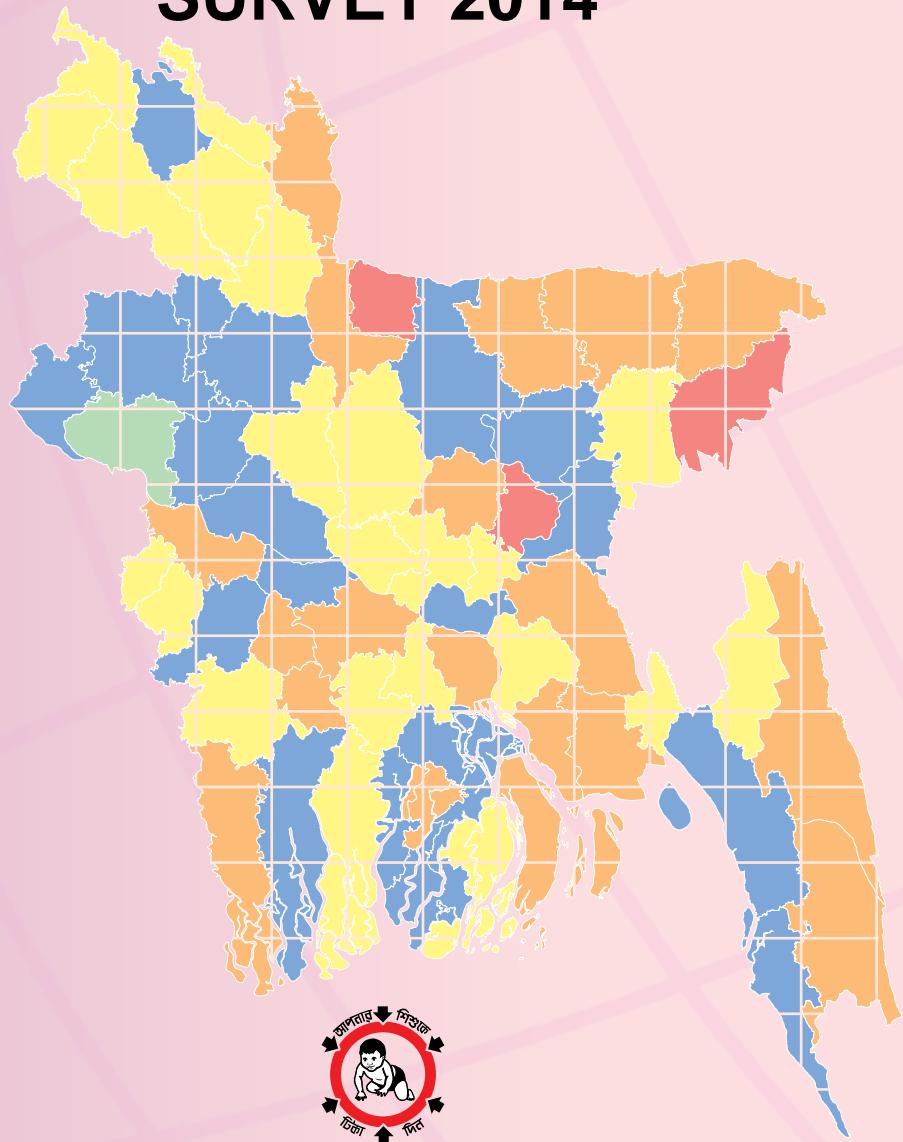




BANGLADESH

EPI

COVERAGE EVALUATION SURVEY 2014



EXPANDED PROGRAMME ON IMMUNIZATION

Directorate General of Health Services
Mohakhali, Dhaka-1212, Bangladesh

EPI Coverage Evaluation Survey 2014

Survey Conducted by : Center for Social and Market Research (CSMR)

Funded by : UNICEF Bangladesh

Printed by : UNICEF Bangladesh

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July, 2015

Design & Layout: Dhrupadi



BANGLADESH

EPI Coverage Evaluation Survey 2014



Expanded Programme on Immunization (EPI)

Directorate General of Health Services (DGHS)

Mohakhali, Dhaka-1212, Bangladesh





MESSAGE

Mohammed Nasim, MP
Hon'ble Minister
Ministry of Health and Family Welfare
Govt. of the people's Republic of Bangladesh



I am delighted knowing that as a part of annual evaluation of child vaccination status, EPI program of Directorate General of Health Services has completed "EPI Coverage Evaluation Survey 2014" and is going to publish the report.

Government of Bangladesh is committed to provide basic health services to all with special emphasis on children and women. In view to reduce child and maternal mortality and morbidity from six dreadful diseases, as for instance Childhood Tuberculosis, Diphtheria, Pertusis, Neonatal Tetanus, Poliomyelitis and Measles, EPI activities were started in the country in 1979. As a reflection of commitment to the safeguard of children, the government subsequently added several new vaccines namely Hep-B, Hib, MR, PCV and IPV vaccine in the EPI programme. Introducing new vaccines, EPI is now protecting children against 10 diseases reaching every door step of the community through its outreach sites.

Coverage Evaluation Survey (CES) is a very effective tool to monitor the progress and find out the weakness of the vaccination program. As per CES, EPI has achieved 82% valid fully vaccination coverage in 2014 among the under one year age children which was only 2% in 1985. For this extensive achievement, my heartfelt gratitude goes to the field workers and managers whom continuous and sincere job made possible such a memorable task.

Health personnel who are very much involved in this vaccination program will be benefitted through the findings and recommendations of this EPI Coverage Evaluation Survey-2014 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
Govt. of the people's Republic of Bangladesh

It is my great pleasure to see that “EPI Coverage Evaluation Survey (CES) 2014” report 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 remarkable progress made during the last 36 years and its contribution to the reduction in childhood mortality and morbidity. I believe, 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.

Since official launching of EPI in 1979, the vaccination coverage among the under one year age children is gradually increasing which was only 2% in 1985 and at present 82%. It was possible due to the combined efforts by Health & Family Planning officials, field workers at all level and technical support from WHO and UNICEF. I would like to thank all experts who made their valuable contribution to the CES-2014.

Immunization contributes to improve health and life expectancy through its social and economic impact at national and community level. It is one of the cornerstones of health and well-beings as well as a cost saving intervention of the health.

I would like to express my thankful gratitude to the concern officials for conducting CES 2014. I hope findings of this survey will be useful to all related stakeholders.

Joy Bangla, Joy Bangabandhu
Long live Bangladesh


Zahid Maleque



MESSAGE

**Secretary
Ministry of Health and family Welfare
Govt. of the People's Republic of Bangladesh**

The Expanded Programme on Immunization (EPI) in Bangladesh is one of the successful programmes which aims to reduce child morbidity and mortality from vaccine preventable diseases.

The EPI Coverage Evaluation Survey (CES) is an important tool for estimation the level of vaccination status at national and sub-national levels. It also indicate the progress and achievement of the programme including the areas of concern i.e. reasons for left out, drop out, vaccination card retention and other quantitative and qualitative aspects of the vaccination programme issues. CES findings help the programme personnel for making good planning, developing strategies to ensure quality service delivery that can help to reach the objectives.

I request 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 the programme accordingly so as to achieve desired level of coverage.

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



Syed Monjurul Islam



PREFACE

Government of Bangladesh took initiatives for implementing vaccination program in the country in 1979. The objective was to protect children against six conventional vaccine preventable diseases namely Childhood Tuberculosis, Diphtheria, Whooping Cough, Neonatal Tetanus, Poliomyelitis and Measles. Subsequently, Hepatitis-B vaccine, Hib vaccine, MR, Measles Second Dose, PCV and IPV have been added in the EPI programme. The program has been saving thousands of children's life from aforementioned vaccine preventable diseases since its introduction. As a result of providing TT vaccine to childbearing age women (CBAW) and pregnant women, Bangladesh has achieved the Neonatal Tetanus (NT) elimination goal in 2008 and maintaining the status.

It is true that EPI in Bangladesh has brought visible and tangible changes over the years in terms of childhood mortality and mortality. However, survey result shows that despite high accessibility of EPI service, a large number of children did not complete all doses of vaccine at right interval and right time.

This 20th survey report gives area specific reasons for not availing the service or reasons for incomplete doses. It would help the policy makers, national and local managers and field level staffs to compare and analyze different districts situation in order to undertake necessary measures for improving the service.

I would like to express my sincere thanks to EPI, UNICEF and WHO for their generous support in conducting the EPI Coverage Evaluation Survey 2014. My sincere thanks to Center for Social and Market Research (CSMR) for carrying out this study maintaining high standard quality.

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



FOREWORD

It is my pleasure to write forwarding note for EPI Coverage Evaluation Survey (CES) 2014. Since 1991 Bangladesh has been conducting nationwide Coverage Evaluation Survey every year. CES established as monitoring tool to assess performances, achievements and progress of the Bangladesh Expanded Programme on Immunization (EPI).

The EPI is always considered a success story in Bangladesh for its remarkable progress. It provides almost universal access to immunization services as measured by the percentage of children under the age of one year receiving BCG, which has increased a mere 2% in 1985 to over 99% in 2014. However, the percentage of children under the age of one year receiving all doses of vaccines at the right time and right interval has been achieved to 82%.

The purpose of conducting CES 2014 is to assess the routine childhood vaccination coverage, Measles Second Dose (MSD) coverage among 18-29 months old children, TT vaccination coverage among women with children 0-11 months, Maternal and newborn health care, TT5 coverage among 18-49 years old women, MR coverage among 16-17 years old adolescent girl, OPV coverage among 0-59 months old children during 21st NID and MR campaign, Vitamin A coverage among 6-59 months old children during vitamin A plus campaign and Vitamin A coverage among women at post partum period and immunization program quantity coverage (valid and crude). The survey was carried out between periods of August-November 2014. The survey was conducted in all 64 districts, 11 City Corporations and 2 slums (in Dhaka and Chittagong City Corporations area).

I would like to thank EPI, UNICEF and WHO personnel whose sincere contributions help in revealing this CES 2014 report. My sincere thanks to Center for Social and Market Research (CSMR) who successfully conducted this survey throughout the country and prepared authentic report.

We look forward to all concern persons in the country for using the CES 2014 document.



Dr. Habib Abdullah Sohel
Director, PHC &
Line Director-MNC&AH
DGHS, Mohakhali, Dhaka



ACKNOWLEDGEMENT

As a part of child vaccination coverage evaluation, EPI of Bangladesh has been conducting nationwide Coverage evaluation survey (CES) since 1991. The survey would provide us national, divisional, district and City Corporation level EPI performance. In 2014, the survey was conducted in all 64 districts, 11 city corporations and 2 slums (Dhaka and Chittagong city corporations). The survey result provides us more detailed picture of districts' and city corporations' vaccination performance. It would also help us to identify and analyze low performing districts and city corporations in order to take appropriate measures to improve the situations.

It is evident that vaccination coverage under EPI is increasing over the past years. Survey result reveals that the national valid vaccination coverage (FVC) was 79.4% in 2010 and 80.7% in 2013; while it is further increased by one percentage point (81.6%) in 2014. Considering the achievement there is no doubt that vaccination has been playing an important role in reducing child mortality and morbidity from vaccine preventable diseases in the country since its introduction. Acknowledging this tremendous success, Bangladesh has been recognized internationally through receiving awards from United Nations in 2010 and from Gavi alliance in 2009 and 2012.

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 Center for Social & Market Research (CSMR) for supporting EPI through conducting the survey and preparing this report.

Hope this report would be useful to all concern persons.

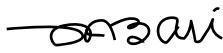

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ACRONYMS

AEFI	Adverse Events Following Immunization
ANC	Antenatal Care
BBS	Bangladesh Bureau of Statistics
BCG	Bacillus Calmette Guerin
BCC	Barisal City Corporation
BDHS	Bangladesh Demographic and Health Survey
CC	City Corporation
CCC	Chittagong City Corporation
CES	Coverage Evaluation Survey
Com CC	Comilla City Corporation
CSBA	Community Skilled Birth Attendant
CSMR	Center for Social and Market Research
DCC	Dhaka 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
FVC	Fully Vaccinated Children
FWA	Family Welfare Assistant
FWV	Family Welfare Visitor
GCC	Gazipur City Corporation
GoB	Government of Bangladesh
HA	Health Assistant
IU	International Unit
KCC	Khulna City Corporation
MA	Medical Assistant
MDG	Millennium Development Goal
MICS	Multiple Indicator Cluster Survey
MNT	Maternal & Neonatal Tetanus
MoHFW	Ministry of Health and Family Welfare
MR	Measles and Rubella
MSD	Measles Second Dose
NCC	Narayanganj City Corporation
NGO	Non-Government Organization
NID	National Immunization Days

NT	Neonatal Tetanus
OPV	Oral Polio Vaccine
PAB	Protected at Birth
PNC	Post-natal Care
PPS	Probability Proportional-to- Size
RCC	Rajshahi City Corporation
Rang CC	Rangpur City Corporation
SCC	Sylhet City Corporation
SACMO	Sub-Assistant Community Medical Officer
SEARO	South East Asian Regional Office of WHO
TT	Tetanus Toxoid
UNICEF	United Nations Children's Fund
VAC	Vitamin A Capsule
WHO	World Health Organization

GLOSSARY

Cluster	The cluster is defined as an enumeration area which constitutes on average with 120 households
Crude	Crude vaccination coverage was defined as the vaccine given to the children where the age for starting vaccinations and/or interval between doses did not meet the EPI- recommended schedule
Fixed Sites	EPI outreach centres and hospitals from which vaccines are received (considered only for NIDs)
Fully Vaccinated	Child receives one dose of BCG, 3 doses of Pentavalent (diphtheria, pertussis, tetanus, Hep-B and Hib), 3 doses of polio and one dose of MR (Measles and Rubella) vaccines
Hard-to-Reach Area	If the recorded time to reach a cluster (Mouza) took more than 2 hours from the upazila headquarters, the cluster was identified as hard-to-reach area
Invalid	Vaccine administered but did not meet the EPI-recommended vaccination schedule for starting age and dose intervals for each antigen
Mohallas	Smallest identifiable area of urban area (municipalities, city corporations), known to the inhabitants as mohallas
MCV1	MR (measles containing vaccine) replaced the measles dose since it was introduced in 2012
Mouza	A revenue village with a jurisdiction list number and defined area
PAB	The newborn is protected if the mother received two valid doses of TT vaccine at least two weeks before delivery
Valid	Vaccine received following EPI recommended starting age and dose interval for each antigen
Upazila	Lowest administrative unit (sub-district level)

EXECUTIVE SUMMARY

Since it was inaugurated in 1979, Bangladesh's Expanded Programme on Immunization (EPI) has been an integral part of Bangladesh's efforts to reduce child mortality. From a crude fully vaccinated rate of 76.0 percent in 1995, the rate today has reached 93.2 percent. The tremendous improvement in EPI contributes substantially to Bangladesh's efforts to achieving Millennium Development Goal 4: Reducing Child Mortality Rates. Still, to meet the childhood vaccination coverage objective, EPI has fixed a target of full vaccination coverage of 90 percent nationally and 85 percent in all districts and TT5 coverage among women of child-bearing age of 80 percent nationally and 75 percent at each district by 2016. Presently, the valid vaccination coverage rate by the age of 23 months nationally is 84.7 percent and ranged from 82.1 to 88.8 percent in some divisions. So, the Government of Bangladesh (GoB), in collaboration with UNICEF, the World Health Organization (WHO), and other stakeholders, continues to identify obstacles and challenges to achieving the desired goals and seeks ways forward to overcome the barriers.

As one of its strategies to successfully implement EPI, the GoB periodically conducts EPI Coverage Evaluation Surveys (CES), which provide a scientific evaluation of the programme. The latest, the twentieth, was conducted in 2014. This report of CES 2014 presents the findings obtained from the household survey.

Both primary and the secondary stakeholders participated as survey respondents in this study. They were mothers/caregivers of children aged 0-11 months, 12-23 months, 18-29 months, 6-59 months, and 0-59 months; women aged 18-49 years; and adolescent girls aged 16-17 years. The study was carried out between August 17 and November 10, 2014.

The objectives of CES 2014 were to assess:

- Childhood vaccination coverage of children 12-23 months old under the routine Expanded Programme of Immunization (EPI)
- Measles Second Dose (MSD) vaccination coverage among 18-29-month-old children under routine EPI
- Tetanus Toxoid (TT) Vaccination Coverage among women with children less than one year old, to determine the status of protection for children against tetanus at birth
- TT5 coverage among women 18-49 years of age, so that the progress of the TT5 programme could be assessed
- Protection at birth against tetanus (PAB) among children aged 0-11 months
- MR vaccination coverage among 16-17 year-old adolescent girls under routine EPI
- OPV coverage among children 0-59 months old during the 21st National Immunization Day (NID) held in December 2013 and during the measles and rubella vaccination (MR) campaign held in February 2014
- Vitamin A coverage of children aged 6-59 months during the Vitamin A Plus campaign, held on April 5, 2014
- The immunization programme's quantity (crude and valid coverage by age of 12 months, drop-out rates) and quality (percentage of invalid doses, vaccination card availability, post-vaccination abscesses, other Adverse Events Following Immunization (AEFI), reasons for drop outs, etc.)
- Trends in vaccination coverage and drop-out rates at national, divisional, city corporation and district levels
- Identify the reasons for failure to vaccinate children through NID and Vitamin A Plus campaigns

The findings are discussed in detail in Chapters 3 to 10 of this report.

METHODOLOGY

The World Health Organization's (WHO) 30 cluster sampling methodology was followed in this study. The study was quantitative in nature, where data were collected through face-to-face interviews with mothers/caregivers of children, women, and adolescent girls by visiting community households. There were seven individual surveys targeting eight different survey subjects. CES 2014 included 77 survey units, comprised of 64 districts, 11 city corporations, and 2 slums in Bangladesh: one in Dhaka and the other in Chittagong City Corporation. From each survey unit, 210 samples were covered. A total of 129,360 interviews, 16,170 from each survey unit, were conducted in 2,310 randomly selected mouzas/mohallas across. Thirty clusters from each survey unit were selected by following the systematic random sampling technique with Probability Proportion to Size (PPS). Respondents from each cluster were identified through a household listing operation and were selected randomly to administer the questionnaire.

FINDINGS

CHILDHOOD VACCINATION COVERAGE

National Coverage

Crude Vaccination Coverage by Age of 23 Months: Nationally, by age of 23 months 93.2 percent children had received all the eligible vaccines, irrespective of the whether the EPI-recommended age for administration and/or the interval between consecutive doses was met. BCG had the highest coverage (99.2 percent), with Penta1 close behind (99.0 percent), but with each subsequent dose, the rate progressively widened (Penta2 - 98.4 percent and Penta3 - 97.1 percent), with MR falling almost six percentage points to 93.2 percent (see Figure 1). No marked variation was observed between rural (93.3 percent) and urban (92.9 percent) areas (see Figure 2).

Crude Vaccination Coverage by Age of 12 Months: Ninety percent of children received all the eligible vaccines by the age of 12 months, irrespective of the whether the EPI-recommended age for administration and/or the interval between consecutive doses was met. Again, BCG had the highest coverage (99.2 percent), followed closely by the Pentavalent doses, but falling considerably for MR (89.7 percent) (see Figure 3). Urban-rural analysis shows no marked variation in the crude coverage between rural (90.1 percent) and urban (88.3 percent) areas (see Figure 4).

Valid Vaccination Coverage by Age of 23 Months: Valid coverage was defined as vaccines administered according to the EPI-recommended minimal age of the child and the recommended interval between doses. Nationally, 84.7 percent of the children received all doses of all antigens as scheduled, with the highest coverage being for BCG (99.2 percent). Penta1 coverage was 92.6 percent, Penta2 93.4 percent, and Penta3 93.2 percent. For the OPV doses, the differences in coverage for the first two were low, (OPV1 (95.8 percent) and OPV2 (95.2 percent)), but dropped almost two percent for OPV3 (93.3 percent) (see Figure 5). The coverage for MR, at 90.1 percent, was 9.1 percent lower than BCG (see Figure 6).

Valid Vaccination Coverage by Age of 12 Months: Overall, by age of 12 months 81.6 percent of children country wide received all scheduled vaccines, following EPI-recommended ages for administration and valid intervals between doses. Valid BCG coverage, at 99.2 percent, was the same as at 23 months, and the Pentavalent and OPV rates were also almost exactly the same, except for OPV3, which, at 92.7 percent, was lower than at 23 months. Among all the antigens, valid MR coverage was the lowest (86.6 percent) (see Figure 7). Urban-rural analysis shows that rural children were more likely to receive valid doses (82.3 percent), compared to their urban counterparts (78.8 percent) (see Figure 8).

Coverage by Division

Crude Vaccination Coverage by Age of 23 Months: Crude full vaccination coverage was highest in Rajshahi (96.8 percent) and lowest in Sylhet (88.6 percent) divisions. Barisal and Rangpur divisions achieved the second highest position with 93.9 percent coverage each. The crude coverage was depicted as 93.4 percent in Khulna, 92.9 percent in Chittagong, and 92.2 percent in Dhaka divisions (see Figure 9). The data indicate that the numbers of drop-outs from vaccination services attributed to the lower crude coverage.

Valid Vaccination Coverage by Age of 12 Months: Rajshahi division had the highest valid full vaccination coverage (87.0 percent), while Barisal division attained the second highest position, with 82.6 percent coverage. The valid vaccination coverage was 81.9 percent in Khulna, 81.5 percent in Rangpur, 81.0 percent in Chittagong, 79.4 percent in Dhaka, and 78.6 percent in Sylhet divisions (see Figure 9a). The coverage analysis and computation of valid coverage show that low drop-out rates, as well as the act of administering higher valid doses, contributed to the higher valid vaccination coverages.

Coverage by City Corporation

Crude Vaccination Coverage by Age of 23 Months: Nationally, urban coverage was observed to be 92.9 percent in CES 2014. Among the city corporations, the highest crude vaccination was found in Rajshahi City Corporation (RCC) (99.0 percent) and the lowest in Khulna City Corporation (KCC) (85.2 percent). The crude vaccination coverage in other city corporations was between 87.1 percent in Dhaka South City Corporation (DSCC) and 97.6 percent in Dhaka North City Corporation (DNCC) (see Figure 40).

Valid Vaccination Coverage by Age of 12 Months: Of the city corporations, Rajshahi City Corporation achieved the highest coverage, at 90.0 percent. The lowest coverage was observed in Gazipur City Corporation (GCC) (70.2 percent). The valid coverage in other city corporations was between 74.1 percent in DNCC and 81.3 percent in Comilla City Corporation (Com CC) (see Figure 43).

Programme Quality

Incidences of Invalid Doses: A dose or antigen is considered to be invalid when the vaccine is administered without complying with the exact EPI-recommended age for starting the vaccine or with the minimum interval between the two consecutive doses. CES 2014 estimated the invalid doses for Penta1, Penta2, and Penta3, and MR vaccines. Invalid doses were found to be most prominent for Penta3 (6.8 percent) and the least prominent for Penta1 (3.4 percent) across the country. The invalid doses of MR vaccine administered to children was also found to be 3.4 percent. A slight variation of invalid doses was noticed between urban and rural areas, with those in urban areas found higher in comparison with rural areas for both Penta and MR vaccines: invalid Penta1 was 4.6 percent, Penta2 7.0 percent, Penta3 8.3 percent and invalid MR was 4.2 percent in urban areas, while invalid Penta1 was found to be 3.1 percent, Penta2 5.2 percent, Penta3 6.4 percent and MR 3.3 percent in rural areas (see Figure 50).

The highest proportion of invalid Penta1 was administered in Barisal division (3.9 percent) and the lowest in Rajshahi and Sylhet divisions (2.6 percent). Similarly, the highest invalid Penta2 (6.3 percent) and Penta3 (7.4 percent) were administered in Barisal division and the lowest in Sylhet division (4.0 percent and 5.3 percent, respectively). Regarding invalid MR, Dhaka division administered the highest invalid dose (4.3 percent), followed by Rangpur (3.6 percent), Khulna and Sylhet (both 3.3 percent), Chittagong and Rajshahi (both 3.2 percent), and Barisal divisions (3.1) (Appendix Table 6).

Among the city corporations, the highest invalid doses were found in DNCC, with 14.9 percent invalid Penta1, 17.6 percent invalid Penta2, 18.5 percent invalid Penta3, and 6.8 percent invalid MR. The lowest invalid doses were in SCC, with 0.7 percent invalid Penta1, 2.8 percent invalid Penta2, 3 percent invalid Penta3, and 2.6 percent invalid MR (see Figure 52).

Vaccination Drop-out Rate: CES 2014 estimated the drop-out rates for Penta1-Penta3 and Penta1-MR. The drop-out rate from Penta1-Penta3 was defined as the proportion of children who received Penta1, but failed to receive Penta3. The drop-out rate from Penta1-MR was defined as the proportion of children who received Penta1, but failed to receive MR. Nationally, the Penta1-Penta3 drop-out rate was found to be 1.9 percent and the Penta1-MR drop-out rate was 5.9 percent as a whole. Among the seven divisions, the Penta1-Penta3 drop-out rate was the highest in Sylhet division (4.3 percent) and the lowest in Rajshahi division (1.0 percent). The rate was 2.5 percent in Barisal division, 1.7 percent in Chittagong, 2.2 percent in Dhaka, 2.0 percent in Khulna and 1.6 percent in Rangpur divisions. Similarly, the Penta1-MR drop-out rate was the highest in Sylhet division (8.6 percent) and lowest in Rajshahi division (2.8 percent). In the other divisions, the Penta1-MR drop-out rate was between 5.7 percent and 6.8 percent (see Figure 57-62).

Among the city corporations, the highest Penta1-Penta3 drop-out rate was observed in KCC (6.7 percent), followed by BCC (5.7 percent), SCC (4.4 percent), NCC (3.8 percent), GCC (2.9 percent), CCC (2.4 percent), Rang CC (1.4 percent), Com CC (1.0 percent) and DSCC (1.0 percent). No drop-out from Penta1-Penta3 was observed in DNCC and RCC. Similarly, the Penta1-MR drop-out rate was the highest (14.8 percent) in KCC and the lowest (1 percent) in RCC. In the other city corporations, the Penta1-MR drop-out rate was between 1.9 percent and 12.9 percent (see Figure 55).

Adverse Events Following Immunization: Nationally, 1.3 percent of the mothers/caregivers of vaccinated children reported that their children developed abscesses after receiving Penta or MR vaccine. There was very little difference on the occurrence of abscesses after Penta and MR vaccine between the children of urban (1.2 percent) and rural (1.3 percent) areas (see Figure 63).

Card Retention Rate: The card retention rate was defined as the proportion of cards available during the survey against the total number of cards issued at the time of first vaccination. Nationally, 99.3 percent of the children received vaccination cards. Of those, 83.4 percent of the mothers/caregivers retained the cards, with the retention rate higher in rural areas (85.6 percent) than in urban areas (75.8 percent). Among rural divisions, the card retention rate was the highest in Rangpur (91.7 percent), followed by Khulna (88.7 percent), Sylhet (88.2 percent), Rajshahi (87.6 percent), Chittagong (85.4 percent), Barisal (84.5 percent) and Dhaka (78.9 percent) divisions. In comparison, among the city corporations, the card retention rate was the highest in RCC (85.2 percent) and the lowest in DSCC (56.7 percent). It was 84.3 percent in Rang CC, 77.5 percent in CCC, 74.5 percent in NCC, 73.8 percent in BCC, 72.9 percent in SCC, 71.6 percent in DNCC, 71.4 percent in KCC, 68.9 percent in GCC, and 67.6 percent in Com CC (see Figure 47-49).

Reasons for Never Vaccinated: Among the surveyed children, less than 1 percent did not receive any vaccine. The reasons mentioned by the mothers/caregivers for never vaccinating were grouped into three broad categories: lack of information, lack of motivation, and obstacles. About two-thirds (63.2 percent) of the mothers lacked information about vaccination services, including that they did not know that the child should be given a vaccine; fear of side-effects; and did not know where to go for vaccination service. A little over one-tenth of the mothers/caregivers reported the cause was related to a lack of motivation. A little over one quarter (26.3 percent) of them mentioned obstacles, either from the supply or demand side. It was observed that mothers/caregivers residing in rural areas (65.5 percent) were more unaware about the information of vaccination and its services than those residing in urban areas (49.7 percent). Conversely, more mothers/caregivers residing in urban areas (35.3 percent) reported obstacles as the major reason for never vaccinating their children than those of rural areas (24.8 percent), and 15 percent of mothers/caregivers from urban areas lacked motivation, as compared to 9.7 percent who resided in rural areas (see Figure 69).

