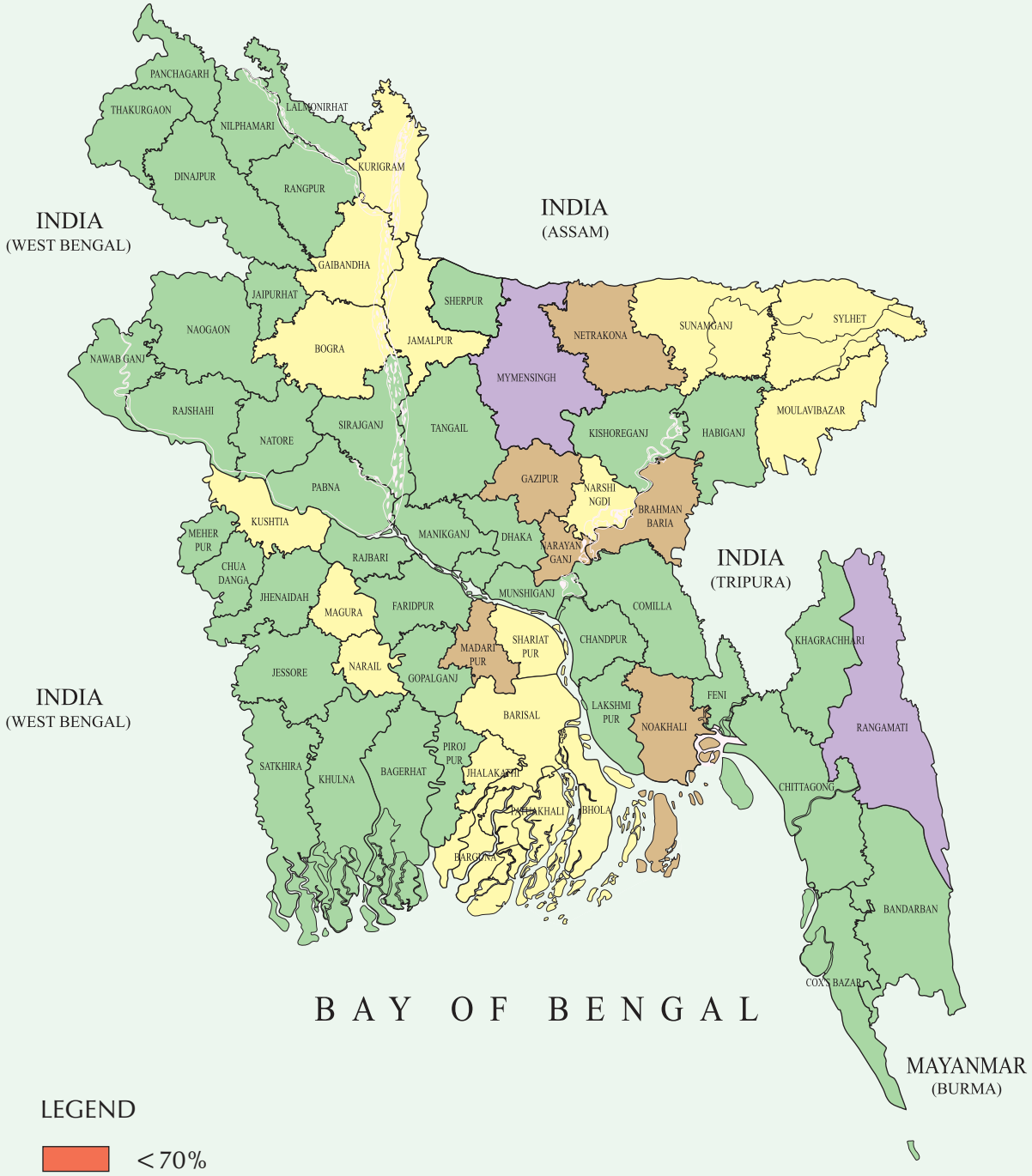
VALID FULL VACCINATION COVERAGE BY 12 MONTHS OF AGE IN BAGNLADESH BY DISTRICT 2013



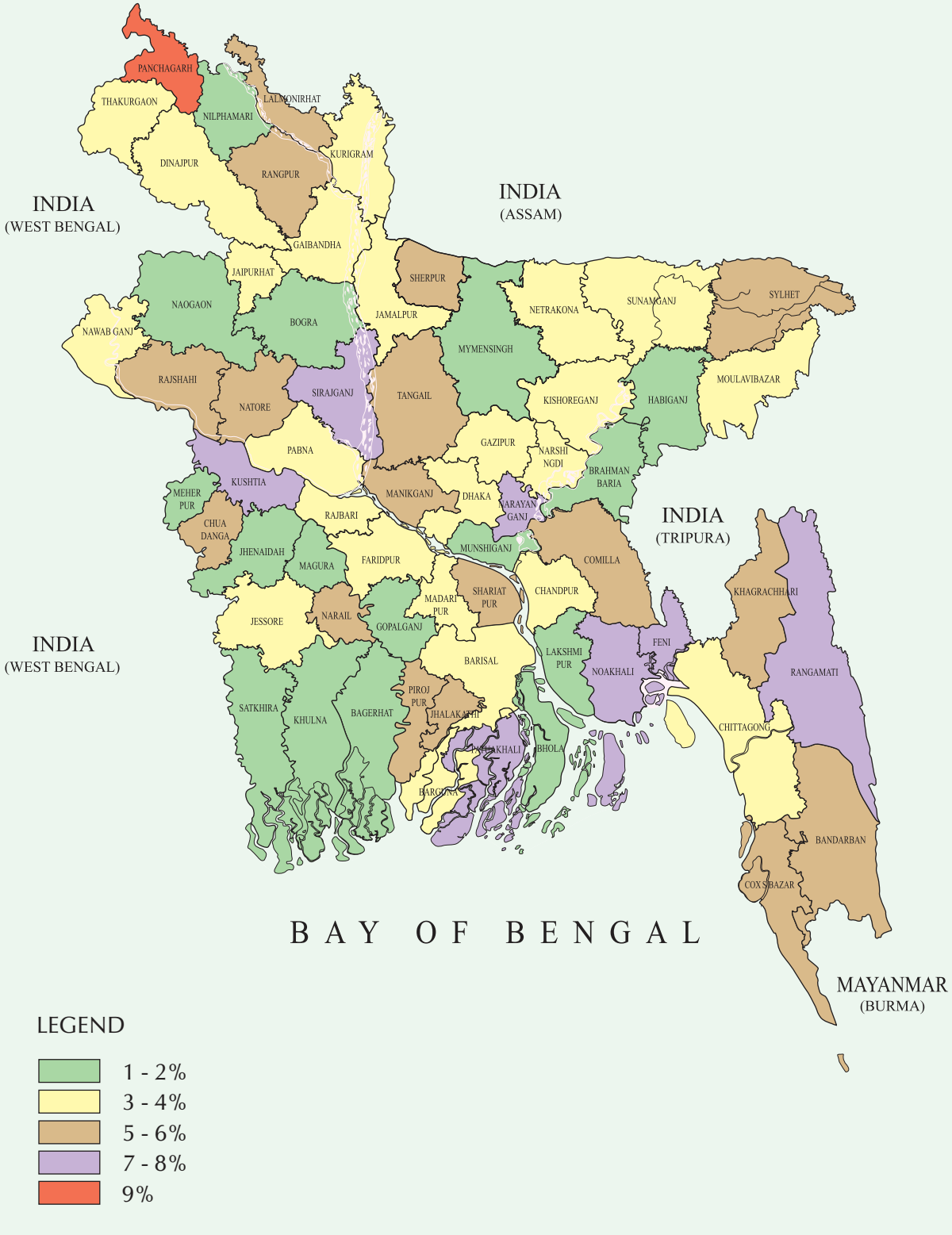
VALID PENTA 3 VACCINATION COVERAGE BY 12 MONTHS OF AGE IN BAGNLADESH BY DISTRICT 2013



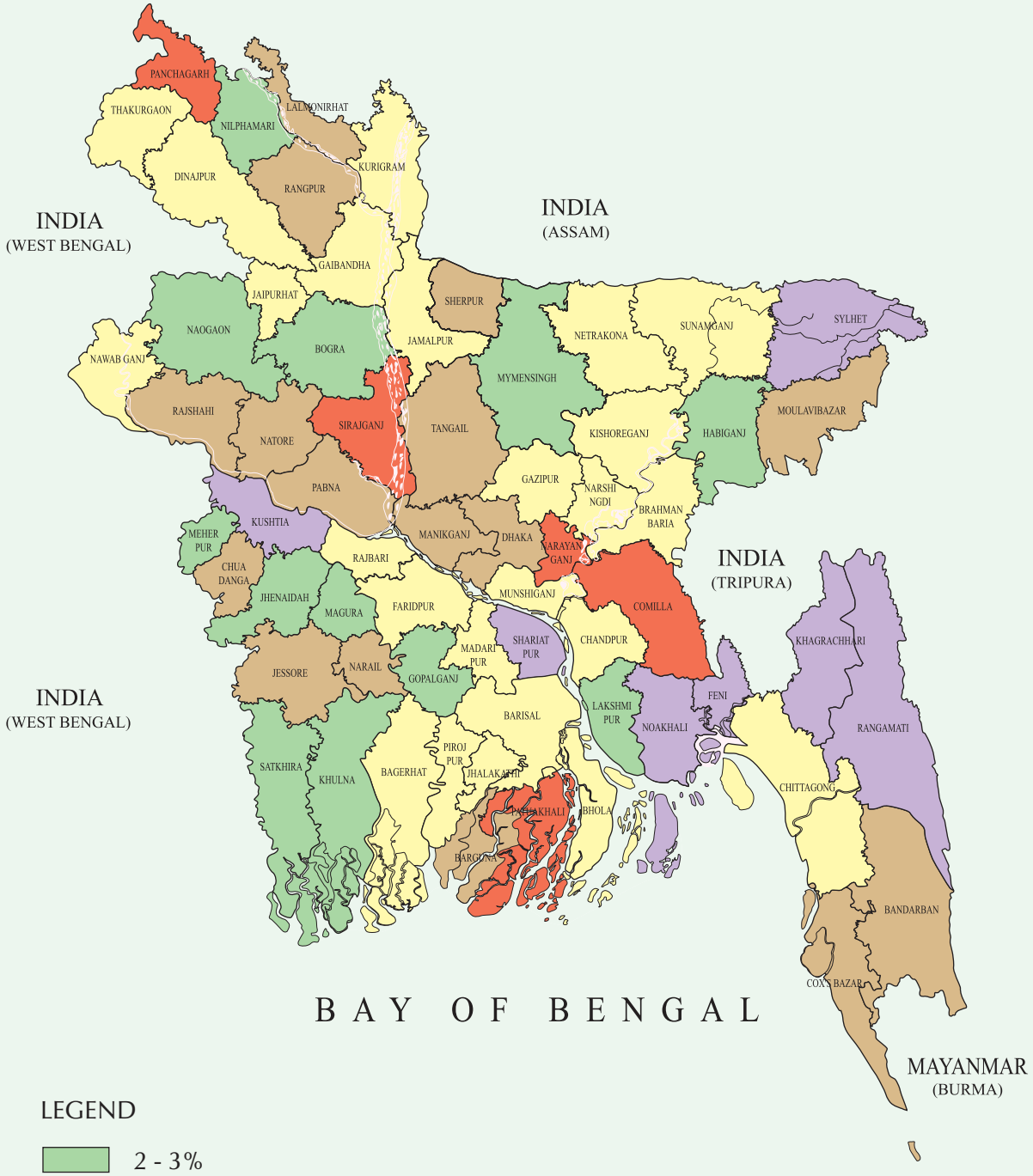
VALID MEASLES VACCINATION COVERAGE BY 12 MONTHS OF AGE IN BAGNLADESH BY DISTRICT 2013



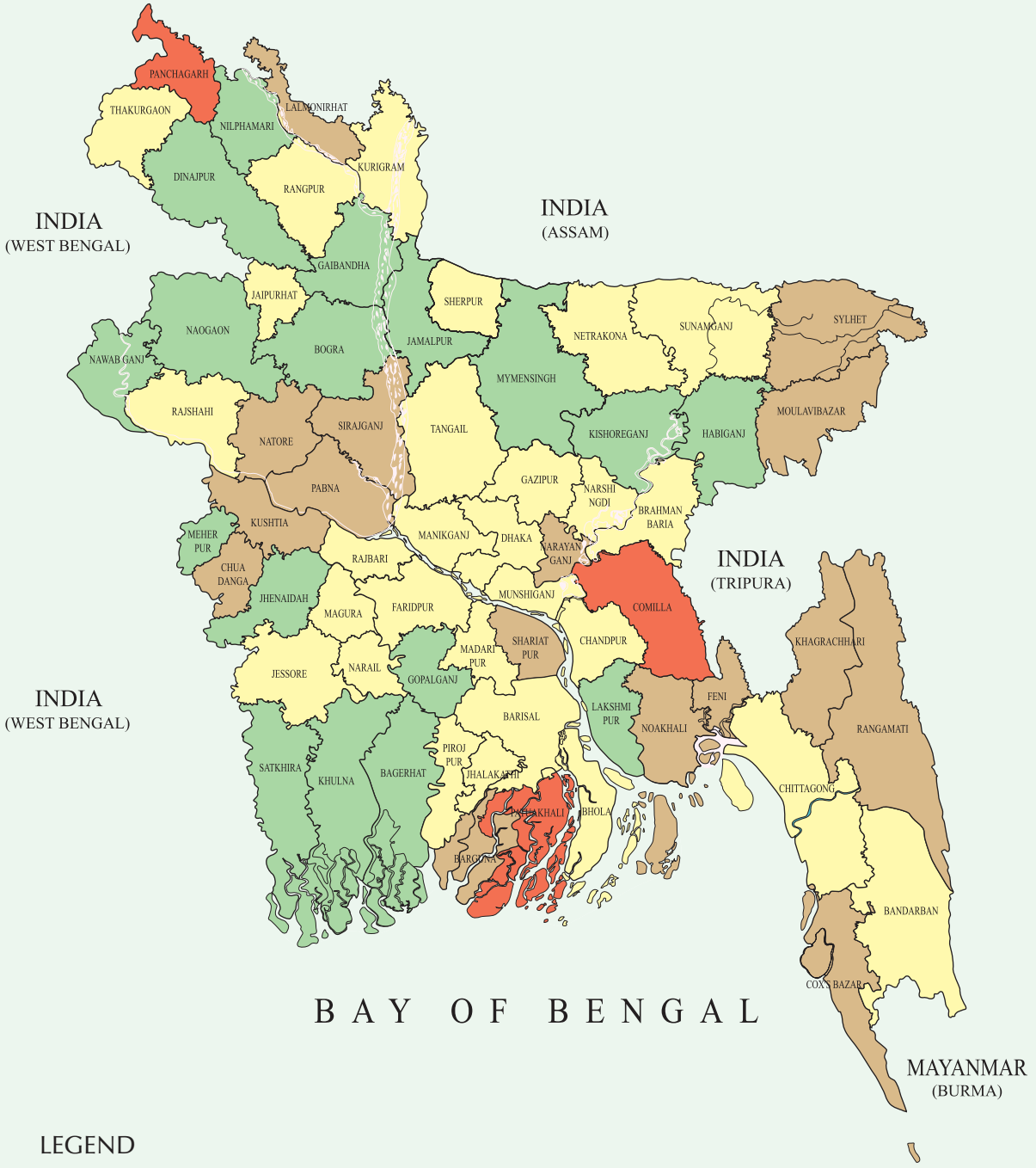
INCIDENCE OF INVALID PENTA 1 DOSE BY 12 MONTHS OF AGE IN BAGNLADESH BY DISTRICT 2013



INCIDENCE OF INVALID PENTA 2 DOSE BY 12 MONTHS OF AGE IN BAGNLADESH BY DISTRICT 2013



INCIDENCE OF INVALID PENTA 3 DOSE BY 12 MONTHS OF AGE IN BAGNLADESH BY DISTRICT 2013

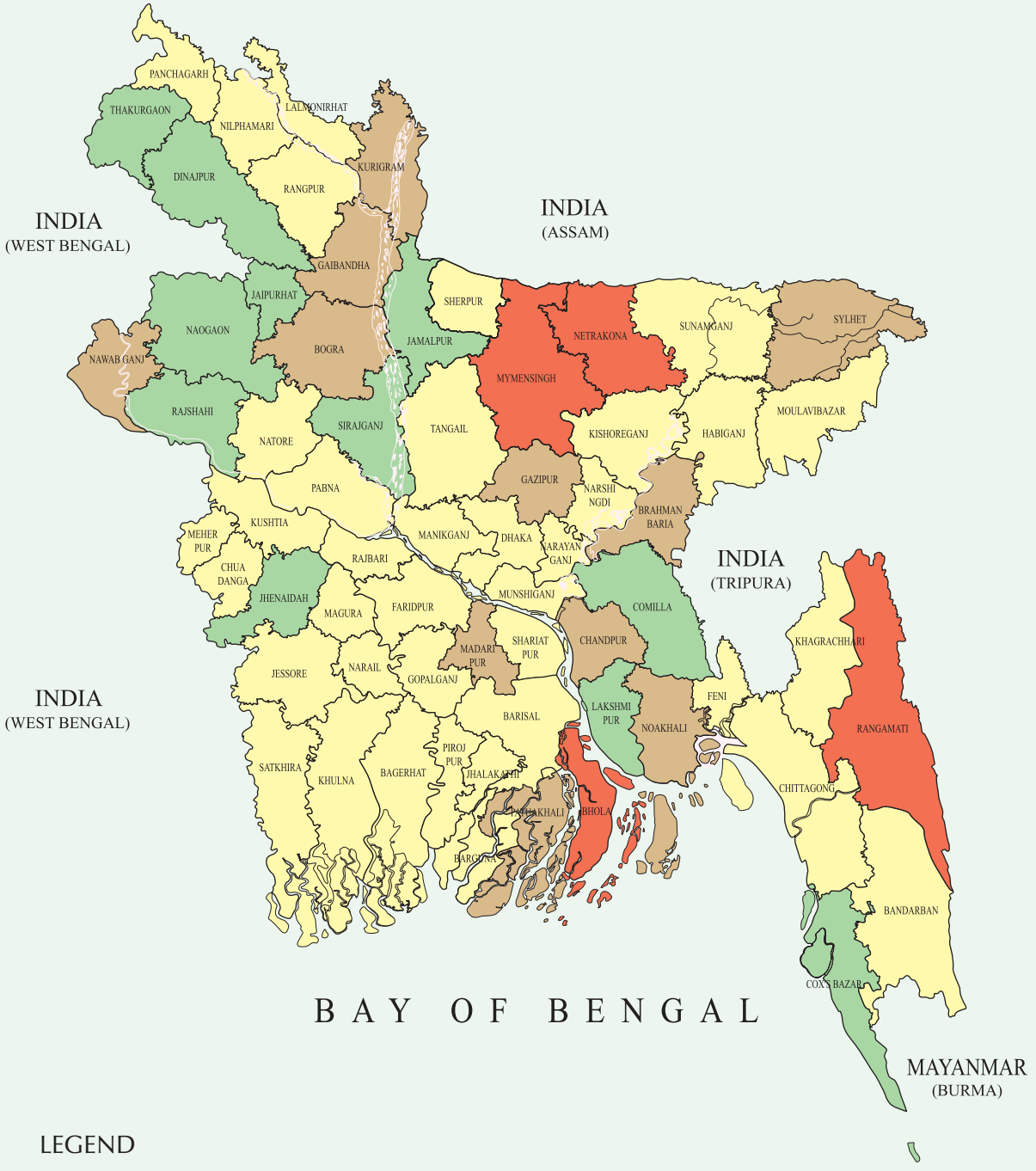


LEGEND

- 2 - 5%
- 6 - 8%
- 9 - 11%
- 12-15%

INCIDENCE OF INVALID MEASLES DOSE BY 12 MONTHS OF AGE IN BAGNLADESH BY DISTRICT 2013

VACCINATION DROUPOUT RATE FOR PENTA 1-PENTA 3 AMONG 12-23 MONTHS OLD CHILDREN IN BAGNLADESH BY DISTRICT IN 2013



LEGEND

- 0%
- 1 - 2%
- 3 - 4%
- 5 - 7%

VACCINATION DROUPOUT RATE FOR PENTA 1-MEASLES AMONG 12-23 MONTHS OLD CHILDREN IN BAGNLADESH BY DISTRICT IN 2013

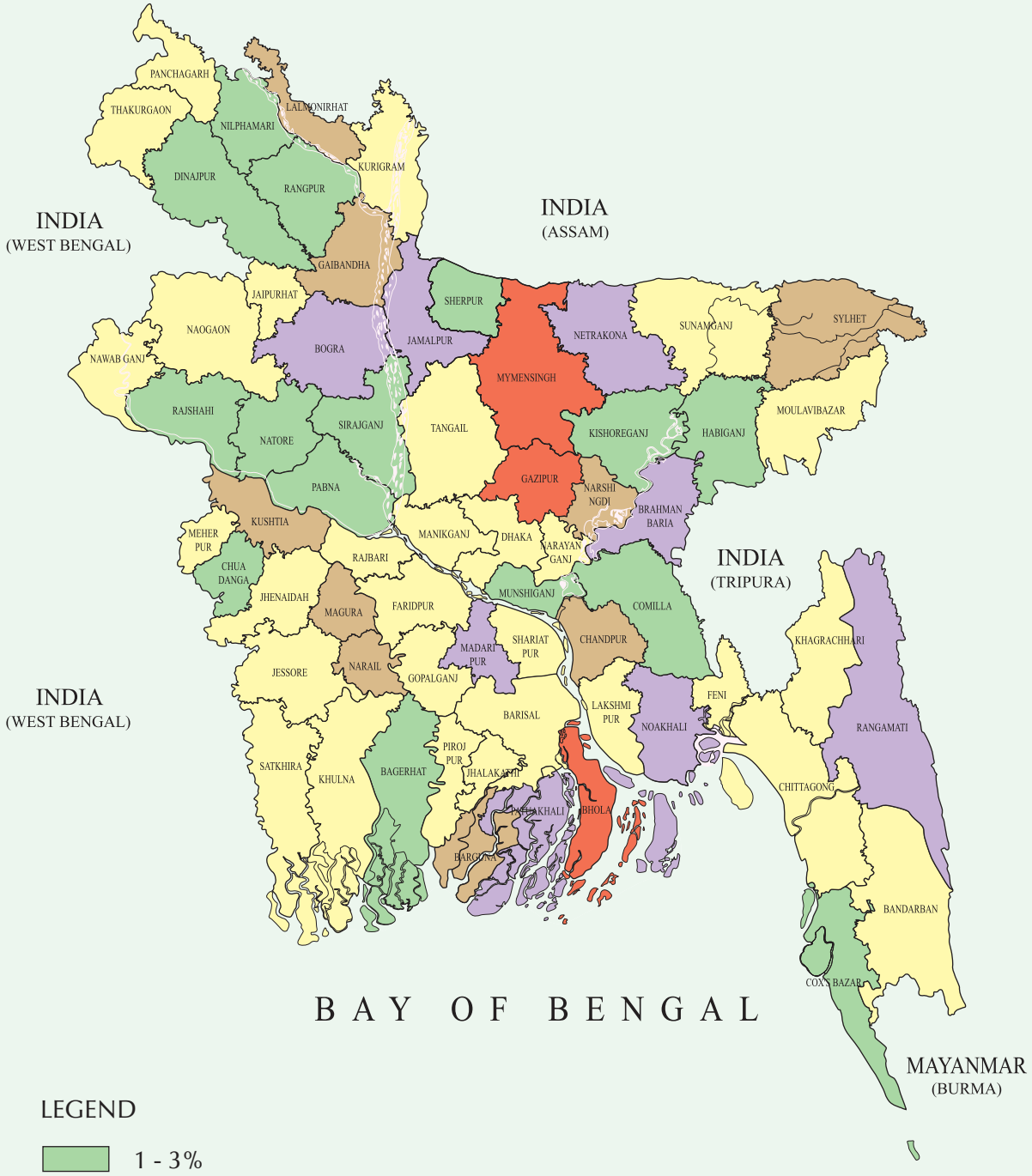


Table 1: Valid Immunization Coverage by Age 12 Months among 12-23 Months Old Children According to Survey Units by District, City Corporation

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Dhaka	100.0	98.5	94.8	97.6	95.4	95.6	96.3	90.2	85.6
Faridpur	99.5	96.8	92.1	94.1	94.1	93.0	93.0	86.7	81.8
Gazipur	100.0	98.9	94.9	96.3	95.2	91.9	93.0	78.2	74.6
Gopalganj	99.5	94.0	91.9	94.2	94.2	94.1	94.1	87.5	85.3
Jamalpur	99.0	96.2	92.6	96.8	96.8	95.7	95.7	82.7	79.1
Kishoreganj	100.0	96.0	91.9	95.4	94.3	92.8	94.0	89.0	87.0
Madaripur	99.0	96.4	93.5	94.0	92.9	92.5	91.3	78.4	73.0
Manikganj	100.0	96.8	91.9	96.4	93.6	93.6	96.4	86.5	81.9
Munshiganj	99.5	98.2	95.8	97.6	95.2	96.1	94.3	94.1	87.5
Mymensingh	99.0	93.6	91.6	91.2	91.2	86.3	85.1	74.6	71.4
Narayanganj	98.6	94.5	87.7	89.7	87.5	89.9	91.4	79.0	74.6
Norsingdhi	98.6	90.7	87.6	91.4	89.5	88.3	87.7	83.7	77.9
Netrokona	98.6	88.7	85.5	84.5	83.3	80.1	80.8	77.3	74.3
Rajbari	100.0	95.7	91.9	95.7	93.9	94.3	93.7	85.0	79.2
Shariatpur	99.5	97.4	92.3	95.3	91.0	92.7	93.4	80.4	73.0
Sherpur	99.5	89.6	85.0	89.8	88.5	88.6	87.9	87.7	81.1
Tangail	98.6	93.2	88.4	92.2	91.0	88.3	90.0	86.7	82.3
Dhaka Slum	97.1	96.2	95.3	91.5	91.5	83.4	83.4	75.7	75.3
DSCC	99.0	96.8	91.7	94.3	93.6	90.4	91.9	78.8	76.1
DNCC	100.0	95.4	90.8	93.6	91.0	92.6	93.2	85.6	80.6
NCC	98.6	91.5	84.0	90.9	87.5	82.2	87.1	77.7	71.7
Dhaka Division	**99.4**	**95.0**	**90.9**	**93.6**	**92.0**	**91.0**	**91.6**	**83.6**	**79.0**
Bagerhat	99.5	97.5	96.0	97.5	95.5	95.6	95.6	94.6	91.0
Chuadanga	100.0	93.3	88.0	93.8	92.7	91.3	90.2	92.2	84.4
Jessore	99.5	95.8	92.1	97.4	95.2	94.8	94.2	89.4	83.3
Jhenaidah	99.5	92.1	89.4	92.5	92.0	92.5	93.6	90.7	88.4
Khulna	99.5	96.5	94.1	95.6	95.0	95.5	95.5	91.3	88.3
Kushtia	100.0	93.5	86.9	92.6	91.6	88.4	89.5	83.8	76.9
Magura	100.0	98.3	95.9	98.4	96.6	94.8	93.6	84.8	80.0
Meherpur	99.5	97.7	96.0	95.9	95.3	95.5	94.3	91.5	87.9
Narail	99.5	91.3	86.9	90.0	88.9	87.8	89.5	82.5	79.5
Satkhira	100.0	97.3	95.1	96.7	95.6	95.2	95.8	89.0	86.7
KCC	99.5	95.0	94.4	92.7	92.7	92.4	93.0	86.6	86.6
Khulna Division	**99.7**	**95.3**	**92.2**	**94.8**	**93.7**	**93.0**	**93.1**	**88.8**	**84.8**
Bogra	100.0	96.1	94.4	95.2	94.1	92.4	91.3	84.7	81.4
Chapai Nawabganj	100.0	91.9	88.5	91.5	90.4	90.7	90.7	89.1	84.8
Joypurhat	100.0	99.4	96.1	100.0	98.3	96.6	98.3	90.2	86.9
Naogaon	99.0	96.6	95.1	96.1	95.1	95.6	95.1	90.2	87.2
Natore	98.1	93.7	88.8	93.7	91.0	91.7	91.1	90.3	81.7
Pabna	100.0	95.7	91.4	94.7	92.3	92.9	91.0	95.1	85.4
Rajshahi	100.0	96.7	90.6	96.1	95.0	95.0	95.0	91.7	84.8

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Serajganj	100.0	97.0	88.2	96.4	95.1	93.8	98.2	88.0	82.7
RCC	100.0	98.3	94.9	97.4	97.4	95.2	95.2	93.7	90.8
Rajshahi Division	**99.7**	**96.2**	**92.1**	**95.7**	**94.3**	**93.8**	**94.0**	**90.4**	**85.2**
Dinajpur	99.5	95.4	91.3	95.9	95.4	96.4	97.0	87.8	85.0
Gaibandha	100.0	93.4	89.6	94.0	93.5	87.5	89.7	83.6	82.9
Kurigram	100.0	96.9	92.2	95.1	94.5	93.6	92.0	84.4	77.5
Lalmonirhat	100.0	97.8	92.9	97.3	95.7	92.5	92.5	86.1	79.4
Nilphamari	100.0	100.0	97.8	99.5	97.9	96.9	97.4	90.7	88.0
Panchagarh	100.0	97.9	88.6	97.4	95.2	94.2	95.3	88.0	77.5
Rangpur	100.0	90.8	85.1	90.9	90.9	88.6	90.9	85.9	82.7
Thakurgaon	99.5	91.4	88.5	91.9	90.2	89.7	87.9	89.1	82.8
Ran CC	98.1	93.2	90.4	91.8	90.1	90.2	90.8	81.6	77.5
Rangpur Division	**99.7**	**95.3**	**90.8**	**95.0**	**93.8**	**92.3**	**92.7**	**86.4**	**81.5**
Habiganj	98.6	94.4	91.7	93.5	92.8	91.8	92.5	87.2	85.7
Moulavibazar	98.6	94.8	90.5	96.5	94.8	92.7	92.7	84.6	79.0
Sunamganj	97.6	91.9	88.5	91.0	89.8	87.9	87.3	83.6	78.3
Sylhet	95.7	95.2	89.6	93.3	91.3	87.3	89.9	82.4	76.8
SCC	99.0	97.7	97.0	96.6	95.9	94.2	94.2	85.7	85.2
Sylhet Division	**97.9**	**94.8**	**91.3**	**94.2**	**92.9**	**90.7**	**91.3**	**84.7**	**80.7**
Barisal	99.0	97.2	92.4	96.3	95.7	94.0	94.0	84.4	78.9
Bhola	98.6	93.5	92.3	89.2	85.0	86.0	86.6	81.1	76.2
Barguna	100.0	96.1	92.9	96.3	92.3	91.4	92.0	83.2	76.6
Jhalokati	99.5	97.3	91.6	95.3	95.3	94.3	93.1	83.6	76.7
Patuakhali	99.5	96.6	88.0	94.9	91.8	88.3	91.4	80.2	72.1
Perojpur	99.5	98.0	93.1	98.0	98.0	95.0	95.5	88.9	84.6
BCC	100.0	96.4	93.5	94.7	94.0	94.2	91.2	80.7	77.1
Barisal Division	**99.5**	**96.5**	**92.0**	**95.0**	**93.3**	**91.9**	**92.1**	**83.2**	**77.5**
Bandarban	99.5	98.0	91.5	96.6	96.1	94.6	96.1	86.7	81.1
B.Baria	98.1	94.0	91.2	90.8	88.8	88.0	88.0	78.5	74.9
Chandpur	99.5	99.5	95.3	98.1	97.5	92.7	92.1	85.7	79.8
Chittagong	100.0	96.7	92.2	96.7	95.6	94.6	94.6	91.2	86.5
Comilla	100.0	92.1	86.5	90.8	86.1	92.2	92.2	88.3	79.4
Cox'sbazar	100.0	95.9	90.0	95.9	94.7	94.2	94.2	90.8	84.5
Feni	99.0	96.7	90.3	96.7	94.9	92.9	95.2	86.4	80.4
Khagrachari	98.1	94.5	89.0	93.0	90.6	91.2	90.0	88.2	78.9
Lakshmipur	100.0	94.9	93.0	96.2	95.5	95.5	94.8	90.2	88.8
Noakhali	97.6	92.0	85.1	88.3	87.0	85.7	87.1	79.0	72.6
Rangamati	93.8	87.2	81.3	85.0	82.8	81.9	83.4	74.6	68.1
Chittagong Slum	97.6	92.3	86.7	86.8	86.8	82.1	84.3	63.3	60.1
CCC	98.6	92.1	87.1	90.0	87.9	86.7	87.4	77.1	70.2
Com CC	99.0	89.3	85.5	90.0	88.5	88.5	86.2	88.9	82.1
Chittagong Division	**98.7**	**94.3**	**89.3**	**93.2**	**91.6**	**90.9**	**91.2**	**85.3**	**79.3**
National	**99.3**	**95.1**	**90.9**	**94.1**	**92.6**	**91.6**	**92.0**	**85.5**	**80.7**
Urban	**99.3**	**94.6**	**90.9**	**93.6**	**92.4**	**90.8**	**91.1**	**84.3**	**80.4**
Rural	**99.3**	**95.4**	**91.1**	**94.5**	**93.1**	**92.2**	**92.5**	**86.4**	**81.2**

Table 1a: Valid Immunization Coverage by Age 12 Months among 12-23 Months Old Children According to Survey Units by District, City Corporation (Fully Immunized arranged in ascending order by all districts)

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Chittagong Slum	97.6	92.3	86.7	86.8	86.8	82.1	84.3	63.3	60.1
Rangamati	93.8	87.2	81.3	85.0	82.8	81.9	83.4	74.6	68.1
CCC	98.6	92.1	87.1	90.0	87.9	86.7	87.4	77.1	70.2
Mymensingh	99.5	93.6	91.6	91.2	91.2	86.3	85.1	74.6	71.4
NCC	98.6	91.5	84.0	90.9	87.5	82.2	87.1	77.7	71.7
Patuakhali	99.5	96.6	88.0	94.9	91.8	88.3	91.4	80.2	72.1
Noakhali	97.6	92.0	85.1	88.3	87.0	85.7	87.1	79.0	72.6
Madaripur	100.0	96.4	93.5	94.0	92.9	92.5	91.3	78.4	73.0
Shariatpur	99.5	97.4	92.3	95.3	91.0	92.7	93.4	80.4	73.0
Netrokona	98.6	88.7	85.5	84.5	83.3	80.1	80.8	77.3	74.3
Gazipur	99.0	98.9	94.9	96.3	95.2	91.9	93.0	78.2	74.6
Narayanganj	100.0	94.5	87.7	89.7	87.5	89.9	91.4	79.0	74.6
B.Baria	98.1	94.0	91.2	90.8	88.8	88.0	88.0	78.5	74.9
Dhaka Slum	97.1	96.2	95.3	91.5	91.5	83.4	83.4	75.7	75.3
DSCC	99.0	96.8	91.7	94.3	93.6	90.4	91.9	78.8	76.1
Bhola	98.6	93.5	92.3	89.2	85.0	86.0	86.6	81.1	76.2
Barguna	100.0	96.1	92.9	96.3	92.3	91.4	92.0	83.2	76.6
Jhalokati	99.5	97.3	91.6	95.3	95.3	94.3	93.1	83.6	76.7
Sylhet	95.7	95.2	89.6	93.3	91.3	87.3	89.9	82.4	76.8
Kushtia	100.0	93.5	86.9	92.6	91.6	88.4	89.5	83.8	76.9
BCC	100.0	96.4	93.5	94.7	94.0	94.2	91.2	80.7	77.1
Kurigram	100.0	96.9	92.2	95.1	94.5	93.6	92.0	84.4	77.5
Panchagarh	100.0	97.9	88.6	97.4	95.2	94.2	95.3	88.0	77.5
Ran CC	98.1	93.2	90.4	91.8	90.1	90.2	90.8	81.6	77.5
Norsingdhi	98.6	90.7	87.6	91.4	89.5	88.3	87.7	83.7	77.9
Sunamganj	97.6	91.9	88.5	91.0	89.8	87.9	87.3	83.6	78.3
Barisal	99.0	97.2	92.4	96.3	95.7	94.0	94.0	84.4	78.9
Khagrachari	98.1	94.5	89.0	93.0	90.6	91.2	90.0	88.2	78.9
Moulavibazar	98.6	94.8	90.5	96.5	94.8	92.7	92.7	84.6	79.0
Jamalpur	99.0	96.2	92.6	96.8	96.8	95.7	95.7	82.7	79.1
Rajbari	100.0	95.7	91.9	95.7	93.9	94.3	93.7	85.0	79.2
Lalmonirhat	100.0	97.8	92.9	97.3	95.7	92.5	92.5	86.1	79.4
Comilla	100.0	92.1	86.5	90.8	86.1	92.2	92.2	88.3	79.4
Narail	99.5	91.3	86.9	90.0	88.9	87.8	89.5	82.5	79.5
Chandpur	99.5	99.5	95.3	98.1	97.5	92.7	92.1	85.7	79.8
Magura	100.0	98.3	95.9	98.4	96.6	94.8	93.6	84.8	80.0
Feni	99.0	96.7	90.3	96.7	94.9	92.9	95.2	86.4	80.4
DNCC	100.0	95.4	90.8	93.6	91.0	92.6	93.2	85.6	80.6
Sherpur	99.5	89.6	85.0	89.8	88.5	88.6	87.9	87.7	81.1
Bandarban	99.5	98.0	91.5	96.6	96.1	94.6	96.1	86.7	81.1

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Bogra	100.0	96.1	94.4	95.2	94.1	92.4	91.3	84.7	81.4
Natore	98.1	93.7	88.8	93.7	91.0	91.7	91.1	90.3	81.7
Faridpur	99.5	96.8	92.1	94.1	94.1	93.0	93.0	86.7	81.8
Manikganj	99.0	96.8	91.9	96.4	93.6	93.6	96.4	86.5	81.9
Com CC	99.0	89.3	85.5	90.0	88.5	88.5	86.2	88.9	82.1
Tangail	98.6	93.2	88.4	92.2	91.0	88.3	90.0	86.7	82.3
Serajganj	100.0	97.0	88.2	96.4	95.1	93.8	98.2	88.0	82.7
Rangpur	100.0	90.8	85.1	90.9	90.9	88.6	90.9	85.9	82.7
Thakurgaon	99.5	91.4	88.5	91.9	90.2	89.7	87.9	89.1	82.8
Gaibandha	100.0	93.4	89.6	94.0	93.5	87.5	89.7	83.6	82.9
Jessore	99.5	95.8	92.1	97.4	95.2	94.8	94.2	89.4	83.3
Chuadanga	100.0	93.3	88.0	93.8	92.7	91.3	90.2	92.2	84.4
Cox'sbazar	100.0	95.9	90.0	95.9	94.7	94.2	94.2	90.8	84.5
Perojpur	99.5	98.0	93.1	98.0	98.0	95.0	95.5	88.9	84.6
Chapai Nawabganj	100.0	91.9	88.5	91.5	90.4	90.7	90.7	89.1	84.8
Rajshahi	100.0	96.7	90.6	96.1	95.0	95.0	95.0	91.7	84.8
Dinajpur	99.5	95.4	91.3	95.9	95.4	96.4	97.0	87.8	85.0
SCC	99.0	97.7	97.0	96.6	95.9	94.2	94.2	85.7	85.2
Gopalganj	99.5	94.0	91.9	94.2	94.2	94.1	94.1	87.5	85.3
Pabna	100.0	95.7	91.4	94.7	92.3	92.9	91.0	95.1	85.4
Dhaka	100.0	98.5	94.8	97.6	95.4	95.6	96.3	90.2	85.6
Habiganj	98.6	94.4	91.7	93.5	92.8	91.8	92.5	87.2	85.7
Chittagong	100.0	96.7	92.2	96.7	95.6	94.6	94.6	91.2	86.5
KCC	99.5	95.0	94.4	92.7	92.7	92.4	93.0	86.6	86.6
Satkhira	100.0	97.3	95.1	96.7	95.6	95.2	95.8	89.0	86.7
Joypurhat	100.0	99.4	96.1	100.0	98.3	96.6	98.3	90.2	86.9
Kishoreganj	100.0	96.0	91.9	95.4	94.3	92.8	94.0	89.0	87.0
Naogaon	99.5	96.6	95.1	96.1	95.1	95.6	95.1	90.2	87.2
Munshiganj	100.0	98.2	95.8	97.6	95.2	96.1	94.3	94.1	87.5
Meherpur	99.5	97.7	96.0	95.9	95.3	95.5	94.3	91.5	87.9
Nilphamari	100.0	100.0	97.8	99.5	97.9	96.9	97.4	90.7	88.0
Khulna	99.5	96.5	94.1	95.6	95.0	95.5	95.5	91.3	88.3
Jhenaidah	99.5	92.1	89.4	92.5	92.0	92.5	93.6	90.7	88.4
Lakshmipur	100.0	94.9	93.0	96.2	95.5	95.5	94.8	90.2	88.8
RCC	100.0	98.3	94.9	97.4	97.4	95.2	95.2	93.7	90.8
Bagerhat	99.5	97.5	96.0	97.5	95.5	95.6	95.6	94.6	91.0

Table 1b: Valid Immunization Coverage by Age 12 months among 12-23 Months Old Children According to Survey Units by District, City Corporation (Fully Immunized Arranged in Ascending Order by All Divisions)

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Mymensingh	99.5	93.6	91.6	91.2	91.2	86.3	85.1	74.6	71.4
NCC	98.6	91.5	84.0	90.9	87.5	82.2	87.1	77.7	71.7
Madaripur	100.0	96.4	93.5	94.0	92.9	92.5	91.3	78.4	73.0
Shariatpur	99.5	97.4	92.3	95.3	91.0	92.7	93.4	80.4	73.0
Netrokona	98.6	88.7	85.5	84.5	83.3	80.1	80.8	77.3	74.3
Gazipur	99.0	98.9	94.9	96.3	95.2	91.9	93.0	78.2	74.6
Narayanganj	100.0	94.5	87.7	89.7	87.5	89.9	91.4	79.0	74.6
Dhaka Slum	97.1	96.2	95.3	91.5	91.5	83.4	83.4	75.7	75.3
DSCC	99.0	96.8	91.7	94.3	93.6	90.4	91.9	78.8	76.1
Norsingdhi	98.6	90.7	87.6	91.4	89.5	88.3	87.7	83.7	77.9
Jamalpur	99.0	96.2	92.6	96.8	96.8	95.7	95.7	82.7	79.1
Rajbari	100.0	95.7	91.9	95.7	93.9	94.3	93.7	85.0	79.2
DNCC	100.0	95.4	90.8	93.6	91.0	92.6	93.2	85.6	80.6
Sherpur	99.5	89.6	85.0	89.8	88.5	88.6	87.9	87.7	81.1
Faridpur	99.5	96.8	92.1	94.1	94.1	93.0	93.0	86.7	81.8
Manikganj	99.0	96.8	91.9	96.4	93.6	93.6	96.4	86.5	81.9
Tangail	98.6	93.2	88.4	92.2	91.0	88.3	90.0	86.7	82.3
Gopalganj	99.5	94.0	91.9	94.2	94.2	94.1	94.1	87.5	85.3
Dhaka	100.0	98.5	94.8	97.6	95.4	95.6	96.3	90.2	85.6
Kishoreganj	100.0	96.0	91.9	95.4	94.3	92.8	94.0	89.0	87.0
Munshiganj	100.0	98.2	95.8	97.6	95.2	96.1	94.3	94.1	87.5
Dhaka Division	**99.4**	**95.0**	**90.9**	**93.6**	**92.0**	**91.0**	**91.6**	**83.6**	**79.0**
Kushtia	100.0	93.5	86.9	92.6	91.6	88.4	89.5	83.8	76.9
Narail	99.5	91.3	86.9	90.0	88.9	87.8	89.5	82.5	79.5
Magura	100.0	98.3	95.9	98.4	96.6	94.8	93.6	84.8	80.0
Jessore	99.5	95.8	92.1	97.4	95.2	94.8	94.2	89.4	83.3
Chuadanga	100.0	93.3	88.0	93.8	92.7	91.3	90.2	92.2	84.4
KCC	99.5	95.0	94.4	92.7	92.7	92.4	93.0	86.6	86.6
Satkhira	100.0	97.3	95.1	96.7	95.6	95.2	95.8	89.0	86.7
Meherpur	99.5	97.7	96.0	95.9	95.3	95.5	94.3	91.5	87.9
Khulna	99.5	96.5	94.1	95.6	95.0	95.5	95.5	91.3	88.3
Jhenaidah	99.5	92.1	89.4	92.5	92.0	92.5	93.6	90.7	88.4
Bagerhat	99.5	97.5	96.0	97.5	95.5	95.6	95.6	94.6	91.0
Khulna Division	**99.7**	**95.3**	**92.2**	**94.8**	**93.7**	**93.0**	**93.1**	**88.8**	**84.8**
Bogra	100.0	96.1	94.4	95.2	94.1	92.4	91.3	84.7	81.4
Natore	98.1	93.7	88.8	93.7	91.0	91.7	91.1	90.3	81.7
Serajganj	100.0	97.0	88.2	96.4	95.1	93.8	98.2	88.0	82.7
Chapai Nawabganj	100.0	91.9	88.5	91.5	90.4	90.7	90.7	89.1	84.8
Rajshahi	100.0	96.7	90.6	96.1	95.0	95.0	95.0	91.7	84.8
Pabna	100.0	95.7	91.4	94.7	92.3	92.9	91.0	95.1	85.4

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Joypurhat	100.0	99.4	96.1	100.0	98.3	96.6	98.3	90.2	86.9
Naogaon	99.0	96.6	95.1	96.1	95.1	95.6	95.1	90.2	87.2
RCC	100.0	98.3	94.9	97.4	97.4	95.2	95.2	93.7	90.8
Rajshahi Division	**99.7**	**96.2**	**92.1**	**95.7**	**94.3**	**93.8**	**94.0**	**90.4**	**85.2**
Kurigram	100.0	96.9	92.2	95.1	94.5	93.6	92.0	84.4	77.5
Panchagarh	100.0	97.9	88.6	97.4	95.2	94.2	95.3	88.0	77.5
Ran CC	98.1	93.2	90.4	91.8	90.1	90.2	90.8	81.6	77.5
Lalmonirhat	100.0	97.8	92.9	97.3	95.7	92.5	92.5	86.1	79.4
Rangpur	100.0	90.8	85.1	90.9	90.9	88.6	90.9	85.9	82.7
Thakurgaon	99.5	91.4	88.5	91.9	90.2	89.7	87.9	89.1	82.8
Gaibandha	100.0	93.4	89.6	94.0	93.5	87.5	89.7	83.6	82.9
Dinajpur	99.5	95.4	91.3	95.9	95.4	96.4	97.0	87.8	85.0
Nilphamari	100.0	100.0	97.8	99.5	97.9	96.9	97.4	90.7	88.0
Rangpur Division	**99.7**	**95.3**	**90.8**	**95.0**	**93.8**	**92.3**	**92.7**	**86.4**	**81.5**
Sylhet	95.7	95.2	89.6	93.3	91.3	87.3	89.9	82.4	76.8
Sunamganj	97.6	91.9	88.5	91.0	89.8	87.9	87.3	83.6	78.3
Moulavibazar	98.6	94.8	90.5	96.5	94.8	92.7	92.7	84.6	79.0
SCC	99.0	97.7	97.0	96.6	95.9	94.2	94.2	85.7	85.2
Habiganj	98.6	94.4	91.7	93.5	92.8	91.8	92.5	87.2	85.7
Sylhet Division	**97.9**	**94.8**	**91.3**	**94.2**	**92.9**	**90.7**	**91.3**	**84.7**	**80.7**
Patuakhali	99.5	96.6	88.0	94.9	91.8	88.3	91.4	80.2	72.1
Bhola	98.6	93.5	92.3	89.2	85.0	86.0	86.6	81.1	76.2
Barguna	100.0	96.1	92.9	96.3	92.3	91.4	92.0	83.2	76.6
Jhalokati	99.5	97.3	91.6	95.3	95.3	94.3	93.1	83.6	76.7
BCC	100.0	96.4	93.5	94.7	94.0	94.2	91.2	80.7	77.1
Barisal	99.0	97.2	92.4	96.3	95.7	94.0	94.0	84.4	78.9
Perojpur	99.5	98.0	93.1	98.0	98.0	95.0	95.5	88.9	84.6
Barisal Division	**99.5**	**96.5**	**92.0**	**95.0**	**93.3**	**91.9**	**92.1**	**83.2**	**77.5**
Chittagong Slum	97.6	92.3	86.7	86.8	86.8	82.1	84.3	63.3	60.1
Rangamati	93.8	87.2	81.3	85.0	82.8	81.9	83.4	74.6	68.1
CCC	98.6	92.1	87.1	90.0	87.9	86.7	87.4	77.1	70.2
Noakhali	97.6	92.0	85.1	88.3	87.0	85.7	87.1	79.0	72.6
B.Baria	98.1	94.0	91.2	90.8	88.8	88.0	88.0	78.5	74.9
Khagrachari	96.1	94.5	89.0	93.0	90.6	91.2	90.0	88.2	78.9
Comilla	100.0	92.1	86.5	90.8	86.1	92.2	92.2	88.3	79.4
Chandpur	99.5	99.5	95.3	98.1	97.5	92.7	92.1	85.7	79.8
Feni	99.0	96.7	90.3	96.7	94.9	92.9	95.2	86.4	80.4
Bandarban	99.5	98.0	91.5	96.6	96.1	94.6	96.1	86.7	81.1
Com CC	99.0	89.3	85.5	90.0	88.5	88.5	86.2	88.9	82.1
Cox'sbazar	100.0	95.9	90.0	95.9	94.7	94.2	94.2	90.8	84.5
Chittagong	100.0	96.7	92.2	96.7	95.6	94.6	94.6	91.2	86.5
Lakshmipur	100.0	94.9	93.0	96.2	95.5	95.5	94.8	90.2	88.8
Chittagong Division	**98.7**	**94.3**	**89.3**	**93.2**	**91.6**	**90.9**	**91.2**	**85.3**	**79.3**
National	**99.3**	**95.1**	**90.9**	**94.1**	**92.6**	**91.6**	**92.0**	**85.5**	**80.7**
Urban	**99.3**	**94.6**	**90.9**	**93.6**	**92.4**	**90.8**	**91.1**	**84.3**	**80.4**
Rural	**99.3**	**95.4**	**91.1**	**94.5**	**93.1**	**92.2**	**92.5**	**86.4**	**81.2**

Table 2: Valid Immunization Coverage by Age 23 Months among 12-23 Months Old Children According to Survey Units by District, City Corporation