Reasons for Partial Vaccination: Six percent of the children were found to receive partial vaccinations. The most prevailing reason given for partial vaccination was an obstacle, 86.1 percent of mothers/caregivers

in urban areas and 79 percent in rural areas reported. In this regard, four out of every five mothers/caregivers reported the obstacles came either from the supply or demand side. A lack of information was the next most common reason given, nationally by 17.6 percent of the mothers/caregivers and by 19.1 percent of those residing in rural areas and 12.8 percent in urban areas. Lack of motivation was the least cited reason for partial vaccination (see Figure 70).

Knowledge about Common Side-effect of Vaccination

Vaccination can cause minimal undesirable side-effects, such as fever or local reactions at the injection site, CES 2014 assessed the knowledge of mothers/caregivers regarding minor side-effects after vaccination. Fever was found as the most reported side-effect as a whole. Overall, 90.5 percent of the mothers/caregivers, 87.7 percent from urban and 91.2 percent from rural areas reported knowing about it (see Figure 66).

MEASLES SECOND DOSE (MSD) COVERAGE

Seventy percent of the children received valid MSD across the country in CES 2014. Children from rural areas were slightly more likely to receive MSD than those from urban areas (71.0 percent vs. 67.6 percent) (see Figure 83). In contrast, 80.5 percent of the children received crude MSD nationally, with a slight variation noticed in coverage between rural and urban areas (80.2 percent in rural and 82.0 percent in urban areas) (see Figure 80).

Drop-out Rate from MR to MSD

Drop-out from the subsequent dose(s) of the same antigen or different antigen was the most notable obstacle in achieving the desired coverage target. A child was considered as a drop-out from MR, if s/he had failed to receive MSD after receiving MR. Nationally, the MR-MSD drop-out rate was found to be 14.0 percent. The drop-out rate was slightly lower (12.2 percent) in urban areas than that in rural ones (14.4 percent) (see Figure 89). However, by gender, no marked variation was observed between males and females (see Figure 89a).

Among the seven divisions, the MR-MSD drop-out rate was the highest (18.5 percent) in Sylhet and the lowest (10.0 percent) in Rajshahi division. The rate was between 16.3 percent and 10.9 percent in the other divisions (see Figure 90). Among the city corporation MR-MSD drop-out was the highest in SCC (18.0 percent) and the lowest in RCC 5.2 percent (see Figure 91).

TT VACCINATION COVERAGE AMONG MOTHERS WITH 0-11 MONTHS OLD CHILDREN

Crude Coverage

Sixty-one percent of the mothers having 0-11 month-old children received 5 doses of TT vaccine across the country. Ninety-eight percent of them received TT1 and TT2, 88.3 percent TT3, and 75.6 percent TT4, respectively (see Figure 92).

Valid Coverage

Nationally, both the valid TT1 and TT2 vaccination coverages were about 97.6 percent. Valid TT3 vaccination coverage was 85.0 percent, TT4 68.9 percent and TT5 49.8 percent. Urban-rural analysis show that TT1, TT2 and TT3 coverages were slightly higher in rural areas than those in urban areas. In

contrast, the coverage of TT5 was 3.3 percentage points higher in urban areas compared to rural areas (52.6 percent vs. 49.3 percent) (see Figure 95).

Protection at Birth (PAB)

CES 2014 data show that countrywide 92.8 percent of the children were protected against tetanus at birth, with rural children slightly ahead of urban children in this context (93.1 percent vs. 91.3 percent). Children from Barisal (94.5 percent), Khulna (94.1 percent), Rajshahi (94.4 percent), and Rangpur (91.4 percent) divisions were in higher position in terms of PAB than those in the other divisions. Children living in Sylhet division were found comparatively less protected (89.5 percent). In contrast, PAB status was almost universal in Rajshahi City Corporation (98.6 percent), followed by Barisal City Corporation (98.1 percent). The PAB was also quite good in Khulna (96.0 percent) and Comilla City Corporations (96.2 percent). However, the coverage was lower among the children in Dhaka North City Corporation (80.0 percent) and Sylhet City Corporation (85.0 percent) (see Figures 115 to 117).

TT Vaccination Card Retention Rate

Nationally, 37.1 percent of the TT vaccination cards were found to be retained. The card retention rate was slightly higher in rural areas than that in urban areas (38.0 percent vs. 34.6 percent). Overall, in 94.5 percent of cases cards were issued at the time of TT vaccination. Only 35.1 percent cards were available during data collection, while 59.4 percent of recipients lost them (see Figure 106).

Incidence of Invalid Doses

The data show that overall the occurrence of invalid doses was 9.0 percent for each of TT3 and TT5. Invalid TT3 was found to be 9.6 percent in Barisal, 11.4 percent in Chittagong, 9.9 percent in Dhaka, 7.0 percent in Khulna, 8.6 percent in Rajshahi, 7.7 percent in Rangpur and 7.4 percent in Sylhet divisions. Similarly, the incidence of invalid TT4 was 8.3 percent in Barisal, 10.8 percent in Chittagong, 10 percent in Dhaka, 7.9 percent in Khulna, 6.8 percent in Rajshahi, 8.6 percent in Rangpur and 7.5 percent in Sylhet divisions. The incidence of invalid TT5 was 10.5 percent in Barisal, 11.8 percent in Chittagong, 9.3 percent in Dhaka, 7.6 percent in Khulna, 7.8 percent in Rajshahi, 8.1 percent in Rangpur and 7.8 percent in Sylhet divisions (see Figure 110).

Among the city corporation, the incidence of invalid TT3 dose was highest in BCC (22.2 percent) and lowest in GCC (0.5 percent). As regards the invalid TT4, it was highest in CCC (21.5 percent) and lowest in RCC (1.9 percent), while invalid TT5 was highest in Com CC (15.2 percent) and lowest in GCC (1.1 percent) (see Figure 111).

TT5 VACCINATION COVERAGE

Crude TT5 Vaccination Coverage: Nationally, 57.1 percent of the women received all five doses of TT vaccines, with little variation in the coverage between rural and urban women (57 percent in rural and 57.7 percent in urban areas). Crude TT1 coverage was 95.1 percent, while TT2 was 93.2 percent, TT3 85.9 percent, and TT4 72.9 percent. A similar picture was observed both in rural and urban areas. In rural areas, the crude coverage of TT1, TT2, TT3, TT4 and TT5 were 95.2 percent, 93.4 percent, 86.1 percent, 73.3 percent, and 57.0 percent respectively. The corresponding figures were 94.9 percent, 92.9 percent, 85.6 percent, 71.8 percent, and 57.7 percent, respectively, in urban areas (see Figure 127).

Valid TT5 Coverage: More than half (53.2 percent) of the surveyed women received all five doses of valid TT vaccine - 52.9 percent in rural and 55.0 percent in urban areas. Like crude TT coverage, valid TT coverage for the subsequent doses were also found to be decreasing (TT1 95.1 percent, TT2 93.2 percent, TT3 85.4 percent, TT4 70.8 percent, and TT5 53.2 percent). However, valid TT3 and TT4 coverages were

slightly better in rural areas than in urban areas (TT3 coverage was 85.6 percent and TT4 71.0 percent in rural areas, as opposed to TT3 85.1 percent and TT4 70.4 percent in urban areas. In contrast, TT5 coverage was two percentage points higher in urban areas, compared to that in rural areas (55 percent vs. 52.9 percent) (see Figure 128).

MATERNAL AND NEWBORN HEALTH

Pregnancy and child-birth related complications are an important cause of maternal mortality. In Bangladesh, one in three women does not receive any antenatal care during pregnancy, and about three in five women deliver their babies without the assistance of a skilled birth attendant.

Antenatal Care

Antenatal Care Coverage: CES 2014 observed that two-third of mothers (66.5 percent) received antenatal care (ANC) from medically-trained providers throughout the country. By residence, 75.2 percent women in urban areas and 64.3 percent women in rural areas received ANC from a medically-trained provider (see Table 13). According to the Bangladesh Demographic and Health Survey (BDHS) 2011, 54.6 percent of the women who gave birth within three years preceding the survey received ANC from a medically-trained provider. However, Multiple Indicator Cluster Survey (MICS) 2012-2013 shows that 58.7 percent of the women who gave birth two years preceding the survey received ANC at least once from a medically-trained provider (see Figure 145).

Number of Antenatal Visits: The minimum number of antenatal care visits during pregnancy recommended by UNICEF and WHO is four. About one-third of the mothers (29.9 percent) made four or more ANC visits across the country, slightly more for urban mothers (34.5 percent) than rural mothers (28.2 percent) (see Table 15).

Iron and Calcium Supplementation: Nationally, 70.8 percent women took iron tablets and two-thirds (59.0 percent) took calcium tablets during their last delivery (see Figure 147-148).

Delivery Care

Place of Delivery: Nationally, 41.2 percent deliveries were conducted at a type of health facility, while the home delivery rate was recorded as 58.8 percent. A 25 percentage points variation was observed in health facility deliveries between rural and urban areas (36.4 percent and 59.8 percent, respectively). A private hospital/clinic was the most common place for institutional deliveries (24.7 percent) (see Table 20).

Delivery Assistant: Reducing maternal deaths from birth complications is possible by increasing the number of births attended by a medically-trained provider: a doctor, nurse, or trained midwife. CES 2014 findings show that a medically-trained provider attended 43.8 percent of total births nationally. The numbers of birth attended by medically-trained providers was remarkably higher in urban areas (61.9 percent) than that in rural areas (39.2 percent). Among the medically-trained providers, MBBS-qualified doctors were the main service provider in urban areas (45.5 percent), followed by nurses and midwives (16.0 percent) (see Table 22).

Postnatal Checkup for Mother and Newborn

Nationally, 35.9 percent of women and 35.6 percent of newborns received a postnatal checkup (PNC) within two days of delivery from medically-trained providers. In contrast, 44.6 percent of mothers and 35.0 percent of newborns did not receive any postnatal care (see Table 22).

MR VACCINATION COVERAGE

One-third of the adolescent girls confirmed they received their MR vaccination. Respondents from rural areas were more likely to receive MR, compared to those from urban areas (31.5 percent in rural areas and 27.5 percent in urban areas) (see Figure 151). Among the divisions, MR coverage was highest in Sylhet (37.7 percent) and lowest in Chittagong divisions (28.7 percent). In other divisions it was between 30.2 percent and 33.9 percent (see Figure 152). Among the city corporations, CCC had the highest position, with 35.7 percent MR coverage. Rang CC achieved the second highest position, with 32.4 percent MR coverage, whereas it was the lowest in BCC (11.4 percent). In other city corporations it ranged between 13.3 percent and 30 percent (see Figure 153).

OPV COVERAGE AMONG 0-59 MONTH OLD CHILDREN

Overall, 95.8 percent of the children received OPV during the first round of the 21st NID, and 95.6 percent received it during the 2nd round (MR campaign period). Ninety-four percent of the respondents received OPV during both the first round of the 21st NID and the second round (MR campaign period) (see Figure 157). Among the divisions, Barisal, Khulna, Rajshahi, and Rangpur divisions had the highest overall OPV coverage (about 97 percent), while the lowest coverage was observed in Chittagong (89.8 percent) in both rounds.

Comparing by rounds, a slightly higher proportion of children received OPV during the first round of the 21st NID, compared to during the MR campaign period in all the divisions, except in Barisal and Sylhet. The OPV coverage during the 1st round of the 21st NID was highest in Rajshahi (98.0 percent) and lowest in Chittagong divisions (92.8 percent). It ranged between 94.4 percent and 97.8 percent in other divisions, with the coverage similar during the MR campaign period (see Figure 158).

Among the city corporations, the OPV coverage of both the rounds came out as universal (100 percent) in DNCC and Rang CC and was between 98.6 percent and 78.6 percent in the other city corporations. No marked variation was noticed between the first round and second round coverage (see Figure 159).

VITAMIN A COVERAGE AMONG 6-59 MONTHS OLD CHILDREN AND POSTPARTUM WOMEN

A Vitamin A Plus campaign was held in April 2014. Nationally, 85.4 percent of infants aged 6-11 months and 93.7 percent of children aged 12-59 months received Vitamin A capsules. No remarkable variation in coverage was observed between urban and rural areas. However, 41.4 percent of the mothers with children aged 0-11 months – 44.0 percent in urban and 40.9 percent in rural areas – received Vitamin A capsules after delivering their last child (see Figure 161).

Table 1: Findings of Key Indicators

Indicators		BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MR	FVC
Crude Vaccination Coverage by Age of 23 Months	National	99.2	99.0	99.0	98.4	98.4	97.1	97.1	93.2	93.2
	Urban	99.5	99.4	99.4	98.7	98.7	97.6	97.6	92.9	92.9
	Rural	99.2	99.0	99.0	98.3	98.3	97.1	97.1	93.4	93.3
	Male	99.2	99.0	99.0	98.4	98.4	97.2	97.2	93.5	93.5
	Female	99.3	99.1	99.1	98.3	98.3	97.0	97.0	92.8	92.8
By Division	Barisal	99.8	99.7	99.7	98.6	98.6	97.2	97.2	93.9	93.9
	Chittagong	98.8	98.8	98.8	98.1	98.1	97.0	97.1	92.9	92.9
	Dhaka	99.3	99.0	99.0	98.3	98.3	96.8	96.8	92.3	92.2
	Khulna	99.7	99.5	99.5	98.7	98.7	97.5	97.5	93.4	93.4
	Rajshahi	99.7	99.5	99.5	99.3	99.3	98.5	98.5	96.8	96.8
	Rangpur	99.9	99.9	99.9	99.3	99.3	98.3	98.3	93.9	93.9
	Sylhet	97.5	96.9	96.9	95.4	95.4	92.7	92.7	88.6	88.6
Valid Vaccination Coverage by Age of 12 Months	National	99.2	95.8	92.6	95.1	93.3	92.7	93.0	86.6	81.6
	Urban	99.3	96.4	92.1	95.5	93.3	92.3	93.5	84.7	78.8
	Rural	99.2	95.6	92.7	95.1	93.3	92.9	92.9	87.1	82.3
	Male	99.2	96.0	92.6	95.4	93.6	93.0	93.1	86.8	81.6
	Female	99.2	95.5	92.5	94.9	93.0	92.4	92.9	86.3	81.6
By Division	Barisal	99.7	96.7	93.1	95.7	93.7	93.5	94.0	87.8	82.6
	Chittagong	98.8	94.9	91.9	94.3	92.5	92.5	92.8	85.9	81.0
	Dhaka	99.3	95.7	92.6	95.2	93.1	92.1	92.5	84.4	79.4
	Khulna	99.6	96.3	92.7	95.5	94.4	93.2	93.0	86.9	81.9
	Rajshahi	99.7	97.4	94.9	97.0	94.9	95.4	95.6	91.8	87.0
	Rangpur	99.9	96.7	93.4	96.3	94.3	94.1	94.5	86.4	81.5
	Sylhet	97.4	91.5	89.1	90.4	89.6	87.0	87.1	82.1	78.6

	National	Urban	Rural	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet
Drop-out Rate										
* Penta1-Penta3	1.9	1.8	1.9	2.5	1.7	2.2	2.0	1.0	1.6	4.3
* Penta1-MR	5.9	6.5	5.7	5.7	5.9	6.8	6.1	2.8	6.0	8.6
Incidence of Invalid Dose										
* Invalid Penta1	3.4	4.6	3.1	3.9	3.3	3.4	3.6	2.6	3.6	2.6
* Invalid Penta2	5.5	7.0	5.2	6.3	5.5	5.6	4.8	4.9	5.6	4.0
* Invalid Penta3	6.8	8.3	6.4	7.4	6.4	7.3	6.4	5.8	6.7	5.3
* Invalid MR	3.4	4.2	3.3	3.1	3.2	4.3	3.3	3.2	3.6	3.3
Card Retention Rate	83.4	75.8	85.6	82.9	82.7	76.9	86.2	86.8	91.1	84.9
Measles Second Dose (MSD) Vaccination Coverage among 18-29 Months Old Children										
* Crude MSD Coverage	80.5	82.0	80.2	84.5	77.9	80.2	81.9	88.2	79.7	71.1
* Valid MSD Coverage	70.4	67.6	71	74.7	70	69.1	72.6	77.9	68.1	62

Indicators	National	Urban	Rural	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet
TT Vaccination Coverage among Mothers with Children 0-11 Months Old										
* Crude TT1	97.6	97.5	97.6	98	96.9	97.3	98.2	99	98.3	91
* Crude TT2	97.6	97.5	97.6	97.7	96.9	97.3	97.9	99	98.3	91
* Crude TT3	88.3	87	88.7	85.5	88.8	86.6	88.9	92.4	90.5	78.6
* Crude TT4	75.6	74.9	75.9	69.9	76.7	74.1	75.4	79.8	76.1	67.5
* Crude TT5	60.5	61.5	60.3	56.1	61.9	59	58.3	63.4	60.1	54.2
* Valid TT1	97.6	97.5	97.7	98	96.9	97.3	98.2	99	98.3	91
* Valid TT2	97.6	97.5	97.6	97.7	96.9	97.3	97.9	99	98.3	91
* Valid TT3	85	83.7	85.5	80.8	85.2	83.3	85.9	89.7	87.6	76.2
* Valid TT4	68.9	69.4	68.9	62.2	68.3	67.2	69.1	74.7	70.4	61.7
* Valid TT5	49.8	52.6	49.3	44.7	49.6	47.8	48.8	54.8	51.5	46.1
Children Protected at Birth	92.8	91.3	93.1	95	94.5	91.6	94.4	95	92.2	88.4
TT5 Vaccination Coverage among Women 18-49 Years Old										
* Crude TT1	95.1	94.9	95.2	93.7	94.5	94.6	96.8	96.1	96.3	89.3
* Crude TT2	93.2	92.9	93.4	92	92.7	92.3	94.9	94.4	95.2	87.0
* Crude TT3	85.9	85.6	86.1	82.5	85.1	85	87.7	88.2	89.2	78.7
* Crude TT4	72.9	71.8	73.3	68.2	72.7	71.6	75	76.1	76	68.3
* Crude TT5	57.1	57.7	57	51.6	57.3	56.1	59.3	61.2	58.6	53.1
* Valid TT1	95.1	94.9	95.2	93.7	94.5	94.6	96.8	96.1	96.3	89.3
* Valid TT2	93.2	92.9	93.4	92	92.7	92.3	94.9	94.4	95.2	87.0
* Valid TT3	85.4	85.1	85.6	81.6	84.6	84.5	87.4	87.5	88.5	78.0
* Valid TT4	70.8	70.4	71	65.4	70.4	69.4	73.5	74.5	73.9	66.5
* Valid TT5	53.2	55	52.9	48.5	53.6	52.5	55.2	57.4	54.9	48.4

CHAPTER 1

Introduction

INTRODUCTION

1.1 PROFILE OF BANGLADESH

History

Bangladesh emerged as an independent sovereign country in 1971, following a nine-month war of liberation, in which 3 million people died.

Geographical location

Located in Southern Asia, Bangladesh is bordered by India to the north, west and east, Myanmar to the south-east, and the Bay of Bengal to the south. The country has a total land Area of 12 Months of 147,570 square kilometers (56,977 square miles). Rather a low-lying country and occupying one of the largest river deltas in the world, Bangladesh is comprised primarily of floodplains, with scattered hills in its eastern and northern parts.

Religion and Culture

Approximately 89 percent of the population is Muslim, with the rest of the population comprised of Hindus (9.6 percent), Buddhists (0.6 percent), and Christians (0.3 percent). Although over 98 percent of the people speak Bangla, English is widely spoken, as well. The country's rich cultural traditions are found in its archaeological sites, sculptures, terracotta, architecture, museums, archives, libraries, classical music, dance, paintings, dramas, folk arts, festivals, and ethnic diversities.

Population and Demography

As of 1 July 2011, the population of Bangladesh was 151 million. With an annual population growth of 1.37 percent, the estimated mid-year population in 2014 was 156 million (Bangladesh Bureau of Statistics, 2011). Bangladesh is one of the most densely-populated countries in the world, with 1,203 people living per square km. Approximately 26 percent of the population lives in urban areas. The average household size is 4.5, and life expectancy at birth for both the sexes is 70 years (WB 2012).

Localities

Bangladesh is divided into seven administrative divisions, in which there are 64 districts, with each district is subdivided into a number of upazilas, which in turn consist of several unions. Under each union there are nine wards. Again, there are several villages in one ward. The city corporations and municipalities are denoted as urban areas. At present there are 11 city corporations and 322 municipalities in the country. The city corporations are divided into zones and wards. In each ward of the city corporation, there are several paras/mohallas. Similarly, each municipality is divided into different wards, also with several paras/mohallas each.

1.2 BACKGROUND OF EPI

In Bangladesh, EPI was inaugurated in the year 1979. However, the national vaccination coverage remained less than 2 percent until 1985. Committing to the Global Universal Child Immunization Initiative, the Government of Bangladesh (GoB) began a phased process of EPI intensification during 1985–1990, with

the aim of vaccinating all infants against six vaccine-preventable diseases. In the course of time, new vaccines were introduced into the routine vaccination schedule under EPI in Bangladesh. In the last five years, EPI has introduced three antigens into the routine vaccination schedule: 1) pentavalent vaccine (DPT+Hep-B+Hib), replacing DPT and monovalent Hep-B; 2) measles and rubella (MR) vaccine, targeting 9-month-old children and 15-year-old adolescent girls, and 3) Measles Second Dose (MSD) at 15-months of age.

At present, the full course of childhood vaccines under EPI in Bangladesh consists of three doses of pentavalent vaccine (diphtheria, pertussis, tetanus, hepatitis B, and *Haemophilus influenza* type b), four doses of oral polio vaccine, one dose of Bacille Calmette-Guérin vaccine against tuberculosis, one dose of measles-rubella, and one dose of MSD vaccine. Moreover, EPI Bangladesh included TT vaccination for 15-49-year-old women and MR vaccination for 16-17-year-old adolescent girls. In rural areas, the EPI programme is implemented by the Ministry of Health and Family Welfare (MoHFW), while in urban communities, the programme is implemented by the Ministry of Local Government, Rural Development and Cooperatives; MoHFW oversees vaccines and other logistics throughout the country.

Among rural communities, the existing immunization programme strategy is based on a model of eight outreach sites per ward (old), covering two vaccination sessions per week. At the village level, vaccinations are administered by health assistants with the help of Family Welfare Assistants appointed by MoHFW. Vaccination services in urban areas are provided through a public-private partnership. Although the city corporations (CCs) and the municipal governments are responsible for providing EPI services, 95 percent of the vaccinations are conducted by different national-level NGOs, with the remaining 5 percent being delivered by CCs and municipalities. The CCs assist NGOs in planning, monitoring, and evaluation. As with rural areas, vaccines are mainly provided in this service delivery system through outreach sites (EPI centres) in urban areas; no vaccinations are administered at home.

The government-led programme of EPI is a noteworthy example of successful collaborative efforts between the UNICEF, WHO, and other development partners. The tremendous success of EPI in Bangladesh contributes significantly to achieving Millennium Development Goal 4: reducing child mortality rates. For its outstanding performance in achieving Millennium Development Goal Goal 4, Bangladesh obtained a UN award in 2010.

To uphold the status, the Government of Bangladesh, UNICEF, WHO, and other stakeholders are making continuous efforts to identify obstacles or challenges and then ways forward to overcome the barriers for achieving the desired goals by meeting both the coverage and the disease reduction objectives. To meet the childhood vaccination coverage objective, EPI has targeted full vaccination coverage at 90 percent nationally and 85 percent in all districts and TT5 coverage among women of child-bearing age at 80 percent nationally and 75 percent at each district by 2016. The establishment of an EPI micro plan (evidence-based strategic planning) is one of the most successful key strategies in this aspect. Additionally, EPI takes the initiative for conducting supplementary immunization activities, like National Immunization Days (NIDs), measles catch-up campaigns, measles follow-up campaigns, MR campaign, etc., to supplement the routine immunization programme.

For the successful implementation of the different activities, EPI has incorporated various strategies, based on past experiences, as well as on the scientific evaluation of the programme periodically. The Coverage Evaluation Survey has proved to be the essential means for monitoring and evaluating the programme. Since 1991, EPI has conducted a CES every year, with the exceptions of 1996, 2004, 2008, and 2012. The last CES (20th CES) was conducted in 2014.

1.3 OBJECTIVES OF EPI CES

The objectives of CES 2014 were to assess the following:

- Childhood vaccination coverage under routine EPI
- Measles Second Dose (MSD) vaccination coverage among 18-29-months-old children under routine EPI
- TT Vaccination Coverage among the women having children less than one year old to determine the status of protection against tetanus of children at birth
- TT5 coverage among women 18-49 years of age to assess the progress of the TT5 programme
- MR vaccination coverage among 16-17 year-old adolescent girls under routine EPI
- OPV coverage during the 21st NIDs and Vitamin A during the Vitamin A Plus campaign held on April 5, 2014
- The immunization programme quantity (crude and valid coverages, coverage by age of 12 months, drop-out rates) and quality (percentage of invalid doses, vaccination card availability, post-vaccination abscesses, other AEFI, reasons for drop outs, etc.)
- Trends in the vaccination coverage and drop-out rates at the national, divisional, city corporation and district levels
- Identify the reasons for failure to vaccinate the children through NID and Vitamin A campaigns

As a routine EPI performance evaluation, CES 2014 was conducted by the Center for Social and Market Research (CSMR), Bangladesh and funded by UNICEF. Technical collaborative support was provided by UNICEF, WHO and EPI. CSMR furnished the following tasks: selection sample clusters; development of data collection instruments (questionnaires), pre-testing and finalization by obtaining approval from UNICEF, WHO and EPI-DGHS; recruitment and training for the survey teams; and field activity planning and implementation. CSMR was also accountable for data analysis and report writing.

1.4 ORGANIZATION OF THE REPORT

The CES 2014 report is organized in line with the objectives of the study, beginning with the Executive Summary as a stand-alone and relatively comprehensive write-up that contains all relevant key findings and a brief analysis of these. The report then consists of 11 chapters. Chapter 1 introduces the report. The objectives of the study are also described in this chapter. Chapter 2 deals with the methodological aspects, which include data collection techniques, sample size determination, distribution of sample size, and sampling. Chapter 3 presents the findings of Childhood Vaccination Coverage survey. Chapter 4 describes the results gathered from the MSD Coverage survey. Chapter 5 describes the findings of TT vaccination coverage of mothers with children 0-11 months old. Chapter 6 presents the findings of the TT5 vaccination coverage survey of women aged 18-49 years. Chapter 7 describes the situation of maternal and newborn health obtained from the Maternal and Neonatal Health Survey. Chapter 8 discusses MR coverage among adolescent girls. Chapter 9 focuses on the OPV coverage during the 21st NID and MR campaigns. The coverage of Vitamin A during the Vitamin A Plus Campaign is examined in Chapter 10. The major key findings and recommendations of the study are then presented in Chapter 11.

CHAPTER 2

Methodology

METHODOLOGY

2.1 SURVEY DESIGN

The World Health Organization's (WHO) recommended 30 clusters sampling methodology was meticulously followed in CES 2014 to ensure representative samples in different strata, such as districts, divisions, and city corporations. The survey was quantitative in nature. A total of 77 survey units were covered countrywide, included in the following: 7 divisions (Dhaka, Chittagong, Rajshahi, Khulna, Barisal, Sylhet, and Rangpur); 11 city corporations (Dhaka North City Corporation, Dhaka South City Corporation, Chittagong City Corporation, Rajshahi City Corporation, Khulna City Corporation, Barisal City Corporation, Narayanganj City Corporation, Rangpur City Corporation, Comilla City Corporation, and Gazipur City Corporation); and 2 slums (1 in Dhaka City Corporation and the other 1 in Chittagong City Corporation).