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Dhaka	100.0	98.5	94.8	97.6	95.4	95.6	96.3	92.5	87.9
Faridpur	99.5	96.8	92.1	94.7	94.7	94.4	93.7	90.8	85.3
Gazipur	100.0	98.9	94.9	96.3	95.2	91.9	93.0	82.8	79.3
Gopalganj	99.5	94.0	91.9	94.2	94.2	94.1	94.1	91.1	89.0
Jamalpur	99.0	96.2	92.6	96.8	96.8	95.7	95.7	86.3	82.7
Kishoreganj	100.0	96.0	91.9	95.4	94.3	93.4	94.5	91.3	89.4
Madaripur	100.0	96.4	93.5	94.0	92.9	93.1	91.9	85.0	79.6
Manikganj	99.0	96.8	91.9	96.4	93.6	94.2	96.4	90.4	85.3
Munshiganj	100.0	98.2	95.8	97.6	95.2	96.7	94.3	95.9	88.7
Mymensingh	99.5	93.6	91.6	91.2	91.2	87.0	85.7	79.9	76.6
Narayanganj	99.0	94.5	87.7	91.2	87.5	90.7	92.2	86.4	80.7
Norsingdhi	98.6	90.7	87.6	91.4	89.5	88.3	87.7	85.7	79.9
Netrokona	98.6	88.7	85.5	84.5	83.3	82.0	82.7	82.0	79.1
Rajbari	100.0	95.7	91.9	96.4	94.5	95.0	94.3	88.8	82.4
Shariatpur	99.5	97.4	92.3	95.3	91.0	93.4	93.4	85.4	77.3
Sherpur	99.5	90.3	85.0	90.5	89.1	89.2	88.6	89.9	82.6
Tangail	98.6	93.2	88.4	92.2	91.0	88.9	90.6	91.1	86.7
Dhaka Slum	97.1	96.2	95.3	91.5	91.5	85.2	85.2	81.1	79.1
Dhaka South CC	99.0	96.8	91.7	94.3	93.6	91.2	91.9	83.8	80.6
Dhaka North CC	100.0	95.4	90.8	93.6	91.0	93.2	93.2	89.6	84.0
NCC	98.6	91.5	84.0	91.6	87.5	83.6	87.1	82.8	73.9
Dhaka Division	**99.4**	**95.0**	**90.9**	**93.8**	**92.1**	**91.6**	**91.9**	**87.7**	**82.7**
Bagerhat	99.5	97.5	96.0	97.5	95.5	96.1	96.1	96.2	92.6
Chuadanga	100.0	93.3	88.0	93.8	92.7	91.3	90.2	92.2	84.4
Jessore	99.5	95.8	92.1	97.4	95.2	95.9	94.8	92.1	85.5
Jhenaidah	99.5	92.1	89.4	92.5	92.0	93.0	94.1	93.5	91.2
Khulna	99.5	96.5	94.1	95.6	95.0	95.5	95.5	92.6	89.5
Kushtia	100.0	93.5	86.9	92.6	91.6	90.1	89.5	88.9	80.3
Magura	100.0	98.3	95.9	98.4	96.6	94.8	93.6	86.5	81.8
Meherpur	99.5	97.7	96.0	95.9	95.3	95.5	94.3	92.7	89.1
Narail	99.5	91.3	86.9	90.0	88.9	87.8	89.5	86.6	83.6
Satkhira	100.0	97.3	95.1	96.7	95.6	95.2	95.8	91.3	89.0
Khulna CC	99.5	95.0	94.4	92.7	92.7	93.0	93.7	92.0	92.0
Khulna Division	**99.7**	**95.3**	**92.2**	**94.8**	**93.7**	**93.5**	**93.3**	**91.3**	**87.1**
Bogra	100.0	96.1	94.4	95.2	94.1	92.4	91.3	85.3	81.9
Chapai Nawabganj	100.0	91.9	88.5	91.5	90.4	90.7	90.7	92.0	87.8
Joypurhat	100.0	99.4	96.1	100.0	98.3	97.8	98.3	92.4	88.0
Naogaon	99.0	96.6	95.1	96.1	95.1	95.6	95.1	92.8	89.7
Natore	98.1	93.7	88.8	93.7	91.0	91.7	91.1	92.0	83.4
Pabna	100.0	95.7	91.4	94.7	92.3	92.9	91.0	96.3	86.7
Rajshahi	100.0	96.7	90.6	96.1	95.0	95.0	95.0	94.0	87.1

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Serajganj	100.0	97.0	88.2	96.4	95.1	94.4	98.2	90.6	84.7
Rajshahi CC	100.0	98.3	94.9	97.4	97.4	96.3	96.3	94.9	92.0
Rajshahi Division	**99.7**	**96.2**	**92.1**	**95.7**	**94.3**	**94.1**	**94.1**	**92.3**	**87.0**
Dinajpur	99.5	95.4	91.3	95.9	95.4	96.4	97.0	90.4	87.6
Gaibandha	100.0	93.4	89.6	94.0	93.5	88.6	90.2	86.5	85.2
Kurigram	100.0	96.9	92.2	95.1	94.5	94.1	92.5	89.1	82.2
Lalmonirhat	100.0	97.8	92.9	97.3	95.7	94.2	92.5	88.9	80.6
Nilphamari	100.0	100.0	97.8	99.5	97.9	96.9	97.4	93.4	90.7
Panchagarh	100.0	97.9	88.6	97.4	95.2	94.7	95.8	90.8	80.3
Rangpur	100.0	90.8	85.1	91.5	90.9	89.7	91.5	91.0	86.5
Thakurgaon	99.5	91.4	88.5	91.9	90.2	91.4	88.5	93.4	85.9
Rangpur CC	100.0	93.2	90.4	91.8	90.1	91.4	91.4	88.6	84.0
Rangpur Division	**99.7**	**95.3**	**90.8**	**95.0**	**93.8**	**93.1**	**93.1**	**90.2**	**84.8**
Habiganj	98.6	94.4	91.7	93.5	92.8	93.2	93.2	90.6	88.5
Moulavibazar	98.6	94.8	90.5	96.5	94.8	93.3	93.3	86.2	80.6
Sunamganj	97.6	91.9	88.5	91.0	89.8	87.9	87.3	85.9	80.6
Sylhet	95.7	95.2	89.6	93.3	91.3	87.9	89.9	84.5	78.8
Sylhet CC	99.0	97.7	97.0	96.6	95.9	94.2	94.2	90.4	89.9
Sylhet Division	**97.9**	**94.8**	**91.3**	**94.2**	**92.9**	**91.2**	**91.5**	**87.4**	**83.4**
Barisal	99.0	97.2	92.4	96.3	95.7	95.2	94.0	88.6	81.9
Bhola	98.6	93.5	92.3	89.2	85.0	86.6	86.6	82.9	77.4
Barguna	100.0	96.1	92.9	96.3	92.3	92.7	92.0	85.9	77.9
Jhalokati	99.5	97.3	91.6	95.3	95.3	94.3	93.1	88.8	81.9
Patuakhali	99.5	96.6	88.0	94.9	91.8	88.3	91.4	82.7	74.6
Perojpur	99.5	98.0	93.1	98.0	98.0	95.0	95.5	92.6	88.3
Barisal CC	100.0	96.4	93.5	94.7	94.0	94.9	91.9	81.4	77.9
Barisal Division	**99.5**	**96.5**	**92.0**	**95.0**	**93.3**	**92.4**	**92.2**	**86.3**	**80.2**
Bandarban	99.5	98.0	91.5	96.6	96.1	94.6	96.1	89.2	83.6
B.Baria	98.1	94.0	91.2	90.8	88.8	89.4	88.7	83.3	79.1
Chandpur	99.5	99.5	95.3	98.1	97.5	93.9	92.7	86.9	81.0
Chittagong	100.0	96.7	92.2	96.7	95.6	94.6	94.6	91.7	87.1
Comilla	100.0	92.1	86.5	90.8	86.1	93.1	92.2	92.5	82.9
Cox'sbazar	100.0	95.9	90.0	95.9	94.7	94.8	94.8	93.8	87.6
Feni	99.0	96.7	90.3	96.7	94.9	94.0	95.8	89.5	82.8
Khagrachari	98.1	94.5	89.0	93.0	90.6	91.2	90.0	91.9	82.6
Lakshmipur	100.0	94.9	93.0	96.2	95.5	96.1	94.8	92.1	90.1
Noakhali	97.6	92.0	85.1	88.3	87.0	86.4	87.1	81.1	74.0
Rangamati	93.8	87.2	81.3	85.0	82.8	81.9	83.4	77.0	70.5
Chittagong CC	98.6	92.1	87.1	90.0	87.9	87.4	87.4	82.5	74.8
Chittagong Slum	97.6	92.3	86.7	86.8	86.8	82.1	84.3	70.0	66.9
Comilla CC	99.0	89.3	85.5	90.0	88.5	89.2	86.2	92.2	84.6
Chittagong Division	**98.7**	**94.3**	**89.3**	**93.2**	**91.6**	**91.5**	**91.3**	**88.1**	**81.8**
National	**99.3**	**95.1**	**90.9**	**94.2**	**92.6**	**92.2**	**92.3**	**88.7**	**83.6**
Urban	**99.3**	**94.6**	**90.9**	**93.7**	**92.5**	**91.5**	**91.4**	**88.6**	**84.1**
Rural	**99.3**	**95.4**	**91.1**	**94.6**	**93.1**	**92.7**	**92.7**	**89.2**	**83.8**

Table 2a: Valid Immunization Coverage by Age 23 Months among 12-23 Months Old Children According to Survey Units by District, City Corporation (Fully Immunized Arranged in Ascending Order by All Districts)

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Chittagong Slum	97.6	92.3	86.7	86.8	86.8	82.1	84.3	70.0	66.9
Rangamati	93.8	87.2	81.3	85.0	82.8	81.9	83.4	77.0	70.5
NCC	98.6	91.5	84.0	91.6	87.5	83.6	87.1	82.8	73.9
Noakhali	97.6	92.0	85.1	88.3	87.0	86.4	87.1	81.1	74.0
Patuakhali	99.5	96.6	88.0	94.9	91.8	88.3	91.4	82.7	74.6
Chittagong CC	98.6	92.1	87.1	90.0	87.9	87.4	87.4	82.5	74.8
Mymensingh	99.5	93.6	91.6	91.2	91.2	87.0	85.7	79.9	76.6
Shariatpur	99.5	97.4	92.3	95.3	91.0	93.4	93.4	85.4	77.3
Bhola	98.6	93.5	92.3	89.2	85.0	86.6	86.6	82.9	77.4
Barguna	100.0	96.1	92.9	96.3	92.3	92.7	92.0	85.9	77.9
Barisal CC	100.0	96.4	93.5	94.7	94.0	94.9	91.9	81.4	77.9
Sylhet	95.7	95.2	89.6	93.3	91.3	87.9	89.9	84.5	78.8
Dhaka Slum	97.1	96.2	95.3	91.5	91.5	85.2	85.2	81.1	79.1
Netrokona	98.6	88.7	85.5	84.5	83.3	82.0	82.7	82.0	79.1
B.Baria	98.1	94.0	91.2	90.8	88.8	89.4	88.7	83.3	79.1
Gazipur	100.0	98.9	94.9	96.3	95.2	91.9	93.0	82.8	79.3
Madaripur	100.0	96.4	93.5	94.0	92.9	93.1	91.9	85.0	79.6
Norsingdhi	98.6	90.7	87.6	91.4	89.5	88.3	87.7	85.7	79.9
Kushtia	100.0	93.5	86.9	92.6	91.6	90.1	89.5	88.9	80.3
Panchagarh	100.0	97.9	88.6	97.4	95.2	94.7	95.8	90.8	80.3
Dhaka South CC	99.0	96.8	91.7	94.3	93.6	91.2	91.9	83.8	80.6
Lalmonirhat	100.0	97.8	92.9	97.3	95.7	94.2	92.5	88.9	80.6
Moulavibazar	98.6	94.8	90.5	96.5	94.8	93.3	93.3	86.2	80.6
Sunamganj	97.6	91.9	88.5	91.0	89.8	87.9	87.3	85.9	80.6
Narayanganj	99.0	94.5	87.7	91.2	87.5	90.7	92.2	86.4	80.7
Chandpur	99.5	99.5	95.3	98.1	97.5	93.9	92.7	86.9	81.0
Magura	100.0	98.3	95.9	98.4	96.6	94.8	93.6	86.5	81.8
Bogra	100.0	96.1	94.4	95.2	94.1	92.4	91.3	85.3	81.9
Barisal	99.0	97.2	92.4	96.3	95.7	95.2	94.0	88.6	81.9
Jhalokati	99.5	97.3	91.6	95.3	95.3	94.3	93.1	88.8	81.9
Kurigram	100.0	96.9	92.2	95.1	94.5	94.1	92.5	89.1	82.2
Rajbari	100.0	95.7	91.9	96.4	94.5	95.0	94.3	88.8	82.4
Sherpur	99.5	90.3	85.0	90.5	89.1	89.2	88.6	89.9	82.6
Khagrachari	98.1	94.5	89.0	93.0	90.6	91.2	90.0	91.9	82.6
Jamalpur	99.0	96.2	92.6	96.8	96.8	95.7	95.7	86.3	82.7
Feni	99.0	96.7	90.3	96.7	94.9	94.0	95.8	89.5	82.8
Comilla	100.0	92.1	86.5	90.8	86.1	93.1	92.2	92.5	82.9
Natore	98.1	93.7	88.8	93.7	91.0	91.7	91.1	92.0	83.4
Narail	99.5	91.3	86.9	90.0	88.9	87.8	89.5	86.6	83.6
Bandarban	99.5	98.0	91.5	96.6	96.1	94.6	96.1	89.2	83.6

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Dhaka North CC	100.0	95.4	90.8	93.6	91.0	93.2	93.2	89.6	84.0
Rangpur CC	98.1	93.2	90.4	91.8	90.1	91.4	91.4	88.6	84.0
Chuadanga	100.0	93.3	88.0	93.8	92.7	91.3	90.2	92.2	84.4
Comilla CC	99.0	89.3	85.5	90.0	88.5	89.2	86.2	92.2	84.6
Serajganj	100.0	97.0	88.2	96.4	95.1	94.4	98.2	90.6	84.7
Gaibandha	100.0	93.4	89.6	94.0	93.5	88.6	90.2	86.5	85.2
Faridpur	99.5	96.8	92.1	94.7	94.7	94.4	93.7	90.8	85.3
Manikganj	99.0	96.8	91.9	96.4	93.6	94.2	96.4	90.4	85.3
Jessore	99.5	95.8	92.1	97.4	95.2	95.9	94.8	92.1	85.5
Thakurgaon	99.5	91.4	88.5	91.9	90.2	91.4	88.5	93.4	85.9
Rangpur	100.0	90.8	85.1	91.5	90.9	89.7	91.5	91.0	86.5
Tangail	98.6	93.2	88.4	92.2	91.0	88.9	90.6	91.1	86.7
Pabna	100.0	95.7	91.4	94.7	92.3	92.9	91.0	96.3	86.7
Rajshahi	100.0	96.7	90.6	96.1	95.0	95.0	95.0	94.0	87.1
Chittagong	100.0	96.7	92.2	96.7	95.6	94.6	94.6	91.7	87.1
Dinajpur	99.5	95.4	91.3	95.9	95.4	96.4	97.0	90.4	87.6
Cox'sbazar	100.0	95.9	90.0	95.9	94.7	94.8	94.8	93.8	87.6
Chapai Nawabganj	100.0	91.9	88.5	91.5	90.4	90.7	90.7	92.0	87.8
Dhaka	100.0	98.5	94.8	97.6	95.4	95.6	96.3	92.5	87.9
Joypurhat	100.0	99.4	96.1	100.0	98.3	97.8	98.3	92.4	88.0
Perojpur	99.5	98.0	93.1	98.0	98.0	95.0	95.5	92.6	88.3
Habiganj	98.6	94.4	91.7	93.5	92.8	93.2	93.2	90.6	88.5
Munshiganj	100.0	98.2	95.8	97.6	95.2	96.7	94.3	95.9	88.7
Gopalganj	99.5	94.0	91.9	94.2	94.2	94.1	94.1	91.1	89.0
Satkhira	100.0	97.3	95.1	96.7	95.6	95.2	95.8	91.3	89.0
Meherpur	99.5	97.7	96.0	95.9	95.3	95.5	94.3	92.7	89.1
Kishoreganj	100.0	96.0	91.9	95.4	94.3	93.4	94.5	91.3	89.4
Khulna	99.5	96.5	94.1	95.6	95.0	95.5	95.5	92.6	89.5
Naogaon	99.0	96.6	95.1	96.1	95.1	95.6	95.1	92.8	89.7
Sylhet CC	99.0	97.7	97.0	96.6	95.9	94.2	94.2	90.4	89.9
Lakshmipur	100.0	94.9	93.0	96.2	95.5	96.1	94.8	92.1	90.1
Nilphamari	100.0	100.0	97.8	99.5	97.9	96.9	97.4	93.4	90.7
Jhenaidah	99.5	92.1	89.4	92.5	92.0	93.0	94.1	93.5	91.2
Khulna CC	99.5	95.0	94.4	92.7	92.7	93.0	93.7	92.0	92.0
Rajshahi CC	100.0	98.3	94.9	97.4	97.4	96.3	96.3	94.9	92.0
Bagerhat	99.5	97.5	96.0	97.5	95.5	96.1	96.1	96.2	92.6

Table 2b: Valid Immunization Coverage by Age 23 Months among 12-23 Months Old Children According to Survey Units by District, City Corporation (Fully Immunized Arranged in Ascending Order by All Divisions)

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
NCC	98.6	91.5	84.0	91.6	87.5	83.6	87.1	82.8	73.9
Mymensingh	99.5	93.6	91.6	91.2	91.2	87.0	85.7	79.9	76.6
Shariatpur	99.5	97.4	92.3	95.3	91.0	93.4	93.4	85.4	77.3
Dhaka Slum	97.1	96.2	95.3	91.5	91.5	85.2	85.2	81.1	79.1
Netrokona	98.6	88.7	85.5	84.5	83.3	82.0	82.7	82.0	79.1
Gazipur	100.0	98.9	94.9	96.3	95.2	91.9	93.0	82.8	79.3
Madaripur	100.0	96.4	93.5	94.0	92.9	93.1	91.9	85.0	79.6
Norsingdhi	98.6	90.7	87.6	91.4	89.5	88.3	87.7	85.7	79.9
Dhaka South CC	99.0	96.8	91.7	94.3	93.6	91.2	91.9	83.8	80.6
Narayanganj	99.0	94.5	87.7	91.2	87.5	90.7	92.2	86.4	80.7
Rajbari	100.0	95.7	91.9	96.4	94.5	95.0	94.3	88.8	82.4
Sherpur	99.5	90.3	85.0	90.5	89.1	89.2	88.6	89.9	82.6
Jamalpur	99.5	96.2	92.6	96.8	96.8	95.7	95.7	86.3	82.7
Dhaka North CC	100.0	95.4	90.8	93.6	91.0	93.2	93.2	89.6	84.0
Faridpur	99.5	96.8	92.1	94.7	94.7	94.4	93.7	90.8	85.3
Manikganj	99.5	96.8	91.9	96.4	93.6	94.2	96.4	90.4	85.3
Tangail	98.6	93.2	88.4	92.2	91.0	88.9	90.6	91.1	86.7
Dhaka	100.0	98.5	94.8	97.6	95.4	95.6	96.3	92.5	87.9
Munshiganj	100.0	98.2	95.8	97.6	95.2	96.7	94.3	95.9	88.7
Gopalganj	99.5	94.0	91.9	94.2	94.2	94.1	94.1	91.1	89.0
Kishoreganj	100.0	96.0	91.9	95.4	94.3	93.4	94.5	91.3	89.4
Dhaka Division	**99.4**	**95.0**	**90.9**	**93.8**	**92.1**	**91.6**	**91.9**	**87.7**	**82.7**
Kushtia	100.0	93.5	86.9	92.6	91.6	90.1	89.5	88.9	80.3
Magura	100.0	98.3	95.9	98.4	96.6	94.8	93.6	86.5	81.8
Narail	99.5	91.3	86.9	90.0	88.9	87.8	89.5	86.6	83.6
Chuadanga	100.0	93.3	88.0	93.8	92.7	91.3	90.2	92.2	84.4
Jessore	99.5	95.8	92.1	97.4	95.2	95.9	94.8	92.1	85.5
Satkhira	100.0	97.3	95.1	96.7	95.6	95.2	95.8	91.3	89.0
Meherpur	99.5	97.7	96.0	95.9	95.3	95.5	94.3	92.7	89.1
Khulna	99.5	96.5	94.1	95.6	95.0	95.5	95.5	92.6	89.5
Jhenaidah	99.5	92.1	89.4	92.5	92.0	93.0	94.1	93.5	91.2
Khulna CC	99.5	95.0	94.4	92.7	92.7	93.0	93.7	92.0	92.0
Bagerhat	99.5	97.5	96.0	97.5	95.5	96.1	96.1	96.2	92.6
Khulna Division	**99.7**	**95.3**	**92.2**	**94.8**	**93.7**	**93.5**	**93.3**	**91.3**	**87.1**
Bogra	100.0	96.1	94.4	95.2	94.1	92.4	91.3	85.3	81.9
Natore	98.1	93.7	88.8	93.7	91.0	91.7	91.1	92.0	83.4
Serajganj	100.0	97.0	88.2	96.4	95.1	94.4	98.2	90.6	84.7
Pabna	100.0	95.7	91.4	94.7	92.3	92.9	91.0	96.3	86.7
Rajshahi	100.0	96.7	90.6	96.1	95.0	95.0	95.0	94.0	87.1
Chapai Nawabganj	100.0	91.9	88.5	91.5	90.4	90.7	90.7	92.0	87.8

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Joypurhat	100.0	99.4	96.1	100.0	98.3	97.8	98.3	92.4	88.0
Naogaon	99.0	96.6	95.1	96.1	95.1	95.6	95.1	92.8	89.7
Rajshahi CC	100.0	98.3	94.9	97.4	97.4	96.3	96.3	94.9	92.0
Rajshahi Division	**99.7**	**96.2**	**92.1**	**95.7**	**94.3**	**94.1**	**94.1**	**92.3**	**87.0**
Panchagarh	100.0	97.9	88.6	97.4	95.2	94.7	95.8	90.8	80.3
Lalmonirhat	100.0	97.8	92.9	97.3	95.7	94.2	92.5	88.9	80.6
Kurigram	100.0	96.9	92.2	95.1	94.5	94.1	92.5	89.1	82.2
Rangpur CC	100.0	93.2	90.4	91.8	90.1	91.4	91.4	88.6	84.0
Gaibandha	100.0	93.4	89.6	94.0	93.5	88.6	90.2	86.5	85.2
Thakurgaon	99.5	91.4	88.5	91.9	90.2	91.4	88.5	93.4	85.9
Rangpur	100.0	90.8	85.1	91.5	90.9	89.7	91.5	91.0	86.5
Dinajpur	99.5	95.4	91.3	95.9	95.4	96.4	97.0	90.4	87.6
Nilphamari	100.0	100.0	97.8	99.5	97.9	96.9	97.4	93.4	90.7
Rangpur Division	**99.7**	**95.3**	**90.8**	**95.0**	**93.8**	**93.1**	**93.1**	**90.2**	**84.8**
Sylhet	95.7	95.2	89.6	93.3	91.3	87.9	89.9	84.5	78.8
Moulavibazar	97.6	94.8	90.5	96.5	94.8	93.3	93.3	86.2	80.6
Sunamganj	98.6	91.9	88.5	91.0	89.8	87.9	87.3	85.9	80.6
Habiganj	98.6	94.4	91.7	93.5	92.8	93.2	93.2	90.6	88.5
Sylhet CC	99.0	97.7	97.0	96.6	95.9	94.2	94.2	90.4	89.9
Sylhet Division	**97.9**	**94.8**	**91.3**	**94.2**	**92.9**	**91.2**	**91.5**	**87.4**	**83.4**
Patuakhali	99.5	96.6	88.0	94.9	91.8	88.3	91.4	82.7	74.6
Bhola	98.6	93.5	92.3	89.2	85.0	86.6	86.6	82.9	77.4
Barguna	100.0	96.1	92.9	96.3	92.3	92.7	92.0	85.9	77.9
Barisal CC	100.0	96.4	93.5	94.7	94.0	94.9	91.9	81.4	77.9
Barisal	99.0	97.2	92.4	96.3	95.7	95.2	94.0	88.6	81.9
Jhalokati	99.5	97.3	91.6	95.3	95.3	94.3	93.1	88.8	81.9
Perojpur	99.5	98.0	93.1	98.0	98.0	95.0	95.5	92.6	88.3
Barisal Division	**99.5**	**96.5**	**92.0**	**95.0**	**93.3**	**92.4**	**92.2**	**86.3**	**80.2**
Chittagong Slum	97.6	92.3	86.7	86.8	86.8	82.1	84.3	70.0	66.9
Rangamati	93.8	87.2	81.3	85.0	82.8	81.9	83.4	77.0	70.5
Noakhali	97.6	92.0	85.1	88.3	87.0	86.4	87.1	81.1	74.0
Chittagong CC	98.6	92.1	87.1	90.0	87.9	87.4	87.4	82.5	74.8
B.Baria	98.1	94.0	91.2	90.8	88.8	89.4	88.7	83.3	79.1
Chandpur	99.5	99.5	95.3	98.1	97.5	93.9	92.7	86.9	81.0
Khagrachari	98.1	94.5	89.0	93.0	90.6	91.2	90.0	91.9	82.6
Feni	99.0	96.7	90.3	96.7	94.9	94.0	95.8	89.5	82.8
Comilla	100.0	92.1	86.5	90.8	86.1	93.1	92.2	92.5	82.9
Bandarban	99.5	98.0	91.5	96.6	96.1	94.6	96.1	89.2	83.6
Comilla CC	99.5	89.3	85.5	90.0	88.5	89.2	86.2	92.2	84.6
Chittagong	100.0	96.7	92.2	96.7	95.6	94.6	94.6	91.7	87.1
Cox'sbazar	100.0	95.9	90.0	95.9	94.7	94.8	94.8	93.8	87.6
Lakshmipur	100.0	94.9	93.0	96.2	95.5	96.1	94.8	92.1	90.1
Chittagong Division	**98.7**	**94.3**	**89.3**	**93.2**	**91.6**	**91.5**	**91.3**	**88.1**	**81.8**
National	**99.3**	**95.1**	**90.9**	**94.2**	**92.6**	**92.2**	**92.3**	**88.7**	**83.6**
Urban	**99.3**	**94.6**	**90.9**	**93.7**	**92.5**	**91.5**	**91.4**	**88.6**	**84.1**
Rural	**99.3**	**95.4**	**91.1**	**94.6**	**93.1**	**92.7**	**92.7**	**89.2**	**83.8**

Table 3: Crude Immunization Coverage among 12-23 Months Old Children According To Survey Units by Districts, City Corporations