2.2 INDIVIDUAL SURVEYS

Under CES 2014, the following seven individual surveys were conducted:

- Childhood Vaccination Coverage Survey
- Measles Second Dose Coverage Survey
- Tetanus Toxoid Vaccination Coverage Survey (TT Survey) among mothers with 0-11-months-old children
- Tetanus Toxoid Vaccination Coverage Survey among the women who were 18-49 years old (TT5 Survey)
- MR Coverage Survey among adolescent girls aged 16-17 years
- OPV Coverage Survey among 0-59 months old children
- Vitamin A Coverage Survey among the 6-59 months old children

2.3 SURVEY SUBJECT

As has been mentioned earlier, CES 2014 included seven individual surveys targeting eight different survey subjects. The survey subjects are shown below by individual survey.

Childhood Vaccination Coverage Survey: According to EPI programme, a child should be vaccinated with all eligible antigens within 1 year after its birth. Therefore, children who were aged between 12 and 23 months and were born between 1 July 2012 and 30 June 2013 were one of the subjects of CES 2014.

Measles Second Dose (MSD) Coverage Survey: MSD should be received between 15 and 18 months after one's birth. Therefore, children who were aged between 18 and 29 months and were born between 01 January 2012 and 31 December 2012 were included in CES 2014.

TT Survey: Bangladesh achieved neonatal tetanus (NT) elimination status in 2008. To uphold and sustain this elimination status, EPI monitored this status through assessing mothers' TT status. Therefore, mothers who had 0-11-month-old children and who delivered their children between 01 July 2013 and 30 June 2014 were the subjects of TT survey.

TT5 Coverage Survey: In the case of women, TT vaccination starts with the first dose after one attains the age of 15 years, and it takes 2 years and 7 months to complete all 5 doses of TT vaccine. To estimate TT5 coverage, women aged between 18-49 years were included in TT5 Vaccination Coverage Survey.



OPV Coverage Survey: Each year, Bangladesh observes NIDs to uphold the country's polio-free status. 0-59 months' cold children are target population during NIDs. The last NIDs were held between December 2013 and February 2014. To estimate the OPV coverage during the NIDs and MR campaign, CES 2014 included children aged between 0-59 months and those who were born between 21 January 2009 and 26 December 2013.

Measles and Rubella (MR) Vaccination Coverage Survey: Adolescent girls aged between 16-17 years were the subjects of the CES 2014 MR Vaccination Coverage Survey.

Vitamin A Coverage Survey: Two types of survey subjects were included in CES 2014:

1. Children who were aged between 12 and 59 months and were born between 5 June 2007 and 3 June 2011, and
2. Children who were aged between 6 and 11 months and were born between 4 June 2011 and 5 December 2011.

2.4 SAMPLE SIZE

The sample size of CES 2014 was calculated separately for each survey unit by following the WHO 30 cluster survey methodology. According to WHO 30 cluster sampling methodology, 30 clusters with seven survey subjects in each district/city corporation are considered to be representative to estimate the coverage by survey unit. Therefore, $30 \times 7 = 210$ samples were recommended to produce district/city corporation survey unit-wise result. Based on these calculations, a total of 129,360 samples were estimated for 77 survey units in 8 different target groups in CES 2014. The following table shows the distribution of samples by survey units as well as the target audience.

Table 2: Distribution of Survey Units, Clusters and Survey Subjects by Division/City Corporation Areas

Divisions/City Corporations/Slum areas	No. of survey units	No. of clusters	No. of 12-23 months old children (Child)	No. of 18-29 months old children (MSD)	No. of mothers with children of 0-11 months old (TT)	No. of women aged 18-49 years (TT5)	No. of adolescent girls aged 16-17 years (MR)	No. of 0-59 months old children (NID)	No. of 6-11 months old children (Vitamin A 1,00,000 IU)	No. of 12-59 months old children (Vitamin A capsule – 2,00,000 IU)
Barisal Division	6	180	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260
Chittagong Division	11	330	2,310	2,310	2,310	2,310	2,310	2,310	2,310	2,310
Dhaka Division	17	510	3,570	3,570	3,570	3,570	3,570	3,570	3,570	3,570
Khulna Division	10	300	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100
Rajshahi Division	8	240	1,680	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	1,680
Sylhet Division	4	120	840	840	840	840	840	840	840	840
City Corporation	11	330	2,310	2,310	2,310	2,310	2,310	2,310	2,310	2,310
Slum of DCC	1	30	210	210	210	210	210	210	210	210
Slum of CCC	1	30	210	210	210	210	210	210	210	210
Total	77	2,310	16,170	16,170	16,170	16,170	16,170	16,170	16,170	16,170

2.5 SAMPLING

Selection of Primary Sampling Units and Survey Subjects

Like previous CESs, a Systematic Random Sampling technique was followed in CES 2014. The Bangladesh Bureau of Statistics (BBS) has developed the list of all mouzas and mohallas. Using this list, a sampling frame with all mouzas and mohallas in a district/city corporation was prepared, from which 30 mouzas/mohallas were selected for each survey unit. In total, 2,310 clusters were selected country-wide. The detailed sampling technique is discussed below.

The following four steps were followed for selecting the samples under CES 2014:

Step 1: Taking into consideration all the mouzas and mohallas available, a sampling frame was prepared. Then, 30 mouzas/mohallas were selected by using the systematic random sampling technique with Probability Proportion to Size (PPS).

Step 2: Following the segmentation method, a mouza/mohalla was divided into segments in such a way that each segment comprises 120 households. Then one segment was selected randomly and was considered to be the final Primary Sampling Units of CES 2014.

Step 3: A list of all eligible respondents was prepared separately for each category of survey through a household listing exercise. Finally, seven survey subjects were selected randomly from each category and administered the survey questionnaire.

Step 4: Interviews were conducted with the selected samples through a pre-designed questionnaire.

2.6 QUESTIONNAIRE

Structured questionnaires were used to obtain data for CES 2014. Each questionnaire was pre-tested to check the consistency, language, time, and other difficulties that would be encountered during the interviews. Findings from pre-testing were incorporated into the questionnaire and were finalized with technical assistance from UNICEF, WHO, and EPI-DGHS. Seven separate survey tools were prepared for seven individual surveys: Child form; MSD form; Maternal and Neonatal Health form; TT5 form; MR form; OPV form; and Vitamin A Plus Campaign form. In addition, the household listing form and sampling frame for each target group were prepared and used. All types of questionnaires are attached in the Appendix as ready reference.

2.7 IMPLEMENTATION OF THE SURVEY

2.7.1 Recruitment

Recruitment of quality control officers, supervisors, and interviewers took place in July 2014. One's educational attainment, previous experiences in conducting CES or similar kind of study, honesty and sincerity, team spirit and ability to work in any place for longer period, results of written test, mock test, and field test as well as his/her performance during the period of training were considered. The best performers were selected as Quality Control Officers and Supervisors.



2.7.2 Training

A seven-day exclusive participatory training programme was held for the field personnel from 6 to 12 August 2014. The training programme included classroom lectures, using multimedia, demonstration interviews, role-playing, field practices, and reviewing of problems. Present in the training programme as resource persons were Director, Primary Health Care and Line Director Maternal, Neonatal, Child & Adolescent Health; Programme Manager, EPI and Surveillance; Assistant Director, EPI and Surveillance; Deputy Programme Manager, EPI & Surveillance; Deputy Civil Surgeon, Dhaka; Deputy Programme Manager, Field Services, EPI; Deputy Programme Manager, Training, EPI; Training Officer, EPI; and Statistical Officer, EPI. Additionally, the Immunization Specialist from UNICEF and National Professional Officer, EPI Surveillance and Data Manager from WHO also provided technical input as resource persons.

2.7.3 Fieldwork/Data Collection

The data collection for CES 2014 was carried out over a period of 80 days, starting from August 17 and ending November 10 2014. Forty-three teams were involved in the data collection process, with each team comprised of three members: one Supervisor and two Field Investigators. Moreover, 20 interviewers and 10 supervisors worked as reserve field resources. In addition to the supervisors, 10 Quality Control Officers were involved in maintaining quality control, and one consultant was engaged to monitor and check data quality from time to time over the entire period of field activities. Field visits were also accompanied by personnel from EPI-Directorate General of Health Services, UNICEF, and WHO to monitor the field activities.

2.7.4 Data Management and Statistical Analysis

A Statistical Package for Social Science was used for analyzing the data. A series of activities were undertaken to manage and analyze the data, which included the following: data cleaning, processing, coding, data punching, quality control, and final analysis to obtain the required output. Data obtained from the field under CES 2014 were handled by using the database software FOPRO version 2.6, and cleaning was done by using the software Clipper Version 5.3.

2.8 WEIGHTING

Weight was assigned for estimating the national coverage for each indicator of every survey component.

CHAPTER 3

Childhood Vaccination Coverage

CHILDHOOD VACCINATION COVERAGE

3.1 CHILDHOOD VACCINATION

Children may inherit some immunity against some specific infections from their mothers to protect themselves, with variant durability, against those diseases. In the course of time, this type of immunity eventually comes to a point where it requires active or passive immunization to have the desired immunity to protect oneself from the specific disease. At present, EPI in Bangladesh deals with vaccines against a number of fatal diseases under the routine childhood vaccination schedule. These diseases are the followings: Childhood Tuberculosis, Diphtheria, Pertussis, Tetanus, Hepatitis B, *Hemophilus Influenza type b*, Poliomyelitis, Measles, and Rubella.

The BCG vaccine provides one protection, against childhood tuberculosis; the Oral Polio Vaccine (OPV) provides protection against Poliomyelitis; the Pentavalent (DPT+Hep-B+Hib) vaccine provides one protection against Diphtheria, Pertussis, Tetanus, Hepatitis B, and *Hemophilus Influenza type b*; and the Measles and Rubella (MR) vaccine provides one protection, against Measles and Rubella. For a quick understanding about the current childhood vaccination schedule under EPI in Bangladesh, the following table provides information about diseases protected by the vaccines, number of dose(s), minimum interval between the doses and starting time.

Table 3: EPI Childhood Vaccination Schedule

Name of Diseases	Name of Vaccine	Number of Doses	Minimum interval between doses	Starting age
Tuberculosis	BCG	1	-	At birth
Diphtheria, Pertussis, Tetanus, Hepatitis-B, Haemophilus Influenza type b(Hib)	Pentavalent (DPT+Hep-B+Hib)	3	4 weeks	6 weeks
Poliomyelitis	OPV	4*	4 weeks	6 weeks
Measles and Rubella	MR	1	-	9 months (270 days)
Measles	Measles Second Dose (MSD)	1	-	15 months

* The 4th dose of OPV is given with the MR vaccine

3.2 CHILDHOOD VACCINATION COVERAGE

A child who has received all the doses of all antigens as recommended in the EPI programme under the childhood vaccination schedule is considered to be fully vaccinated. The EPI has a WHO-recommended vaccination schedule to administer and complete the required doses of all antigens. According to the EPI childhood vaccination schedule, a child should receive all eligible vaccines within one year of age, complying with the recommended minimal age for starting the vaccines and the intervals between the consecutive doses. Two types of coverage – crude and valid – were estimated and analyzed as per WHO guidelines and presented in CES 2014.

Valid coverage informs us that the first dose of a vaccine was given at the recommended age and the recommended minimum interval between doses was maintained. Therefore, any dose of a scheduled vaccine received by a recipient that was administered at the appropriate age and at the minimum time interval between the doses was considered as a valid dose. If any child received all the valid doses within age of 12 months, CES termed it as valid coverage by age of 12 months. And, if s/he received all the valid doses within age of 23 months, CES termed it as valid coverage by age of 23 months. Conversely, the coverage was defined as crude when a child received all the scheduled vaccines, whether or not the recommended starting age or intervals between the doses were complied with as recommended by EPI Bangladesh.

3.3 COVERAGE RATES FROM CARDS AND HISTORY

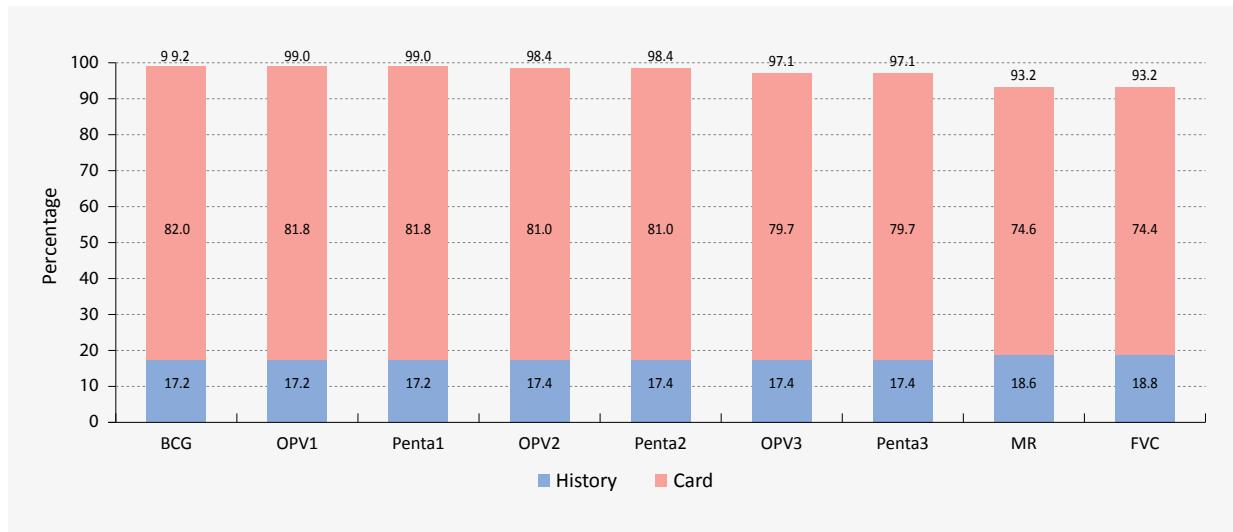
Total coverage is an aggregated result obtained from both vaccination cards and history. Information about CES 2014 was gathered from those two sources: card and history. For children who didn't have a vaccination card, their vaccination information was recorded by taking their history from their mother/caregiver. CES 2014 analyzed the coverage of both the sources separately. The findings are presented below.

3.3.1 Levels of Crude Vaccination Coverage by Age of 23 Months

Crude vaccination coverage was defined as the vaccines given to children when the exact age for starting the vaccination and/or the interval between the doses as recommended in the EPI schedule were or were not met. Information about the child's vaccinations was obtained from children aged 12-23 months, of whom 83.4 percent had vaccination cards. Figure 1 presents crude vaccination coverage separately obtained from two sources: cards and history.

Nationally, 93.2 percent of the children received all the eligible vaccines, irrespective of the appropriate time for starting the antigen and/or the minimum interval between the two doses. Following the order by which the EPI schedule recommended doses, as shown in Figure 1, BCG had the highest coverage (99.2 percent), followed by Penta1, Penta2, Penta3, and MR. The difference between BCG and MR was the most prominent (6 percentage points), while the difference was least prominent between BCG and Penta1 (0.2 percentage point), a pattern common in all the variations of vaccination coverage. The difference gradually narrowed for subsequent doses. The gap in coverage between the two antigens/doses might be caused by the drop outs from subsequent doses.

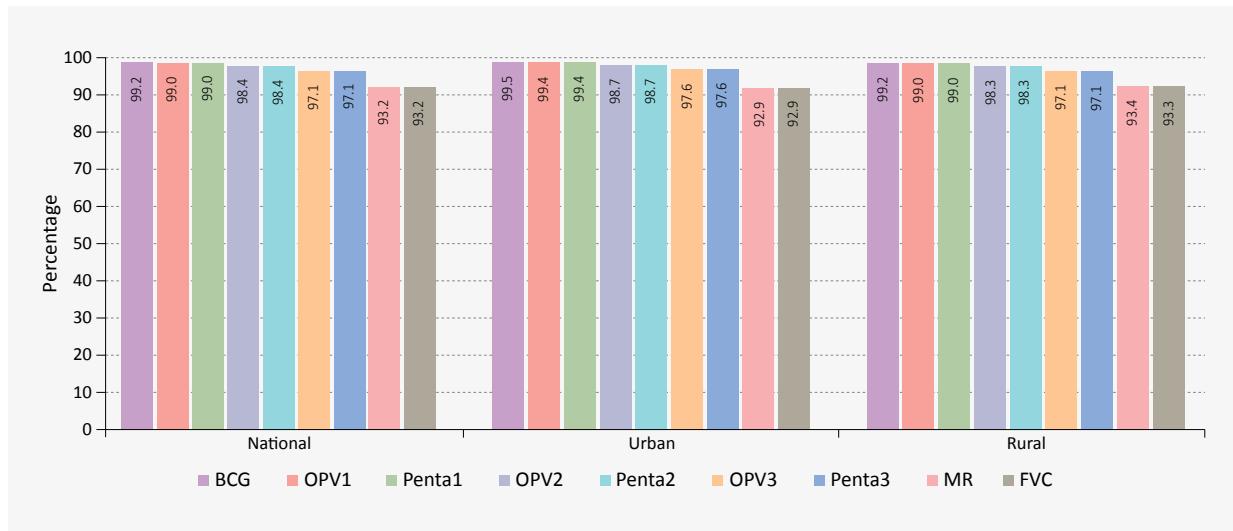
Figure 1: Crude Vaccination Coverage by 23 Months of Age at National Level, by Card and History in 2014



Source: CES 2014

By residence, little variation was observed in crude coverage between rural and urban areas (93.3 percent vs. 92.9 percent) (see Figure 2).

Figure 2: Crude Vaccination Coverage by Age of 23 Months by National, Rural and Urban Areas in 2014



Source: CES 2014

3.3.2 Levels of Crude Vaccination Coverage by Age of 12 Months

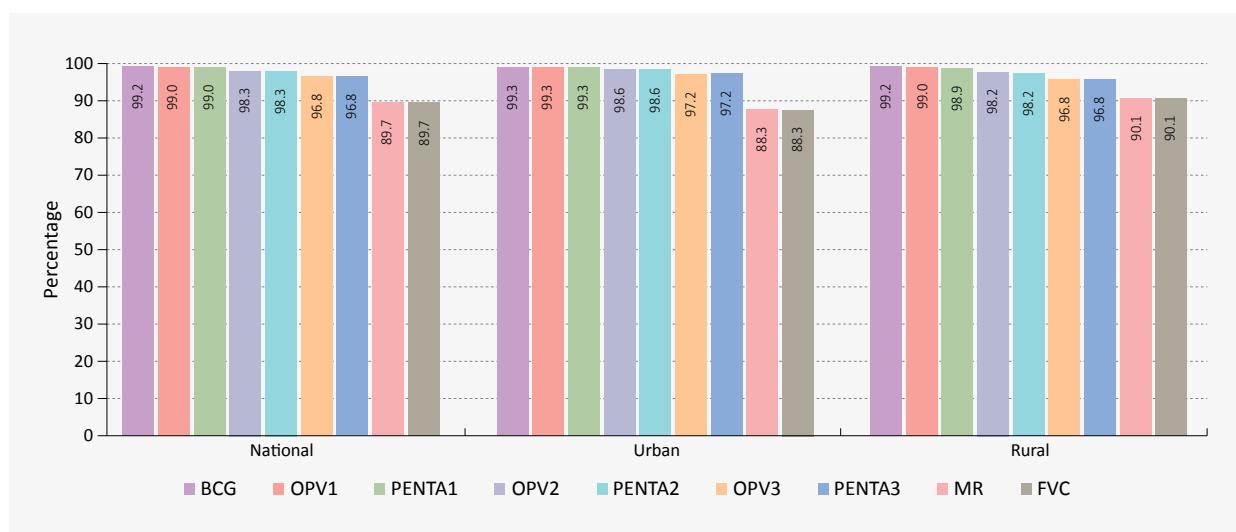
Crude Vaccination Coverage by Age of 12 Months: Ninety percent of children received all eligible vaccines by age of 12 months, irrespective of whether the age for starting the antigen and/or the minimum interval between the consecutive doses was as recommended. Following the order by which the EPI schedule recommended doses, as shown in Figure 3, coverage ranged from BCG at 99.2 percent, with a gradual decrease through to Penta3 at 96.8 percent, and then a 7 percent drop for MR (89.7 percent). Urban-rural analysis shows little variation between rural and urban areas, with rural children slightly more likely to receive the crude vaccine by age of 12 months than children residing in urban areas (90.1 percent vs. 88.3 percent, respectively) (see Figure 4).

Figure 3: Crude Vaccination Coverage by Age of 12 Months at National Level by Card and History in 2014



Source: CES 2014

Figure 4: Crude Vaccination Coverage by Age of 12 Months by National, Rural and Urban Areas in 2014

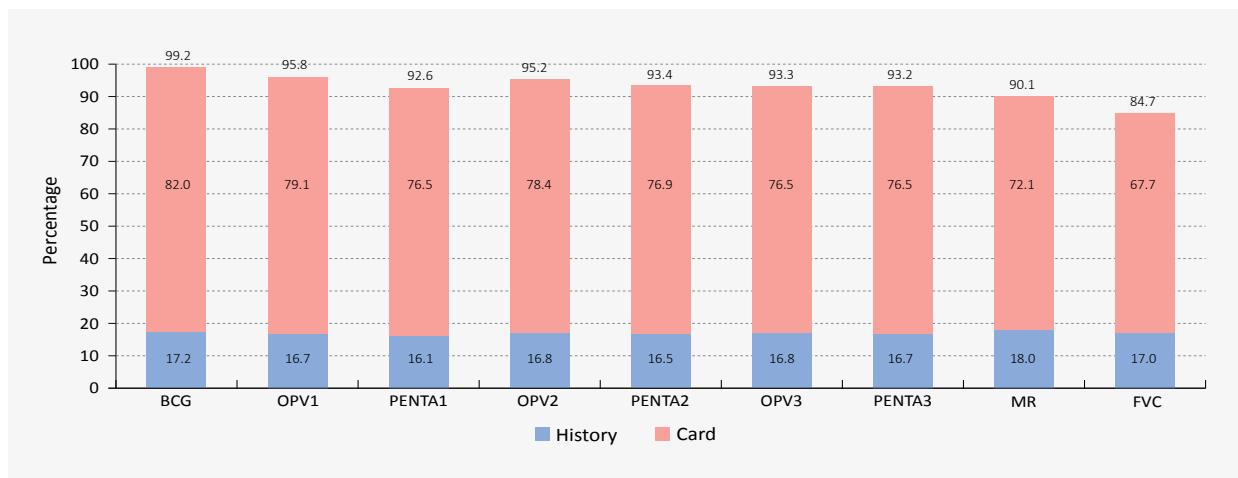


Source: CES 2014

3.3.3 Levels of Valid Vaccination Coverage by Age of 23 Months

Figure 5 presents Valid Vaccination Coverage by age of 23 months. Valid coverage was defined as vaccines received by following the EPI-recommended age and dose interval for each antigen. Nationally, 84.7 percent of the children received all the scheduled doses of all antigens with BCG coverage being at 99.2 percent. Penta1 coverage was 92.6 percent, Penta2 93.4 percent, and Penta3 93.2 percent (the higher numbers for later rates were due to . In contrast, OPV1, OPV2, and OPV3 coverage were 95.8 percent, 95.2 percent, and 93.3 percent, respectively, which were slightly higher than Penta1, Penta2 and Penta3 coverages. Moreover, MR coverage (90.1 percent) was revealed to be 9.1 percentage points lower than BCG (99.2 percent).

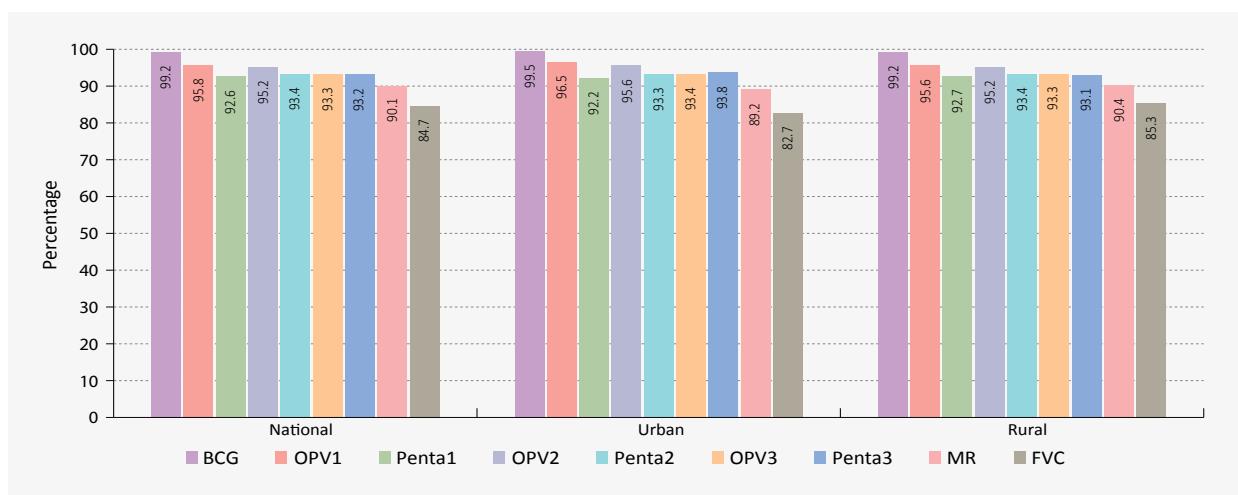
Figure 5: Valid Vaccination Coverage by Age of 23 Months at National Level by Card and History in 2014



Source: CES 2014

By residence, fully valid vaccination coverage was 2.6 percentage points higher in rural areas (85.3 percent), compared to those who resided in urban areas (82.7 percent) (see Figure 6).

Figure 6: Valid Vaccination Coverage by Age of 23 Months by National, Rural and Urban Areas in 2014

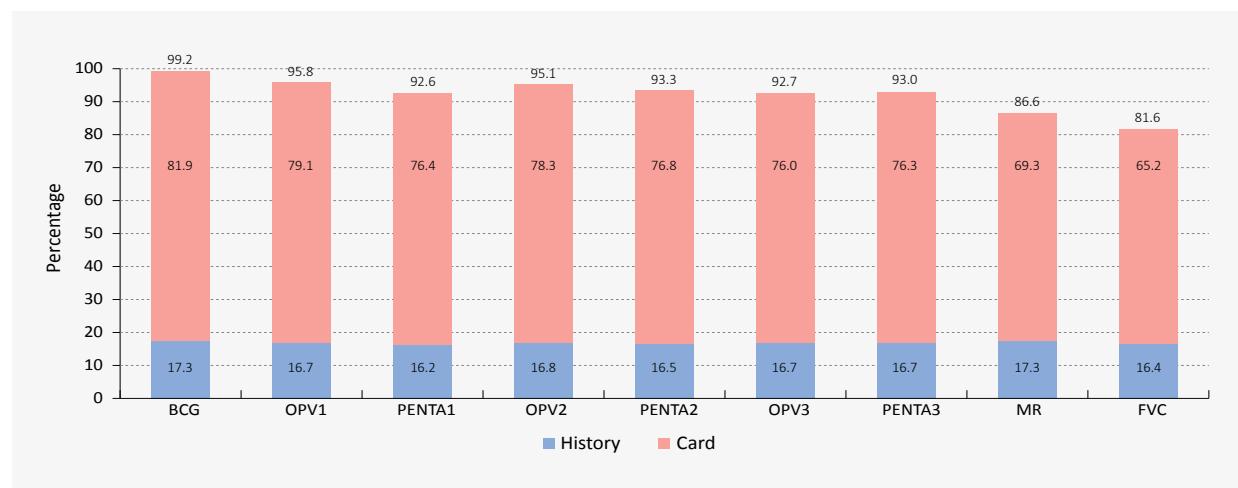


Source: CES 2014

3.3.4 Valid Vaccination Coverage by Age of 12 Months

Figure 7 presents the valid vaccination coverage by age of 12 months. It is evident from the figure that nationally 81.6 percent of children received all the scheduled vaccines by age of 12 months, following EPI-recommended age and dose intervals for each antigen. The drop from BCG coverage (99.2 percent) to the pentavalent administrations (Penta1 (92.6 percent), Penta2 (93.3 percent), and Penta3 (93.0 percent) was greater than for the respective of OPV doses (95.8 percent, 95.1 percent, and 92.7 percent). Valid MR coverage was 12 percent lower than for the BCG coverage. Administering vaccines without following the EPI-recommended minimum age and intervals caused invalid doses, as well as drop-outs from BCG; and the subsequent dose of OPV and Penta vaccines attributed to lower MR coverage.

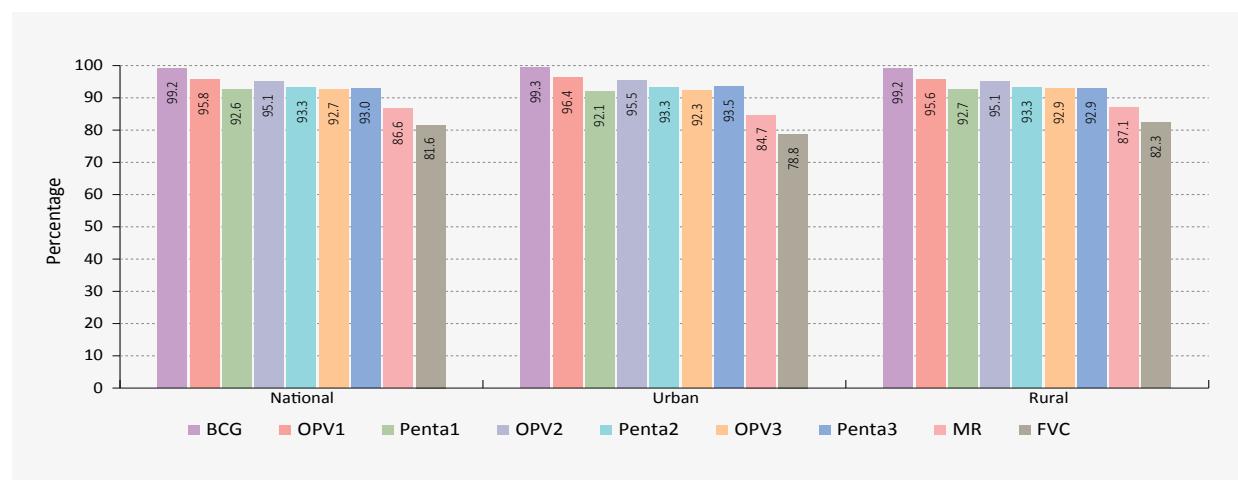
Figure 7: Valid Vaccination Coverage by Age of 12 Months at National Level, by Card and History in 2014



Source: CES 2014

Similar to valid vaccination coverage by age of 23 months, valid coverage by age of 12 months was higher among children in rural areas. Eighty-two percent of children in rural areas received all valid vaccines by age of 12 months, as against 78.8 percent of those residing in urban areas (see Figure 8).

Figure 8: Valid Vaccination Coverage by Age of 12 Months, by National, Rural and Urban Area in 2014

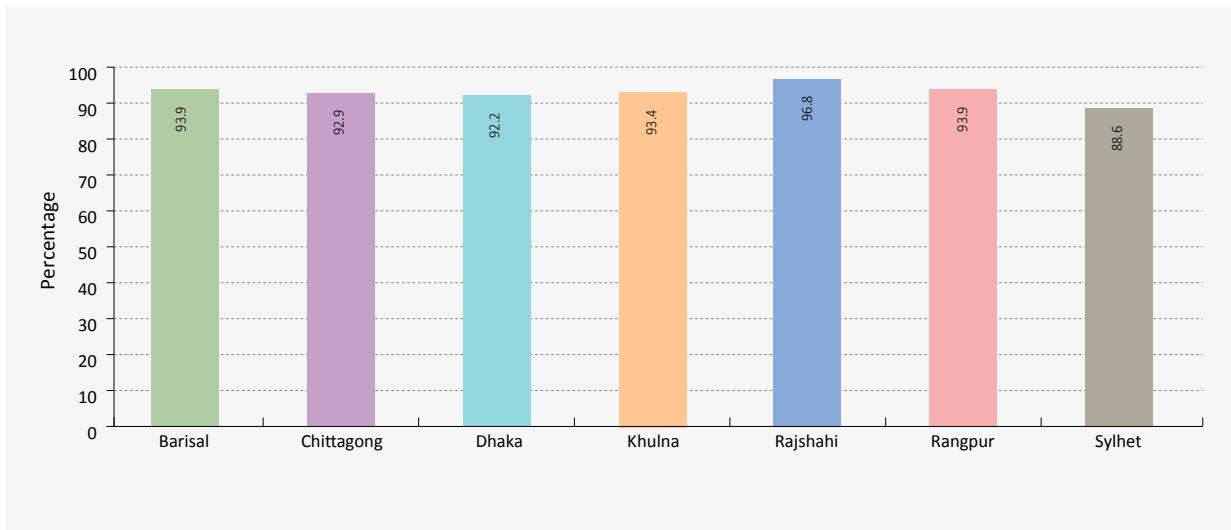


Source: CES 2014

3.3.5 Crude Vaccination Coverage by Age of 23 Months by Division

Figure 9 presents crude vaccination coverage by 23 month age, by division. It shows that crude vaccination coverage was the highest in Rajshahi (96.8 percent) and lowest in Sylhet (88.6 percent) divisions. Elsewhere coverage ranged from 93.9 percent, in both Barisal and Rangpur, to 92.2 percent, in Dhaka division. Survey data indicate that the lower crude coverage in Sylhet division can be attributed to drop-outs from subsequent doses.

Figure 9: Crude Vaccination Coverage by Age of 23 Months, by Division in 2014

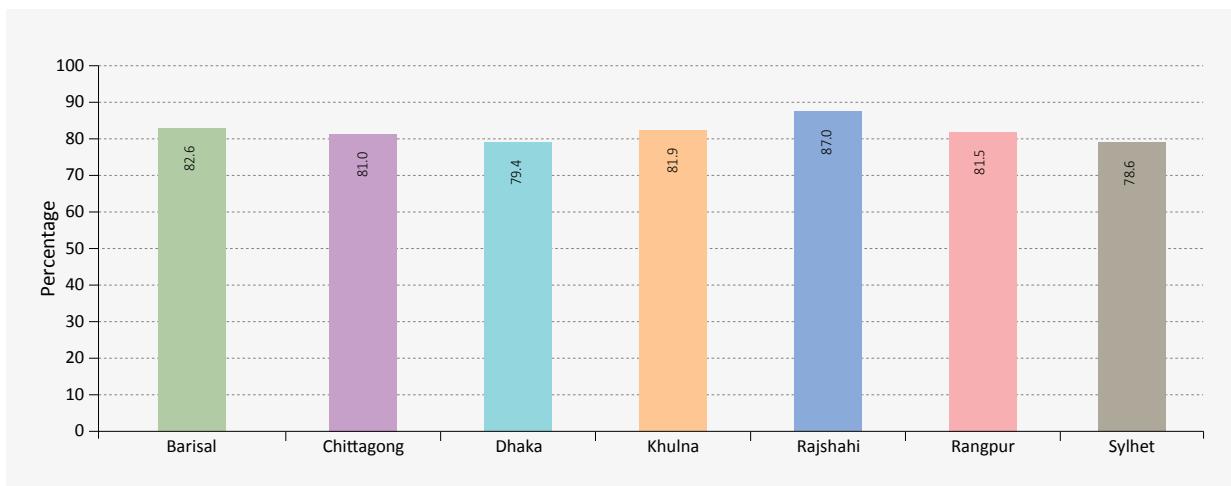


Source: CES 2014

3.3.6 Valid Vaccination Coverage by Age of 12 Months by Division

Valid vaccination coverage by age of 12 months is displayed in Figure 9a. For children age of 23 months, Rajshahi division had the highest valid vaccination coverage (87.0 percent) and Sylhet the lowest (78.6 percent). The coverage analysis and computation of valid coverage show that low drop-out rate as well as the act of administering higher valid dose attributed to higher valid vaccination coverage. Conversely, higher drop-out rate and administering invalid dose contributed to lower valid vaccination coverage.

Figure 9a: Valid Vaccination Coverage by Age of 12 Months, by Division in 2014

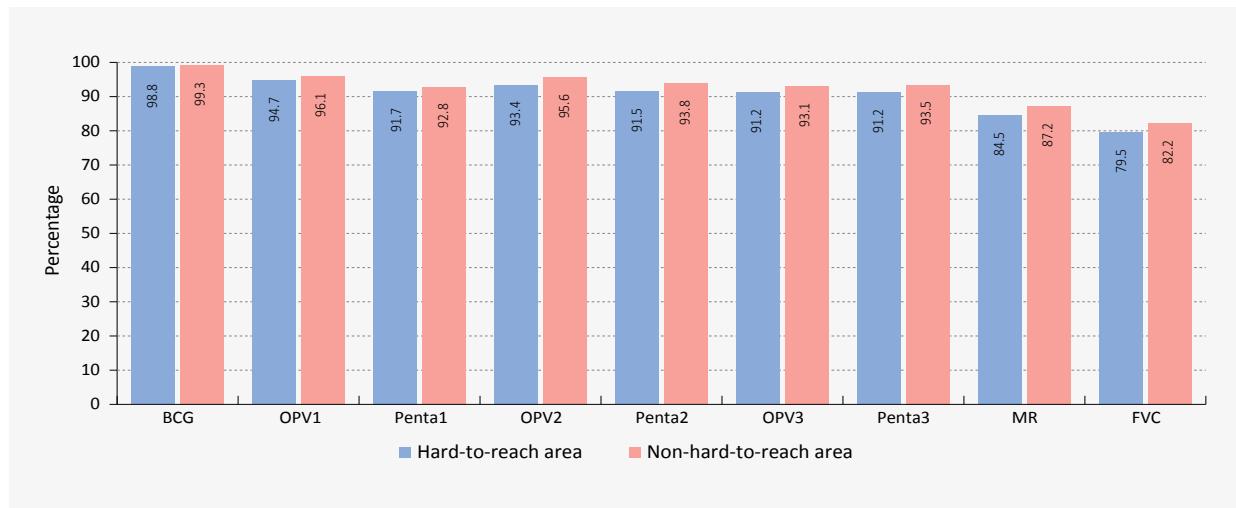


Source: CES 2014

3.3.7 Valid Vaccination Coverage by Hard-to-Reach Areas

A hard-to-reach area was defined as an area where two or more hours is required to reach it from the Upazila headquarters. Figure 10 indicates that the vaccination coverage was about 3 percentage points higher in non-hard-to-reach areas than in hard-to-reach areas, which was true across all antigens.

Figure 10: Valid Vaccination Coverage by Age of 12 Months by Hard-to-Reach Area in 2014



Source: CES 2014

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

Table 4 presents valid vaccination coverage by age of 12 months by background characteristics, such as gender and areas, which showed little variation, and the education of mothers and income of families, which had greater influences.

There was no gender disparity, with valid vaccination coverage at 81.6 percent for both males and females. As for residence, there was a slight difference between rural (82.3 percent) and urban (78.8 percent) areas.

However, regarding the educational attainment of mothers, valid vaccination coverage was higher among those children whose mothers had higher education. Coverage was considerably higher among children whose mothers had more than ten years of education (84.5 percent), as compared to those with five years (80.8 percent) and those with no education (75.5 percent). Beyond the HSC level, additional education actually resulted in a decrease in coverage (81.6 percent for a degree and 83.2 percent for a Masters).

In terms of income, valid vaccination coverage was highest, at 83.5 percent, among children from the highest income group of Tk. 10000+ per month and gradually decreased as income decreased to 79.5 percent in the income group of Tk. 3001-5000 per month.

Moreover, vaccination coverage was also assessed by wealth quintile, which was calculated by using a principal component analysis. Similar to the analysis by income, the vaccination coverage was lower in the poorer wealth quintiles. The coverage was 82.1 percent in the richest wealth quintile, which was actually one percent lower than the next richest quintile, and 80.1 percent in the poorest.

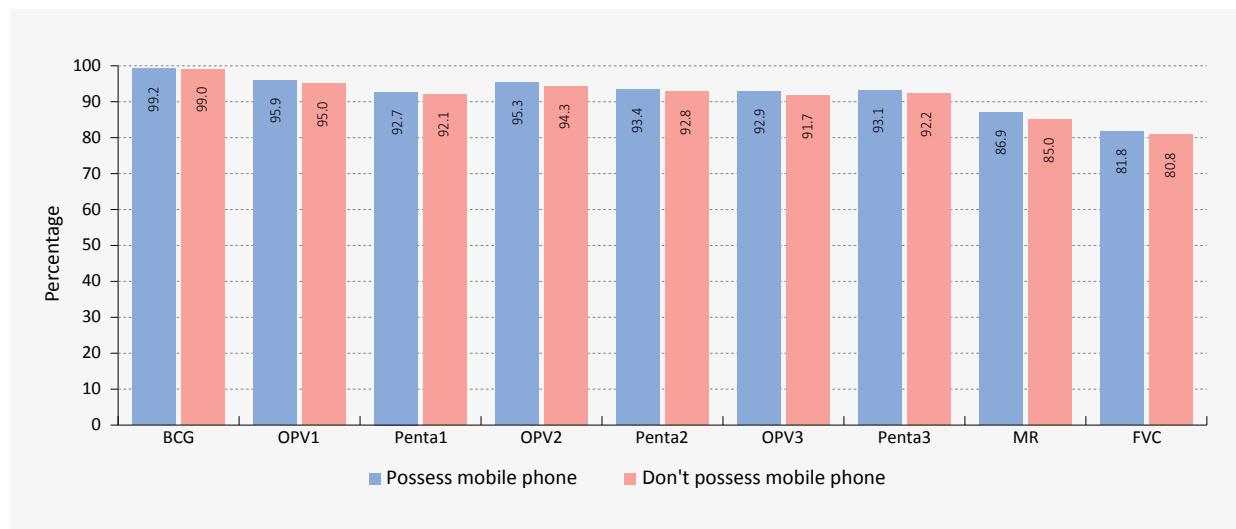
Table 4: Percentage Distribution of Children who received all Valid Vaccine by Age of 12 Months by Background Characteristics

	Valid Coverage								
	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MR	FVC
Sex									
Male	99.2	96.0	92.6	95.4	93.6	93.0	93.1	86.8	81.6
Female	99.2	95.5	92.5	94.9	93.0	92.4	92.9	86.3	81.6
Residence									
Urban	99.3	96.4	92.1	95.5	93.3	92.3	93.5	84.7	78.8
Rural	99.2	95.6	92.7	95.1	93.3	92.9	92.9	87.1	82.3
Education of mothers									
Illiterate	98.7	94.9	91.6	93.0	90.4	89.1	89.8	81.2	75.5
Primary	99.0	95.3	92.2	94.7	93.3	91.7	92.2	85.2	80.8
Secondary	99.3	95.7	92.7	95.3	93.4	93.4	93.5	87.9	82.8
SSC/Dakhil/'O' Level	99.6	97.8	93.7	97.6	96.0	95.8	95.9	90.0	84.5
HSC/Alim/'A' Level	100.0	97.2	95.1	96.6	95.1	95.6	95.3	89.7	85.5
Degree/Fazil	100.0	94.7	90.0	94.7	91.9	91.7	92.5	88.1	81.6
Masters/Kamil	100.0	96.4	93.6	96.4	92.9	97.0	97.0	89.8	83.2
Monthly income in Tk.									
Up to 3000	99.2	95.7	94.1	94.2	92.5	91.7	92.1	82.3	79.8
3001 – 5000	98.9	94.6	90.3	93.7	91.6	91.2	91.7	85.8	79.5
5001 – 7000	99.1	95.6	92.4	94.8	93.1	91.5	91.8	84.5	79.7
7001 - 10000	98.9	95.3	92.6	94.8	93.1	92.5	92.6	85.6	81.2
10000+	99.6	96.6	93.1	96.1	94.0	93.9	94.2	88.9	83.5
Wealth Quintiles									
Poorest	98.9	94.2	91.4	93.4	91.7	90.8	91.1	84.6	80.1
Second	99.0	95.6	92.4	94.6	93.1	92.3	92.3	84.5	79.6
Middle	99.3	96.3	93.7	95.8	94.0	93.1	92.9	87.8	83.0
Fourth	99.3	96.0	92.5	95.7	93.6	93.6	93.8	88.5	83.1
Richest	99.6	96.8	92.8	96.2	94.1	93.7	94.8	87.4	82.1
Hard to reach area									
Yes	98.8	94.7	91.7	93.4	91.5	91.2	91.2	84.5	79.5
No	99.3	96.1	92.8	95.6	93.8	93.1	93.5	87.2	82.2
Ownership of Mobile phone									
Yes	99.2	95.9	92.7	95.3	93.4	92.9	93.1	86.9	81.8
No	99.0	95.0	92.1	94.3	92.8	91.7	92.2	85.0	80.8
National	99.2	95.8	92.6	95.1	93.3	92.7	93.0	86.6	81.6

3.3.9 Valid Vaccination Coverage by Age of 12 Months by the Ownership of Mobile Phones

In CES 2014, vaccination coverage was also analyzed by mobile phone ownership. A slight difference in coverage was noticed between those who owned mobile phones (81.8 percent) and those who did not (80.8 percent). As had been expected, the coverage of each antigen was also lower among those who did not have a mobile phone. The rate of difference varied from 0.2 percent for BCG coverage to 1.9 percent for MR.

Figure 11: Valid vaccination Coverage by the Age of 12 Months by Ownership of Mobile Phone



Source: CES 2014

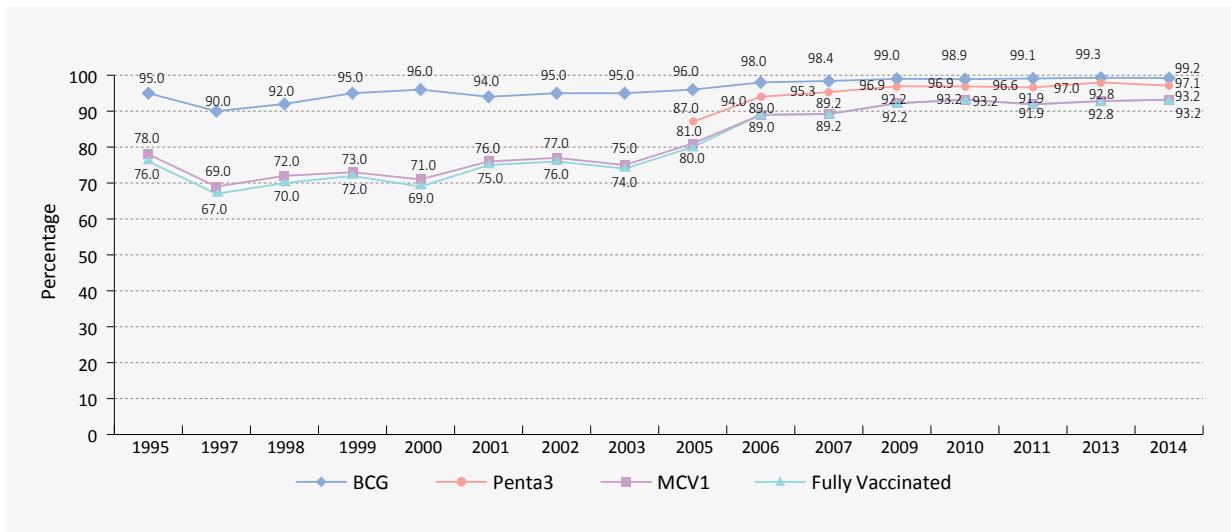
3.3.10 Trends in Coverage

Over the last two decades, enormous changes in terms of programme implementation strategies and the introduction of new vaccines have taken place in the EPI programme. Those changes might act as an influencing factor in achieving higher coverage. CES 2014 analyzed the trend in coverage by using time series data produced in previous CESs since 1995. As discussed below, a tremendous improvement in both crude and valid coverage, with some fluctuation, was observed over time.

Crude Vaccination Coverage by Age of 23 Months

Figure 12 presents the trend in Crude Vaccination Coverage by age of 23 months over the last two decades, from 1995 to 2014. The figure indicates that crude coverage increased by 17 percentage points, beginning at 76.0 percent in 1995, with fluctuations as low as 67.0 percent in 1997 and 69.0 percent in 2000. However, since 2003 the trend has been gradually increasing in coverage, with the exception of 2011, such that the rate in 2014 had climbed to 93.2 percent.

Figure 12: Annual Trend in National Crude Vaccination Coverage by Age of 23 Months from 1995 to 2014

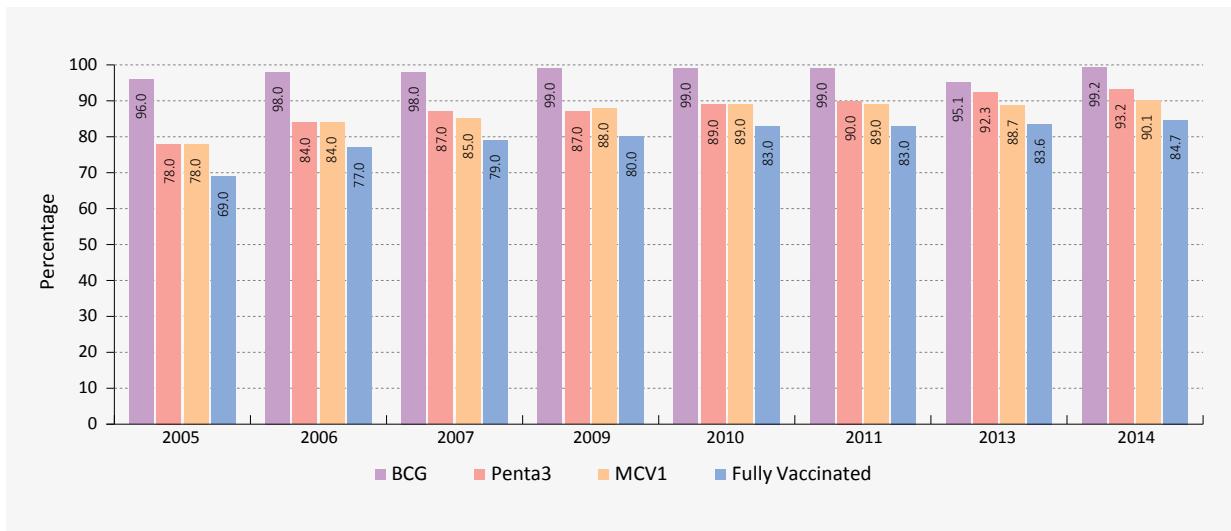


Source: Coverage Evaluation Surveys 1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Valid Vaccination Coverage by Age of 23 Months

Figure 13 shows Valid Vaccination Coverage by age of 23 months since 2005, portraying a gradual improvement in valid vaccination coverage. Valid vaccination coverage increased by 16 percentage points, from 69.0 percent in 2005 to 84.7 percent in 2014.

Figure 13: Annual Trend in National Valid Vaccination Coverage by Age of 23 Months from 2005 to 2014

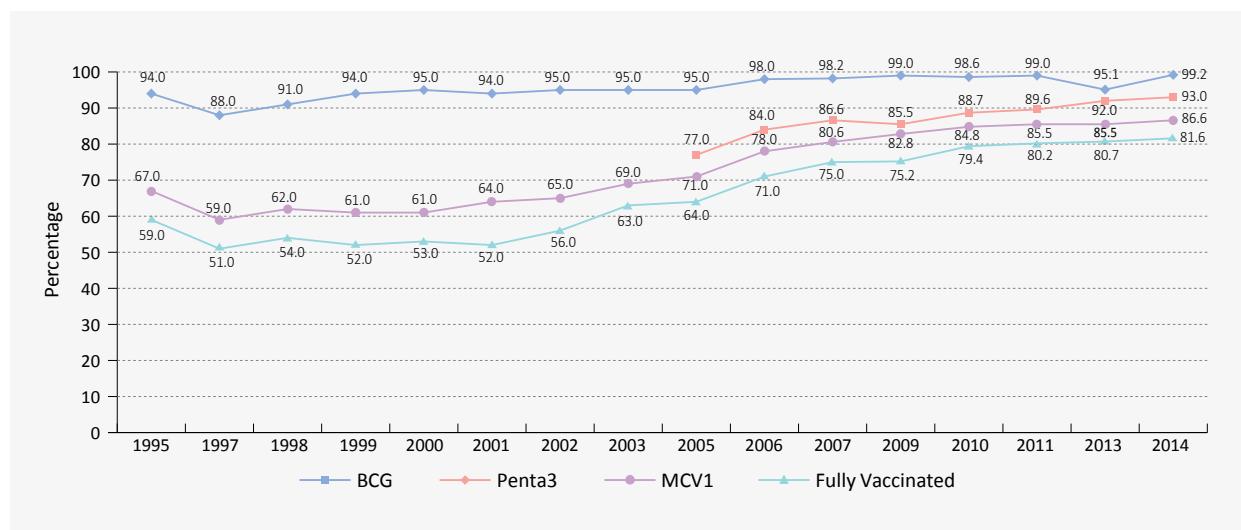


Source: Coverage Evaluation Surveys 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Valid Vaccination Coverage by Age of 12 Months

Improvement of valid coverage by age of 12 months is the ultimate goal of EPI. The programme has set a target of achieving 90.0 percent vaccination coverage nationally and at least 85.0 percent in each district by 2016. Figure 14 indicates the fluctuating and decreasing trend in the coverage from 1995 to 2001. While valid coverage had decreased 7.0 percent between 1995 and 2001, from 59.0 percent to 52.0 percent, a remarkable increase in vaccination coverage has occurred in the last 15 years, increasing to 30 percentage points to 81.6 percent in 2014. The trend analysis indicates that gradual improvement in BCG, Penta3, and Measles/MR coverage attributed to the continuous improvement in the fully valid vaccination coverage.

Figure 14: Annual Trend in National Valid Vaccination Coverage by Age of 12 Months from 1995 to 2014



Source: Coverage Evaluation Surveys 1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

3.3.11 Trends in Vaccination Coverage by Division

Analysis of the divisional trends will help district and divisional health managers understand the performances in vaccination coverage over time in their respective divisions. Similar to the trends in the national coverage, the trends in the divisional coverage are discussed below. For each division, three figures are presented: the first depicts crude coverage, the second valid coverage by age of 23 months, and the third shows valid coverage by age of 12 months.

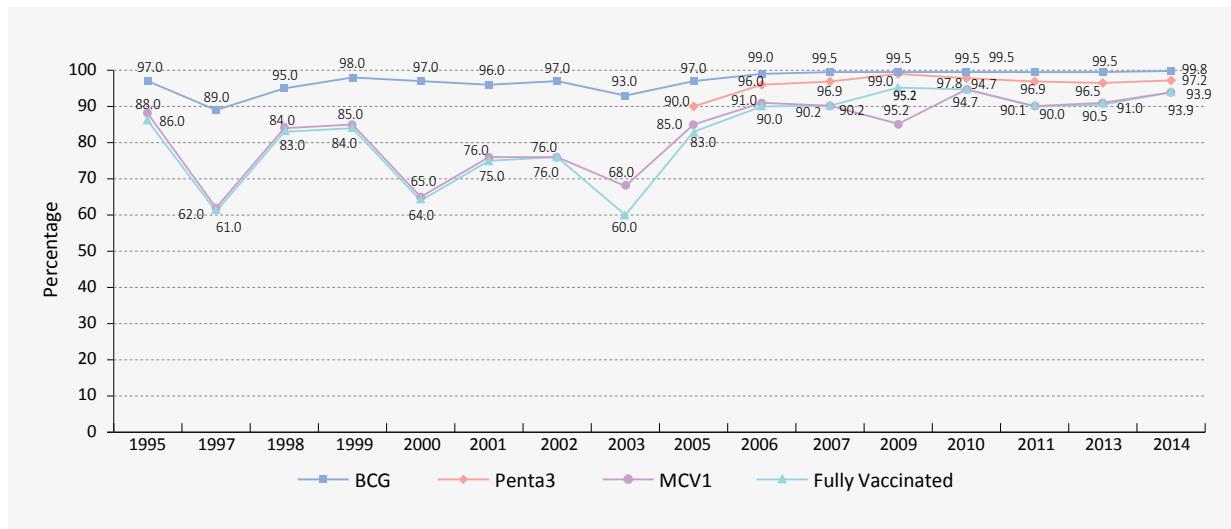
Barisal Division

Crude coverage in Barisal division was found to fluctuate widely between 1995 and 2003, as shown in Figure 15. Crude coverage declined from 86.0 percent in 1995 to 61.0 percent in 1997, then fluctuated from highs of 85.0 percent to lows of 60.0 percent until 2003. A substantial improvement in crude coverage was noticed between 2003 and 2005, when it rose 23 percentage points to 83.0 percent. Since then an uninterrupted increase in the coverage resulted in a rate of 93.9 percent in 2014.