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Dhaka	100.0	100.0	100.0	99.0	99.0	98.6	98.6	94.8	94.8
Faridpur	99.5	99.5	99.5	98.1	98.1	97.1	97.1	94.3	94.3
Gazipur	100.0	100.0	100.0	98.6	98.6	95.2	95.2	85.7	85.7
Gopalganj	99.5	99.5	99.5	99.0	99.0	97.6	97.6	93.3	93.3
Jamalpur	99.0	98.6	98.6	98.6	98.6	98.1	98.1	88.1	88.1
Kishoreganj	100.0	100.0	100.0	100.0	100.0	98.6	98.6	97.1	97.1
Madaripur	100.0	100.0	100.0	97.6	97.6	96.7	96.7	88.6	88.6
Manikganj	99.0	99.0	99.0	98.6	98.6	98.1	98.1	93.8	93.8
Munshiganj	100.0	100.0	100.0	100.0	100.0	99.0	99.0	97.1	97.1
Mymensingh	99.5	98.1	98.1	95.7	95.7	91.4	91.4	83.8	83.8
Narayanganj	99.0	99.0	99.0	98.6	98.6	98.1	98.1	93.8	93.8
Norsingdhi	98.6	98.6	98.6	98.1	98.1	95.7	95.7	89.5	89.5
Netrokona	98.6	98.1	98.1	95.7	95.7	92.9	92.9	88.1	88.1
Rajbari	100.0	100.0	100.0	99.5	99.5	98.1	98.1	93.3	93.3
Shariatpur	99.5	99.5	99.5	98.1	98.1	97.6	97.6	95.2	95.2
Sherpur	99.5	99.5	99.5	99.0	99.0	98.6	98.6	95.7	95.7
Tangail	98.6	98.6	98.6	98.1	98.1	97.1	97.1	94.3	94.3
Dhaka Slum	97.1	97.1	97.1	93.3	93.3	90.5	90.5	83.8	83.8
Dhaka South CC	99.0	99.0	99.0	98.6	98.6	97.6	97.6	92.4	92.4
Dhaka North CC	100.0	100.0	100.0	98.1	98.1	97.1	97.1	94.3	94.3
NCC	98.6	97.6	97.6	97.1	97.1	94.8	94.8	92.4	92.4
Dhaka Division	**99.4**	**99.2**	**99.2**	**98.3**	**98.3**	**96.9**	**96.9**	**92.3**	**92.3**
Bagerhat	99.5	99.5	99.5	99.5	99.5	98.6	98.6	96.7	96.7
Chuadanga	100.0	99.0	99.0	98.6	98.6	97.6	97.6	96.7	96.7
Jessore	99.5	99.5	99.5	99.5	99.5	98.6	98.6	94.3	94.3
Jhenaidah	99.5	99.5	99.5	99.5	99.5	99.0	99.0	95.2	95.2
Khulna	99.5	99.5	99.5	98.6	98.6	98.6	98.6	93.8	93.8
Kushtia	100.0	99.5	99.5	98.1	98.1	96.7	96.7	92.4	92.4
Magura	100.0	100.0	100.0	99.5	99.5	97.1	97.1	92.4	92.4
Meherpur	99.5	99.5	99.5	97.6	97.6	96.7	96.7	93.3	93.3
Narail	99.5	99.5	99.5	97.6	97.6	96.7	96.7	91.9	91.9
Satkhira	100.0	100.0	100.0	100.0	100.0	99.0	99.0	95.2	95.2
Khulna CC	99.5	99.5	99.5	98.6	98.6	97.6	97.6	93.3	93.3
Khulna Division	**99.7**	**99.6**	**99.6**	**98.8**	**98.8**	**97.8**	**97.8**	**94.1**	**94.1**
Bogra	100.0	100.0	100.0	99.0	99.0	95.7	95.7	88.1	88.1
Chapai Nawabganj	100.0	98.6	98.6	97.1	97.1	95.2	95.2	93.8	93.8
Joypurhat	100.0	100.0	100.0	100.0	100.0	100.0	100.0	95.7	95.7
Naogaon	99.0	98.1	98.1	97.6	97.6	97.6	97.6	93.8	93.8
Natore	98.1	98.1	98.1	98.1	98.1	97.1	97.1	94.3	94.3
Pabna	100.0	100.0	100.0	99.0	99.0	99.0	99.0	97.6	97.6
Rajshahi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.6	98.6
Rajshahi CC	100.0	100.0	100.0	99.0	99.0	98.6	98.6	97.1	97.1

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Rajshahi Division	**99.7**	**99.4**	**99.4**	**98.8**	**98.8**	**98.1**	**98.1**	**95.2**	**95.2**
Dinajpur	99.5	99.0	99.0	99.0	99.0	98.6	98.6	95.7	95.7
Gaibandha	100.0	100.0	100.0	99.0	99.0	96.2	96.2	90.5	90.5
Kurigram	100.0	99.5	99.5	97.1	97.1	96.2	96.2	92.9	92.9
Lalmonirhat	100.0	100.0	100.0	99.5	99.5	98.6	98.6	92.9	92.9
Nilphamari	100.0	100.0	100.0	100.0	100.0	99.0	99.0	97.1	97.1
Panchagarh	100.0	99.5	99.5	99.0	99.0	98.6	98.6	95.2	95.2
Rangpur	100.0	100.0	100.0	99.0	99.0	99.0	99.0	96.7	96.7
Serajganj	100.0	99.5	99.5	99.5	99.5	99.5	99.5	97.6	97.6
Thakurgaon	99.5	99.5	99.5	99.5	99.5	99.0	99.0	95.2	95.2
Rangpur CC	98.1	97.1	97.1	95.7	95.7	94.8	94.8	91.0	91.0
Rangpur Division	**99.7**	**99.4**	**99.4**	**98.7**	**98.7**	**97.8**	**97.8**	**94.1**	**94.1**
Habiganj	98.6	97.1	97.1	96.2	96.2	95.2	95.2	93.3	93.3
Moulavibazar	98.6	98.6	98.6	98.1	98.1	97.6	97.6	92.9	92.9
Sunamganj	97.6	97.6	97.6	96.7	96.7	95.2	95.2	92.4	92.4
Sylhet	95.7	95.7	95.7	93.8	93.8	91.4	91.4	88.6	88.6
Sylhet CC	99.0	99.0	99.0	98.6	98.6	96.2	96.2	93.8	93.3
Sylhet Division	**97.9**	**97.6**	**97.6**	**96.7**	**96.7**	**95.1**	**95.1**	**92.2**	**92.1**
Barisal	99.0	99.0	99.0	98.1	98.1	97.6	97.6	92.9	92.9
Bhola	98.6	97.6	97.6	93.3	93.3	91.9	91.9	84.8	84.8
Barguna	100.0	100.0	100.0	99.5	99.5	98.6	98.6	91.9	91.9
Jhalokati	99.5	99.0	99.0	97.6	97.6	97.1	97.1	92.9	92.9
Patuakhali	99.5	99.0	99.0	98.6	98.6	95.7	95.7	87.6	87.6
Perojpur	99.5	99.0	99.0	99.0	99.0	97.6	97.6	94.8	94.8
Barisal CC	100.0	100.0	100.0	99.0	99.0	97.1	97.1	89.0	89.0
Barisal Division	**99.5**	**99.1**	**99.1**	**97.9**	**97.9**	**96.5**	**96.5**	**90.5**	**90.5**
Bandarban	99.5	99.5	99.5	98.1	98.1	97.6	97.6	93.8	93.8
B.Baria	98.1	98.1	98.1	96.2	96.2	94.8	94.8	88.1	88.1
Chandpur	99.5	99.5	99.5	98.1	98.1	95.7	95.7	90.5	90.5
Chittagong	100.0	100.0	100.0	99.5	99.5	98.6	98.6	95.7	95.7
Comilla	100.0	100.0	100.0	99.5	99.5	99.5	99.5	96.7	96.7
Cox'sbazar	100.0	100.0	100.0	100.0	100.0	99.5	99.5	98.1	98.1
Feni	99.0	99.0	99.0	99.0	99.0	97.6	97.6	94.3	94.3
Khagrachari	98.1	98.1	98.1	96.7	96.7	96.7	96.7	93.8	93.8
Lakshmipur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	95.2	95.2
Noakhali	97.6	97.6	97.6	93.8	93.8	93.3	93.3	86.7	86.7
Rangamati	93.8	93.8	93.8	91.0	91.0	88.6	88.6	83.3	83.3
Ctg CC	98.6	98.6	98.6	97.1	97.1	94.8	94.8	92.4	92.4
Ctg Slum	97.6	97.1	97.1	92.4	92.4	88.6	88.6	76.7	76.7
Comilla CC	99.0	99.0	99.0	99.0	99.0	99.0	99.0	97.1	97.1
Chittagong Division	**98.7**	**98.7**	**98.7**	**97.5**	**97.5**	**96.6**	**96.6**	**92.7**	**92.7**
National	**99.3**	**99.1**	**99.1**	**98.2**	**98.2**	**97.0**	**97.0**	**92.8**	**92.8**
Urban	**99.3**	**99.1**	**99.1**	**98.4**	**98.4**	**96.8**	**96.8**	**92.9**	**92.9**
Rural	**99.3**	**99.1**	**99.1**	**98.2**	**98.2**	**97.2**	**97.2**	**93.1**	**93.1**

Table 3a: Crude Immunization Coverage among 12-23 Months Old Children According to Survey Units by District, City Corporation (Fully Immunized Arranged in Ascending Order by All Districts)

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Chittagong Slum	97.6	97.1	97.1	92.4	92.4	88.6	88.6	76.7	76.7
Dhaka Slum	97.1	97.1	97.1	93.3	93.3	90.5	90.5	83.8	83.8
Rangamati	93.8	93.8	93.8	91.0	91.0	88.6	88.6	83.3	83.3
Mymensingh	99.5	98.1	98.1	95.7	95.7	91.4	91.4	83.8	83.8
Bhola	98.6	97.6	97.6	93.3	93.3	91.9	91.9	84.8	84.8
Gazipur	100.0	100.0	100.0	98.6	98.6	95.2	95.2	85.7	85.7
Noakhali	97.6	97.6	97.6	93.8	93.8	93.3	93.3	86.7	86.7
Patuakhali	99.5	99.0	99.0	98.6	98.6	95.7	95.7	87.6	87.6
Jamalpur	99.0	98.6	98.6	98.6	98.6	98.1	98.1	88.1	88.1
Netrokona	98.6	98.1	98.1	95.7	95.7	92.9	92.9	88.1	88.1
Bogra	100.0	100.0	100.0	99.0	99.0	95.7	95.7	88.1	88.1
B.Baria	98.1	98.1	98.1	96.2	96.2	94.8	94.8	88.1	88.1
Madaripur	100.0	100.0	100.0	97.6	97.6	96.7	96.7	88.6	88.6
Sylhet	95.7	95.7	95.7	93.8	93.8	91.4	91.4	88.6	88.6
Barisal CC	100.0	100.0	100.0	99.0	99.0	97.1	97.1	89.0	89.0
Norsingdhi	98.6	98.6	98.6	98.1	98.1	95.7	95.7	89.5	89.5
Gaibandha	100.0	100.0	100.0	99.0	99.0	96.2	96.2	90.5	90.5
Chandpur	99.5	99.5	99.5	98.1	98.1	95.7	95.7	90.5	90.5
Rangpur CC	98.1	97.1	97.1	95.7	95.7	94.8	94.8	91.0	91.0
Narail	99.5	99.5	99.5	97.6	97.6	96.7	96.7	91.9	91.9
Barguna	100.0	100.0	100.0	99.5	99.5	98.6	98.6	91.9	91.9
Dhaka South CC	99.0	99.0	99.0	98.6	98.6	97.6	97.6	92.4	92.4
NCC	98.6	97.6	97.6	97.1	97.1	94.8	94.8	92.4	92.4
Kushtia	100.0	99.5	99.5	98.1	98.1	96.7	96.7	92.4	92.4
Magura	100.0	100.0	100.0	99.5	99.5	97.1	97.1	92.4	92.4
Sunamganj	97.6	97.6	97.6	96.7	96.7	95.2	95.2	92.4	92.4
Ctg CC	98.6	98.6	98.6	97.1	97.1	94.8	94.8	92.4	92.4
Kurigram	100.0	99.5	99.5	97.1	97.1	96.2	96.2	92.9	92.9
Lalmonirhat	100.0	100.0	100.0	99.5	99.5	98.6	98.6	92.9	92.9
Moulavibazar	98.6	98.6	98.6	98.1	98.1	97.6	97.6	92.9	92.9
Barisal	99.0	99.0	99.0	98.1	98.1	97.6	97.6	92.9	92.9
Jhalokati	99.5	99.0	99.0	97.6	97.6	97.1	97.1	92.9	92.9
Gopalganj	99.5	99.5	99.5	99.0	99.0	97.6	97.6	93.3	93.3
Rajbari	100.0	100.0	100.0	99.5	99.5	98.1	98.1	93.3	93.3
Meherpur	99.5	99.5	99.5	97.6	97.6	96.7	96.7	93.3	93.3
Khulna CC	99.5	99.5	99.5	98.6	98.6	97.6	97.6	93.3	93.3
Habiganj	98.6	97.1	97.1	96.2	96.2	95.2	95.2	93.3	93.3
Sylhet CC	99.0	99.0	99.0	98.6	98.6	96.2	96.2	93.8	93.3
Manikganj	99.0	99.0	99.0	98.6	98.6	98.1	98.1	93.8	93.8
Narayanganj	99.0	99.0	99.0	98.6	98.6	98.1	98.1	93.8	93.8

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Khulna	99.5	99.5	99.5	98.6	98.6	98.6	98.6	93.8	93.8
Chapai Nawabganj	100.0	98.6	98.6	97.1	97.1	95.2	95.2	93.8	93.8
Naogaon	99.0	98.1	98.1	97.6	97.6	97.6	97.6	93.8	93.8
Bandarban	99.5	99.5	99.5	98.1	98.1	97.6	97.6	93.8	93.8
Khagrachari	98.1	98.1	98.1	96.7	96.7	96.7	96.7	93.8	93.8
Faridpur	99.5	99.5	99.5	98.1	98.1	97.1	97.1	94.3	94.3
Tangail	98.6	98.6	98.6	98.1	98.1	97.1	97.1	94.3	94.3
Dhaka North CC	100.0	100.0	100.0	98.1	98.1	97.1	97.1	94.3	94.3
Jessore	99.5	99.5	99.5	99.5	99.5	98.6	98.6	94.3	94.3
Natore	98.1	98.1	98.1	98.1	98.1	97.1	97.1	94.3	94.3
Feni	99.0	99.0	99.0	99.0	99.0	97.6	97.6	94.3	94.3
Dhaka	100.0	100.0	100.0	99.0	99.0	98.6	98.6	94.8	94.8
Perojpur	99.5	99.0	99.0	99.0	99.0	97.6	97.6	94.8	94.8
Shariatpur	99.5	99.5	99.5	98.1	98.1	97.6	97.6	95.2	95.2
Jhenaidah	99.5	99.5	99.5	99.5	99.5	99.0	99.0	95.2	95.2
Satkhira	100.0	100.0	100.0	100.0	100.0	99.0	99.0	95.2	95.2
Panchagarh	100.0	99.5	99.5	99.0	99.0	98.6	98.6	95.2	95.2
Thakurgaon	99.5	99.5	99.5	99.5	99.5	99.0	99.0	95.2	95.2
Lakshmipur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	95.2	95.2
Sherpur	99.5	99.5	99.5	99.0	99.0	98.6	98.6	95.7	95.7
Joypurhat	100.0	100.0	100.0	100.0	100.0	100.0	100.0	95.7	95.7
Dinajpur	99.5	99.0	99.0	99.0	99.0	98.6	98.6	95.7	95.7
Chittagong	100.0	100.0	100.0	99.5	99.5	98.6	98.6	95.7	95.7
Bagerhat	99.5	99.5	99.5	99.5	99.5	98.6	98.6	96.7	96.7
Chuadanga	100.0	99.0	99.0	98.6	98.6	97.6	97.6	96.7	96.7
Rangpur	100.0	100.0	100.0	99.0	99.0	99.0	99.0	96.7	96.7
Comilla	100.0	100.0	100.0	99.5	99.5	99.5	99.5	96.7	96.7
Kishoreganj	100.0	100.0	100.0	100.0	100.0	98.6	98.6	97.1	97.1
Munshiganj	100.0	100.0	100.0	100.0	100.0	99.0	99.0	97.1	97.1
Rajshahi CC	100.0	100.0	100.0	99.0	99.0	98.6	98.6	97.1	97.1
Nilphamari	100.0	100.0	100.0	100.0	100.0	99.0	99.0	97.1	97.1
Comilla CC	99.0	99.0	99.0	99.0	99.0	99.0	99.0	97.1	97.1
Pabna	100.0	100.0	100.0	99.0	99.0	99.0	99.0	97.6	97.6
Serajganj	100.0	99.5	99.5	99.5	99.5	99.5	99.5	97.6	97.6
Cox'sbazar	100.0	100.0	100.0	100.0	100.0	99.5	99.5	98.1	98.1
Rajshahi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.6	98.6

Table 3b: Crude Immunization Coverage by Age 23 Months among 12-23 Months Old Children According to Survey Units by District, City Corporation (Fully Immunized Arranged in Ascending Order by All Divisions)

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Dhaka Slum	97.1	97.1	97.1	93.3	93.3	90.5	90.5	83.8	83.8
Mymensingh	99.5	98.1	98.1	95.7	95.7	91.4	91.4	83.8	83.8
Gazipur	100.0	100.0	100.0	98.6	98.6	95.2	95.2	85.7	85.7
Jamalpur	99.0	98.6	98.6	98.6	98.6	98.1	98.1	88.1	88.1
Netrokona	98.6	98.1	98.1	95.7	95.7	92.9	92.9	88.1	88.1
Madaripur	100.0	100.0	100.0	97.6	97.6	96.7	96.7	88.6	88.6
Norsingdhi	98.6	98.6	98.6	98.1	98.1	95.7	95.7	89.5	89.5
Dhaka South CC	99.0	99.0	99.0	98.6	98.6	97.6	97.6	92.4	92.4
NCC	98.6	97.6	97.6	97.1	97.1	94.8	94.8	92.4	92.4
Gopalganj	99.5	99.5	99.5	99.0	99.0	97.6	97.6	93.3	93.3
Rajbari	100.0	100.0	100.0	99.5	99.5	98.1	98.1	93.3	93.3
Manikganj	99.0	99.0	99.0	98.6	98.6	98.1	98.1	93.8	93.8
Narayanganj	99.0	99.0	99.0	98.6	98.6	98.1	98.1	93.8	93.8
Faridpur	99.5	99.5	99.5	98.1	98.1	97.1	97.1	94.3	94.3
Tangail	98.6	98.6	98.6	98.1	98.1	97.1	97.1	94.3	94.3
Dhaka North CC	100.0	100.0	100.0	98.1	98.1	97.1	97.1	94.3	94.3
Dhaka	100.0	100.0	100.0	99.0	99.0	98.6	98.6	94.8	94.8
Shariatpur	99.5	99.5	99.5	98.1	98.1	97.6	97.6	95.2	95.2
Sherpur	99.5	99.5	99.5	99.0	99.0	98.6	98.6	95.7	95.7
Kishoreganj	100.0	100.0	100.0	100.0	100.0	98.6	98.6	97.1	97.1
Munshiganj	100.0	100.0	100.0	100.0	100.0	99.0	99.0	97.1	97.1
Dhaka Division	**99.4**	**99.2**	**99.2**	**98.3**	**98.3**	**96.9**	**96.9**	**92.3**	**92.3**
Narail	99.5	99.5	99.5	97.6	97.6	96.7	96.7	91.9	91.9
Kushtia	100.0	99.5	99.5	98.1	98.1	96.7	96.7	92.4	92.4
Magura	100.0	100.0	100.0	99.5	99.5	97.1	97.1	92.4	92.4
Meherpur	99.5	99.5	99.5	97.6	97.6	96.7	96.7	93.3	93.3
Khulna CC	99.5	99.5	99.5	98.6	98.6	97.6	97.6	93.3	93.3
Khulna	99.5	99.5	99.5	98.6	98.6	98.6	98.6	93.8	93.8
Jessore	99.5	99.5	99.5	99.5	99.5	98.6	98.6	94.3	94.3
Jhenaidah	99.5	99.5	99.5	99.5	99.5	99.0	99.0	95.2	95.2
Satkhira	100.0	100.0	100.0	100.0	100.0	99.0	99.0	95.2	95.2
Bagerhat	99.5	99.5	99.5	99.5	99.5	98.6	98.6	96.7	96.7
Chuadanga	100.0	99.0	99.0	98.6	98.6	97.6	97.6	96.7	96.7
Khulna Division	**99.7**	**99.6**	**99.6**	**98.8**	**98.8**	**97.8**	**97.8**	**94.1**	**94.1**
Bogra	100.0	100.0	100.0	99.0	99.0	95.7	95.7	88.1	88.1
Chapai Nawabganj	100.0	98.6	98.6	97.1	97.1	95.2	95.2	93.8	93.8
Naogaon	99.0	98.1	98.1	97.6	97.6	97.6	97.6	93.8	93.8
Natore	98.1	98.1	98.1	98.1	98.1	97.1	97.1	94.3	94.3
Joypurhat	100.0	100.0	100.0	100.0	100.0	100.0	100.0	95.7	95.7
Rajshahi CC	100.0	100.0	100.0	99.0	99.0	98.6	98.6	97.1	97.1

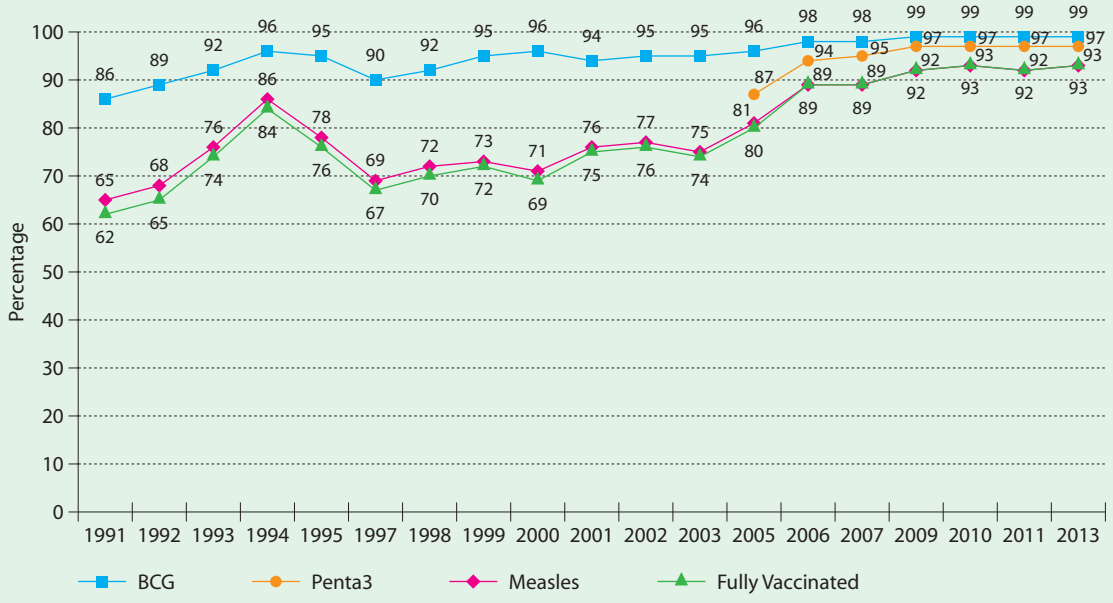
Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Pabna	100.0	100.0	100.0	99.0	99.0	99.0	99.0	97.6	97.6
Rajshahi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.6	98.6
Rajshahi Division	**99.7**	**99.4**	**99.4**	**98.8**	**98.8**	**98.1**	**98.1**	**95.2**	**95.2**
Gaibandha	100.0	100.0	100.0	99.0	99.0	96.2	96.2	90.5	90.5
Rangpur CC	98.1	97.1	97.1	95.7	95.7	94.8	94.8	91.0	91.0
Kurigram	100.0	99.5	99.5	97.1	97.1	96.2	96.2	92.9	92.9
Lalmonirhat	100.0	100.0	100.0	99.5	99.5	98.6	98.6	92.9	92.9
Panchagarh	100.0	99.5	99.5	99.0	99.0	98.6	98.6	95.2	95.2
Thakurgaon	99.5	99.5	99.5	99.5	99.5	99.0	99.0	95.2	95.2
Dinajpur	99.5	99.0	99.0	99.0	99.0	98.6	98.6	95.7	95.7
Rangpur	100.0	100.0	100.0	99.0	99.0	99.0	99.0	96.7	96.7
Nilphamari	100.0	100.0	100.0	100.0	100.0	99.0	99.0	97.1	97.1
Serajganj	100.0	99.5	99.5	99.5	99.5	99.5	99.5	97.6	97.6
Rangpur Division	**99.7**	**99.4**	**99.4**	**98.7**	**98.7**	**97.8**	**97.8**	**94.1**	**94.1**
Sylhet	95.7	95.7	95.7	93.8	93.8	91.4	91.4	88.6	88.6
Sunamganj	97.6	97.6	97.6	96.7	96.7	95.2	95.2	92.4	92.4
Moulavibazar	98.6	98.6	98.6	98.1	98.1	97.6	97.6	92.9	92.9
Habiganj	98.6	97.1	97.1	96.2	96.2	95.2	95.2	93.3	93.3
Sylhet CC	99.0	99.0	99.0	98.6	98.6	96.2	96.2	93.8	93.3
Sylhet Division	**97.9**	**97.6**	**97.6**	**96.7**	**96.7**	**95.1**	**95.1**	**92.2**	**92.1**
Bhola	98.6	97.6	97.6	93.3	93.3	91.9	91.9	84.8	84.8
Patuakhali	99.5	99.0	99.0	98.6	98.6	95.7	95.7	87.6	87.6
Barisal CC	100.0	100.0	100.0	99.0	99.0	97.1	97.1	89.0	89.0
Barguna	100.0	100.0	100.0	99.5	99.5	98.6	98.6	91.9	91.9
Barisal	99.0	99.0	99.0	98.1	98.1	97.6	97.6	92.9	92.9
Jhalokati	99.5	99.0	99.0	97.6	97.6	97.1	97.1	92.9	92.9
Perojpur	99.5	99.0	99.0	99.0	99.0	97.6	97.6	94.8	94.8
Barisal Division	**99.5**	**99.1**	**99.1**	**97.9**	**97.9**	**96.5**	**96.5**	**90.5**	**90.5**
Ctg Slum	97.6	97.1	97.1	92.4	92.4	88.6	88.6	76.7	76.7
Rangamati	93.8	93.8	93.8	91.0	91.0	88.6	88.6	83.3	83.3
Noakhali	97.6	97.6	97.6	93.8	93.8	93.3	93.3	86.7	86.7
B.Baria	98.1	98.1	98.1	96.2	96.2	94.8	94.8	88.1	88.1
Chandpur	99.5	99.5	99.5	98.1	98.1	95.7	95.7	90.5	90.5
Ctg CC	98.6	98.6	98.6	97.1	97.1	94.8	94.8	92.4	92.4
Bandarban	99.5	99.5	99.5	98.1	98.1	97.6	97.6	93.8	93.8
Khagrachari	98.1	98.1	98.1	96.7	96.7	96.7	96.7	93.8	93.8
Feni	99.0	99.0	99.0	99.0	99.0	97.6	97.6	94.3	94.3
Lakshmipur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	95.2	95.2
Chittagong	100.0	100.0	100.0	99.5	99.5	98.6	98.6	95.7	95.7
Comilla	100.0	100.0	100.0	99.5	99.5	99.5	99.5	96.7	96.7
Comilla CC	99.0	99.0	99.0	99.0	99.0	99.0	99.0	97.1	97.1
Cox'sbazar	100.0	100.0	100.0	100.0	100.0	99.5	99.5	98.1	98.1
Chittagong Division	**98.7**	**98.7**	**98.7**	**97.5**	**97.5**	**96.6**	**96.6**	**92.7**	**92.7**
National	**99.3**	**99.1**	**99.1**	**98.2**	**98.2**	**97.0**	**97.0**	**92.8**	**92.8**
Urban	**99.3**	**99.1**	**99.1**	**98.4**	**98.4**	**96.8**	**96.8**	**92.9**	**92.9**
Rural	**99.3**	**99.1**	**99.1**	**98.2**	**98.2**	**97.2**	**97.2**	**93.1**	**93.1**