Valid coverage by age of 23 months, as shown in Figure 16, also had a significant increase, of 16.6 percent with some fluctuation, in the last decade. In just the period between CES 2013 and CES 2014, valid coverage increased by 5.4 percentage points.

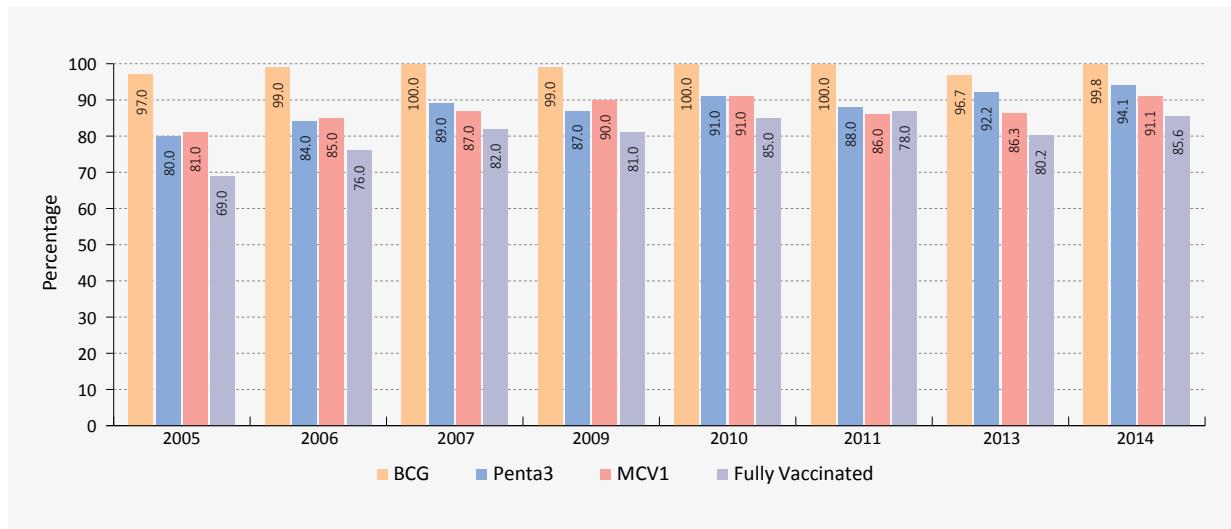
The trend in the valid coverage by age of 12 months, as is presented in Figure 17, was similar to that for crude vaccination coverage, in that it fluctuated considerably between 1995 and 2003, but has steadily increased since then. After a jump from 50.0 percent in 2003 to 67.0 percent in 2005, coverage steadily rose another 15 percentage points to 82.6 percent in 2014.

Figure 15: Annual Trend in Crude Vaccination Coverage by Age of 23 Months in Barisal Division from 1995 to 2014



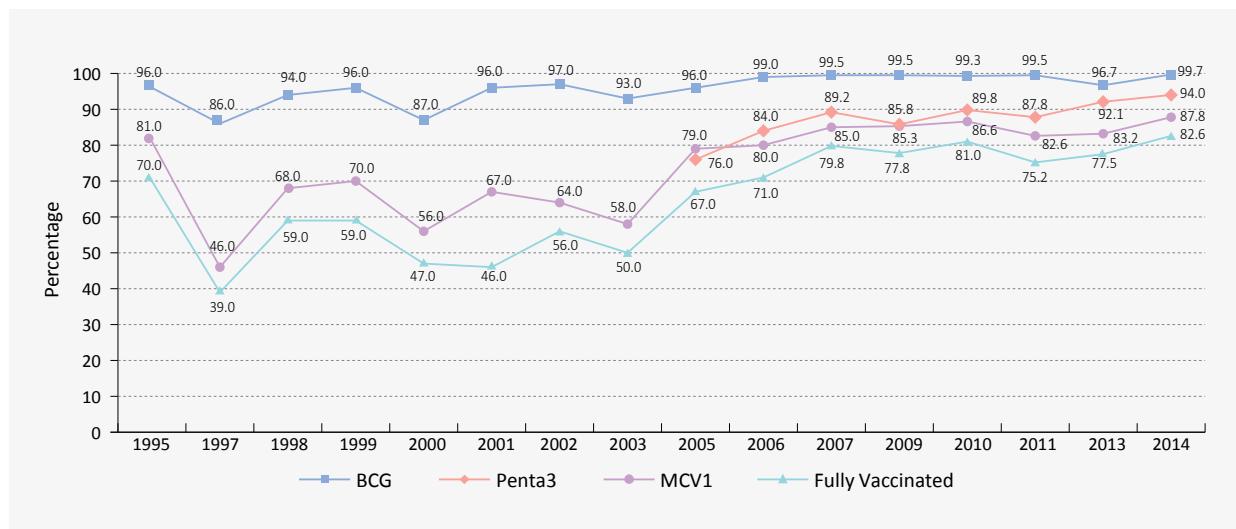
Source: Coverage Evaluation Surveys 1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014
MCV1 replaced Measles after introduction in 2012

Figure 16: Annual Trend in Valid Vaccination Coverage by Age of 23 Months in Barisal Division from 2005 to 2014



Source: Coverage Evaluation Surveys 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Figure 17: Annual Trend in valid Vaccination Coverage by Age of 12 Months in Barisal Division from 1995 to 2014



Source: Coverage Evaluation Surveys 1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

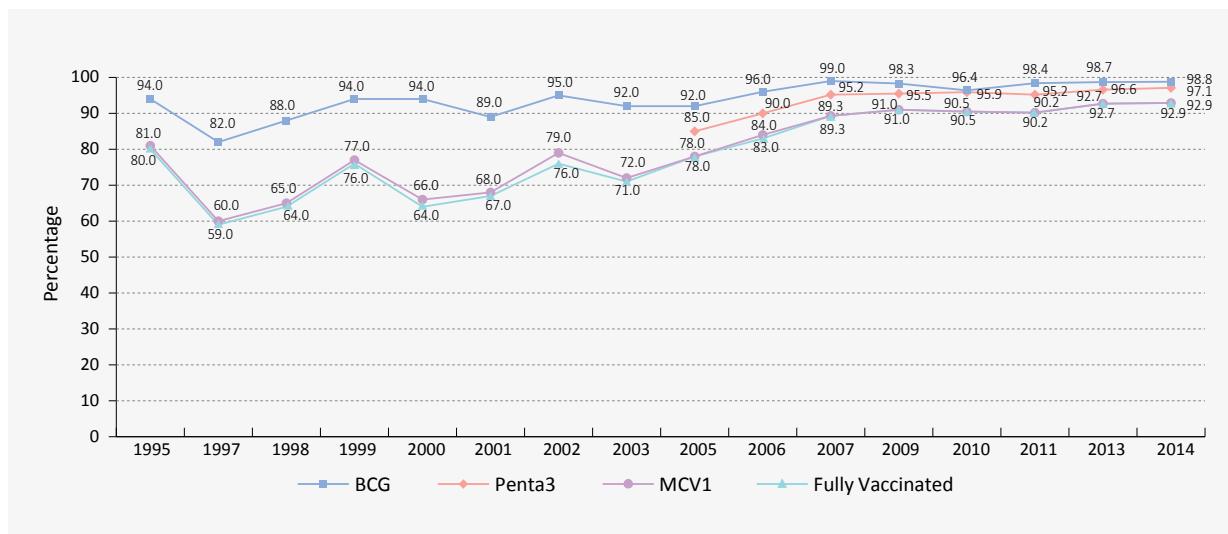
Chittagong Division

The trend in crude vaccination coverage in Chittagong division is presented in Figure 18, which indicates a sharp 21 percentage point decline in coverage between the years 1995 and 1997, to 59.0 percent. After considerable fluctuation until it reached 71.0 percent in 2003, the trend has been towards a substantial, almost uninterrupted improvement with crude coverage increasing another 22 percentage points to 92.9 percent in 2014, and being almost static between CES 2013 and CES 2014.

Figure 19 presents valid coverage by age of 23 months as having increased by 20 percentage points, with some fluctuations, in the last decade. Having started at 65.0 percent in 2005 the rate increased to 84.9 percent in 2014, with an increase of 3 percentage points just between CES 2013 and CES 2014.

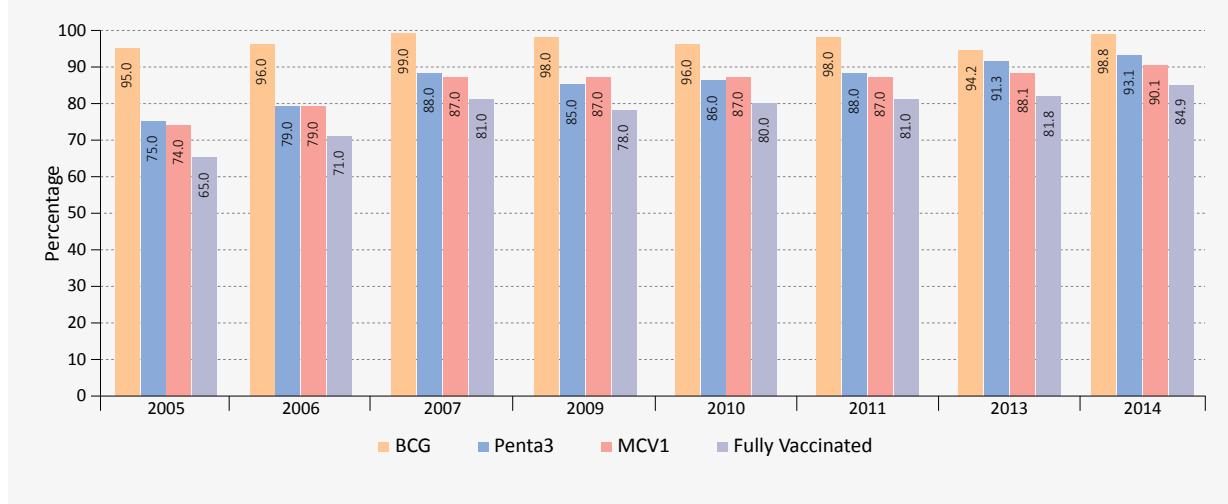
While sharing the same 1995 to 1997 sharp decline that was seen in the 23 months crude vaccination coverage, valid coverage by age of 12 months has also increased considerably since then. Just between 2000, it has increased by 35.0 percentage points, from 46.0 percent to 81.0 percent in 2014 (see Figure 20).

Figure 18: Annual Trend in Crude Vaccination Coverage by Age of 23 Months in Chittagong Division from 1995 to 2014



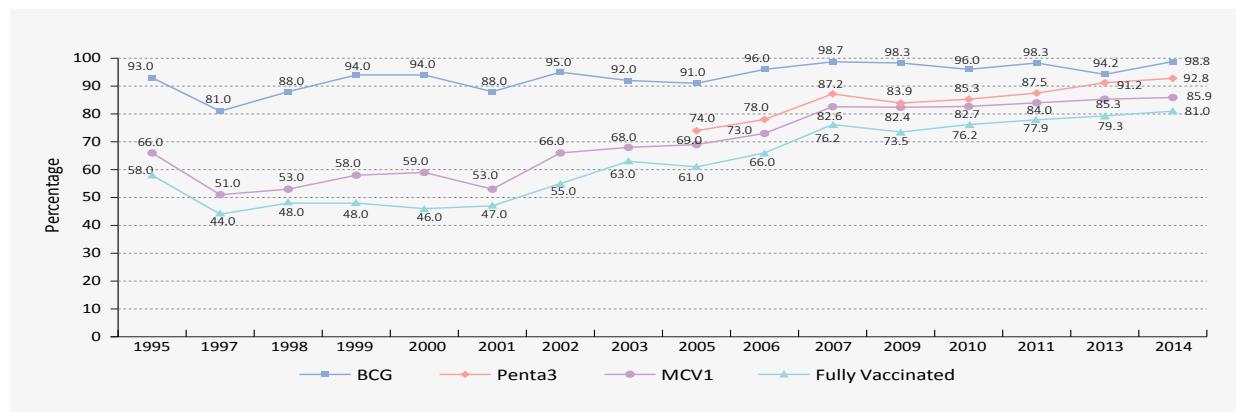
Source: Coverage Evaluation Surveys 1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Figure 19: Annual Trend in Valid Vaccination Coverage by Age of 23 Months in Chittagong Division from 2005 to 2014



Source: Coverage Evaluation Surveys 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Figure 20: Annual Trend in Valid Vaccination Coverage by Age of 12 Months in Chittagong Division from 1995 to 2014



Source: Coverage Evaluation Surveys 1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

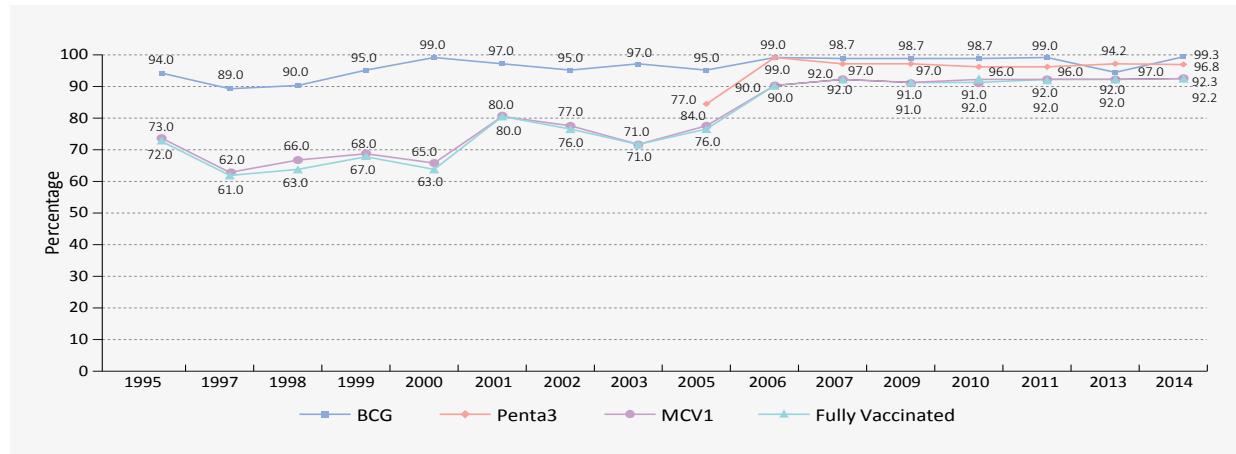
Dhaka Division

Dhaka divisions' fluctuations in crude vaccination coverage were not as wide as for Barisal and Chittagong, but in common with them, coverage began to climb after 2003. Having begun lower than those two divisions, at 72.0 percent in 1995, it's low of 61.0 percent in 1997 was not such a sharp drop. Still, after the same pattern of fluctuations until 2003, Dhaka experienced a steep 19.0 percent increase in the rate to 90.0 percent in 2006 (see Figure 21). From 2006 to 2013, coverage remained almost constant at 90.0 percent to 92.0 percent.

It is evident from Figure 22 that the valid coverage by age of 23 months substantially increased during the last decade – from 63.0 percent in 2005 to 82.9 percent in 2014 – and it remained almost static between CES 2013 (82.7) and CES 2014 (82.9 percent).

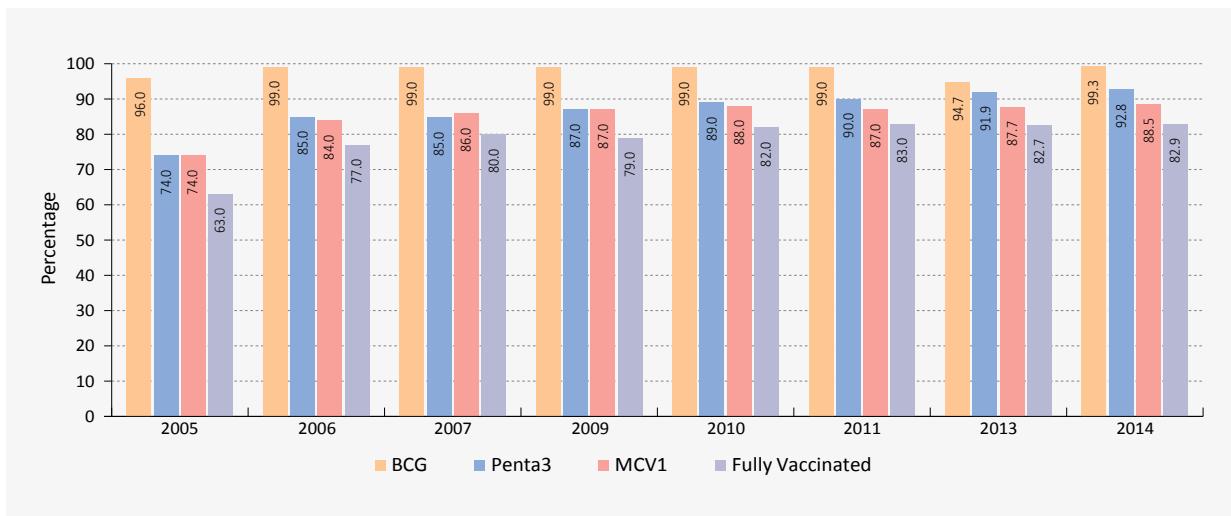
For valid vaccination coverage by age of 12 months, the rate has doubled since 1995, from 39.0 percent in 1995 to 79.4 percent in 2014 (see Figure 23). Following the greatest increase between 2002 and 2006, from 52.0 percent to 72.0 percent, the rate of increase as slowed, with only a 0.4 percent rise between CES 2013 and CES 2014, but stayed on an upward path.

Figure 21: Annual Trend in Crude Vaccination Coverage by Age of 23 Months in Dhaka Division from 1995 to 2014



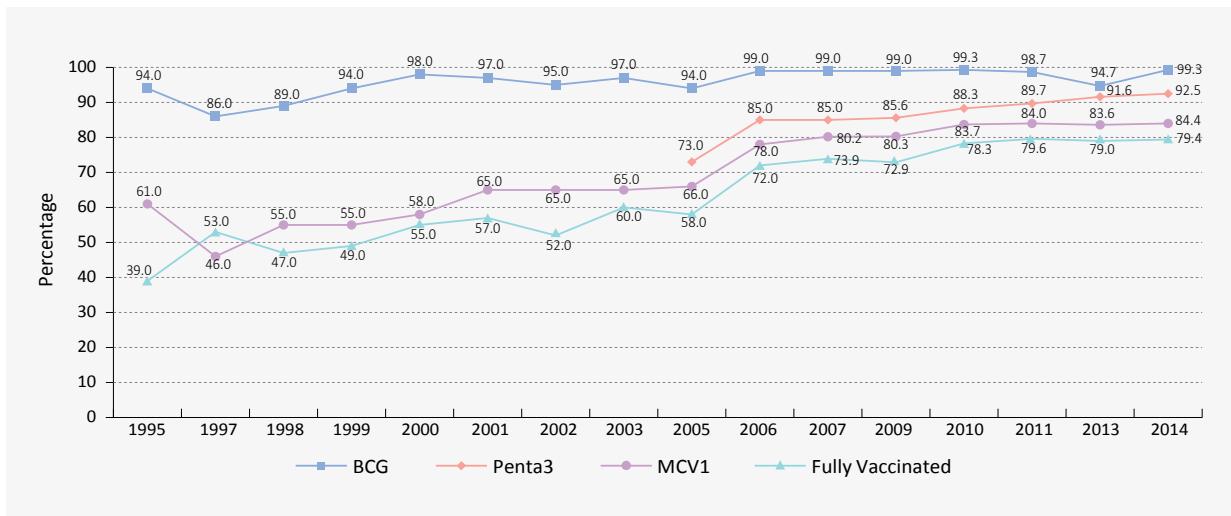
Source: Coverage Evaluation Surveys 1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Figure 22: Annual Trend in Valid Vaccination Coverage by Age of 23 Months in Dhaka Division from 2005 to 2014



Source: Coverage Evaluation Surveys 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Figure 23: Annual Trend in Valid Vaccination Coverage by Age of 12 Months in Dhaka Division from 1995 to 2014



Source: Coverage Evaluation Surveys 1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

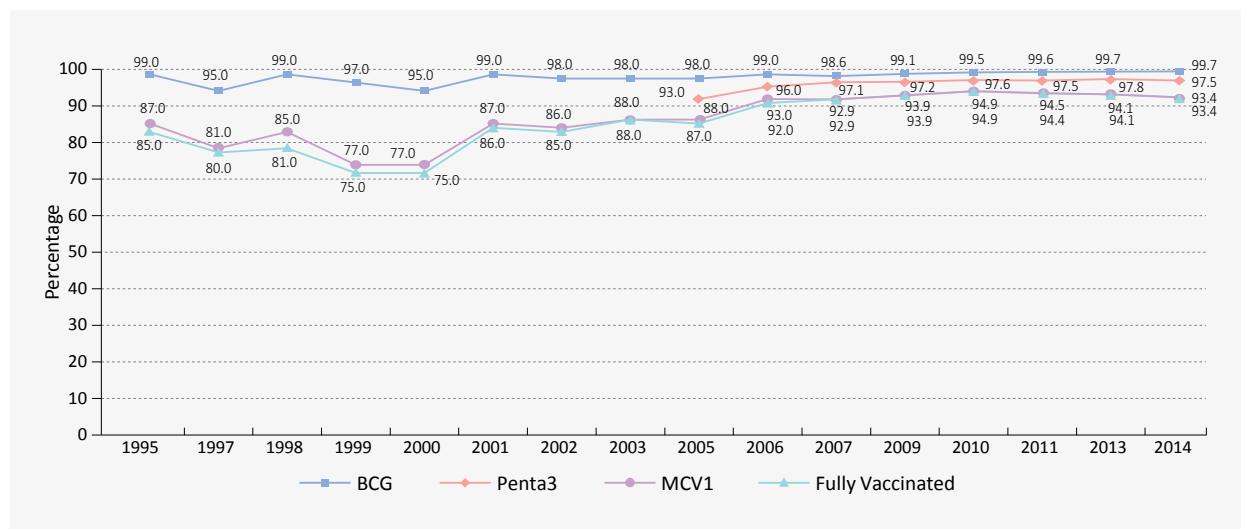
Khulna Division

Of the five divisions that have records to 1995, Khulna division has had the flattest rise in coverage figures, having started at the highest percentage for crude vaccination coverage, 85.0 percent in 1995 (see Figure 24). While the division shared with the others a drop and then the fluctuations of the early years, it also stabilized earlier, in 2001, when the rate was 86.0 percent and then generally rose until 2011, when it reached a high of 94.4 percent. Since then, it has declined slightly with each CES but was still at 93.4 percent in 2014.

Figure 25 presents valid vaccination coverage by age of 23 months since 2005. The figure indicates that it increased by 12 percentage points, from 75.0 percent in 2005 to 87.1 percent in 2013. Showing a similar trend as the crude coverage, the valid vaccination coverage decreased by about 2 percentage points between the CES 2013 and CES 2014, from 87.1 percent to 85.3 percent.

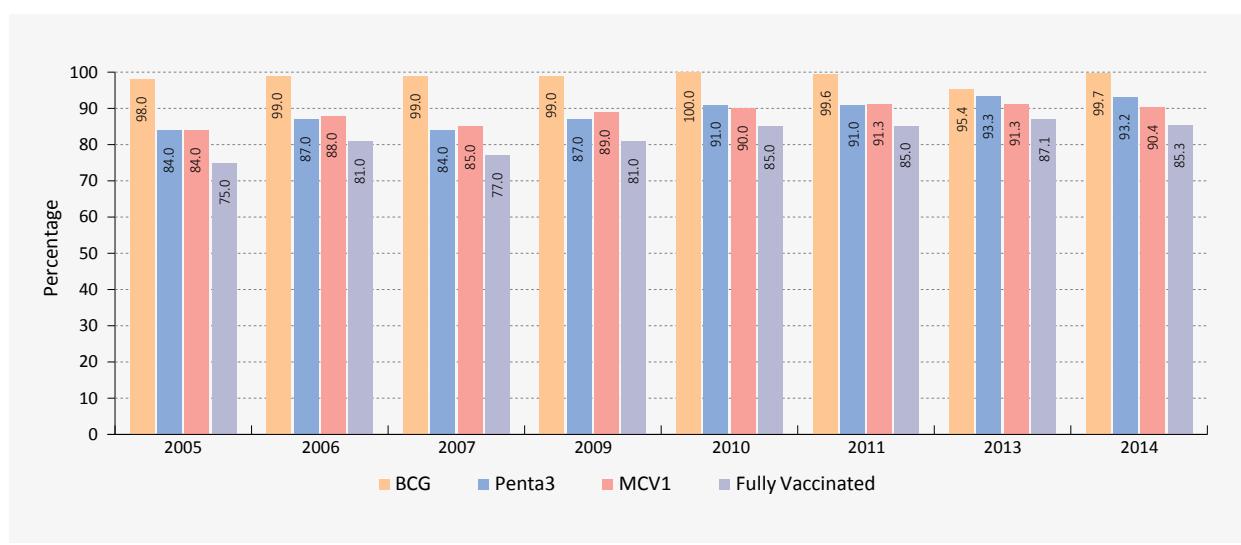
Figure 26 illustrates the trend of valid coverage by age of 12 months. It shows a slow decline in coverage between 1995 and 2002, from 72.0 percent to 67.0 percent. After some fluctuation, coverage rose to 72.2 percent in 2007 and since then there was a continuous improvement in coverage to 2013, when it was 84.8 percent. Coverage again dropped in 2014, to 81.9 percent.

Figure 24: Annual Trend in Crude Vaccination Coverage by Age of 23 Months in Khulna Division from 1995 to 2014



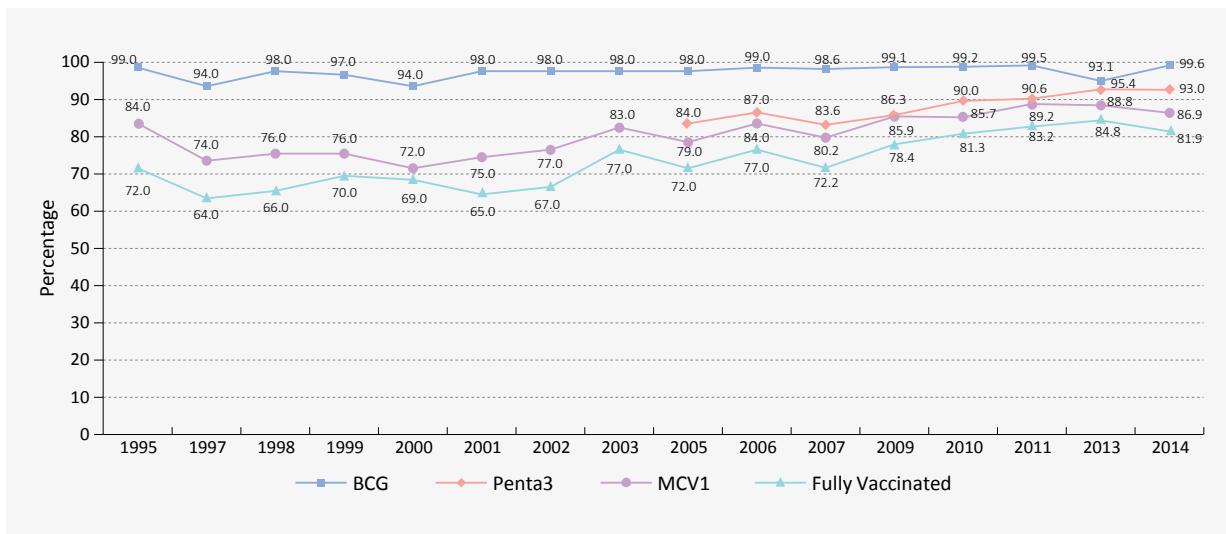
Source: Coverage Evaluation Surveys 1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Figure 25: Annual Trend in Valid Vaccination Coverage by Age of 23 Months in Khulna Division from 2005 to 2014



Source: Coverage Evaluation Surveys 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Figure 26: Annual Trend in Valid Vaccination Coverage by Age of 12 Months in Khulna Division from 1995 to 2014



Source: Coverage Evaluation Surveys 1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

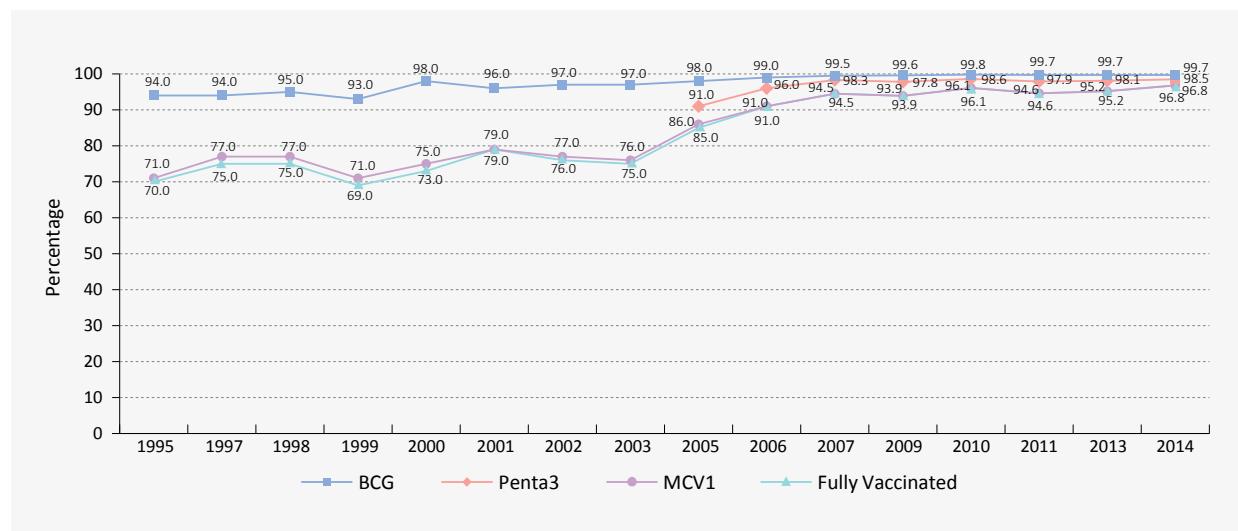
Rajshahi Division

The trend in crude vaccination coverage by age of 23 months in Rajshahi division since 1995 follows much the same pattern as other divisions. However, it missed the dip in 1997; rather, its rise has been quite constant since 1995, when it started at 70.0 percent (see Figure 27). The most considerable jump was between 2003 and 2006, when the rate increased by 16 percentage points to 91.0 percent. This rapid jump contributed to Rajshahi's attainment of the status of the highest performing division in Bangladesh. Since 2007, crude coverage remained almost static, ranging from 93.9 percent to 96.1 percent; between 2013 and 2014, the rate increased 1.6 percentage points to 96.8 percent.

The trend of valid vaccination coverage by age of 23 months, presented in Figure 28, shows that the rate fluctuated with almost every CES, beginning at 72.0 percent in 2005 and reaching a high of 88.8 percent in 2014. Although fluctuating CES to CES, the overall trend has been up, including between 2013 and 2014, when the rate increased 2 percentage points.

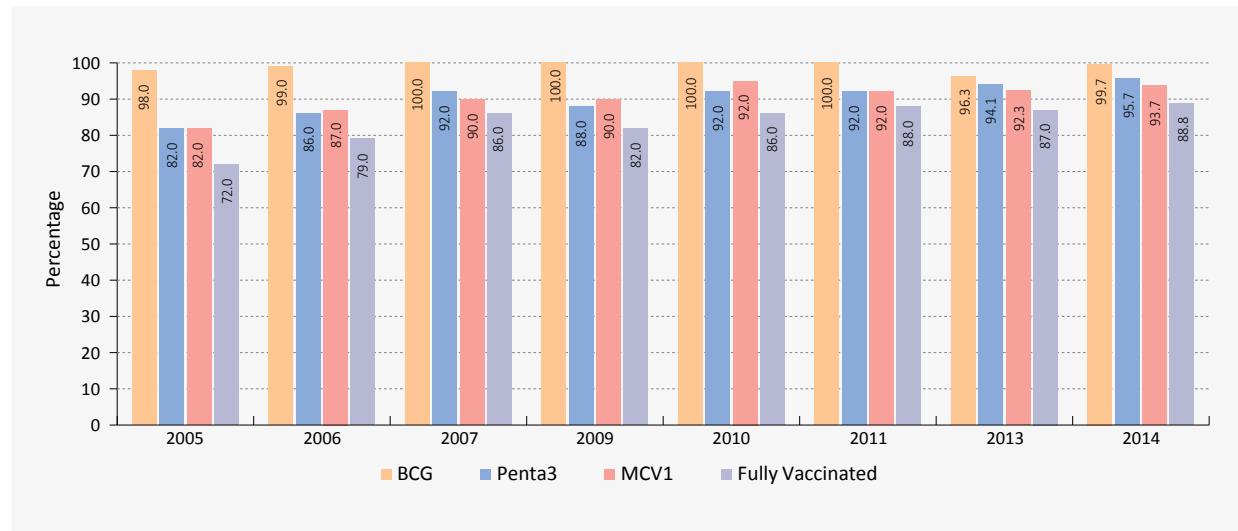
Figure 29 shows that valid coverage by age of 12 months quite steadily decreased from 61.0 percent in 1995 to 54.0 percent in 2002 in Rajshahi division. Since then there was an almost continuous improvement, increasing by 33 percentage points to 87.0 percent in 2014. Between the latest two surveys, valid vaccination coverage increased by 2 percentage points.

Figure 27: Annual Trend in Crude Vaccination Coverage by Age of 23 Months in Rajshahi Division from 1995 to 2014



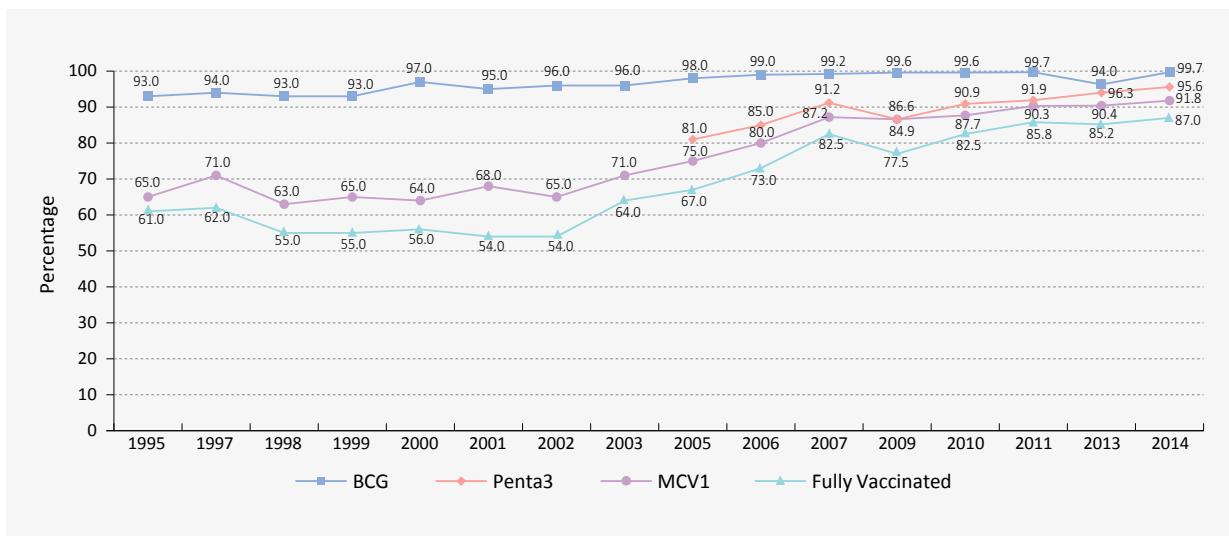
Source: Coverage Evaluation Surveys 1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Figure 28: Annual Trend in Valid Vaccination Coverage by Age of 23 Months in Rajshahi Division from 2005 to 2014



Source: Coverage Evaluation Surveys 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Figure 29: Annual Trend in Valid Vaccination Coverage by Age of 12 Months in Rajshahi Division from 1995 to 2014



Source: Coverage Evaluation Surveys 1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

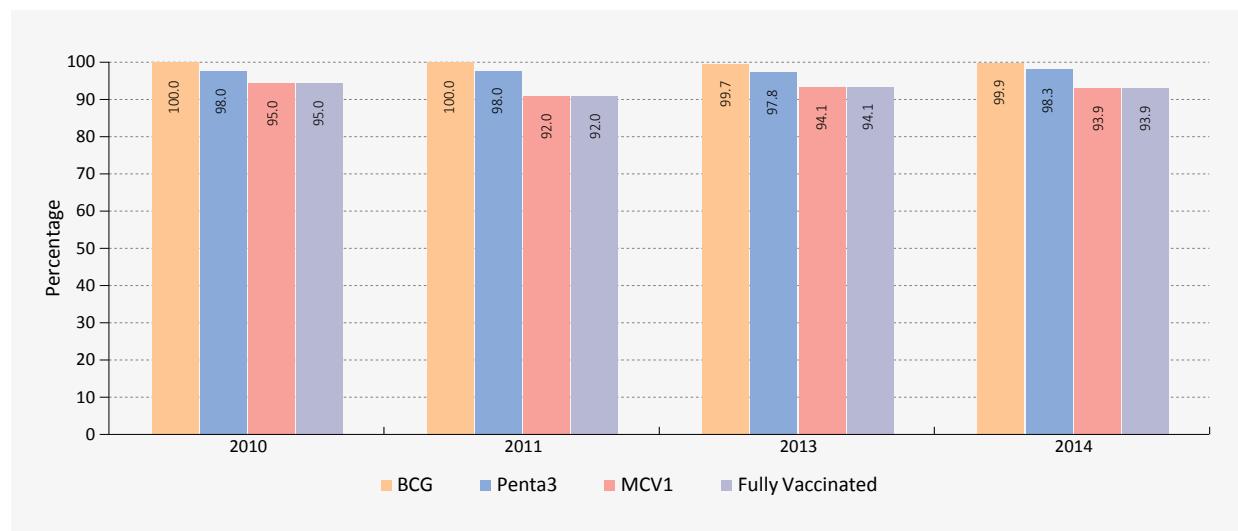
Rangpur Division

Rangpur is the youngest of the the seven divisions in Bangladesh. As an independent administrative division, it emerged in 2010. Therefore, the trend in Rangpur division, as shown in Figure 30, describes vaccination coverage only since 2010. Crude vaccination coverage was 95.0 percent in 2010, decreased to 92.0 percent in 2011, and rose again, to 93.9 percent, in 2014.

As regards valid vaccination coverage by age of 23 months, it was found to be almost static during the years 2010 to 2014. Valid vaccination coverage has risen slightly, from 84.0 percent in 2010 to 85.4 percent in 2014 (see Figure 31).

The valid coverage by age of 12 months trend was similar to the trend of valid coverage by age of 23 months. Both coverages were found to be increasing at a slow pace, with valid coverage up from 78.0 percent in 2010 to 81.5 percent in 2014 and unchanged between the 2013 and 2014 CESs (see Figure 32).

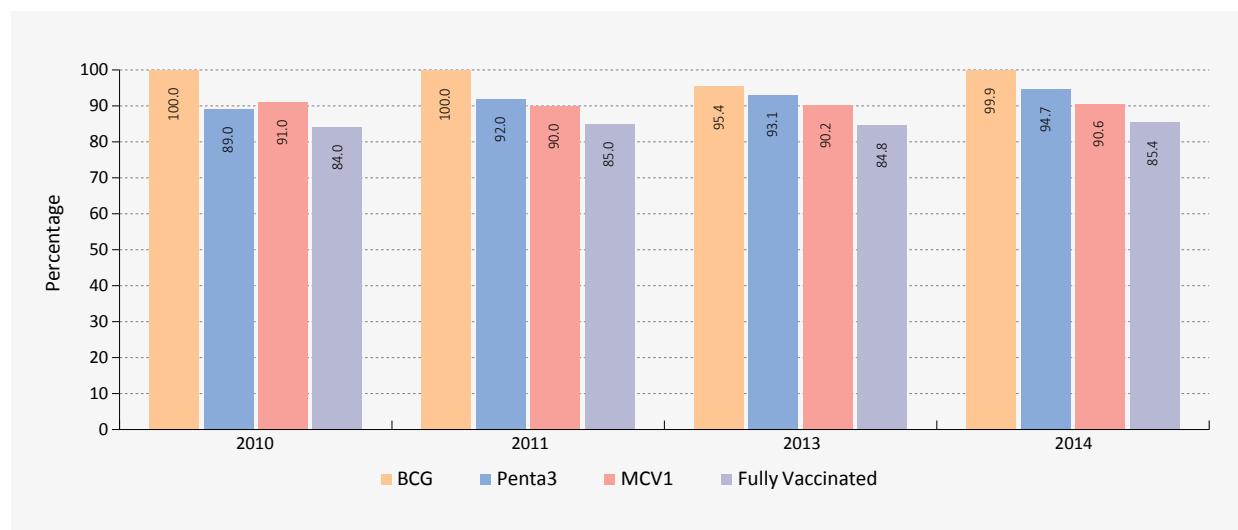
Figure 30: Annual Trend in Crude Vaccination Coverage by Age of 23 Months in Rangpur Division* from 2010 to 2014



Source: Coverage Evaluation Survey 2010, 2011, 2013 and 2014

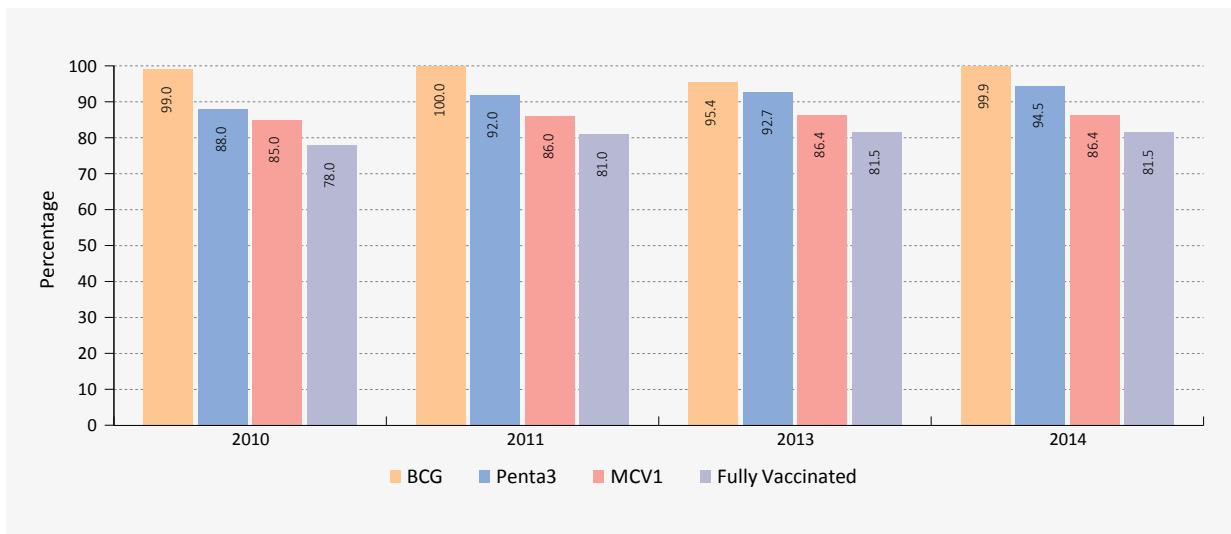
* Rangpur division was included in Rajshahi division till 2009

Figure 31: Annual Trend in Valid Vaccination Coverage by Age of 23 Months in Rangpur Division* from 2010 to 2014



Source: Coverage Evaluation Surveys 2010, 2011, 2013 and 2014

Figure 32: Annual Trend in Valid Vaccination Coverage by Age of 12 Months in Rangpur Division* from 2010 to 2014



Source: Coverage Evaluation Surveys 2010, 2011, 2013 and 2014

* Rangpur division was included in Rajshahi division till 2009

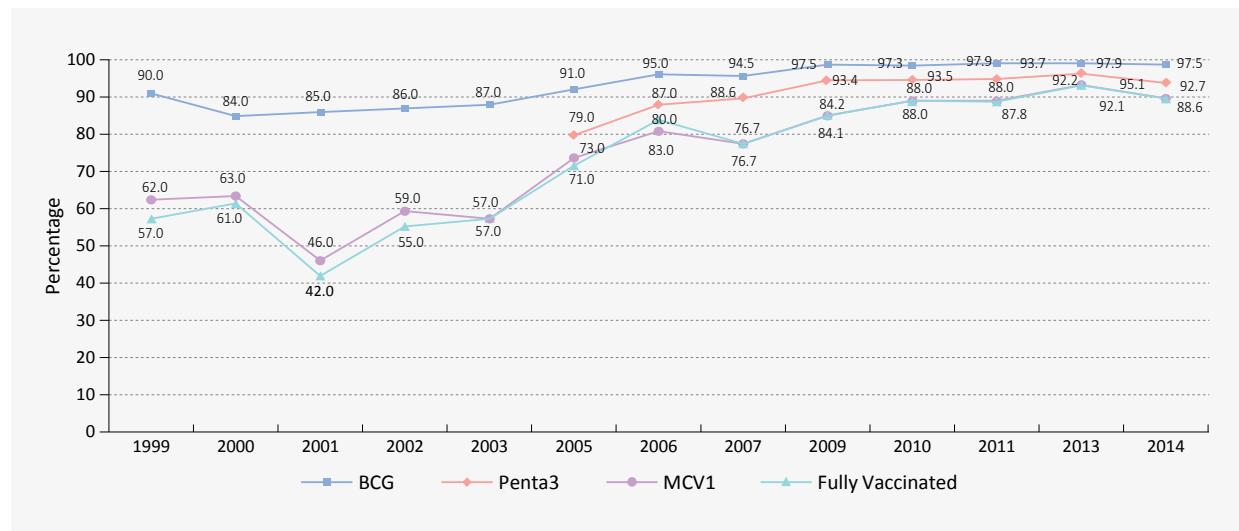
Sylhet Division

As with Rangpur division, Sylhet division is a newer division, having been part of Chittagong division until 1998. Consequently, Figure 33, illustrating crude coverage in Sylhet division by age of 23 months, begins in 1999, when the crude coverage rate was 57.0 percent. The rate dropped to 42.0 percent in 2001, but after that, coverage has for the most part continually increased to 92.1 percent in 2013. Between 2013 and 2014, the rate dropped three and a half points, to 88.6 percent.

As for valid vaccination coverage by age of 23 months, this trend is similar to that of crude coverage: an uninterrupted but substantial increase in coverage from 2005 to 2013 (see Figure 34). Valid coverage increased by 24 percentage points, from 59.0 percent in 2005 to 83.4 percent in 2013. However, a slight decrease in coverage was observed in 2014 to 82.1 percent.

Similarly, Figure 35 shows that valid coverage by age of 12 months increased, following the same trend as valid coverage by age of 23 months, between the periods 1999-2003 and 2005-2014. Valid coverage by age of 12 months increased from 32.0 percent in 1999 to 42.0 percent in 2003, with fluctuations, followed by a continuous improvement during the years 2003-2013. Valid coverage increased by 39 percentage points, from 42.0 percent in 2003 to 80.7 percent in 2013. However, in 2014, it decreased by 2 percentage points, from 80.7 percent in 2013 to 78.6 percent.

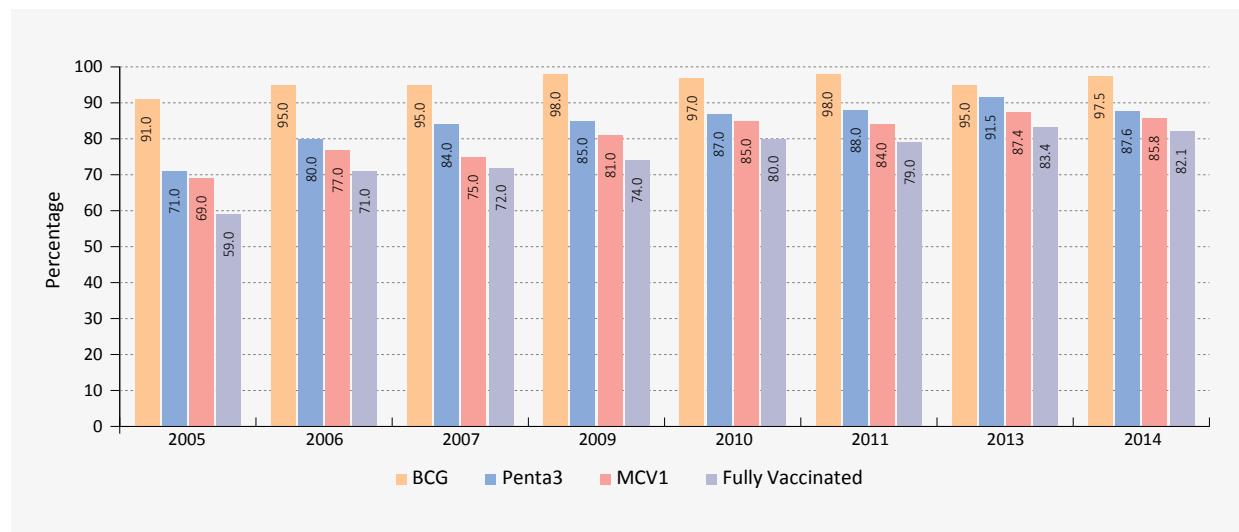
Figure 33: Annual Trend in Crude Vaccination Coverage by Age of 23 Months in Sylhet Division* from 1999 to 2014



Source: Coverage Evaluation Surveys 1999-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

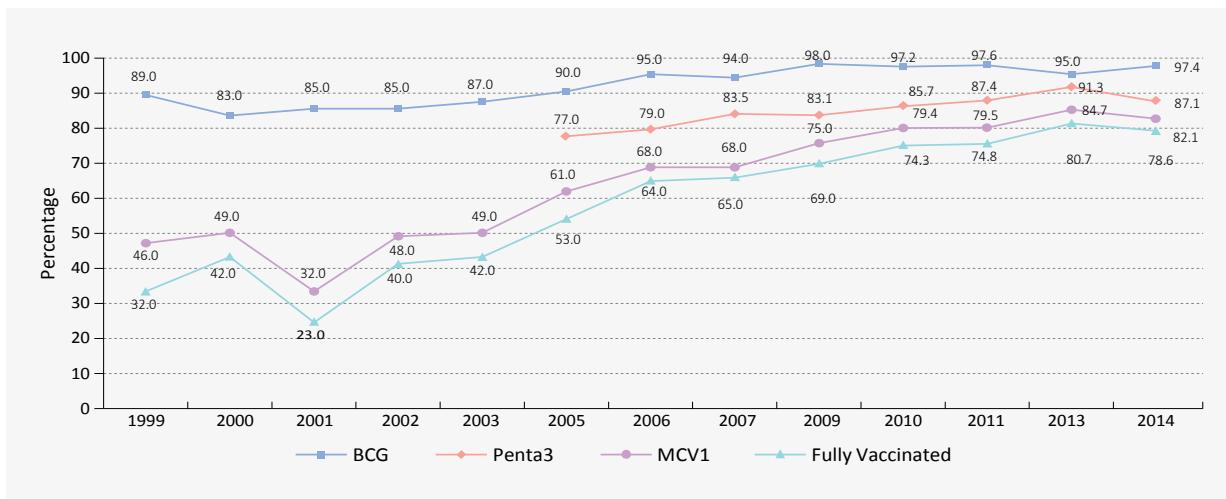
* Sylhet division was included in Chittagong division until 1999

Figure 34: Annual Trend in Valid Vaccination Coverage by Age of 23 Months in Sylhet Division from 2005 to 2014



Source: Coverage Evaluation Surveys 2005, 2006, 2009, 2010, 2011, 2013 and 2014

Figure 35: Annual Trend in Valid Vaccination Coverage by Age of 12 Months in Sylhet Division from 1999 to 2014



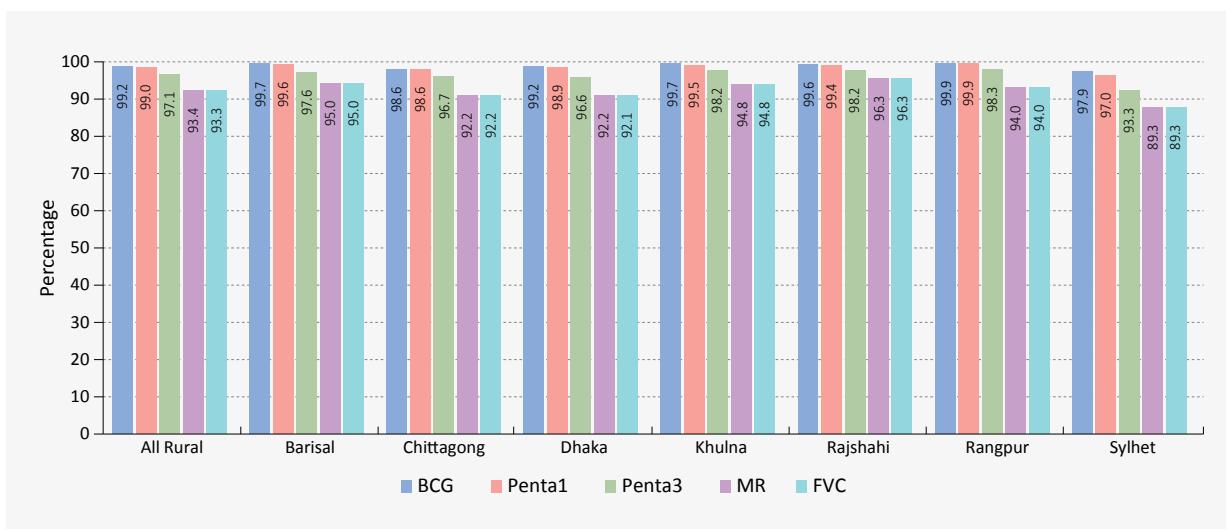
Source: Coverage Evaluation Surveys 1999-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

3.3.12 Rural Coverage by Division

Crude Vaccination Coverage by Age of 23 Months

Crude vaccination coverage by age of 23 months varied slightly by rural division. As Figure 36 shows all were within four percent of the national rural average of 93.3 percent. Crude vaccination coverage was highest in Rajshahi division (96.3 percent) and lowest in Sylhet (89.3 percent). Along with Sylhet, only Chittagong and Dhaka were below the national average. By vaccine type, all achieved a BCG coverage rate of 99.2 percent or higher, except Chittagong (98.6 percent) and Sylhet (97.9 percent). The same general patterns were observed for Penta1 and Penta3. The pattern changed slightly with MR coverage, where Rajshahi division had the highest coverage (96.3 percent) and Rangpur was in the middle of the rates (94.0 percent), Sylhet again with the lowest rate (89.3 percent).