Table 4: Incidence of Invalid Penta 1, Penta 2, Penta 3, Measles doses by 12 Months of age and vaccination Dropout Rate for Penta1-Penta3 and Penta1-Measles among 12-23 months old children in Bangladesh by District and City Corporotions 2013

Survey Units	Invalid PENTA1	Invalid PENTA2	Invalid PENTA3	Invalid Measles	Droupout rate of PENTA1-PENTA3	Droupout rate of PENTA1-Measles
Dhaka Division	**4.3**	**6.0**	**7.6**	**4.3**	**2.4**	**7.0**
Dhaka	3.7	6.0	6.8	1.6	1.4	5.2
Dhaka South City Corp	5.2	5.9	7.6	6.6	1.4	6.7
Dhaka North City Corp	4.6	6.6	7.4	3.0	2.9	5.7
Dhaka Slum	1.0	1.0	2.1	3.5	6.9	14.7
Faridpur	4.7	4.8	7.1	3.8	2.4	5.3
Gazipur	3.9	5.1	6.5	2.8	4.8	14.3
Gopalganj	2.1	2.1	2.9	2.4	1.9	6.2
Jamalpur	4.2	4.2	5.5	2.1	0.5	10.6
Kishoreganj	4.0	5.2	5.4	3.7	1.4	2.9
Madaripur	3.6	4.9	6.8	4.4	3.3	11.4
Manikganj	5.0	7.9	8.6	3.1	1.0	5.3
Munshiganj	2.4	4.8	7.8	1.3	1.0	2.9
Mymensingh	2.0	2.0	4.2	5.0	6.8	14.6
Narayanganj	7.6	11.5	11.0	4.3	1.0	5.3
NCC	7.7	11.3	14.7	10.2	2.9	5.4
Norsingdhi	3.7	5.6	7.7	4.4	2.9	9.2
Netrokona	3.2	5.3	7.1	5.7	5.3	10.2
Rajbari	3.7	5.1	7.1	5.0	1.9	6.7
Shariatpur	5.1	9.4	11.7	9.4	1.9	4.3
Sherpur	5.3	6.8	8.9	5.4	1.0	3.8
Tangail	5.5	7.3	8.0	3.5	1.4	4.3
Chittagong Division	**5.3**	**7.1**	**8.8**	**4.3**	**2.2**	**6.0**
Bandarban	6.6	7.2	7.2	5.0	1.9	5.7
B.Baria	2.8	5.0	6.6	4.1	3.4	10.2
Chandpur	4.3	4.9	8.2	4.0	3.8	9.1
Chittagong	4.4	5.6	7.5	3.0	1.4	4.3
CCC	5.8	8.1	10.2	11.4	3.9	6.3
Chittagong Slum	5.7	6.1	8.1	9.6	8.8	21.1
Comilla	6.3	12.1	13.1	1.8	0.5	3.3
Com CC	3.8	5.3	9.2	3.5	0.0	1.9
Cox'sbazar	5.9	7.1	9.1	3.2	0.5	1.9
Feni	7.1	8.9	9.2	5.3	1.4	4.8
Khagrachari	5.6	8.1	11.3	2.1	1.5	4.4
Lakshmipur	2.5	2.6	4.5	1.4	0.0	4.8
Noakhali	7.1	8.8	10.4	5.8	4.4	11.2
Rangamati	7.1	9.8	10.1	6.9	5.6	11.2
Rajshahi Division	**4.2**	**5.3**	**6.5**	**2.7**	**1.3**	**4.2**
Bogra	1.7	2.8	4.0	2.5	4.3	11.9
Chapai Nawabganj	4.0	4.6	5.4	1.3	3.4	4.8
Joypurhat	3.3	4.5	6.1	3.6	0.0	4.3

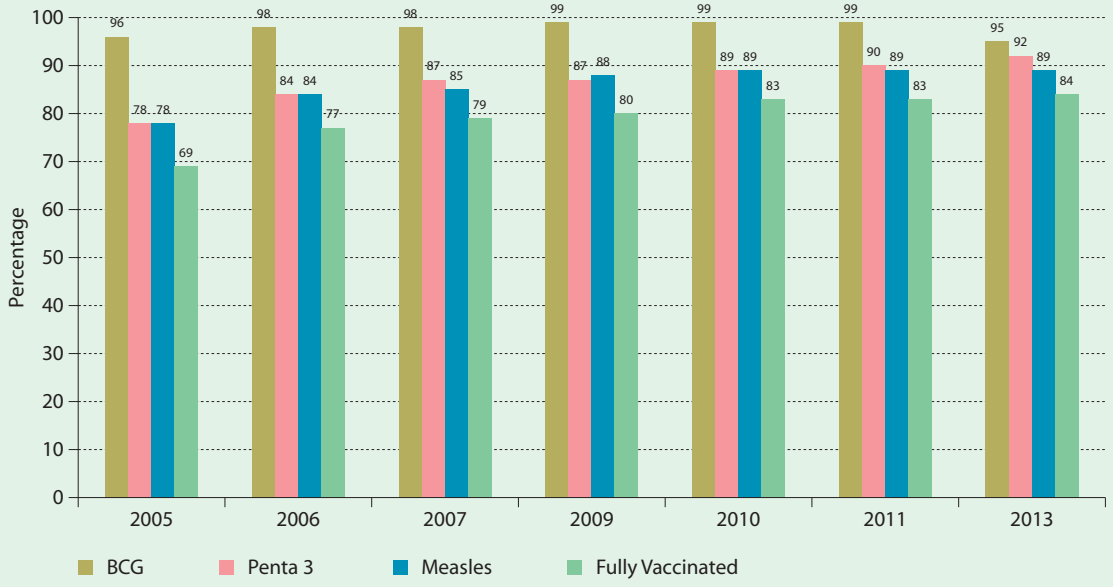
Survey Units	Invalid PENTA1	Invalid PENTA2	Invalid PENTA3	Invalid Measles	Droupout rate of PENTA1-PENTA3	Droupout rate of PENTA1-Measles
Naogaon	1.5	2.6	3.6	1.1	0.5	4.4
Nartore	5.0	7.3	9.0	2.5	1.0	3.9
Pabna	4.3	6.8	9.9	1.3	1.0	2.4
Rajshahi	6.1	6.7	7.8	4.1	0.0	1.4
Serajganj	8.9	10.3	10.3	6.8	0.0	1.9
RCC	3.4	3.4	3.5	1.8	1.4	2.9
Khulna Division	**3.4**	**4.6**	**5.8**	**2.7**	**1.7**	**5.5**
Bagerhat	2.5	4.5	5.1	0.5	1.0	2.9
Chuadanga	5.3	6.5	9.2	4.6	1.4	2.4
Jessore	3.7	6.0	8.3	1.8	1.0	5.3
Jhenaidah	2.7	3.2	3.3	1.9	0.5	4.3
Khulna	2.4	3.7	4.3	1.3	1.0	5.7
Kustia	7.2	8.3	10.8	3.9	2.9	7.2
Magura	2.3	3.5	6.0	5.8	2.9	7.6
Meherpur	2.4	3.0	4.2	0.6	2.9	6.2
Narail	5.5	6.2	6.9	4.7	2.9	7.7
Satkhira	2.2	3.8	3.9	3.6	1.0	4.8
KCC	0.6	1.3	0.7	1.5	1.9	6.2
Sylhet Division	**3.7**	**5.1**	**6.6**	**4.8**	**2.5**	**5.6**
Habiganj	2.8	3.6	3.6	1.5	2.0	3.9
Moulavibazar	4.3	6.1	9.0	6.7	1.0	5.8
Sunamganj	3.5	4.7	7.1	7.2	2.4	5.4
Sylhet	6.4	8.7	10.1	4.7	4.5	7.5
SCC	0.7	1.4	1.4	3.0	2.9	5.3
Barisal Division	**4.8**	**6.6**	**9.0**	**4.3**	**2.6**	**8.6**
Barisal	4.9	5.5	8.1	4.8	1.4	6.3
Bhola	1.2	5.7	7.7	2.2	5.9	13.2
Barguna	4.5	7.9	10.6	6.7	1.4	8.1
Jhalokati	5.8	5.9	8.3	4.6	1.9	6.3
Patuakhali	8.7	11.9	15.0	5.1	3.4	11.5
Perojpur	5.4	5.4	6.6	2.4	1.4	4.3
BCC	2.9	3.7	7.1	5.2	2.9	11.0
Rangpur Division	**4.8**	**6.0**	**7.4**	**3.7**	**1.6**	**5.3**
Dinajpur	4.2	5.3	5.9	4.0	0.5	3.4
Gaibandha	4.4	5.1	4.7	2.6	3.8	9.5
Kurigram	4.7	5.4	7.7	4.2	3.3	6.7
Lalmonirhat	5.5	7.2	11.1	4.3	1.4	7.1
Nilphamari	2.2	3.2	4.3	3.4	1.0	2.9
Panchagarh	9.3	11.5	12.8	4.8	1.0	4.3
Rangpur	6.9	6.5	6.0	5.5	1.0	3.3
Ran CC	2.9	4.7	5.4	2.8	2.5	6.4
Thakurgaon	3.5	5.3	8.4	1.4	0.5	4.3
National	**4.4**	**5.8**	**7.4**	**3.8**	**2.2**	**6.4**
Urban	**3.9**	**5**	**6.6**	**3.9**	**2.3**	**6.2**
Rural	**4.5**	**6.1**	**7.6**	**3.8**	**2.0**	**6.1**

Figure 1. Annual Trend in National Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children from 1991 to 2013



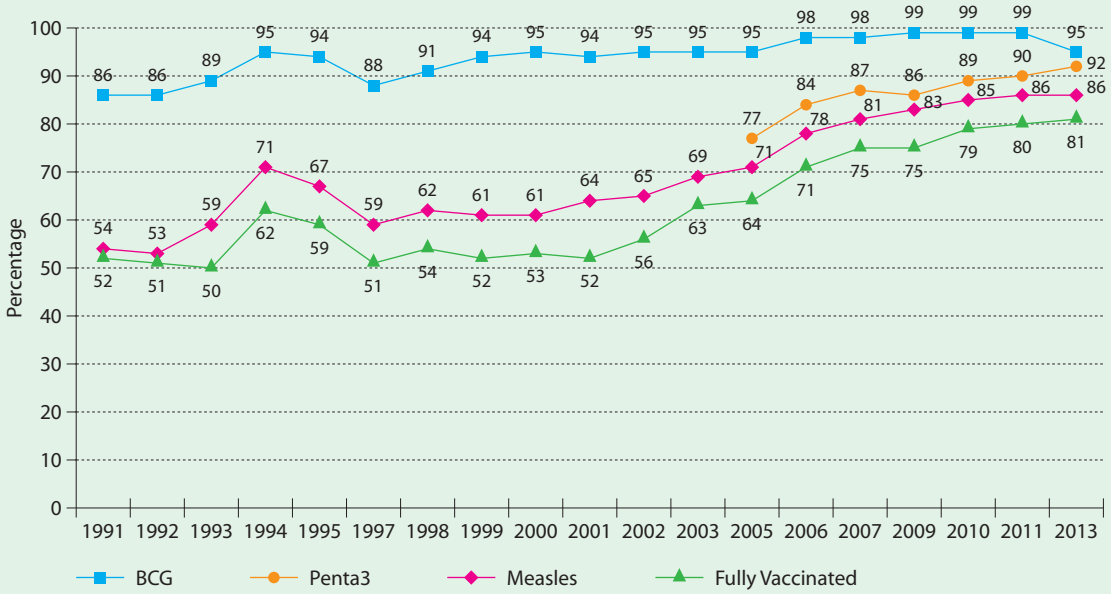
Source : Coverage Evaluation Survey 1991-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure 2. Annual trend in national valid vaccination coverage by age 23 months among 12-23 months old children from 2005 to 2013



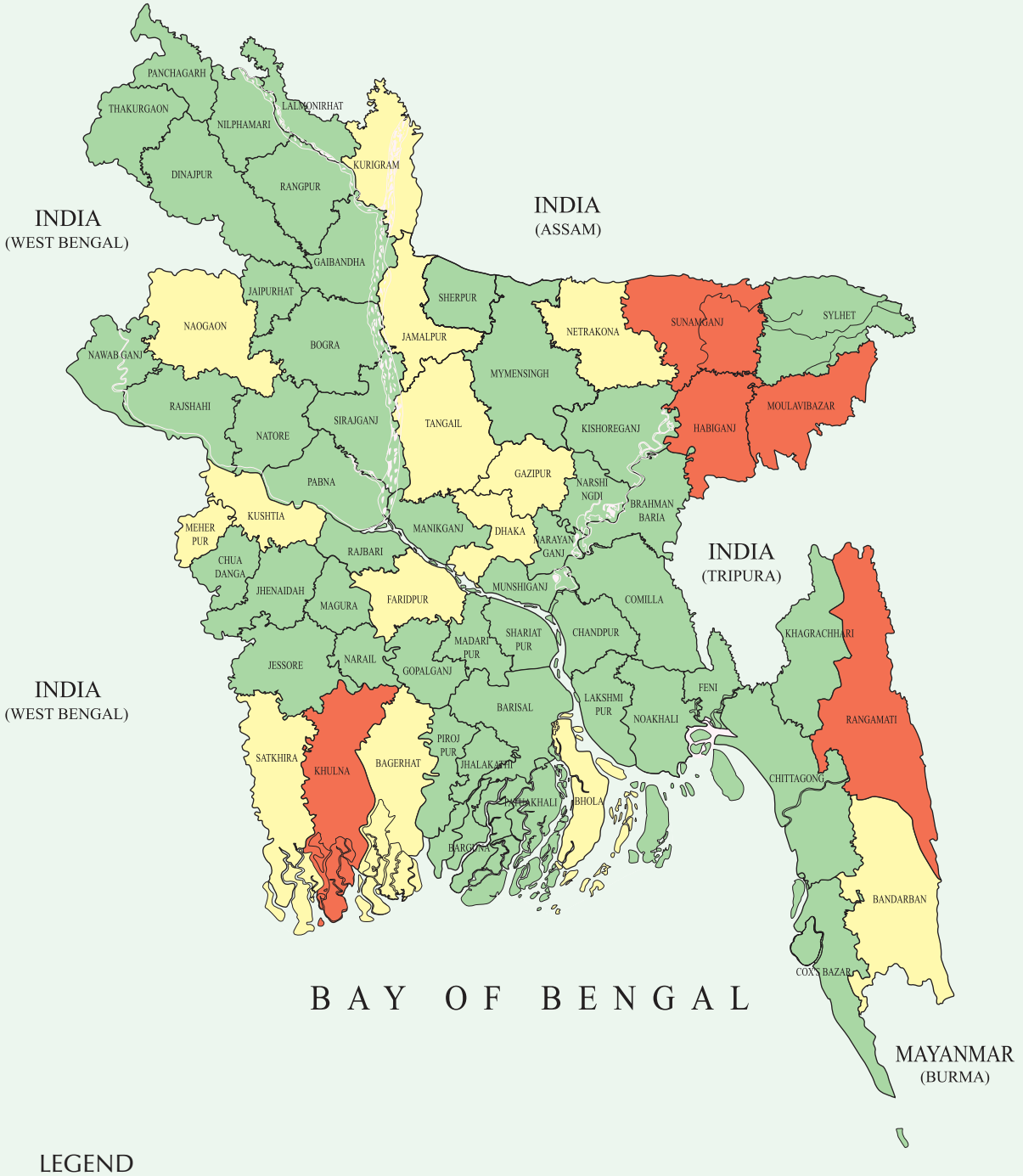
Source : Coverage Evaluation Survey 2005, 2006, 2007, 2009, 2010, 2011 and 2013

Figure 3. Annual trend in national valid vaccination coverage by age 12 months among 12-23 months old children from 1991 to 2013



Source : Coverage Evaluation Survey 1991-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011 and 2013

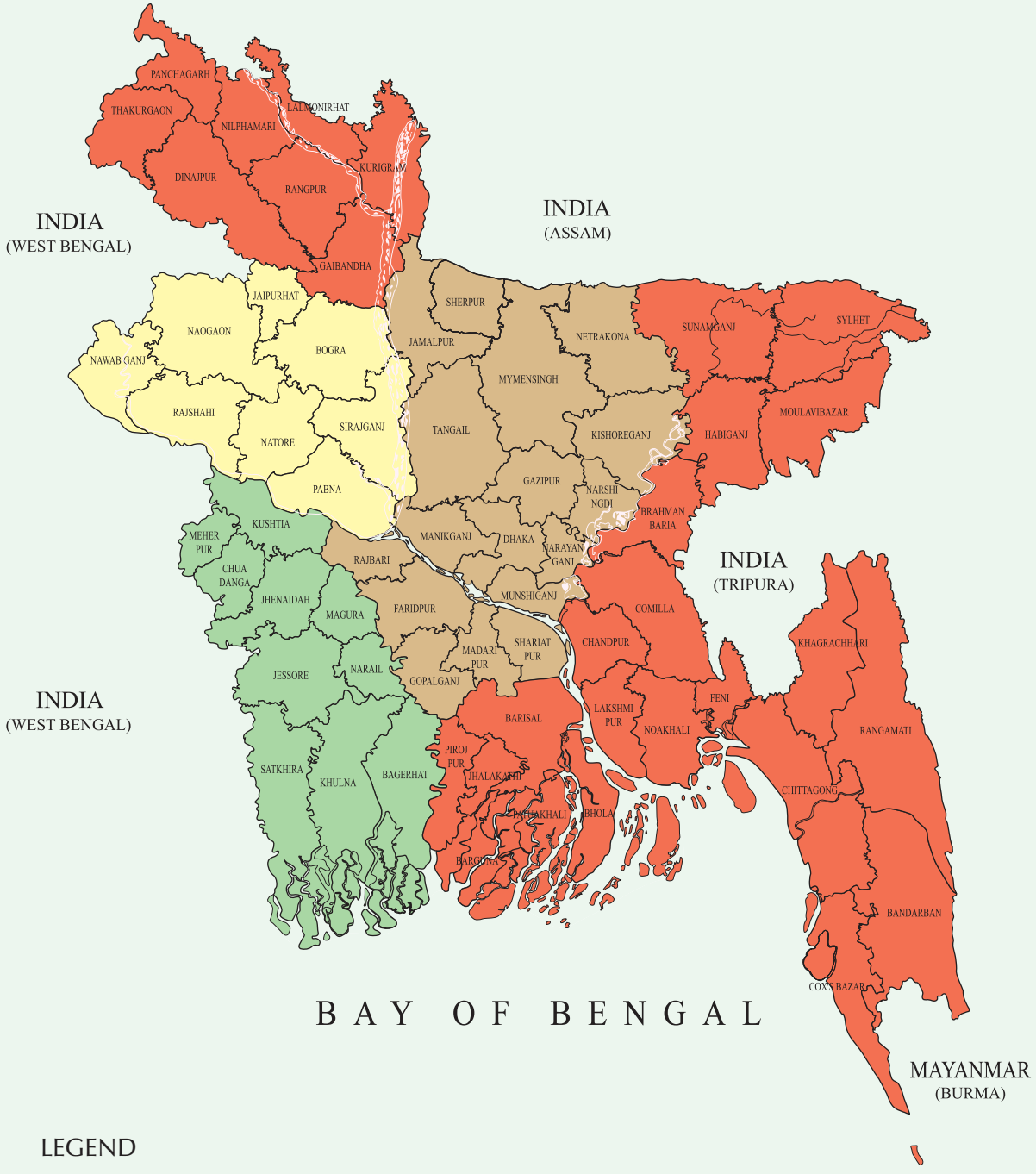
PERCENTAGE OF NEWBORN PROTECTED AT BIRTH AGAINST TETANUS BY DISTRICT 2013



LEGEND

- <85%
- 85 - 89
- > =90%

CHILDREN DELIVERED AT HOME BY DIVISION IN 2013



LEGEND

- 45 - 49
- 50 - 56
- 57 - 63
- 64 - 69

CHILDREN DELIVERED AT HEALTH FACILITY BY DIVISION IN 2013

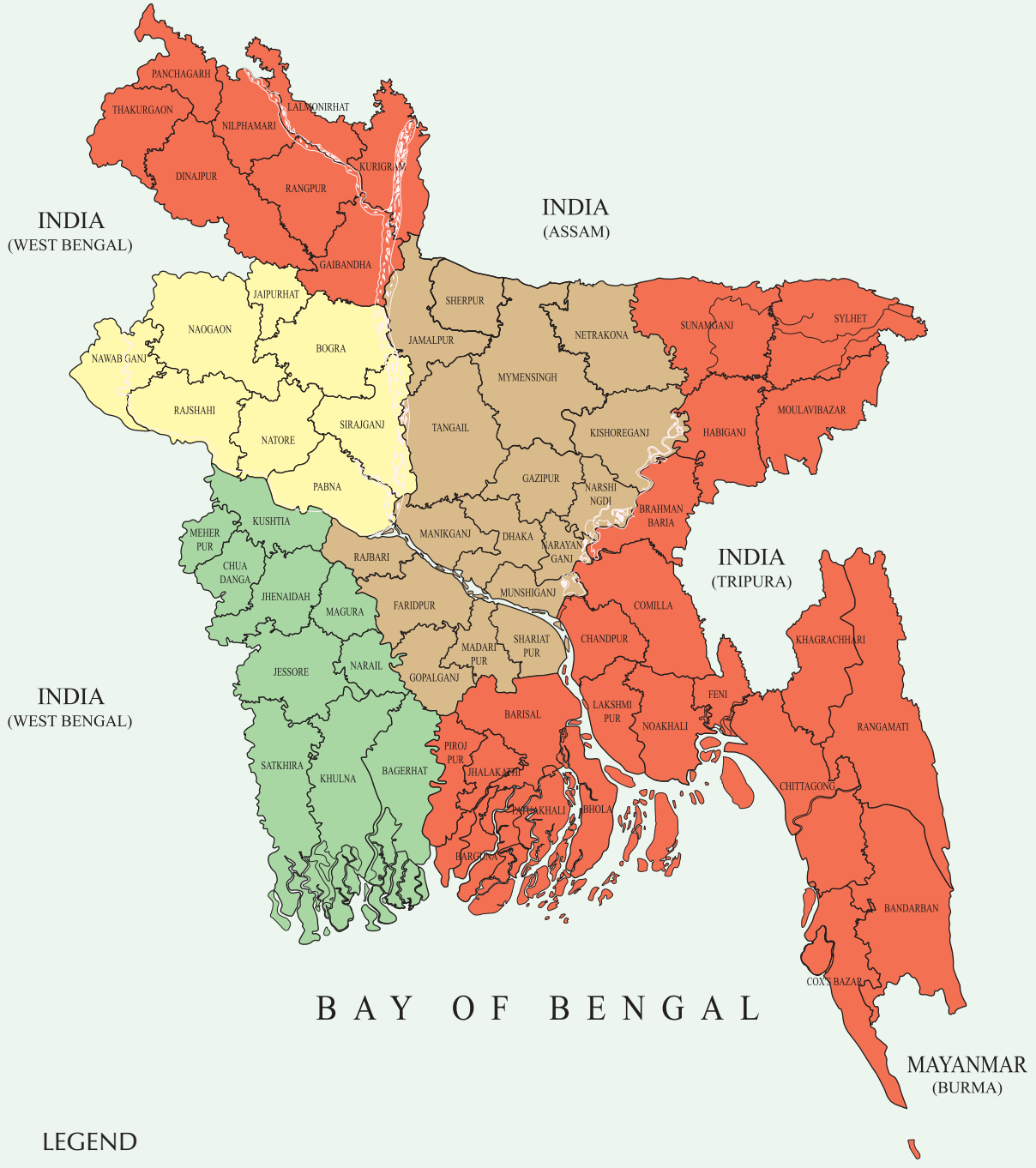


Table 5: Valid TT Coverage among Mothers with 0-11 Months Old Children by Survey Units, According to Survey Units