Figure 36: Crude Vaccination Coverage by Age of 23 Months in Rural Areas by Division in 2014

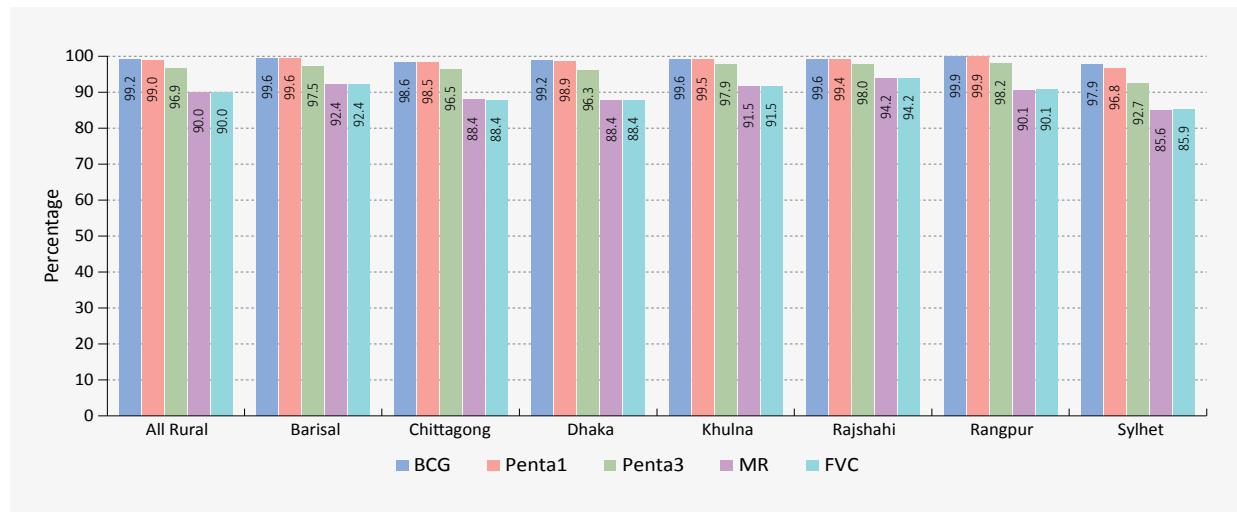


Source: CES 2014

Crude Vaccination Coverage by Age of 12 Months

Similar to the crude coverage by 23 months, Rajshahi division achieved the highest crude vaccination coverage (94.2 percent) by age of 12 months. It was the lowest in Sylhet division (85.9 percent). Crude coverage was 92.4 percent in Barisal, 91.5 percent in Khulna, 90.1 percent in Rangpur, and 88.4 percent in Chittagong and Dhaka divisions (see Figure 37).

Figure 37: Crude Vaccination Coverage by Age of 12 Months in Rural Areas by Division in 2014

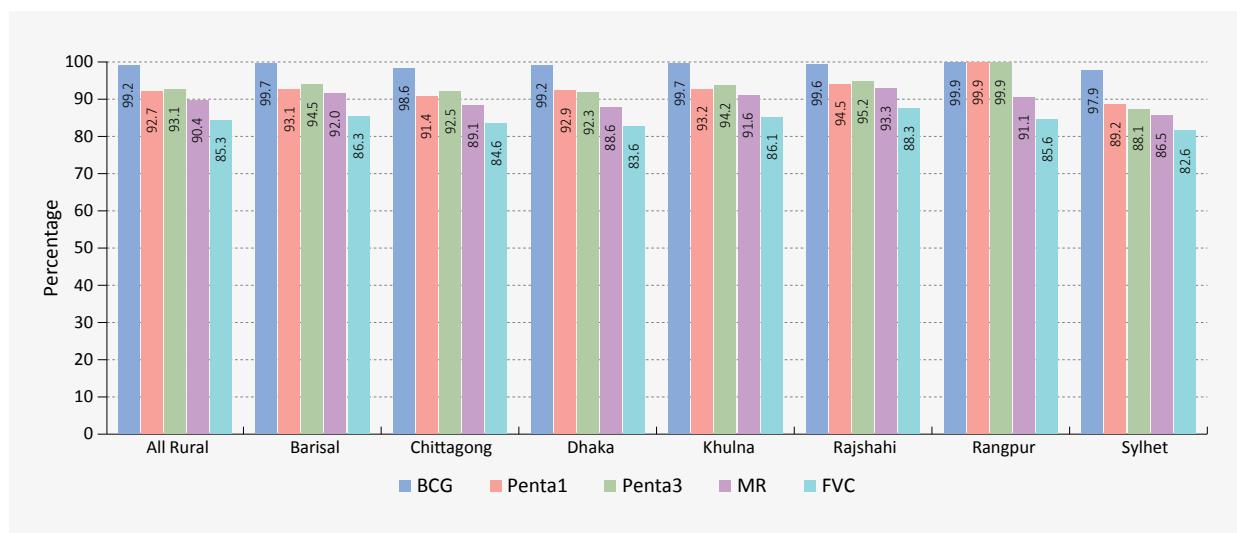


Source: CES 2014

Valid Coverage by Age of 23 Months

Nationally, 85.3 percent of rural children received all vaccines by age of 23 months, by the EPI-recommended age and intervals between doses. Of the seven divisions, children from rural areas of Rajshahi division (88.3 percent) were more likely to receive all valid vaccines than those from the other rural divisions.

Figure 38: Valid Vaccination Coverage by Age of 23 Months in Rural Areas by Division in 2014

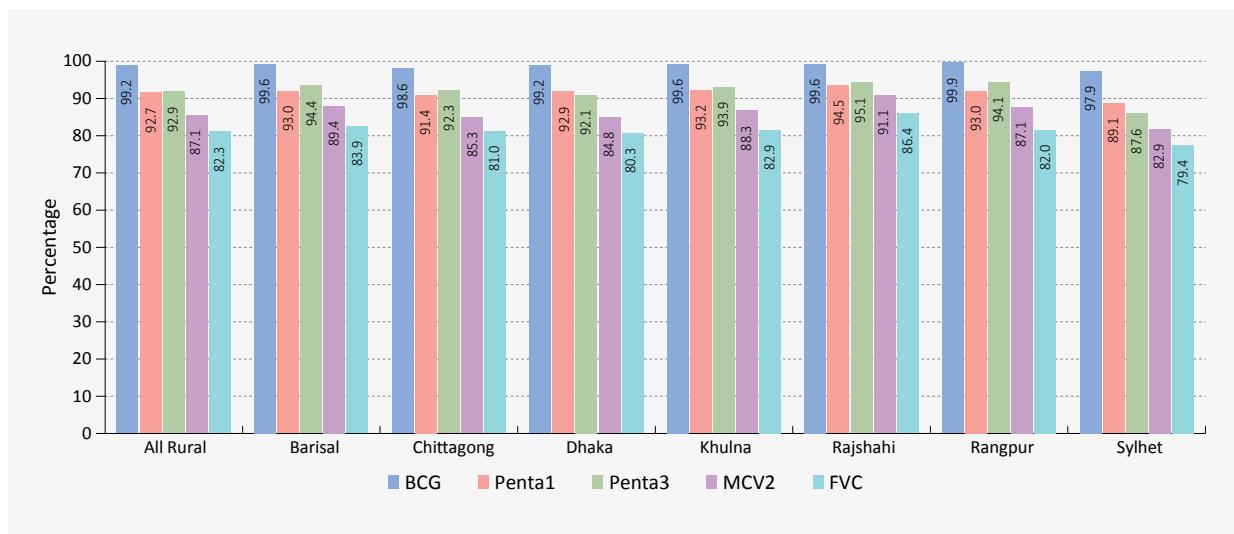


Source: CES 2014

Valid Coverage by Age of 12 Months

Figure 39 presents valid vaccination coverage by age of 12 months. Nationally, valid coverage in rural areas was 82.3 percent, with slight variation between divisions, from the highest in Rajshahi division (86.4 percent) to the lowest in Sylhet (79.4 percent).

Figure 39: Valid Vaccination Coverage by Age of 12 Months in Rural Areas by Division in 2014



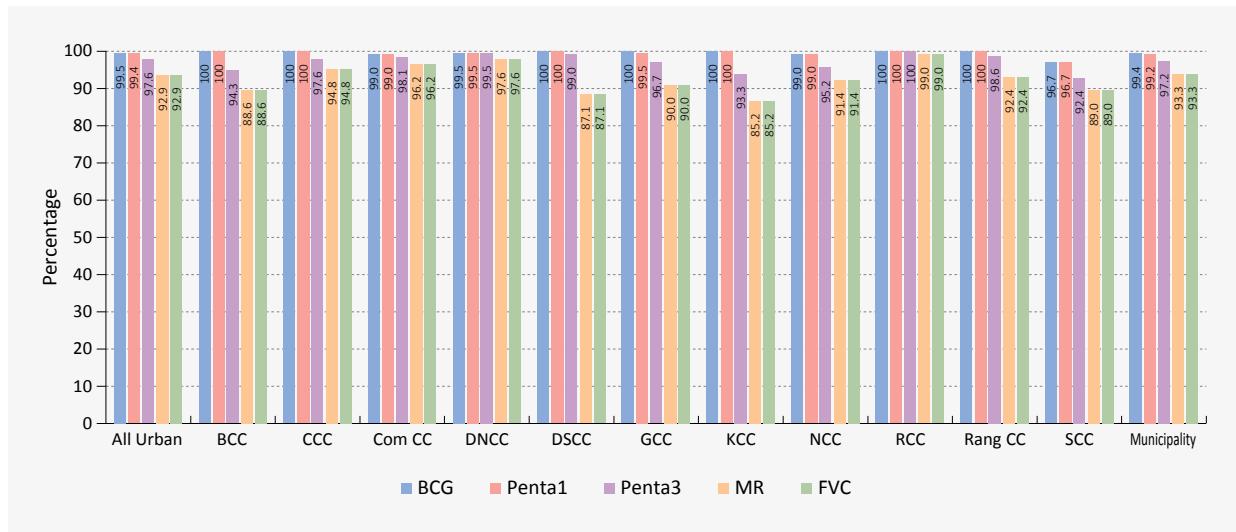
Source: CES 2014

3.3.13 Coverage by City Corporation and Municipality

Figures 40 and 41 depict vaccination coverage by city corporations. For CES 2014, each of the 11 city corporations in Bangladesh were surveyed as separate survey strata.

Crude Vaccination Coverage by the Age of 23 Months: Figure 40 shows urban vaccination coverage by city corporation. Nationally, urban coverage was depicted at 92.9 percent in CES 2014. Among the city corporations, the highest crude vaccination coverage was in RCC and the lowest in KCC, with 99.0 percent and 85.2 percent coverage, respectively. The crude vaccination coverage in other city corporations ranged between 87.1 percent in DSCC and 97.6 percent in DNCC.

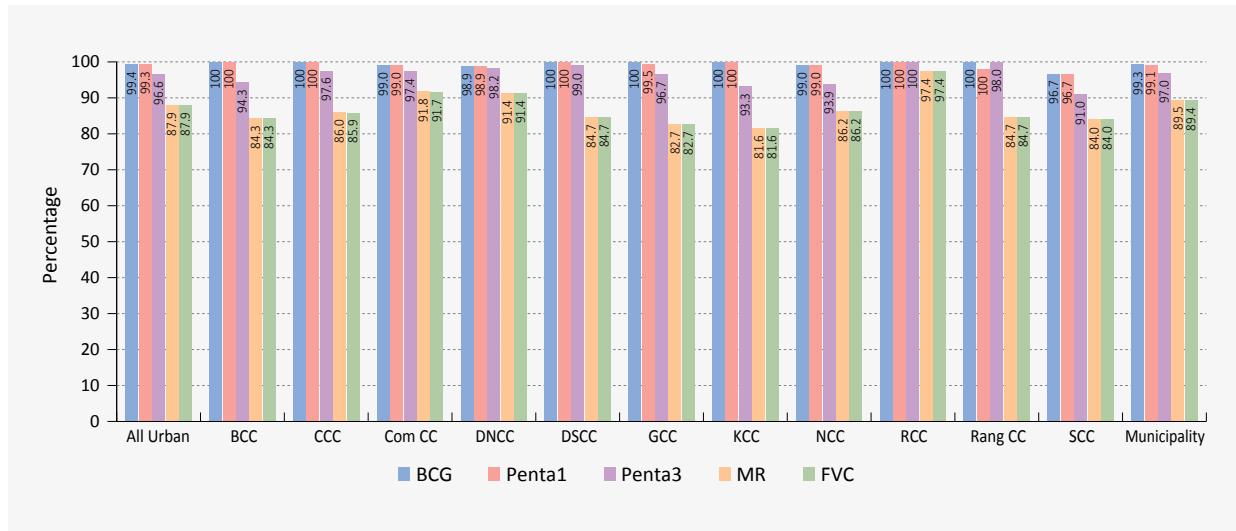
Figure 40: Crude Vaccination Coverage by Age of 23 Months in Urban Areas by City Corporation and Municipality in 2014



Source: CES 2014

Crude Vaccination Coverage by Age of 12 Months: Figure 41 illustrates crude vaccination coverage by age of 12 months. RCC again attained the highest coverage (97.4 percent) and KCC the lowest (81.6 percent).

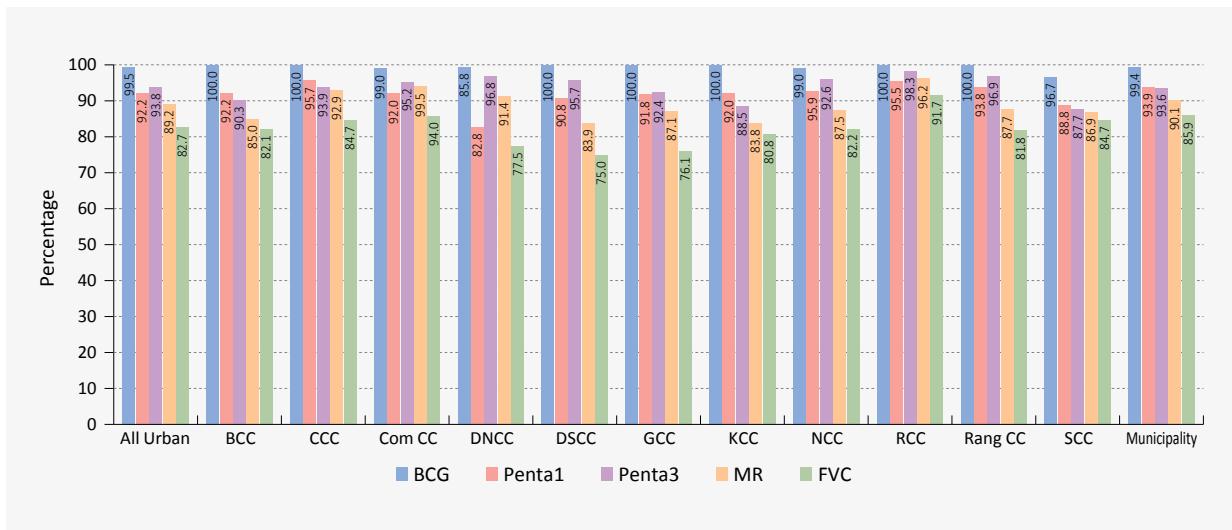
Figure 41: Crude Vaccination Coverage by Age of 12 Months in Urban Areas by City Corporation and Municipality in 2014



Source: CES 2014

Valid Coverage by Age of 23 Months: Figure 42 highlights valid vaccination coverage by age of 23 months by city corporation. The figure shows that the valid coverage was by far the highest in RCC (91.7 percent). The next highest were SCC and CCC at 84.7 percent, with the rest being between 82.2 percent and the lowest rate of 75.0 percent, in DSCC.

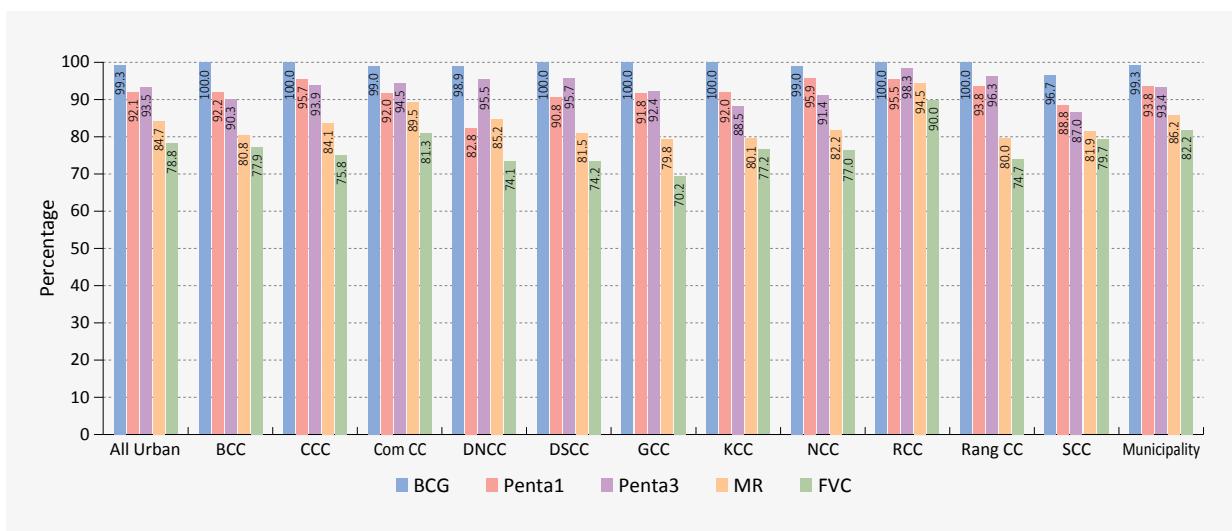
Figure 42: Valid Vaccination Coverage by Age of 23 Months in Urban Areas by City Corporation and Municipality in 2014



Source: CES 2014

Valid Coverage by Age of 12 Months: The valid coverage by age of 12 months is shown in Figure 43. Among the city corporations, RCC achieved the highest coverage, at 90.0 percent. Again, there was a considerable drop to the next highest: 81.3 percent in Com CC. The lowest coverage was again in GCC (70.2 percent).

Figure 43: Valid Vaccination Coverage by the Age of 12 Months in Urban Areas by City Corporation and Municipality in 2014



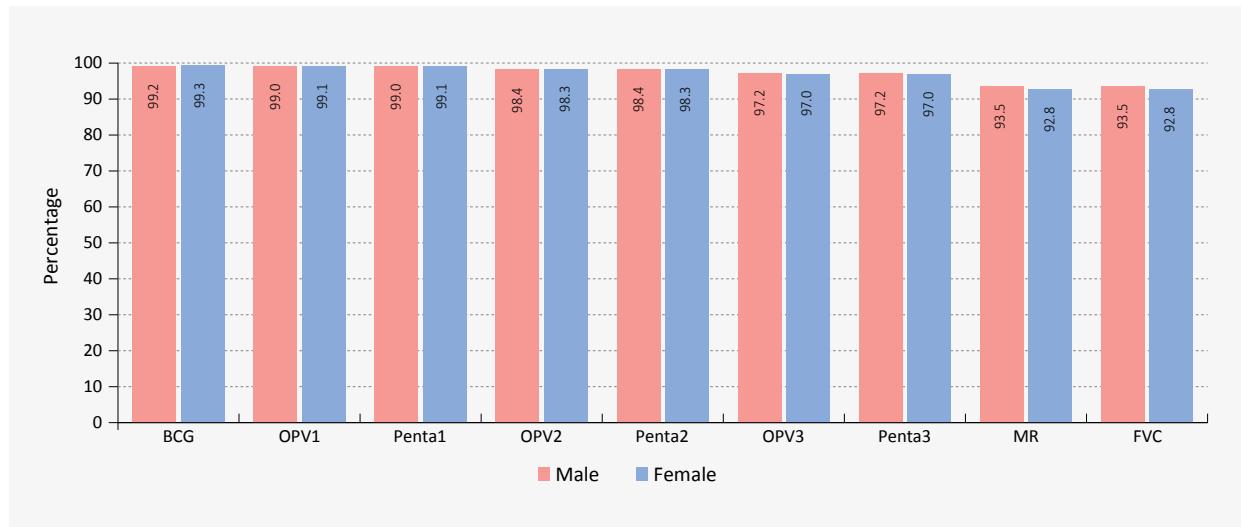
Source: CES 2014

3.3.14 Sex Differentials in Coverage

Crude Vaccination Coverage by Age of 23 Months by Sex

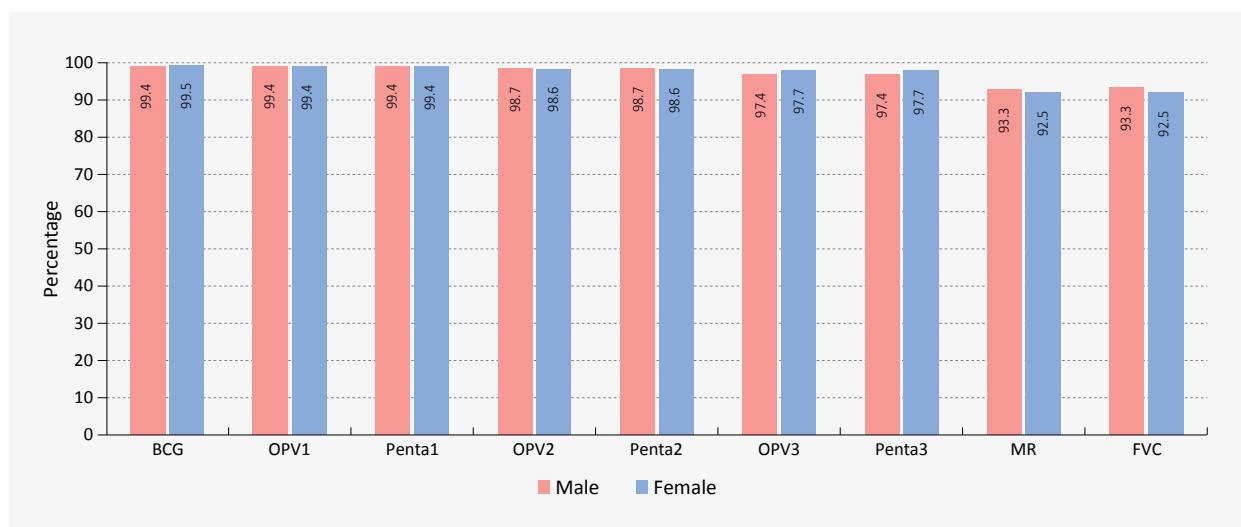
Figures 44 to 44b present the crude vaccination coverage by age of 23 months by sex. Nationally, no marked difference was noticed in the crude coverage between males and females, being 93.5 percent for males as against 92.8 percent for females. Similarly, a slight difference was observed between males and females in both urban and rural areas.

Figure 44: National Crude Vaccination Coverage by Age of 23 Months by Sex in 2014



Source: CES 2014

Figure 44a: Crude Vaccination Coverage by Age of 23 Months in Urban Areas by Sex in 2014



Source: CES 2014

Figure 44b: Crude Vaccination Coverage by Age of 23 Months in Rural Areas by Sex in 2014

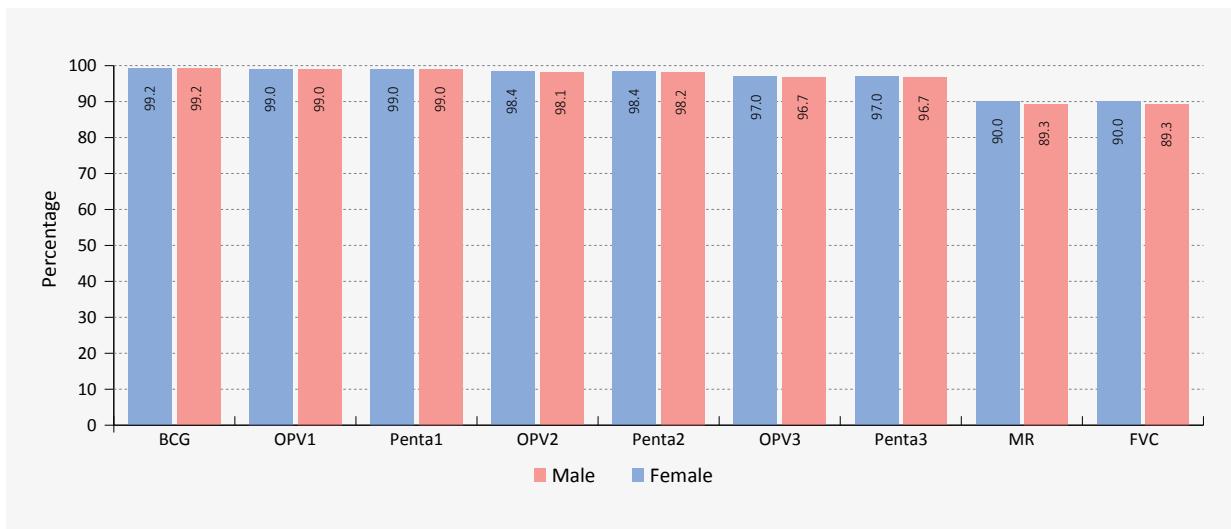


Source: CES 2014

Crude Vaccination Coverage by Age of 12 Months by Sex

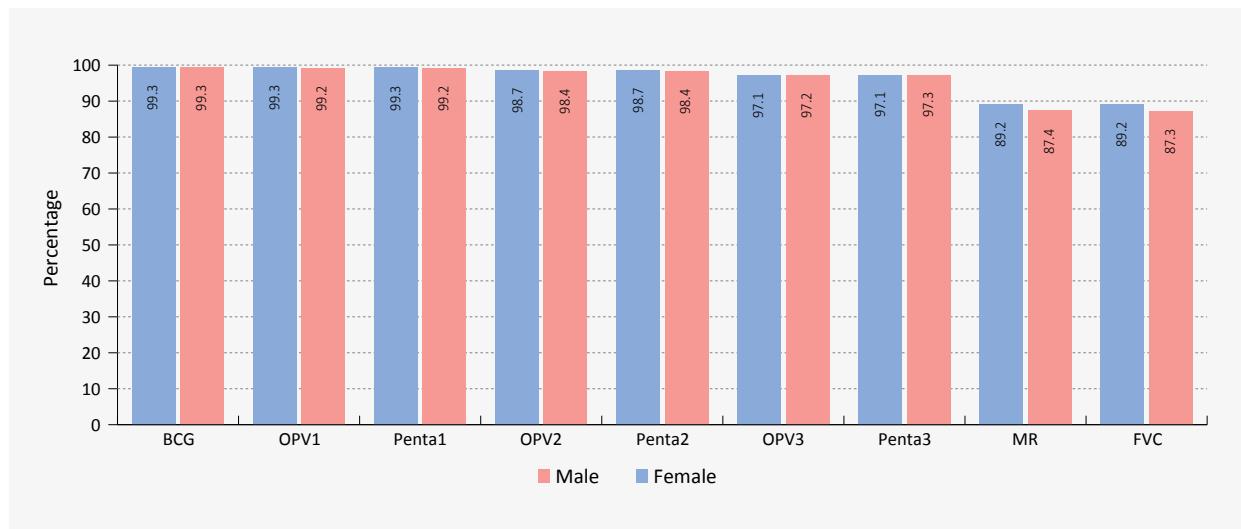
Figures 44c to 44e present crude vaccination coverage by age of 12 months. Nationally, there was less than one percentage point of difference in crude coverage between males and females (90.0 percent vs. 89.3 percent). Males were more likely to receive crude vaccine than females in both urban (89.2 percent vs. 87.3 percent) and rural areas (90.4 percent vs. 89.8 percent).