Survey Units	TT1	TT2	TT3	TT4	TT5
Dhaka Division	**97.6**	**96.1**	**81.7**	**61.3**	**40.9**
Dhaka	94.8	93.3	74.3	54.8	37.1
DSCC	97.6	96.7	74.8	55.7	35.7
DNCC	99.5	99.0	83.3	51.9	32.9
Dhaka Slum	94.3	91.9	73.3	47.6	28.6
Faridpur	92.4	90.5	75.7	54.8	30.5
Gazipur	98.6	98.1	78.6	53.3	31.9
Gopalganj	98.6	97.6	85.2	69.0	53.3
Jamalpur	97.1	96.7	77.1	48.1	29.5
Kishoreganj	98.1	96.7	85.2	68.6	51.0
Madaripur	98.1	96.7	79.5	50.5	28.1
Manikganj	97.6	97.1	81.0	58.1	39.5
Munshiganj	96.7	96.2	91.0	80.0	61.0
Mymensingh	99.0	95.7	82.9	67.1	45.7
Narayanganj	97.1	96.7	83.8	67.6	46.7
NCC	99.0	98.6	81.9	63.3	43.8
Norsingdhi	98.6	96.2	87.6	64.3	40.5
Netrokona	98.1	95.7	81.4	59.0	38.1
Rajbari	98.1	97.6	90.0	75.7	51.9
Shariatpur	98.1	93.3	78.6	65.2	47.1
Sherpur	98.6	96.7	82.4	59.5	35.2
Tangail	95.7	92.9	80.0	58.6	37.6
Chittagong Division	**97.0**	**95.8**	**84.5**	**65.6**	**46.1**
Bandarban	95.2	92.9	81.9	66.2	46.7
B.Baria	97.6	96.7	81.9	62.4	41.9
Chandpur	98.1	95.7	84.8	65.7	41.0
Chittagong	99.5	99.0	90.5	77.1	55.2
CCC	99.0	98.1	79.0	61.4	37.6
Chittagong Slum	95.2	91.9	59.5	39.0	22.4
Comilla	99.0	98.1	93.8	85.7	69.5
Com CC	99.5	99.5	88.6	66.2	51.4
Cox'sbazar	98.6	96.7	87.1	67.1	43.3
Feni	99.5	98.1	91.9	75.2	56.7
Khagrachari	94.8	93.3	84.3	60.0	41.4
Lakshmipur	97.6	96.2	87.6	68.1	51.9
Noakhali	94.8	94.8	77.1	51.0	30.0
Rangamati	88.1	85.7	70.0	47.1	32.9
Rajshahi Division	**98.6**	**97.4**	**87.2**	**66.6**	**45.3**
Bogra	98.6	97.6	82.4	58.6	37.1
Chapai Nawabganj	97.1	96.7	88.1	64.3	42.9
Joypurhat	99.5	97.6	88.1	67.1	44.8
Naogaon	96.7	95.2	87.6	75.7	51.9

Survey Units	TT1	TT2	TT3	TT4	TT5
Nartore	99.0	97.6	85.7	69.0	47.6
Pabna	100.0	98.6	89.5	68.1	43.8
Rajshahi	99.0	97.6	87.6	69.0	45.7
Serajganj	99.0	98.1	82.9	49.5	33.3
RCC	98.6	97.6	93.3	77.6	60.5
Khulna Division	**98.8**	**96.8**	**84.1**	**63.3**	**42.9**
Bagerhat	99.0	97.1	82.9	60.0	35.7
Chuadanga	99.0	96.7	90.0	67.6	47.1
Jessore	98.6	97.6	82.4	61.4	44.3
Jhenaidah	99.5	98.6	87.6	65.7	42.9
Khulna	99.0	94.8	77.1	51.4	33.3
Kustia	99.0	97.1	86.7	70.0	45.2
Magura	99.5	97.6	93.3	79.5	59.5
Meherpur	98.6	95.7	71.9	44.3	28.1
Narail	98.1	96.2	82.9	62.4	39.0
Satkhira	98.6	97.1	89.5	74.8	56.7
KCC	98.1	96.2	81.0	59.0	39.5
Sylhet Division	**95.4**	**92.1**	**78.7**	**60.0**	**43.6**
Habiganj	98.1	90.5	78.6	63.8	47.1
Moulavibazar	90.0	88.6	76.7	66.7	49.0
Sunamganj	97.6	94.3	81.0	60.0	45.2
Sylhet	97.6	95.7	82.9	62.4	41.4
SCC	93.8	91.4	74.3	47.1	35.2
Barisal Division	**98.6**	**96.5**	**86.5**	**68.1**	**47.8**
Barisal	99.0	96.7	90.5	78.1	60.0
Bhola	97.6	94.8	91.4	84.8	67.1
Barguna	98.1	97.1	81.4	61.9	40.5
Jhalokati	99.0	96.7	92.9	79.5	60.0
Patuakhali	99.5	97.1	76.7	46.7	22.9
Perojpur	98.6	95.7	84.3	63.3	42.9
BCC	98.6	97.1	88.1	62.4	41.0
Rangpur Division	**99.1**	**97.0**	**83.4**	**64.2**	**43.5**
Dinajpur	98.6	96.7	90.0	81.0	61.0
Gaibandha	99.0	98.1	87.6	60.0	39.0
Kurigram	99.0	95.7	68.1	40.5	18.1
Lalmonirhat	99.0	96.2	72.4	51.9	31.0
Nilphamari	99.5	98.1	90.0	71.9	53.8
Panchagarh	99.0	96.7	89.0	69.5	50.5
Rangpur	98.6	96.2	76.2	59.0	39.0
Ran CC	99.0	99.0	91.0	75.7	54.8
Thakurgaon	100.0	96.2	86.2	68.1	44.3
National	**98.0**	**96.3**	**83.4**	**63.9**	**43.6**
Urban	**98.5**	**97.3**	**83.8**	**62.6**	**43.3**
Rural	**97.8**	**95.8**	**83.6**	**64.3**	**43.9**

Table 6: Crude TT Coverage among Mothers with 0-11 Months Old Children by Survey Units, According to Survey Units

Survey Units	TT1	TT2	TT3	TT4	TT5
Dhaka Division	**97.6**	**96.1**	**87.4**	**74.7**	**56.6**
Dhaka	94.8	93.3	83.8	63.8	50.0
DSCC	97.6	96.7	77.6	69.0	50.0
DNCC	99.5	99.5	87.6	72.9	50.5
Dhaka Slum	94.3	91.9	79.5	67.1	52.9
Faridpur	92.4	90.5	81.0	68.1	45.7
Gazipur	98.6	98.1	84.3	68.6	48.6
Gopalganj	98.6	97.6	89.0	79.0	68.1
Jamalpur	97.1	96.7	89.5	71.9	52.9
Kishoreganj	98.1	96.7	92.4	83.3	68.1
Madaripur	98.1	96.7	91.4	80.0	54.8
Manikganj	97.6	97.1	83.3	67.6	47.1
Munshiganj	96.7	96.2	91.0	81.4	64.3
Mymensingh	99.0	95.7	86.2	78.1	63.3
Narayanganj	97.1	96.7	87.6	76.7	60.0
NCC	99.0	98.6	89.5	74.8	58.6
Norsingdhi	98.6	96.2	92.9	78.6	60.5
Netrokona	98.1	95.7	86.7	71.9	53.8
Rajbari	98.1	97.6	91.0	79.5	55.2
Shariatpur	98.1	93.3	85.7	77.1	65.7
Sherpur	98.6	96.7	92.9	80.5	61.4
Tangail	95.7	93.3	85.2	71.9	52.9
Chittagong Division	**97.0**	**95.8**	**88.4**	**75.5**	**62.1**
Bandarban	95.2	93.3	87.1	72.4	60.5
B.Baria	97.6	97.1	84.3	69.5	54.8
Chandpur	98.1	95.7	87.6	76.7	61.9
Chittagong	99.5	99.0	92.9	87.1	76.7
CCC	99.0	98.1	86.7	72.9	61.0
Ctg Slum	95.2	91.9	74.8	57.1	43.8
Comilla	99.0	98.1	93.8	87.1	71.4
Com CC	99.5	99.5	92.4	79.5	65.2
Cox'sbazar	98.6	96.7	91.4	84.3	73.3
Feni	99.5	98.1	94.3	83.8	70.5
Khagrachari	94.8	93.3	85.7	66.7	51.0
Lakshmipur	97.6	96.2	92.4	79.5	66.2
Noakhali	94.8	94.8	86.7	68.6	56.2
Rangamati	88.1	85.7	73.8	53.8	38.6
Rajshahi Division	**98.6**	**97.5**	**90.4**	**75.7**	**58.5**
Bogra	98.6	97.6	86.7	68.1	50.5
Chapai Nawabganj	97.1	96.7	90.5	70.5	51.9
Joypurhat	99.5	97.6	90.5	75.7	60.0
Naogaon	96.7	95.2	87.6	77.1	54.8

Survey Units	TT1	TT2	TT3	TT4	TT5
Nartore	99.0	97.6	89.5	76.7	62.9
Pabna	100.0	99.0	91.9	81.0	64.3
Rajshahi	99.0	97.6	91.9	78.1	60.0
Serajganj	99.0	98.1	90.5	71.0	53.8
RCC	98.6	97.6	94.8	83.3	68.1
Khulna Division	**98.8**	**96.8**	**88.6**	**72.5**	**55.7**
Bagerhat	99.0	97.1	87.6	69.5	49.0
Chuadanga	99.0	96.7	91.9	73.8	58.1
Jessore	98.6	97.6	87.6	75.7	60.0
Jhenaidah	99.5	98.6	92.4	73.8	52.4
Khulna	99.0	94.8	87.6	69.0	55.2
Kustia	99.0	97.1	87.1	71.9	49.0
Magura	99.5	98.1	95.2	85.2	72.4
Meherpur	98.6	95.7	84.3	64.3	50.5
Narail	98.1	96.2	87.6	71.9	54.8
Satkhira	98.6	97.1	89.5	75.7	58.6
KCC	98.1	96.2	83.8	66.7	52.4
Sylhet Division	**95.4**	**92.3**	**82.0**	**67.1**	**55.2**
Habiganj	98.1	91.0	81.4	67.6	58.6
Moulavibazar	90.0	89.0	80.0	70.0	59.5
Sunamganj	97.6	94.3	84.3	73.3	61.0
Sylhet	97.6	95.7	86.7	68.6	53.3
SCC	93.8	91.4	77.6	56.2	43.8
Barisal Division	**98.6**	**96.5**	**90.3**	**77.6**	**60.2**
Barisal	99.0	96.7	91.9	80.0	64.3
Bhola	97.6	94.8	91.9	85.2	70.5
Barguna	98.1	97.1	84.8	67.6	43.8
Jhalokati	99.0	96.7	94.3	81.9	62.9
Patuakhali	99.5	97.1	88.1	74.3	57.1
Perojpur	98.6	96.2	89.0	77.1	61.9
BCC	98.6	97.1	92.4	77.1	61.0
Rangpur Division	**99.1**	**97.0**	**87.4**	**71.7**	**55.4**
Dinajpur	98.6	96.7	90.0	81.4	64.3
Gaibandha	99.0	98.1	90.0	76.2	60.5
Kurigram	99.0	95.7	75.7	50.5	32.4
Lalmonirhat	99.0	96.7	80.5	62.4	45.2
Nilphamari	99.5	98.1	90.5	73.8	57.1
Panchagarh	99.0	96.7	92.4	78.1	60.5
Rangpur	98.6	96.2	84.3	69.0	55.2
Rangpur City Corp	99.0	99.0	92.9	79.0	63.8
Thakurgaon	100.0	96.2	90.0	75.2	59.5
National	**98.0**	**96.3**	**87.8**	**74.4**	**58.1**
Urban	**98.5**	**97.3**	**88.1**	**73.6**	**57.0**
Rural	**97.8**	**95.9**	**88.0**	**74.2**	**58.0**

Table 7: Valid TT Coverage among Women Age 18-49 Years by Survey Units, according to Division

Survey Units	TT1	TT2	TT3	TT4	TT5
Dhaka Division	**90.3**	**87.8**	**72.3**	**50.4**	**31.6**
Dhaka	87.1	84.8	67.6	48.1	30.5
DSCC	90.5	88.1	72.9	48.6	29.5
DNCC	96.7	96.7	72.9	49.5	33.8
Dhaka Slum	83.3	79.5	67.1	40.5	23.3
Faridpur	85.7	83.8	69.5	48.6	32.4
Gazipur	92.9	87.6	68.1	47.6	26.2
Gopalganj	88.1	85.7	71.0	53.3	34.3
Jamalpur	87.1	83.8	64.8	41.9	22.9
Kishoreganj	95.2	93.3	77.6	55.2	34.3
Madaripur	91.0	88.6	69.0	51.9	32.9
Manikganj	91.0	87.6	70.5	45.2	31.4
Munshiganj	94.3	93.3	85.7	65.7	42.9
Mymensingh	90.0	88.1	74.3	49.5	31.9
Narayanganj	91.9	90.0	75.2	51.4	33.8
NCC	89.5	84.8	67.6	46.2	27.1
Norsingdhi	88.1	85.2	72.4	44.3	22.9
Netrokona	90.5	87.6	76.2	51.9	29.5
Rajbari	94.3	92.9	75.7	51.0	29.0
Shariatpur	91.9	89.5	79.5	57.1	41.0
Sherpur	84.3	83.3	74.8	55.2	37.1
Tangail	85.7	81.0	60.0	45.2	28.6
Chittagong Division	**91.8**	**89.3**	**77.3**	**56.3**	**34.9**
Bandarban	98.6	97.6	92.9	79.5	62.4
B.Baria	84.8	79.5	64.3	43.8	28.1
Chandpur	93.8	90.5	74.3	53.3	30.0
Chittagong	96.2	95.2	87.1	68.1	42.9
CCC	91.0	88.6	71.9	50.0	30.5
Chittagong Slum	84.3	80.0	61.9	38.6	24.8
Comilla	91.9	89.0	79.5	58.1	28.1
Com CC	91.4	89.0	78.1	51.9	29.0
Cox'sbazar	99.5	99.0	89.5	67.1	44.8
Feni	94.8	93.8	85.2	60.5	33.8
Khagrachari	93.3	91.4	79.5	61.4	39.0
Lakshmipur	90.0	85.2	73.3	51.0	27.1
Noakhali	88.1	84.3	69.0	46.2	27.1
Rangamati	80.5	77.1	60.0	41.4	31.0
Rajshahi Division	**94.9**	**92.3**	**78.7**	**57.0**	**36.3**
Bogra	91.4	89.0	79.5	57.6	35.7
Chapai Nawabganj	93.3	91.0	75.2	53.8	34.8
Joypurhat	95.7	95.2	82.4	62.9	39.5
Naogaon	95.7	95.2	78.1	60.5	34.3

Survey Units	TT1	TT2	TT3	TT4	TT5
Nartore	94.3	86.7	76.2	55.2	38.6
Pabna	94.8	92.9	77.6	52.9	26.2
Rajshahi	93.3	91.0	77.6	54.8	36.7
Serajganj	98.6	95.2	75.7	43.3	28.6
RCC	97.1	94.8	86.2	72.4	52.4
Khulna Division	**93.3**	**90.3**	**73.4**	**50.2**	**30.6**
Bagerhat	92.9	88.6	78.1	56.2	37.1
Chuadanga	93.8	93.3	76.7	56.2	30.0
Jessore	90.0	87.6	71.9	55.2	37.1
Jhenaidah	96.2	91.0	78.6	57.6	40.0
Khulna	93.8	91.0	72.4	51.0	28.6
Kustia	92.9	91.0	71.0	45.7	26.2
Magura	96.7	95.7	79.5	56.7	38.1
Meherpur	92.9	91.0	71.4	38.1	15.2
Narail	91.4	85.7	73.3	55.2	37.6
Satkhira	95.7	91.0	67.6	41.0	21.9
KCC	90.0	88.1	66.7	39.0	24.3
Sylhet Division	**87.4**	**84.1**	**70.1**	**53.9**	**35.0**
Habiganj	84.8	80.0	57.6	41.4	24.8
Moulavibazar	92.4	91.4	81.4	62.4	39.0
Sunamganj	94.3	90.0	76.7	61.4	40.0
Sylhet	85.2	83.3	73.8	59.5	41.4
SCC	80.5	75.7	61.0	44.8	29.5
Barisal Division	**89.3**	**85.7**	**69.4**	**45.2**	**24.9**
Barisal	89.0	88.1	74.8	51.9	32.4
Bhola	90.0	86.7	74.3	51.0	27.6
Barguna	90.5	85.2	60.5	37.1	18.6
Jhalokati	82.9	79.5	69.5	49.0	28.6
Patuakhali	89.5	81.9	57.1	31.9	15.2
Perojpur	89.5	87.1	74.3	50.0	25.7
BCC	93.8	91.4	75.2	45.2	26.2
Rangpur Division	**93.4**	**89.5**	**72.4**	**52.8**	**32.6**
Dinajpur	95.7	94.3	79.0	62.9	45.7
Gaibandha	92.4	86.7	69.0	44.3	21.4
Kurigram	92.4	85.7	58.1	36.2	20.5
Lalmonirhat	87.6	81.9	61.0	43.3	26.7
Nilphamari	99.0	97.6	84.8	66.7	41.9
Panchagarh	92.9	85.2	69.5	53.3	37.1
Rangpur	88.6	85.7	73.8	51.0	31.9
Ran CC	95.7	93.8	83.3	62.4	36.2
Thakurgaon	96.7	94.3	72.9	54.8	31.9
National	**91.6**	**88.8**	**73.6**	**52.2**	**32.1**
Rural	**91.6**	**88.6**	**73.6**	**52.2**	**32.0**
Urban	**91.9**	**89.1**	**73.8**	**52.4**	**33.2**

Table 8: Crude TT Coverage among Women Age 18-49 years by Survey Units, According to Survey Units

Survey Units	TT1	TT2	TT3	TT4	TT5
Dhaka Division	**90.3**	**87.8**	**78.5**	**64.4**	**48.8**
Dhaka	87.1	84.8	73.3	55.2	41.9
DSCC	90.5	88.1	78.6	67.1	47.6
DNCC	96.7	96.7	83.3	66.2	49.0
Dhaka Slum	83.3	79.5	74.3	57.1	41.4
Faridpur	85.7	83.8	75.7	56.2	41.4
Gazipur	92.9	87.6	71.0	53.8	33.3
Gopalganj	88.1	85.7	79.0	64.3	49.0
Jamalpur	87.1	83.8	74.3	61.0	47.6
Kishoreganj	95.2	93.3	85.7	73.8	59.5
Madaripur	91.0	88.6	80.5	65.7	52.9
Manikganj	91.0	87.6	73.3	56.2	42.4
Munshiganj	94.3	93.3	88.6	76.7	58.1
Mymensingh	90.0	88.1	79.0	64.3	48.1
Narayanganj	91.9	90.0	80.0	67.1	43.3
NCC	89.5	84.8	75.7	61.4	50.0
Norsingdhi	88.1	85.2	78.1	66.2	51.4
Netrokona	90.5	87.6	77.6	66.7	47.1
Rajbari	94.3	92.9	85.7	69.0	52.4
Shariatpur	91.9	89.5	82.4	72.9	62.9
Sherpur	84.3	83.3	80.0	71.9	60.0
Tangail	85.7	81.0	68.6	52.9	38.1
Chittagong Division	**91.8**	**89.3**	**82.0**	**69.8**	**56.9**
Bandarban	98.6	97.6	93.3	82.4	67.6
B.Baria	84.8	79.5	70.0	54.8	47.6
Chandpur	93.8	91.0	81.4	66.2	53.3
Chittagong	96.2	95.2	91.0	80.0	66.7
CCC	91.0	88.6	77.1	66.2	50.5
Ctg Slum	84.3	80.0	70.0	52.9	43.8
Comilla	91.9	89.0	84.3	75.2	60.0
Com CC	91.4	89.0	82.4	71.0	55.7
Cox'sbazar	99.5	99.0	94.3	84.8	75.2
Feni	94.8	93.8	88.6	75.7	63.8
Khagrachari	93.3	91.4	81.9	69.0	51.9
Lakshmipur	90.0	85.2	78.6	68.1	56.2
Noakhali	88.1	84.3	78.1	63.8	53.3
Rangamati	80.5	77.6	64.8	50.0	37.6
Rajshahi Division	**94.9**	**92.4**	**83.5**	**69.3**	**51.8**
Bogra	91.4	89.0	82.9	70.0	51.4
Chapai Nawabganj	93.3	91.0	79.0	61.4	44.8
Joypurhat	95.7	95.2	85.2	75.7	60.5
Naogaon	95.7	95.2	83.3	69.0	49.5

Survey Units	TT1	TT2	TT3	TT4	TT5
Nartore	94.3	87.1	81.0	65.7	49.0
Pabna	94.8	92.9	83.8	70.5	53.3
Rajshahi	93.3	91.0	83.8	68.1	52.9
Serajganj	98.6	95.2	84.3	65.2	43.3
RCC	97.1	94.8	88.6	78.1	61.4
Khulna Division	**93.3**	**90.3**	**79.7**	**63.9**	**49.2**
Bagerhat	92.9	88.6	79.5	65.2	49.5
Chuadanga	93.8	93.3	80.0	67.1	54.3
Jessore	90.0	87.6	76.7	61.4	51.9
Jhenaidah	96.2	91.0	83.3	70.5	56.2
Khulna	93.8	91.0	84.3	66.2	51.4
Kustia	92.9	91.0	78.1	64.3	45.2
Magura	96.7	95.7	86.7	69.0	51.9
Meherpur	92.9	91.0	79.0	61.0	41.0
Narail	91.4	85.7	75.7	60.0	49.0
Satkhira	95.7	91.0	78.6	59.5	47.6
KCC	90.0	88.1	75.2	58.6	43.3
Sylhet Division	**87.4**	**84.2**	**76.1**	**63.6**	**50.8**
Habiganj	84.8	80.0	65.7	48.6	34.3
Moulavibazar	92.4	91.4	85.7	70.0	55.7
Sunamganj	94.3	90.0	85.7	71.4	61.4
Sylhet	85.2	83.3	76.7	71.9	58.1
SCC	80.5	76.2	66.7	56.2	44.3
Barisal Division	**89.3**	**85.7**	**78.3**	**63.7**	**49.8**
Barisal	89.0	88.1	79.5	71.9	63.8
Bhola	90.0	86.7	81.9	69.0	58.6
Barguna	90.5	85.2	74.3	52.4	34.3
Jhalokati	82.9	79.5	74.8	62.9	49.5
Patuakhali	89.5	81.9	72.4	51.9	32.4
Perojpur	89.5	87.1	82.4	70.0	55.2
BCC	93.8	91.4	82.9	68.1	54.8
Rangpur Division	**93.4**	**89.5**	**76.9**	**59.9**	**42.4**
Dinajpur	95.7	94.3	83.3	67.6	53.8
Gaibandha	92.4	86.7	74.8	62.4	43.3
Kurigram	92.4	85.7	61.9	40.0	25.7
Lalmonirhat	87.6	81.9	68.1	51.0	35.7
Nilphamari	99.0	97.6	87.1	70.5	51.4
Panchagarh	92.9	85.2	73.3	61.4	44.8
Rangpur	88.6	85.7	78.6	58.1	39.5
Ran CC	95.7	93.8	86.7	66.2	44.8
Thakurgaon	96.7	94.8	78.6	62.4	42.4
National	**91.6**	**88.8**	**79.5**	**65.2**	**50.1**
Rural	**91.6**	**88.7**	**79.6**	**65.0**	**49.9**
Urban	**91.9**	**89.1**	**79.5**	**66.0**	**50.7**

Table 9: PAB Status among Mothers with 0-11 Months Old Children

Survey Units	Protected at Birth
Dhaka Division	**81.6**
Dhaka	88.6
Dhaka South City Corp	92.9
Dhaka North City Corp	98.6
Dhaka Slum	88.6
Faridpur	87.1
Gazipur	89.5
Gopalganj	92.9
Jamalpur	86.7
Kishoreganj	96.7
Madaripur	92.9
Manikganj	94.8
Munshiganj	90.5
Mymensingh	91.4
Narayanganj	93.3
Narayanganj City Corp	96.2
Norsingdhi	91.0
Netrokona	88.1
Rajbari	94.3
Shariatpur	90.5
Sherpur	91.4
Tangail	88.6
Chittagong Division	**95.0**
Bandarban	85.7
B.Baria	94.3
Chandpur	90.0
Chittagong	97.6
Ctg City Corp	94.8
Ctg Slum	81.9
Comilla	96.2
Comilla City Corp	98.6
Cox'sbazar	91.4
Feni	94.3
Khagrachari	90.5
Lakshmipur	90.5
Noakhali	90.5
Rangamati	81.0
Rajshahi Division	**93.4**
Bogra	94.3
Chapai Nawabganj	91.0
Joypurhat	95.7
Naogaon	88.1
Nartore	92.4

Survey Units	Protected at Birth
Pabna	94.3
Rajshahi	94.8
Serajganj	95.7
RCC	96.2
Khulna Division	**88.7**
Bagerhat	88.1
Chuadanga	93.8
Jessore	90.5
Jhenaidah	91.9
Khulna	80.5
Kustia	85.2
Magura	95.2
Meherpur	87.1
Narail	92.4
Satkhira	86.7
KCC	90.0
Sylhet Division	**95.8**
Habiganj	77.1
Moulavibazar	82.4
Sunamganj	81.9
Sylhet	92.4
SCC	79.5
Barisal Division	**96.3**
Barisal	92.9
Bhola	89.0
Barguna	91.4
Jhalokati	93.3
Patuakhali	94.3
Perojpur	92.4
BCC	89.5
Rangpur Division	**95.3**
Dinajpur	93.8
Gaibandha	91.9
Kurigram	88.6
Lalmonirhat	91.0
Nilphamari	94.3
Panchagarh	94.3
Rangpur	90.0
Rangpur City Corp	96.2
Thakurgaon	93.3
National	**91.0**
Urban	**92.7**
Rural	**90.6**

Table 10: OPV Coverage among 0-59 Months Children in the 20th NIDS by District and City Corporation

Survey Units	Recieved 1st round	Recieved 2nd round	Recieved both round
Dhaka Division	**94.6**	**92.0**	**91.2**
Dhaka	94.3	93.8	93.8
DSCC	95.2	96.7	95.2
DNCC	99.0	99.0	99.0
Dhaka Slum	94.8	93.3	91.9
Faridpur	91.0	81.4	79.5
Gazipur	91.4	86.7	84.8
Gopalganj	97.1	92.4	91.9
Jamalpur	95.2	90.5	90.0
Kishoreganj	94.3	95.7	92.9
Madaripur	89.0	88.1	87.1
Manikganj	98.1	98.6	98.1
Munshiganj	98.1	98.6	98.1
Mymensingh	96.7	93.3	93.3
Narayanganj	100.0	99.5	99.5
NCC	90.0	88.6	88.1
Norsingdhi	85.7	84.8	82.9
Netrokona	96.7	93.3	92.4
Rajbari	99.0	98.1	98.1
Shariatpur	93.8	85.7	85.7
Sherpur	97.1	91.9	91.9
Tangail	90.5	84.3	81.9
Chittagong Division	**95.3**	**94.4**	**93.5**
Bandarban	96.7	97.1	96.7
B.Baria	90.0	86.7	85.2
Chandpur	84.8	81.4	78.1
Chittagong	99.0	99.5	99.0
CCC	99.0	99.0	99.0
Chittagong Slum	96.7	97.1	96.7
Comilla	97.1	91.4	91.0
Com CC	98.1	98.1	98.1
Cox'sbazar	99.0	99.0	99.0
Feni	100.0	100.0	100.0
Khagrachari	92.9	91.9	91.4
Lakshmipur	91.4	92.4	88.6
Noakhali	94.3	94.8	93.3
Rangamati	96.2	95.7	95.7
Rajshahi Division	**97.3**	**96.8**	**96.7**
Bogra	98.1	96.2	96.2
Chapai Nawabganj	96.7	96.7	96.2
Joypurhat	98.6	97.6	97.6
Naogaon	99.5	99.0	99.0

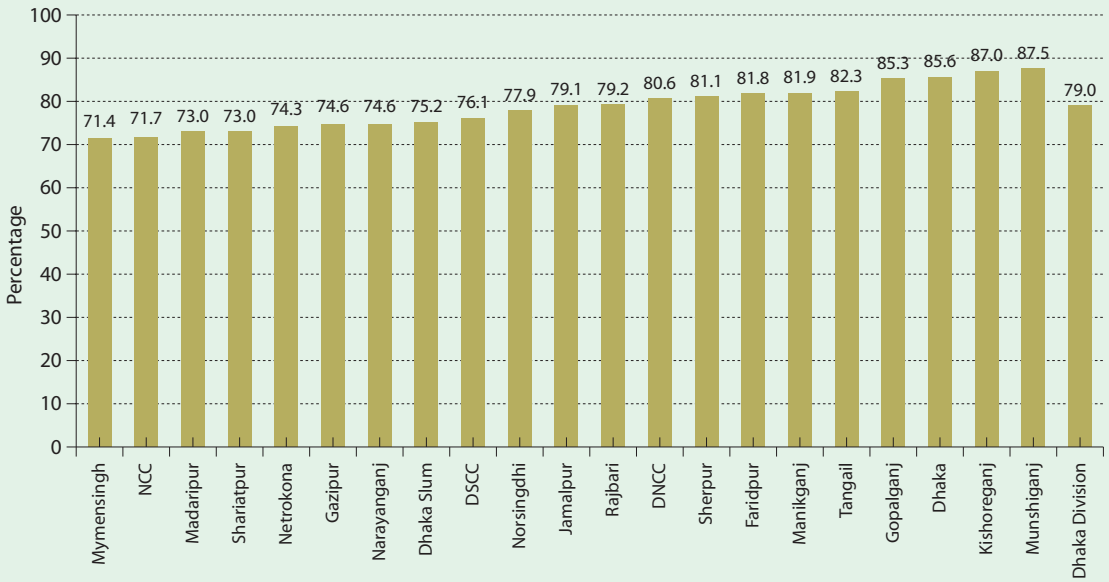
Survey Units	Recieved 1st round	Recieved 2nd round	Recieved both round
Nartore	96.2	95.2	95.2
Pabna	95.2	95.2	94.8
Rajshahi	92.9	92.9	92.9
Serajganj	98.6	98.6	98.1
RCC	100.0	100.0	100.0
Khulna Division	**96.5**	**96.4**	**95.8**
Bagerhat	99.0	99.5	99.0
Chuadanga	98.1	97.1	96.7
Jessore	94.8	94.8	94.3
Jhenaidah	95.7	95.2	93.8
Khulna	98.6	98.6	98.6
Kustia	93.3	91.0	90.5
Magura	94.8	94.3	94.3
Meherpur	97.1	97.6	96.7
Narail	97.6	99.0	97.6
Satkhira	96.7	97.1	96.2
KCC	95.7	95.7	95.7
Sylhet Division	**95.3**	**92.8**	**92.4**
Habiganj	92.9	88.6	88.1
Moulavibazar	92.4	91.9	91.0
Sunamganj	92.9	85.7	85.2
Sylhet	99.0	99.0	99.0
SCC	99.5	98.6	98.6
Barisal Division	**95.6**	**94.5**	**93.9**
Barisal	95.7	95.2	95.2
Bhola	89.0	87.1	86.7
Barguna	96.7	94.3	93.8
Jhalokati	93.8	91.4	90.5
Patuakhali	98.6	98.6	98.6
Perojpur	96.7	96.7	95.2
BCC	98.6	98.1	97.1
Rangpur Division	**98.5**	**98.3**	**97.6**
Dinajpur	98.6	97.6	97.1
Gaibandha	95.2	96.2	94.8
Kurigram	100.0	100.0	100.0
Lalmonirhat	98.1	97.6	96.2
Nilphamari	99.5	99.5	99.5
Panchagarh	98.1	98.1	96.7
Rangpur	99.5	99.5	99.5
Ran CC	98.1	98.1	97.6
Thakurgaon	99.0	97.6	97.1
National	**95.7**	**94.3**	**93.6**
Urban	**96.7**	**95.8**	**95.2**
Rural	**95.7**	**94.4**	**93.7**

Table 11: Vitamin A Supplementation Coverage among Postpartum Women, Infants aged 6-11 Months and Children aged 12-59 Months and Anthelmintic Coverage among Children aged 24-59 Months by Districts and City Corporations

Survey Units	Infant	Children	Postpartum Women	Anthelmintic
Dhaka Division	**86.0**	**93.0**	**32.3**	**89.4**
Dhaka	89.5	95.2	21.4	92.9
DSCC	92.4	95.2	36.2	90.5
DNCC	96.2	97.6	38.6	96.2
Dhaka Slum	90.5	91.9	43.8	87.6
Faridpur	72.4	85.7	43.3	76.7
Gazipur	91.0	95.2	23.3	91.0
Gopalganj	93.3	93.8	30.0	91.0
Jamalpur	87.1	91.9	51.4	88.1
Kishoreganj	64.3	96.7	18.6	90.0
Madaripur	61.4	81.4	50.5	81.0
Manikganj	99.0	98.1	18.6	99.0
Munshiganj	91.9	96.7	36.7	91.9
Mymensingh	97.6	98.1	31.9	98.1
Narayanganj	100.0	100.0	22.9	100.0
NCC	58.1	87.1	29.0	79.0
Norsingdhi	88.6	88.1	27.6	83.8
Netrokona	94.3	91.9	34.3	91.4
Rajbari	91.4	98.1	74.8	93.8
Shariatpur	81.4	89.0	28.1	82.4
Sherpur	90.5	95.2	41.9	92.4
Tangail	79.0	84.3	39.5	78.6
Chittagong Division	**82.2**	**91.7**	**43.1**	**88.5**
Bandarban	94.8	94.8	69.0	96.2
B.Baria	42.4	87.1	24.3	77.1
Chandpur	65.7	67.6	27.1	62.4
Chittagong	92.4	99.5	29.5	95.2
CCC	98.6	99.5	37.1	97.1
Ctg Slum	90.5	94.3	32.4	88.1
Comilla	86.2	95.2	14.8	91.0
Com CC	95.2	94.8	23.3	86.2
Cox'sbazar	40.0	98.1	31.9	94.8
Feni	100.0	100.0	59.5	100.0
Khagrachari	88.6	90.0	50.0	89.5
Lakshmipur	85.7	85.7	31.9	83.8
Noakhali	86.7	85.7	26.2	84.3
Rangamati	91.9	94.3	31.9	92.9
Rajshahi Division	**81.2**	**93.2**	**35.4**	**88.0**
Bogra	82.9	89.0	20.5	87.1
Chapai Nawabganj	82.4	90.0	25.2	84.8

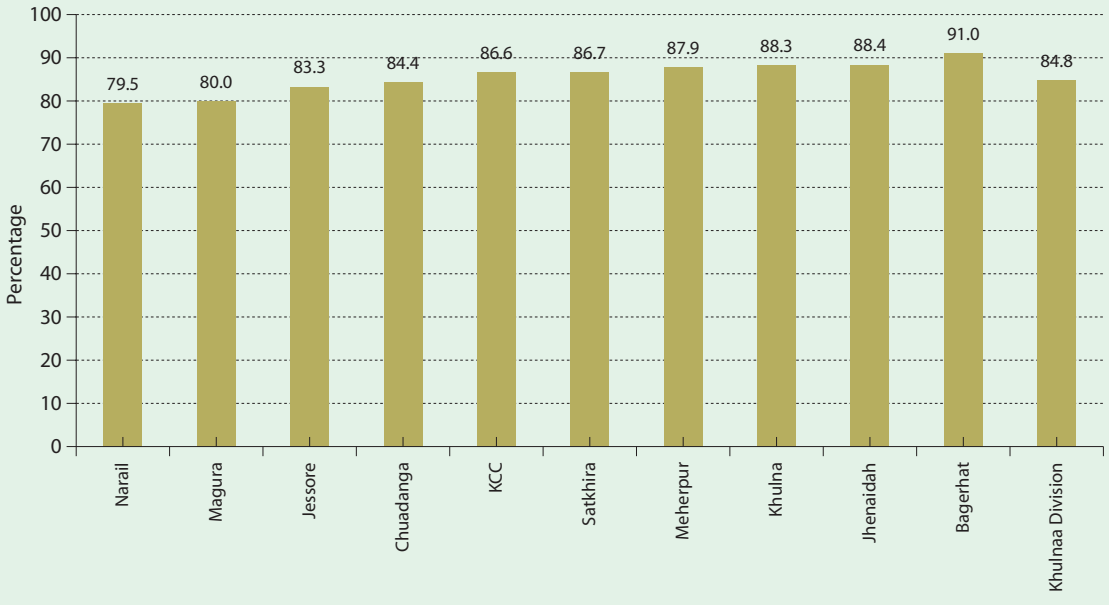
Survey Units	Infant	Children	Postpartum Women	Anthelmintic
Joypurhat	91.0	95.2	31.9	90.5
Naogaon	65.7	96.7	25.7	93.3
Nartore	71.9	91.0	28.1	81.0
Pabna	78.1	90.5	43.8	82.4
Rajshahi	89.0	91.0	27.1	87.1
Serajganj	97.1	97.1	56.7	96.2
RCC	72.4	98.6	50.5	90.0
Khulna Division	**83.4**	**93.2**	**35.4**	**91.0**
Bagerhat	92.9	96.7	47.6	97.1
Chuadanga	90.0	96.2	21.0	92.4
Jessore	84.3	94.8	41.9	93.8
Jhenaidah	88.1	91.9	21.0	89.0
Khulna	90.0	98.6	35.2	97.6
Kustia	78.6	89.5	24.3	86.2
Magura	71.0	80.0	19.5	77.1
Meherpur	68.1	92.9	21.0	84.8
Narail	83.8	91.9	2.4	91.9
Satkhira	76.7	95.2	21.9	94.8
KCC	94.3	97.1	51.9	96.2
Sylhet Division	**91.7**	**92.2**	**38.3**	**89.5**
Habiganj	88.6	87.6	21.0	86.2
Moulavibazar	91.9	90.0	33.3	86.7
Sunamganj	83.8	88.1	41.0	89.5
Sylhet	98.1	98.1	39.5	98.1
SCC	96.2	97.1	31.4	87.1
Barisal Division	**80.0**	**90.4**	**40.9**	**87.6**
Barisal	83.8	89.0	39.5	89.0
Bhola	56.7	79.5	35.7	75.2
Barguna	77.1	92.9	76.2	90.0
Jhalokati	77.1	90.0	28.6	82.4
Patuakhali	88.6	95.2	64.3	95.7
Perojpur	86.2	92.4	31.0	87.6
BCC	90.5	93.8	55.2	92.9
Rangpur Division	**84.4**	**93.9**	**45.6**	**92.6**
Dinajpur	89.0	92.9	42.4	88.6
Gaibandha	77.1	91.0	50.5	87.1
Kurigram	66.2	92.4	59.5	93.8
Lalmonirhat	62.9	87.1	59.5	88.1
Nilphamari	94.3	95.2	61.0	91.9
Panchagarh	85.2	94.8	30.0	95.2
Rangpur	98.6	99.5	22.9	100.0
Rangpur City Corp	98.1	98.1	36.7	96.2
Thakurgaon	88.6	93.8	15.2	92.9
National	**84.3**	**92.8**	**35.8**	**89.8**
Urban	**87.3**	**94.3**	**37.2**	**89.7**
Rural	**83.0**	**92.1**	**35.3**	**89.5**

Figure 4. Valid Full Immunization by Age 12 Months among 12-23 Months Old Children by Districts in Dhaka Division (Fully Immunized Arranged in Ascending Order by All Districts)



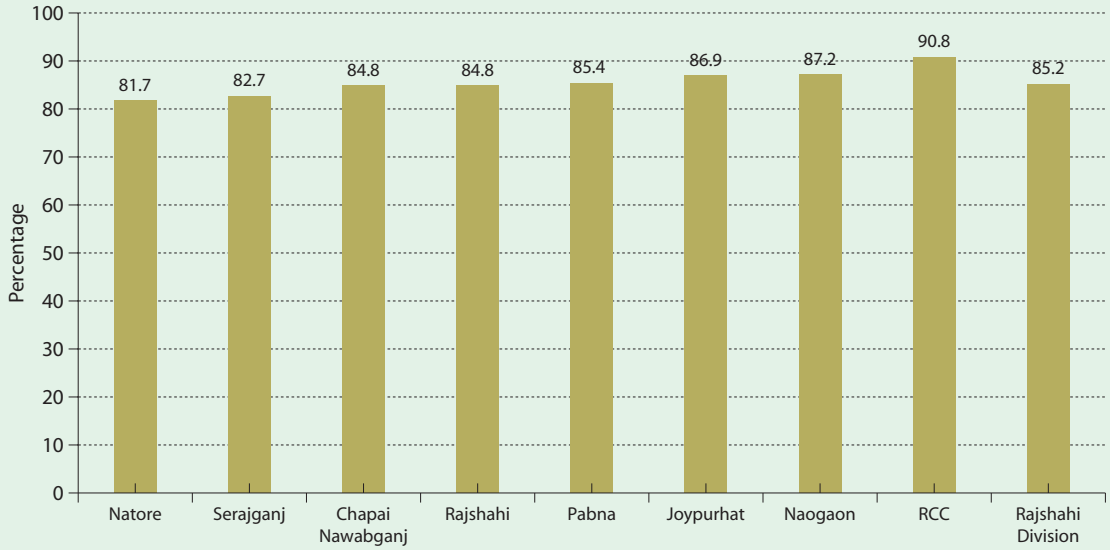
Source : CES 2013

Figure 5. Valid Full Immunization by Age 12 Months among 12-23 Months Old Children by Districts in Khulna Division (Fully Immunized Arranged In Ascending Order by All Districts)



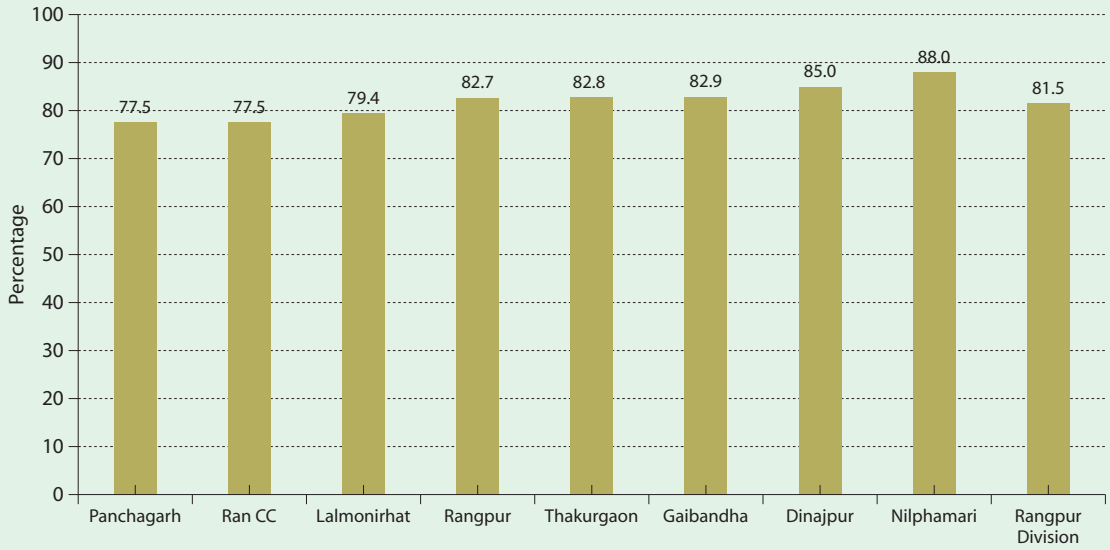
Source : CES 2013

Figure 6. Valid Full Immunization by Age 12 Months among 12-23 Months Old Children by Districts in Rajshahi Division (Fully Immunized Arranged In Ascending Order by All Districts)



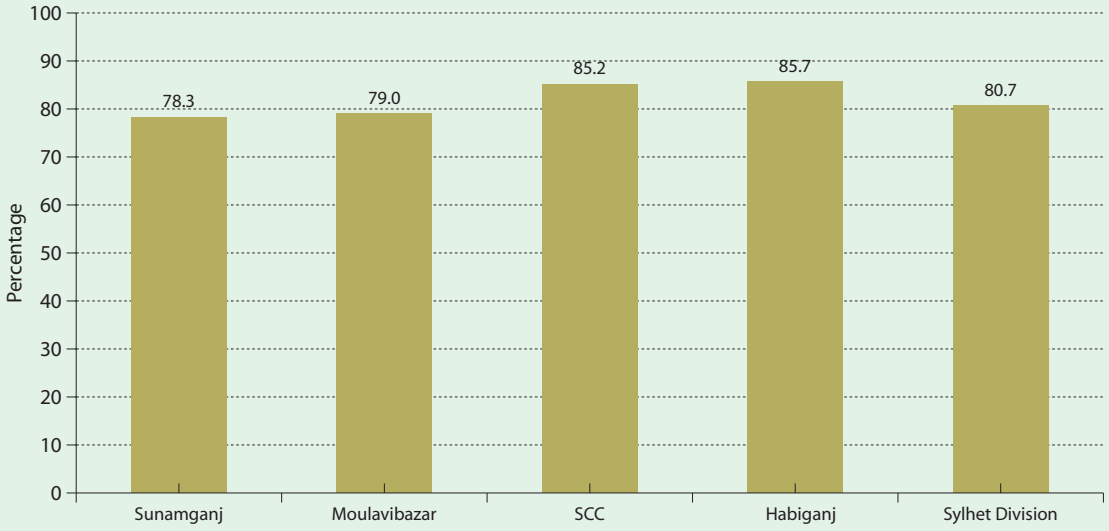
Source : CES 2013

Figure 7. Valid Full Immunization by Age 12 Months among 12-23 Months Old Children by Districts in Rangpur Division (Fully Immunized Arranged In Ascending Order by All Districts)



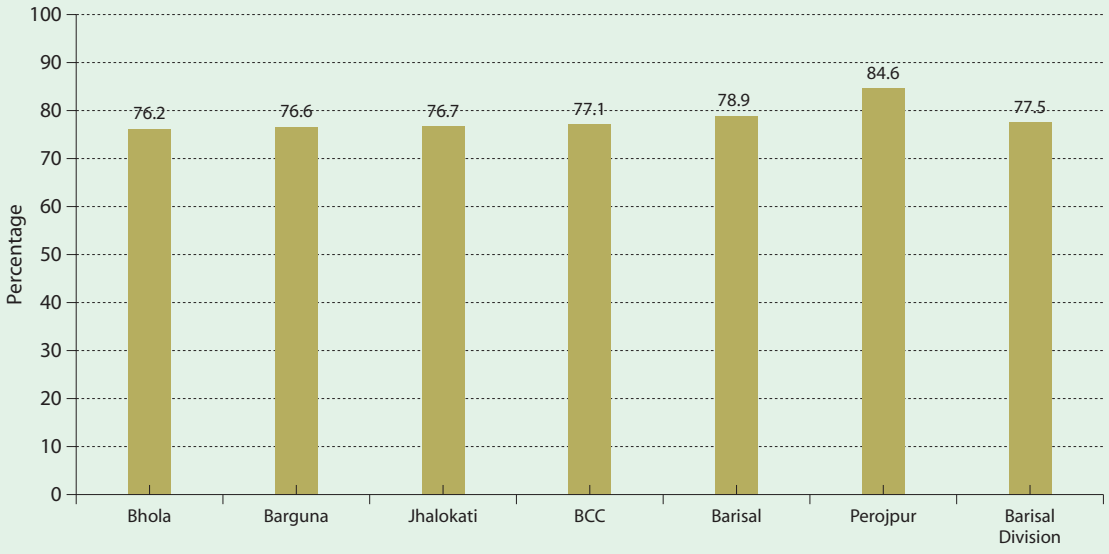
Source : CES 2013

Figure 8. Valid Full Immunization by Age 12 Months among 12-23 Months Old Children by Districts in Sylhet Division (Fully Immunized Arranged In Ascending Order by All Districts)



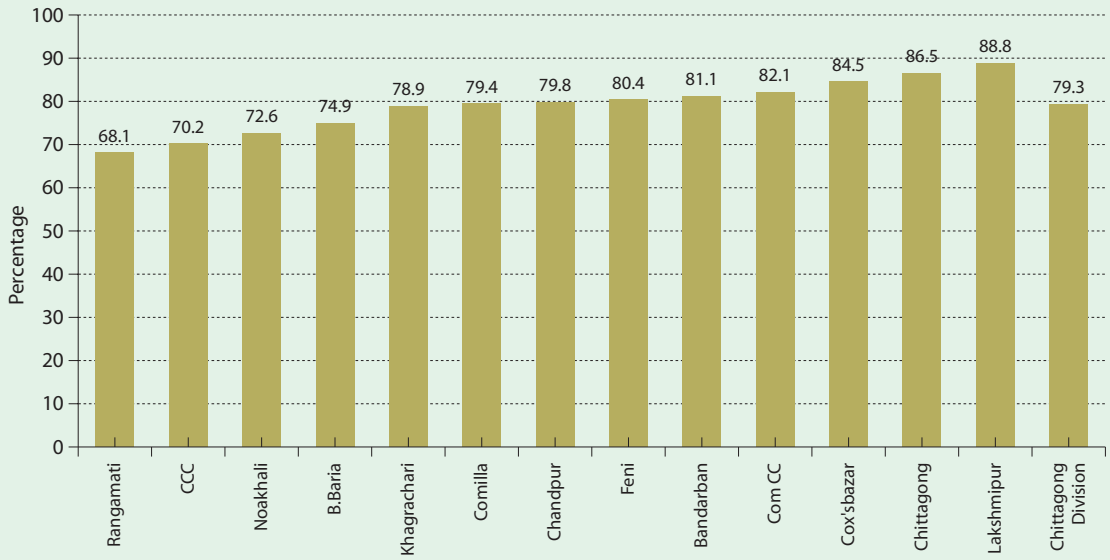
Source : CES 2013

Figure 9. Valid Full Immunization by Age 12 Months among 12-23 Months Old Children by Districts in Barisal Division (Fully Immunized Arranged In Ascending Order by All Districts)



Source : CES 2013

Figure 10. Valid Full Immunization by Age 12 Months among 12-23 Months Old Children by Districts in Chittagong Division (Fully Immunized Arranged In Ascending Order by All Districts)



Source : CES 2013

Appendix C

QUESTIONNAIRE

People's Republic of Bangladesh
Expanded Program on Immunization (EPI)
Coverage Evaluation Survey, 2013

Child Form

PROJECT	**EPI Coverage Evaluation Survey (Form-1: Child Form)**							***CENTRE***				
Cluster No		**Type of Cluster**	**Urban = 1 Rural = 2**					**Name of Dist:**			**Name of Upazila:**	
Hard-to-reach area	**Yes = 1 No = 2**							Time required to reach the cluster from Upazila HQ. (Min.)[1]		Mode of transport to reach the cluster from Upazila HQ[2]		
District Code		**Upazila Code**										
Area	**Village/Para:**							**INTERVIEW TIME**				
	Union:							**START**		**END**		
LANDMARKS												
NAME OF INTERVIEWER			**Code**									

CHECK DETAILS		**Code**	**Accompany**			**Back Check**			**Scrutiny**		
			Code	**Sign**	**Date**	**Code**	**Sign**	**Date**	**Code**	**Sign**	**Date**
NAME OF FS			**1**			**1**			**1**		
NAME OF FC			**1**			**1**			**1**		
NAME OF OTHER OFFICIAL			**1**			**1**			**1**		

I hereby oath that all the information of the information of this interview true and correct. I followed the survey methodology and didn't take any unfair means while collecting data of this questionnaire.

Signature of Interviewer

Introduction

Salam/Adab. My name is ----. I am from Nielsen Bangladesh a research firm of Bangladesh on behalf of EPI. Currently we are conducting a survey on mother and child vaccination. I would be grateful to you if you help me in this regard. Your information will be kept confidential and will be used for the development of EPI programme.

1 Time required to go to the Cluster from upazila headquarter

2 Transport used to go to the cluster from Upazila Headquarter - walk-01, Bus-02, Rickshaw/van-03, Boat/Traller-04, Tempu-05, Others (specify)

Child Form

Applicable for those babies born in between *01-01-2011* **and** *31-12-2011*
(Applicable for those babies born in between 18 Poush 1417 and 17 Push 1418)

1. Cluster No										
2. Date										
3. Survey Area										
4. Sl no. of sample (to be filled in by office)										
5. Sl no. of children in this cluster			**Skip to**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6. Household number/G R number and name of house head										
7. Name of the child										
8. Sex of the child :Male -1 Female-2										
9. Name of the father of the child										
10. Name of the mother of the child										
11. Date of the birth of the child (Day/Month/Year)										
11.1 Where was the child born?	Health care center : 1									
	Home : 2									
12. Academic qualification of the mother: Illiterate -1, Primary-2, Secondary-3, SSC/Dhakil/ O level-4, HSC/Alim/ A level-5, Degree/Fazil-6, Masters/Kamil-7										
13. Academic qualification of the father of the child: Illiterate -1, Primary-2, Secondary-3, SSC/Dhakil/ O level-4, HSC/Alim/ A level-5, Degree/Fazil-6, Masters/Kamil-7										
14. Occupation of the mother: Housewife-1, Government employee-2, Non-government employee-3, Household works/day labour-4, Small business-5, Large business-6, Teacher-7, Professional -8, others										
15. Occupation of the father: Agriculture-1, Government employee-2, Non-government employee-3, Day labor/rickshaw/van puller-4, Small business-5, Large business-6, Teacher-7, professional -8, driver (truck/bus/car)-9,others										
16. Number of family members										
17. Has the baby ever received vaccine?[1]	Yes: 1		**17.1**							
	No: 2		**18**							
17.1 Does the child have card for vaccination?	Yes: 1		**18**							
	No: 2		**17.2**							
17.2. If s/he doesn't have card, then ask, Were you ever given a card?	Yes: 1		**17.3**							
	No: 2		**18**							
17.3. If the answer for the question 17.2 is yes, then ask Why didn't you preserve the card? (please mention)										
18. Would you please tell me, at least how many times the child should be taken to the vaccination center to complete all the vaccines? (write the number or 'don't know')										
19 BCG	(Date/+/0)									
19.1. BCG Scar (notice the upper side of the left arm)	Yes: 1									
	No: 2									
19.2. BCG -Source(from where BCG has taken)	GOB Outreach	1								
	NGO	2								
	All GOB Hospital	3								
	Private	4								

1 If the respondent answer code 2 that is 'yes' then ask Q18, 28,29, 33-39

20. pentavalent 1	(Date/+/0)										
20. 1. pentavalent 1 Source	GOB Outreach	1									
	NGO	2									
	All GOB Hospital	3									
	Private	4									
21. OPV 1	(Date/+/0)										
22. pentavalent 2	(Date/+/0)										
23. OPV 2	(Date/+/0)										
24 pentavalent 3	(Date/+/0)										
25. OPV 3	(Date/+/0)										
26. OPV 4)	(Date/+/0)										
27. Measles	(Date/+/0)										
27.1 From where did you vaccinate your child most of the time?[2]	GOB Outreach	1	**27.2**								
	NGO	2	**28**								
	All GOB Hospital	3									
	Private	4									
27.2 [if the respondent answer GOB Outreach in Q 27.1 that is code "1" then ask Q 27.2] From where did you vaccinate your child? [Please write the name of the vaccination place or house]											
28. How many times did the worker come to you to remind about completing vaccination?											
29. What are the side effects may occur if the child is vaccinated? [Multiple response possible]	Fever	: 01									
	Abscess	: 02									
	Don't know	: 99									
	Others (specify)	:									
30. After giving vaccine to your child, has there been any abscess at the place of vaccine?	Yes	: 1	**31.1**								
	No	: 2	**32**								
31.1 If the answer is yes in Q30, then ask, Where did you have the abscess? (multiple answers can be recorded) (please code)	Right thigh	: 1	**31.2**								
	Left thigh	: 2									
	Left arm	: 3									
	Others (specify)	:									
31.2 Did you feel discourage to give his/her rest of the vaccines due to abscess or any other problem?	Yes	: 1									
	No	: 2									
32. Have you ever given money for vaccination of your child? (please code)	Yes	: 1	**32.1**								
	No	: 2	**33**								
32.1 If yes, how much money did you pay?			**32.2**								
32.2 (If yes, then ask) As you given money, did you abstain yourself from giving rest vaccine to your child?	Yes:	1									
	No:	2									
33. What is the monthly income of your family? (include all sources)											

Vaccination Code Date - Record date from vaccination card	Source codes:	
+ - History that the child was vaccinated	GOB Outreach = Community household, Satellite clinic, Community Clinic, Club	NGO = Hospital, Clinic, Outreach
0 - The child was not vaccinated	All GOB Hospital = District, UHC etc.	Private = Chamber, clinic and hospital

2 Only ask the respondnets of Barisal and B'Baria

Reasons for Vaccination Failure

34. The children who never/partially vaccinated ask the mothers or guardians "Why was the child not vaccinated or why the child was not fully vaccinated?" (accept most important answer and circle the appropriate code)

Sl. no. of the baby in this cluster	1	2	3	4	5	6	7
1. Lack of information							
i. Didn't know that my child should be given vaccine	1	1	1	1	1	1	1
ii .Didn't know when to go for the second/third dose	2	2	2	2	2	2	2
iii. Didn't know when to go for vaccine of measles	3	3	3	3	3	3	3
iv. Didn't know where to go for vaccine	4	4	4	4	4	4	4
V. Fearing side effects	5	5	5	5	5	5	5
vi. rumor (Please mention)	6	6	6	6	6	6	6
2. Lack of Motivation							
vii. Don't believe in vaccination	21	21	21	21	21	21	21
viii. Was busy and so couldn't give vaccine to child	22	22	22	22	22	22	22
ix. Will give vaccine in future	23	23	23	23	23	23	23
x. There was a long queue in the vaccination centre	24	24	24	24	24	24	24
xi.Don't remember	25	25	25	25	25	25	25
3. Obstacles							
xii. There was no vaccine in the center	40	40	40	40	40	40	40
xiii. There was no vaccinator in the center	41	41	41	41	41	41	41
xiv. Vaccine centre was too far	42	42	42	42	42	42	42
xv. Injection was too painful for the child	43	43	43	43	43	43	43
xvi. Was abscess at the place of vaccine	44	44	44	44	44	44	44
xvii. Faced difficulty after receiving vaccine	45	45	45	45	45	45	45
xviii. Vaccinator was not friendly	46	46	46	46	46	46	46
xix. The child was sick, so was not taken to the vaccination center	47	47	47	47	47	47	47
xx. The child was sick, so the vaccinator didn't give vaccine	48	48	48	48	48	48	48
xxi. Mother was sick	49	49	49	49	49	49	49
xxii.I thought the vaccinator would come home	50	50	50	50	50	50	50
xxiii. They charge money to take vaccine	51	51	51	51	51	51	51
xxivi. The session time was inconvenient	52	52	52	52	52	52	52x
4. Others (please specify)							
xxv.							
xxvi.							

35	Source of drinking water? Pipe water inside the house- 01 Pipe water outside the house -02, Tube well-03 Deep Tube well - 04, Sallow well-05, Well- 06, Pond/canal/lake -07, River/Fountain-08, Tara Pump-09, Rain water-10		**Skip to**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
36	Type of latrine? Sanitary latrine- 1, Water seal/ slub latrine- 2, Pit latrine - 3, Open latrine - 4, Hanging latrine - 5, No latrine - 6									
37	Household durables?	Yes-1 No - 2								
37.1	Almirah	Yes-1 No - 2								
37.2	Table	Yes-1 No- 2								
37.3	Chair/bench	Yes-1 No- 2								
37.4	Clock	Yes-1 No - 2								
37.5	Khat/Bed	Yes-1 No - 2								
37.6	Radio	Yes-1 No- 2								
37.7	Television	Yes-1 No- 2								

37.8	Bicycle	Yes-1 No - 2	**Skip to**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
37.9	Motor Cycle	Yes-1 No - 2								
37.10	Sewing Machine	Yes-1 No- 2								
37.11	Telephone	Yes-1 No- 2								
37.12	Mobile phone	Yes-1 No - 2								
37.13	Refrigerator	Yes-1 No - 2								
37.14	Car/Truck	Yes-1 No- 2								
37.15	Boat	Yes-1 No- 2								
37.16	Rickshaw/Van	Yes-1 No- 2								
37.17	Electricity	Yes-1 No- 2								
38	Materials of the floor concrete -1, soil-2, Bamboo-3, wood-4									
38.1	Materiasl of the wall concrete -1, soil-2, Bamboo-3, wood-4, Ply wood-5 Tin-6, Brick-7									
38.2	Materials of the roof Concrete-1, Tin-2, Bamboo/wood-3, straw-4, Tally-5, No roof-6									

TT Form

Applicable for those women who gave birth to live or dead child between *01-01-2012* and *31-12-2012* **(Who gave birth to live or dead child between 18 Poush 1418 and 17 Push 1419)**									
1. Cluster No									
2. Date									
3. Survey Area									
4. Sl number of sample (to be filled in by office)									
5. Sl number of woman in this cluster		**Skip to**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6. Household number/GR number/Name of the house head									
7. Name of the respondent									
8. Name of the husband									
9. Date of birth of the child born at the latest (still or live)									
10. Age of the respondent (write in year)									
11. Academic qualification of the respondent Illiterate -1, Primary-2, Secondary-3, SSC/Dhakil/ O level-4, HSC/Alim/ A level-5, Degree/Fazil-6, Masters/Kamil-7									
12. Academic qualification of the husband: Illiterate -1, Primary-2, Secondary-3, SSC/Dhakil/ O level-4, HSC/Alim/ A level-5, Degree/Fazil-6, Masters/Kamil-7									
13. Occupation of the respondent Housewife-1, Government employee-2, Non-government employee-3, Household works/day labour-4, Small business-5, Big business-6, Teacher-7, Professional -8, others									
14. Occupation of the husband Agriculture-1, Government employee-2, Non-government employee-3, Day labor/rickshaw/van puller-4, Small business-5, Big business-6, Teacher-7, professional -8, driver (truck/bus/car)-9,others									
15. Number of family members of the family									
16. How many times have you given birth to child? (live and dead)	Live								
	Dead								
	Total								
16.1 Was the last born baby alive or dead?	Alive	**17**							
	Died	**16.2**							
	Still birth:3	**17**							
16.2.Within how many days since birth, did the child die?									
17. Where was your last child born?	Health complex: 1	**18**							
	At home: 2								
17.1 Please tell us the type of birth attendant assisted to your last delivery?	SBA : 1								
	USBA : 2								
SBA = Skilled Birth Attendant		**USBA = Un-Skilled Birth Attendant**							
18. Have you ever received any TT injection?	Yes: 1	**18.1**							
	No: 2	**33**							
18.1 Do you have card for TT injection?	Yes: 1	**19**							
	No: 2	**18.2**							
18.2. (If the respondent does not have any card then ask) were you ever given a card for TT injection?	Yes: 1	**18.3**							
	No: 2	**19**							
18.3 If the answer for 18.2 is yes, then ask - Why didn't you preserve the card?									

Instruction: Record the answers for Q 19-29 from a card or history									
19 TT1	(Date/+/0)								
19. 1. What is the source of TT1 vaccination?	GOB Outreach	1							
	NGO	2							
	All GOB Hospital	3							
	Private	4							
20. TT2	(Date/+/0)								
20.1. From where did you receive TT2 vaccine?	GOB Outreach	1							
	NGO	2							
	All GOB Hospital	3							
	Private	4							
20.2 Interval between TT-1 and TT-2			..... week	..... week	..... week	..... week	..... week	..... week	..... week
21. TT3	(Date/+/0)								
21. 1 Interval between TT-2 and TT-3	(write in month)		..... Month	..... Month	..... Month	..... Month	..... Month	..... Month	..... Month
22. TT4	(Date/+/0)								
22.1 Interval between TT-3 and TT-4	(write in month)ss		..... Month	..... Month	..... Month	..... Month	..... Month	..... Month	..... Month
23. TT5	(Date/+/0)								
23. 1. Interval between TT-4 and TT-5	(write in month)		..... Month	..... Month	..... Month	..... Month	..... Month	..... Month	..... Month
24. TT6	(Date/+/0)								
24. 1. Interval between TT-5 and TT-6	(write in month)		..... Month	..... Month	..... Month	..... Month	..... Month	..... Month	..... Month
25. TT7	(Date/+/0)								
25. 1. Interval between TT-6 and TT-7	(write in month)		..... Month	..... Month	..... Month	..... Month	..... Month	..... Month	..... Month
26. TT8	(Date/+/0)								
26.1 Interval between TT 7 and TT8	(write in month)		..... Month	..... Month	..... Month	..... Month	..... Month	..... Month	..... Month
27. TT9	(Date/+/0)								
27.1 Interval between T8 and T9	(write in month)		..... Month	..... Month	..... Month	..... Month	..... Month	..... Month	..... Month
28. TT10	(Date/+/0)								
28.1 Interval between TT9 and TT10	(write in month)		..... Month	..... Month	..... Month	..... Month	..... Month	..... Month	..... Month
29. Last TT vaccination	(Date/+/0)								
29.1. Interval between TT 10 and last TT injection	(write in month)		..... Month	..... Month	..... Month	..... Month	..... Month	..... Month	..... Month
30. Interval between latest TT injection and birth date of the child	(write in Weeks)		..... Month	..... Month	..... Month	..... Month	..... Month	..... Month	..... Month
31. Question number of TT vaccination received in the last pregnancy									
31a. Was the child protected at birth	Yes-1, No-2								

		Skip to	1	2	3	4	5	6	7
32. Have you ever had an abscess after receiving a Tetanus injection?	Yes: 1	**32.1**							
	No: 2	**33**							
	Don't know/Can't remember: 9								
32.1 Were you discouraged to take the next TT injection due to abscess or any other problem?	Yes: 1								
	No: 2								
33. Did the health worker ask you about TT injection When you took your child for vaccination?	Yes: 1								
	No: 2								
	Not applicable: 3								
	Don't know: 9								
34. (Check Q18: Those who did not receive TT injection ask them) Why didn't you receive TT injection? [single response]									
35. How many times must a woman receive TT injection to be protected for the rest of her life? (write number or 'don't know')									
36. Did you take vitamin A capsule within six weeks/42 days of your delivery?	Yes: 1	**36.1**							
	No: 2	**Stop**							
36.1. If yes, then tell us from where have you taken Vitamin A?	At home : 1								
	Vaccination center: 2								
	Hospital: 3								

Vaccination code:	Source codes:
Date - Record date from vaccination card	GOB Outreach = Community household, Community clinic, Satellite clinic, club
+ History that the child was vaccinated	All GOB Hospital = District, UHC etc.
0 Was not vaccinated	NGO = Hospital, Clinic, Outreach, Private = chamber, clinic and hospital

Thank You

TT 5 Form

Applicable for 18-49 years old women

1. Cluster No.									
2. Household Number/GR number and name of house head									
3. Date									
4. Survey Area									
5. Name of respondent									
6. Father's Name/Husband's Name									
7. Sl number of sample (to be filled in by office)									
8. Sl number of woman in this cluster		**Skip to**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
9. Age of the respondent? (in years)									
10.Marital Status	Married/ divorce/ separated - 1								
	Unmarried - 2								
11. Educational Qualification of the respondents: Illiterate -1, Primary-2, Secondary-3, SSC/Dhakil/ O level-4, HSC/Alim/ A level-5, Degree/Fazil-6, Masters/Kamil-7									
12. Occupation of the respondents: Housewife-1, Government employee-2, Non-government employee-3,Household works-4, Small business-5, Large business-6, Student-7 Teacher-8, Professional -9, Others									
13. Total family member									
14. Have you ever received TT Injection?	Yes: 1								
	No: 2	**28**							
15. Do you have card for TT injection?	Yes: 1	**16**							
	No: 2	**15.1**							
15.1 (If the respondent does not have any card) were you ever given a card for TT injection?	Yes: 1	**15.2**							
	No: 2	**16**							
15.2 (if yes) Why did you not preserve the card?									
Instruction: 16-26 record the answer from card or history									
16. TT 1	(Date/+/0)								
16.1 Source of TT1?	(O/H/N/P)								
17. TT2	Date/+/0								
17.1 Source of TT2?	(O/H/N/P)								
17.2 Interval between TT-1 and TT-2?	(write in weeks)	..... weeks	..... weeks	..... weeks	..... weeks	..... weeks	..... weeks	..... weeks	..... weeks
18. TT 3	(Date/+/0)								
18.1 Interval between TT2 and TT3	(Write in months)	..... Months	..... Months	..... Months	..... Months	..... Months	..... Months	..... Months	..... Months
19. TT4	(Date/+/0)								
19.1 Interval between TT3 and TT4	(Write in months)	..... Months	..... Months	..... Months	..... Months	..... Months	..... Months	..... Months	..... Months

		Skip	1	2	3	4	5	6	7
20. TT5	(Date/+/0)								
20.1 Interval between TT 4 and TT5	(Write in months)		..... Months	..... Months	..... Months	..... Months	..... Months	..... Months	..... Months
21.TT6	(Date/+/0)								
21.1 Interval between TT5 and TT6	(Write in months)		..... Months	..... Months	..... Months	..... Months	..... Months	..... Months	..... Months
22. TT 7	(Date/+/0)								
22.1 Interval between TT 6 and TT7	(Write in months)		..... Months	..... Months	..... Months	..... Months	..... Months	..... Months	..... Months
23. TT8	(Date/+/0)								
23.1 Interval between TT 7 and TT8	(Write in months)		..... Months	..... Months	..... Months	..... Months	..... Months	..... Months	..... Months
24. TT9	(Date/+/0)								
24.1 Interval between T8 and T9	(write in months)		..... Months	..... Months	..... Months	..... Months	..... Months	..... Months	..... Months
25. TT10	(Date/+/0)								
25.1 Interval between TT9 and TT10	(write in months)		..... Months	..... Months	..... Months	..... Months	..... Months	..... Months	..... Months
26. Last TT vaccine	(Date/+/0)								
26.1 Interval between TT 10 and last TT injection	(write in months)		..... Months	..... Months	..... Months	..... Months	..... Months	..... Months	..... Months
		Skip	**1**	**2**	**3**	**4**	**5**	**6**	**7**
27. Have you ever had an abscess after receiving a Tetanus injection?	Yes: 1	**27.1**							
	No: 2	**28**							
27.1 Are you discouraged to take the rest TT injection due to abscess or any other problem?	Yes: 1								
	No: 2								
28. How many times must a woman receive TT injection to be protected for the rest of her life? (write number or 'don't know')									
29. Why did you not take any TT injection? (ask those who have never taken any TT injection)									
30. What is the monthly income of your family? (include all source)									

Vaccination Code: Date/+/0

Date - Record date from vaccination card.
\+ - History that the child was vaccinated.
0 - The child was not vaccinated

Source codes:

O = GOB Outreach (Community household, community clinic, Satellite clinic, Club)
H = AllGOBHospital (e.g., District, UHC)
N = NGO (Hospital, Clinic, Outreach),
P = Private (chamber, clinic and hospital)

Thank You

NID Form

Applicable for those who were born in between 17/2/2007 and 11/1/2012

1. Cluster number										
2. Date										
3. Survey area										
4. Name of the child										
5. Name of the child's father										
6. Name of the child's mother										
7. Sl. no. of the child in this cluster			**Skip to**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
8. Sex: Male -1 Female - 2										
9. Date of birth of the child (Day/Month/Year)										
9a. Age in Month										
9b. Eligible for vaccine (/PM/PVM/PVAM)										
10. Ask mother/guardian: Did your child receive polio drops during the first round of 20th NID held on 7TH January, 2012 (or 4 days afterwards?"	Yes: 1		10.1							
	No: 2		10.2							
10.1. If yes, ask,where was the child vaccinated?	At fixed site	1	11							
	Child to Child Search	2	10.2							
	Mobile center	3	10.2							
			Skip to	**1**	**2**	**3**	**4**	**5**	**6**	**7**
10.2. If the child (0-59 months) was not vaccinated at the fixed site held on 7thJanuary, 2012 ask "Why was not your child vaccinated at the fixed site"? If the response is more than one then ask "which of those is the most important reason and code accordingly?"	Didn't know									
	Was very busy: 01									
	Went in traveling: 02									
	Doesn't believe in vaccine: 03									
	The child was fed in the previous time: 04									
	The child was sick, so/he was not taken: 05									
	The child was sick, so vaccine was not given: 06									
	No Vaccine: 07									
	No Vaccinator: 08									
	There was a long queue: 09									
	The centre was too far: 10									
	Session time was inconvenient: 11									
	Fear of side effect: 12									
	Waited for home visit: 13									
	Religious/Social obstacles: 14									
	Was not at home: 15									
	Others (specify)									
11. Ask mother/guardian: Did your child receive polio drops during the 2nd round of NID held on 11th February, 2012 (or 4 days afterwards?"	Yes: 1		11.1							
	No: 2		11.2							

			Skip to	1	2	3	4	5	6	7
11.1. If yes, ask,where was the child vaccinated?	At fixed site	1	12							
	Child to Child Search	2	11.2							
	Mobile center	3	11.2							
			Skip to	**1**	**2**	**3**	**4**	**5**	**6**	**7**
11.2. If the child (0-59 months) was not vaccinated at the fixed site held on 11th February, 2012 ask "Why was not your child vaccinated at the fixed site"? If the response is more than one then ask "which of those is the most important reason and code accordingly?"	Didn't know									
	Was very busy:	01								
	Went in traveling:	02								
	Doesn't believe in vaccine:	03								
	The child was fed in the previous time:	04								
	The child was sick, so /he was not taken:	05								
	The child was sick, so vaccine was not given:	06								
	No Vaccine;	07								
	No Vaccinator:	08								
	There was a long queue:	09								
	The centre was too far:	10								
	Session time was inconvenient:	11								
	Fear of side effect:	12								
	Waited for home visit:	13								
	Religious/Social obstacles:	14								
	Was not at home:	15								
	Others (specify)									
12. Ask mother/guardian How did you learn about the 'Jatiya Tika Dibosh' held on 7th January, and 11th February, 2012 (Please code)	GOB/ City corporations FW visit:	01								
	City Corporation's Health Worker:	02								
	NGO worker Visit:	03								
	Teacher visit:	04								
	Other volunteers Visit:	05								
	Family/neighbor/friends:	06								
	Television:	07								
	Radio:	08								
	Poster:	09								
	Newspaper:	10								
	Mobile Miking:	11								
	Mosque Miking:	12								
	Health Workers' home visit:	13								
	Told during first round:	14								
	Other (specify)									

Vitamin A *

Applicable for Children Aged 12-59 Months

Applicable for those children who born in between 2/6/2007 and 5/12/2011

1.Cluster number																
2. Date																
3. Survey area																
			6-11 months							12-59 Months						
7. Sl. no. of the child in this cluster		Skip to	1	2	3	4	5	6	7	8	9	10	11	12	13	14
4. Name of the child																
5. Name of the child's father																
6. Name of the child's mother																
8. Sex: Male -1 Female-2																
9. Date of birth of the child (Day/Month/Year)																
9a. Age in Month																
9b. Eligible for vaccine Vitamin A (VA)/Deworming Tablet (DT))																
10. Ask mother/guardian: Was your child (12-59 months) fed vitamin A during the Vitamin A Plus Campaign held 2 june, 2012	Yes: 1															
	No: 2															
10.1 If the child (12-59 months) was not fed Vitamin A during the Vitamina A Plus Campaign held 2 June, 2012 then ask, Why the child wasn't fed Vitamin A during the Vitamina A Plus	Didn't know	99														
	Was very busy	01														
	Went on traveling	02														
	Don't believe in Vitamin **A**	03														
	The child was fed in the previous time	04														
	The child was sick, so didn't take him to the vaccination centre	05														
	The child was sick , so the health worker didn't give vaccine	06														
	Vitamin A was not available	07														
	Health worker was not available	08														
	There was a long queue	09														

			6-11 months							12-59 Months						
		Skip to	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	The centre was too far	10														
	The time was not in favor	11														
	Was afraid of side effects	12														
	Was waiting to come back home with vitamin A:13	13														
	Religious/Social obstacles	14														
	Was not at home	15														
	Others (specify)															
			12-59 Months (Applicable for all districts)							6-11 Months(Comilla, Moulvibazar, Gopalganj, Satkhira, Barisal, Barisal City Corporation, and Rajshahi City Corporation)						
		Skip to	1	2	3	4	5	6	7	8	9	10	11	12	13	14
11. How did you learn about the Vitamina A Plus Campaign held 2 June, 2012 (Multiple answer)	GOB/ City corporations FW visit	01														
	City Corporation's Health Worker:	02														
	NGO worker Visit	03														
	Teacher visit	04														
	Other volunteers Visit	05														
	Family/neighbor/ friends	06														
	Television	07														
	Radio	08														
	Poster	09														
	Newspaper	10														
	Mobile Miking	11														
	Mosque Miking	12														
	Health Workers' home visit	13														
	Told during first round	14														
	Others (specify)	15														

Anthelmintic Tablet

Applicable for those children who born in between 31/5/2006 and 30/5/2009

		Skip to	1	2	3	4	5	6	7
12. Name of the child									
13. Name of the child's father									
14. Name of the child's mother									
15. Sex: Male -1 Female-2									
16. Date of birth of the child (Day/Month/Year)									
17. Ask mother/guardian Was your child (24-59 months) fed antihelmenthic tablet during Vitamin A Plus Capaign held on 2 June, 2012 ?	Yes: 1	18							
	No: 2	17.1							
17.1 If the child (24-59 months) was not fed Anthelmintic tablet during Vitamin A Plus Capaign held on 2 June, 2012 then ask, Why the child wasn't fed Anthelmintic tablet during Vitamin A Plus Capaign held on 2 June, 2012? (If there come multiple answers, ask which one is more important and code accordingly)	Didn't know								
	Was very busy								
	Went on traveling: 02								
	Don't believe in Anthelmintic: 03								
	The child was fed in the previous time: 04								
	The child was sick, so didn't take him to the vaccination centre: 05								
	The child was sick , so the health worker didn't give vaccine								
	Anthelmintic tablet was not available: 07								
	Health worker was not available: 08								
	There was a long queue: 09								
	The centre was too far: 10								
	The time was not in favor: 11								
	Was afraid of side effects: 12								
	Was waiting to come back home with Anthelmintic: 13								
	Religious/Social obstacles: 14								
	Was not at home: 15								
	Others (specify)								
18. Ask mother/guardian How did you learn about the Vitamin A Plus Capaign held on 2 June, 2012 (Please code)	GOB/City corporations FW visit: 01								
	City Corporation's Health Worker: 02								
	NGO worker Visit: 03								
	Teacher visit: 04								
	Other volunteers Visit: 05								
	Family/neighbor/friends: 06								
	Television: 07								
	Radio: 08								
	Poster: 09								
	Newspaper: 10								
	Mobile Miking: 11								
	Mosque Miking: 12								
	Health Workers' home visit: 13								
	Told during first round: 14								
	Other (specify)								

EXPANDED PROGRAMME ON IMMUNIZATION
Directorate General of Health Services
Mohakhali, Dhaka-1212