Figure 44c: National Crude Vaccination Coverage by the Age of 12 Months by Sex in 2014



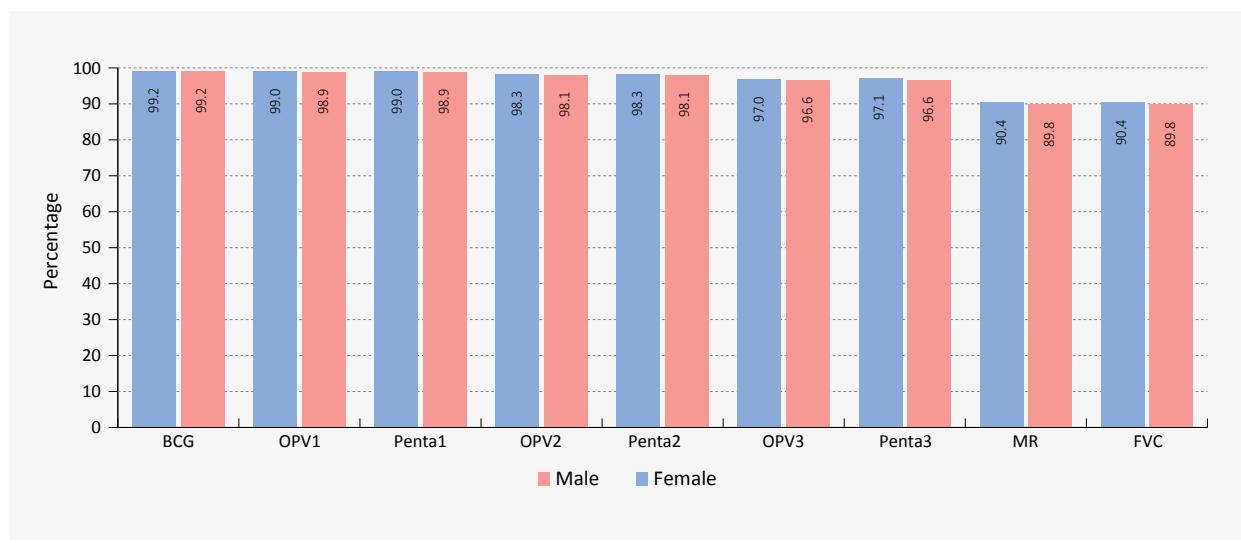
Source: CES 2014

Figure 44d: Crude Vaccination Coverage by Age of 12 Months in Urban Areas by Sex in 2014



Source: CES 2014

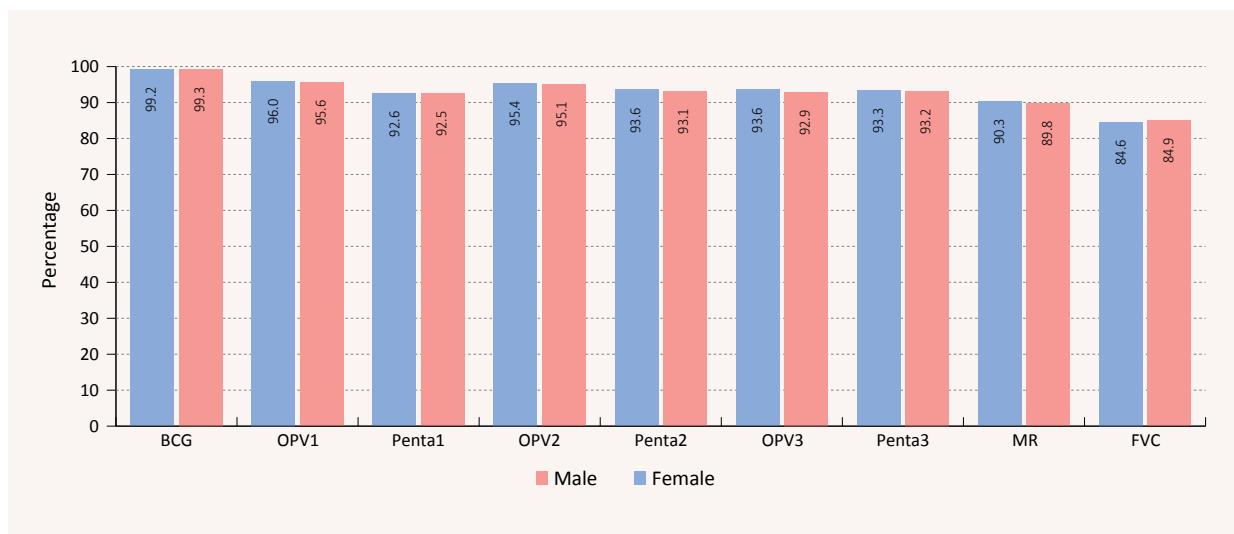
Figure 44e: Crude Vaccination Coverage by Age of 12 Months in Rural Areas by Sex in 2014



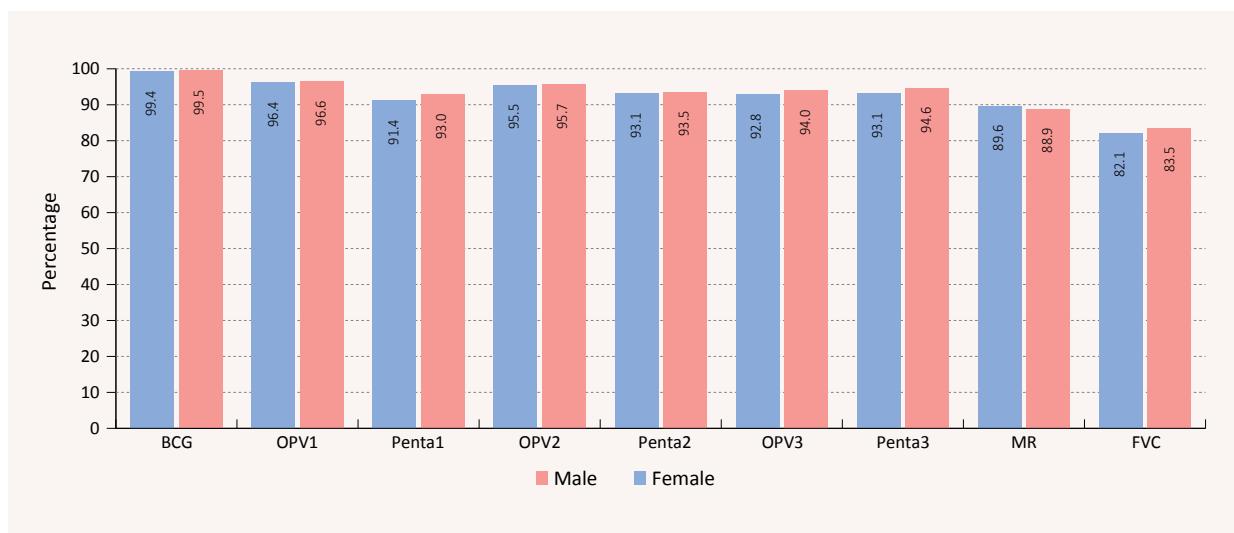
Source: CES 2014

Valid Vaccination Coverage by Age of 23 Months by Sex

Figures 45 to 45b depict the valid vaccination coverage by age of 23 months. It shows that the valid coverage was 85.0 percent for both the males and females. However, the rate was found to be slightly higher among females than males in urban areas. Eighty-four percent females received all the valid vaccines, as opposed to 82.1 percent of the males. No marked difference in the valid coverage was observed in rural areas between males and females (85.4 percent vs. 85.3 percent).

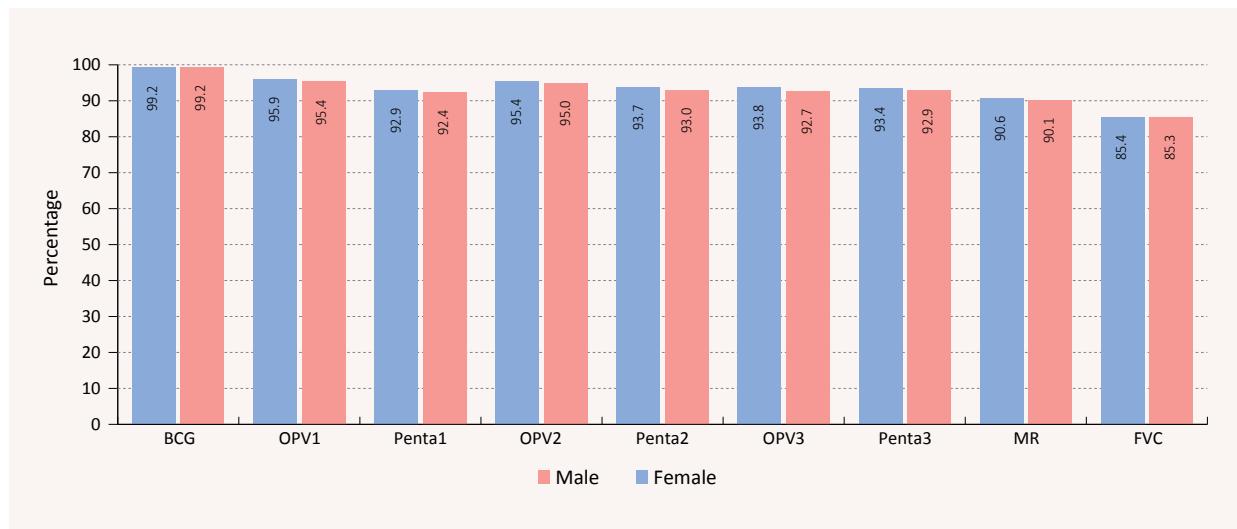
Figure 45: National Valid Vaccination Coverage by Age of 23 Months by Sex in 2014

Source: CES 2014

Figure 45a: Valid Vaccination Coverage by Age of 23 Months in Urban Areas by Sex in 2014

Source: CES 2014

Figure 45b: Valid Vaccination Coverage by Age of 23 Months in Rural Areas by Sex in 2014

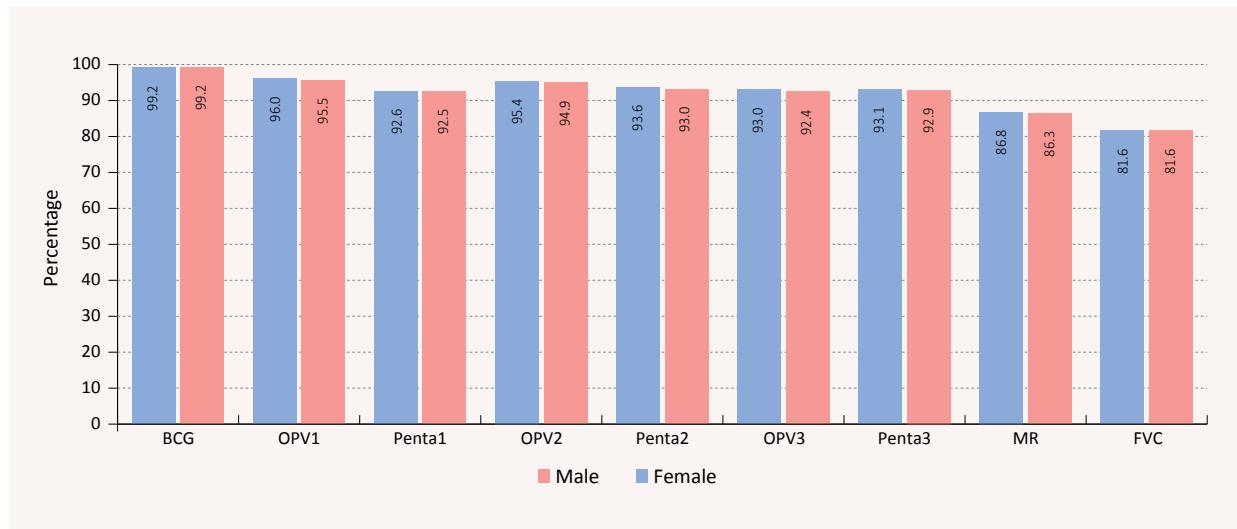


Source: CES 2014

Valid Vaccination Coverage by Age of 12 Months by Sex

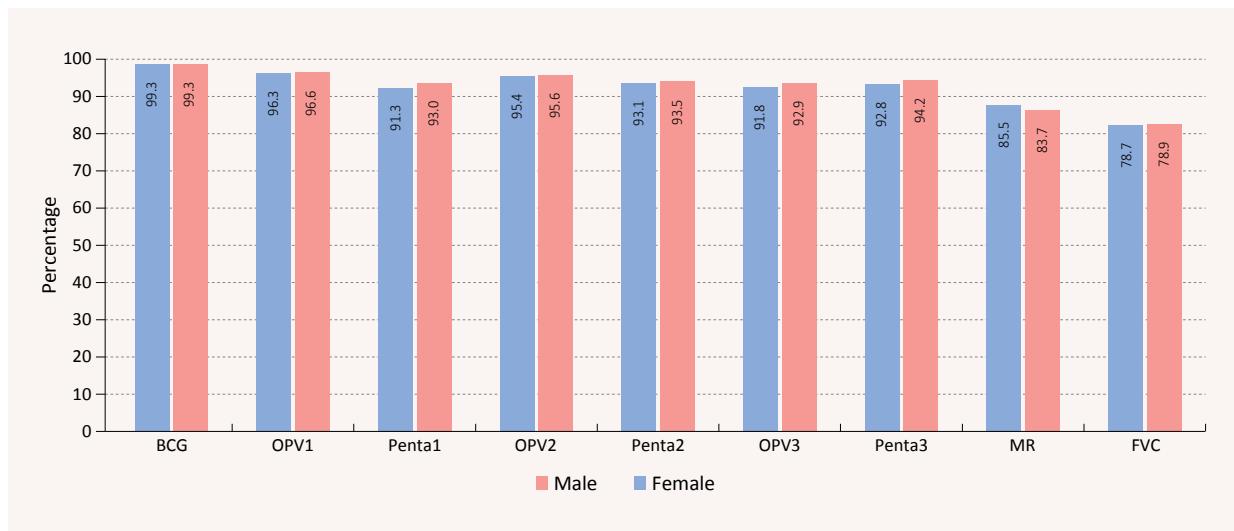
Sex differential in the valid coverage by age of 12 months is presented in Figures 46-46b. Valid coverage was 81.6 percent for both males and females and neither was variation observed between males and females residing in rural areas. However, a slight difference in the valid coverage between males and females was observed in urban areas (male 78.7 percent and female 78.9 percent).

Figure 46: National Valid Vaccination Coverage by Age of 12 Months by Sex in 2014



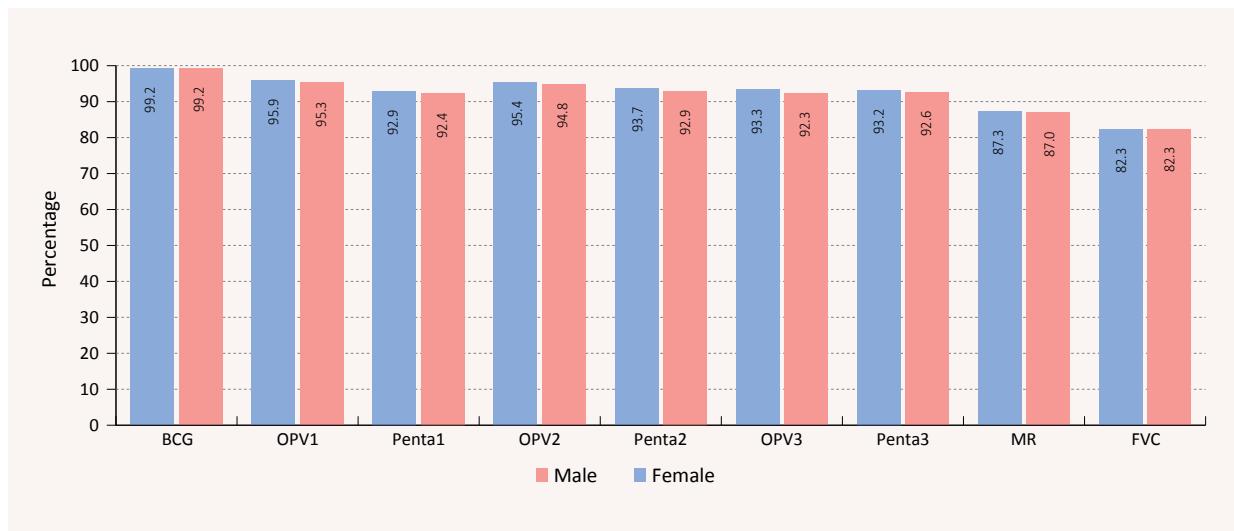
Source: CES 2014

Figure 46a: Valid Vaccination Coverage by Age of 12 Months in Urban Areas by Sex in 2014



Source: CES 2014

Figure 46b: Valid Vaccination Coverage by Age of 12 Months in Rural Areas by Sex in 2014



Source: CES 2014

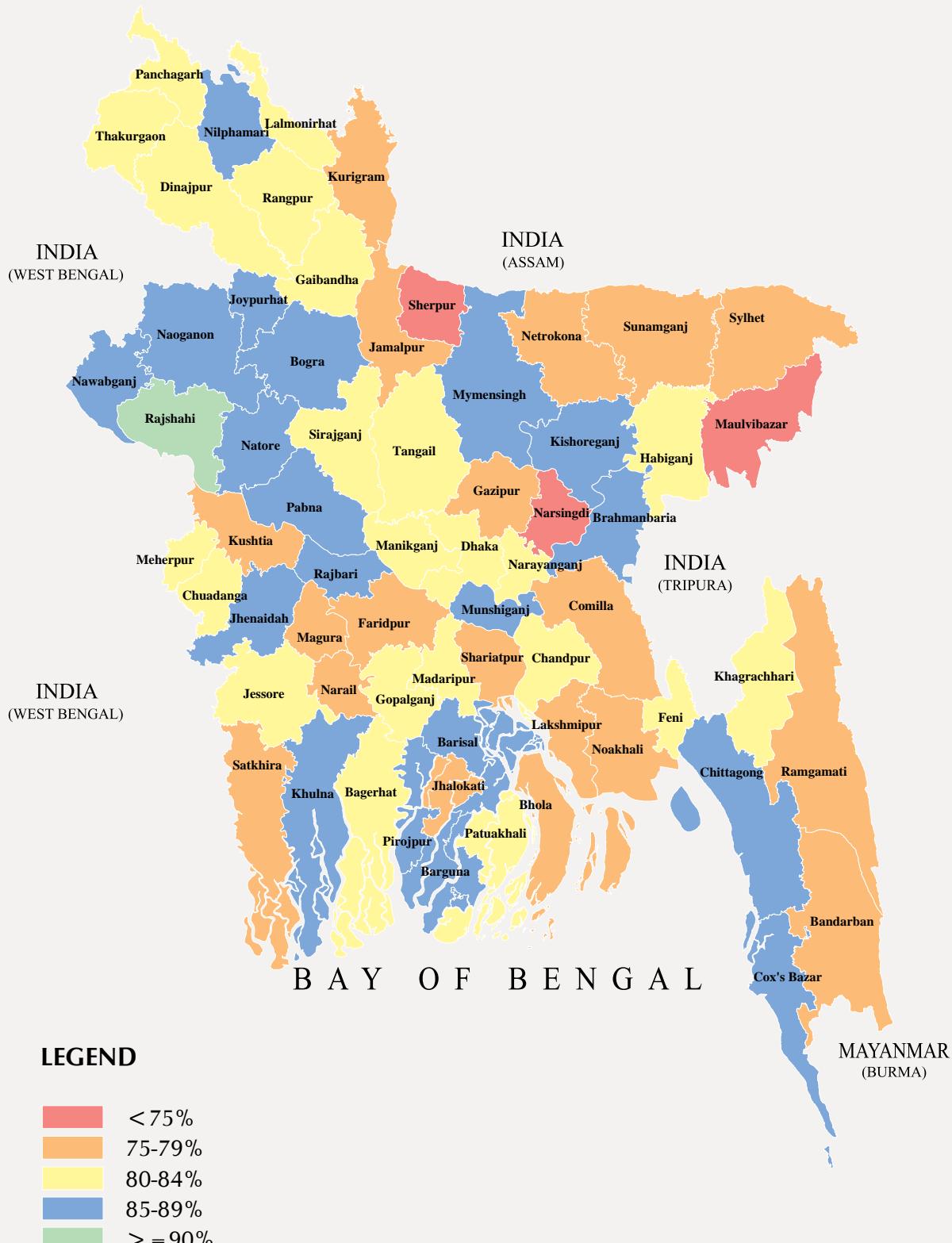
Map 1: Crude Full Vaccination Coverage by Age of 23 Months by District



LEGEND

- < 75%
- 75-79%
- 80-84%
- 85-89%
- > = 90%

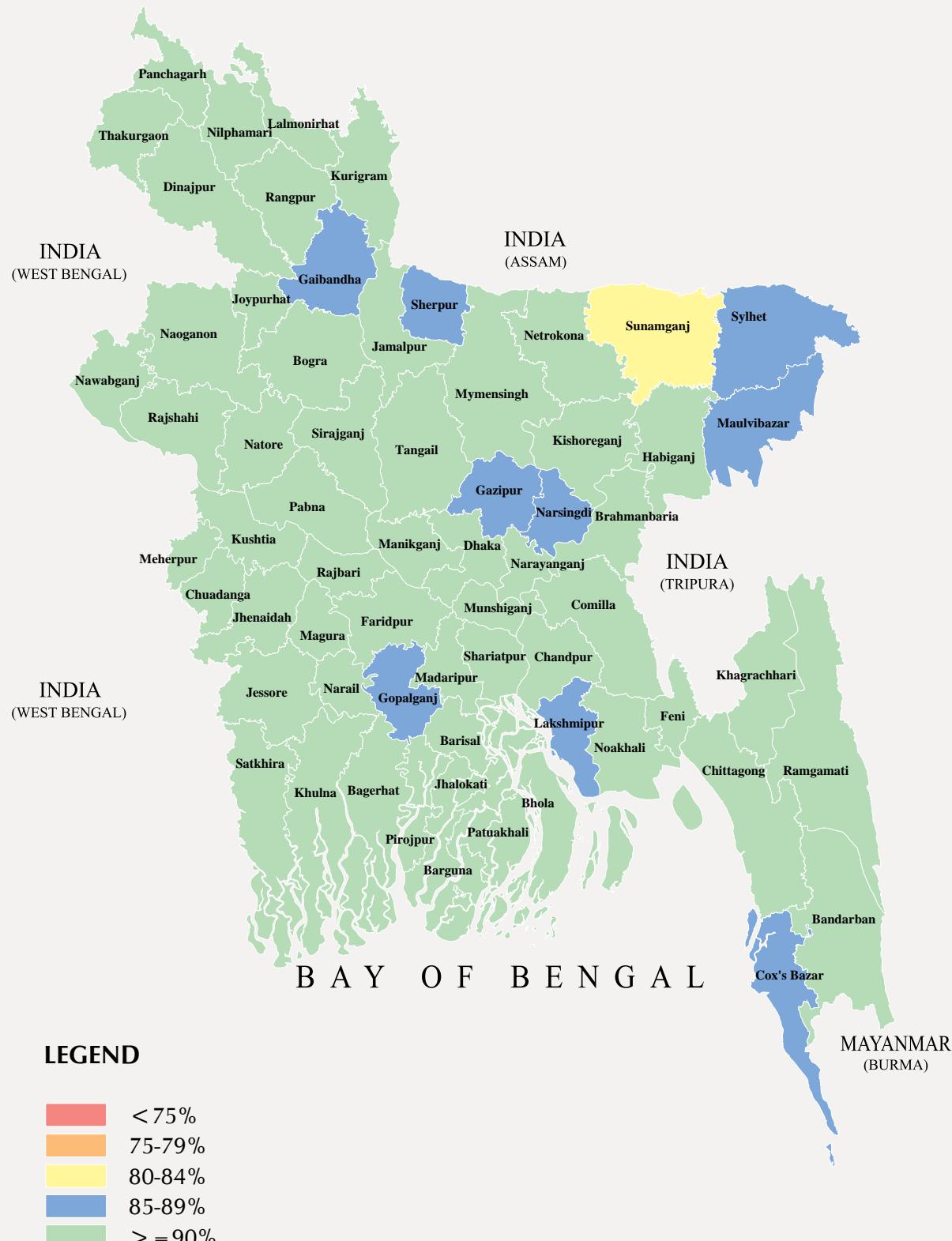
Map 2: Valid Full Vaccination Coverage by Age of 12 Months by District



Map 3: Crude Penta 3 Vaccination Coverage by Age of 23 Months by District



Map 4: Valid Penta 3 Vaccination Coverage by Age of 23 Months by District





Map 6: Valid Penta 3 Vaccination Coverage by Age of 12 Months by District



Map 7: Crude MR Vaccination Coverage by Age of 23 Months by District



LEGEND

- < 75%
- 75-79%
- 80-84%
- 85-89%
- > = 90%

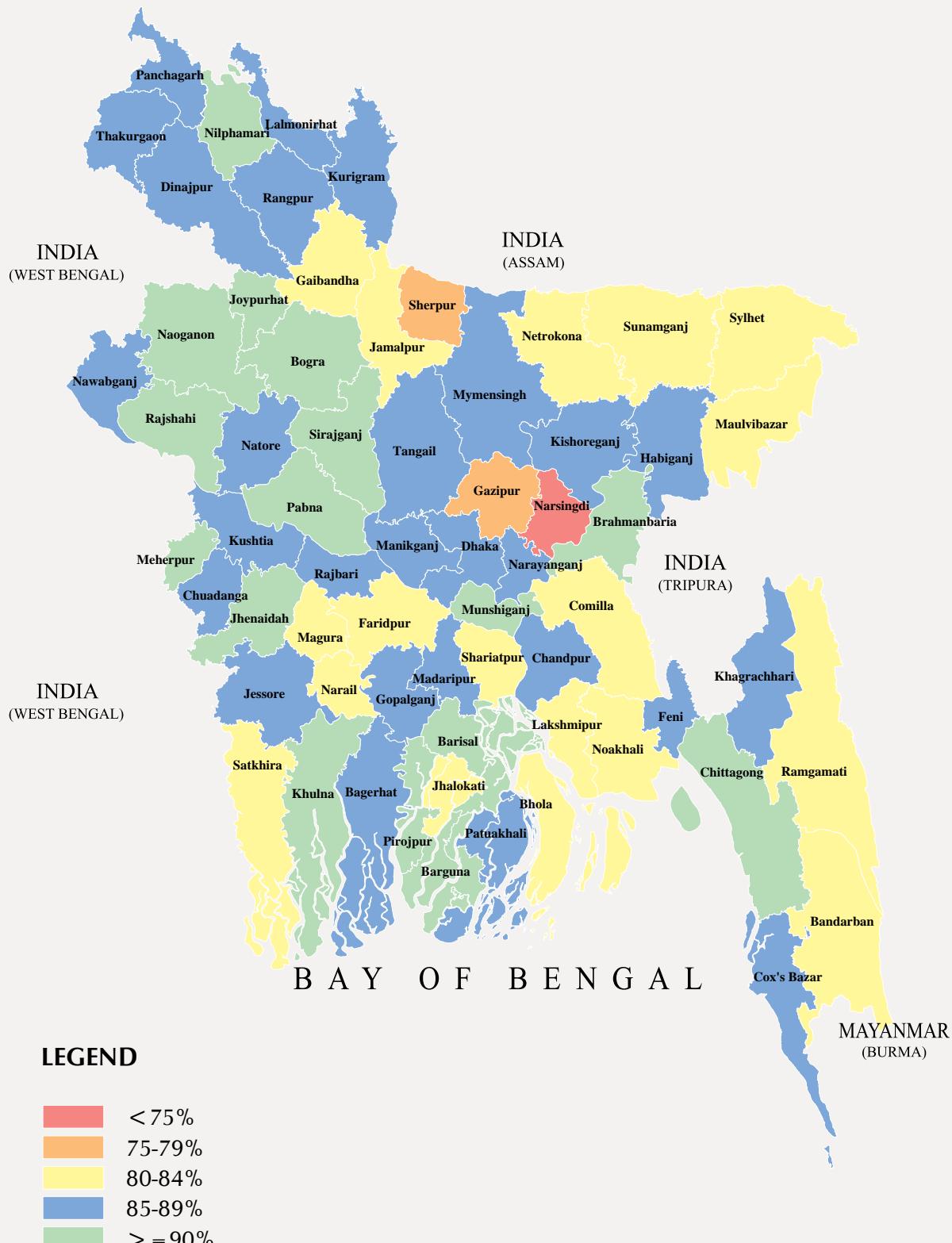
Map 8: Valid MR Vaccination Coverage by Age of 23 Months by District



Map 9: Crude MR Vaccination Coverage by Age of 12 Months by District



Map 10: Valid MR Vaccination Coverage by Age of 12 Months by District

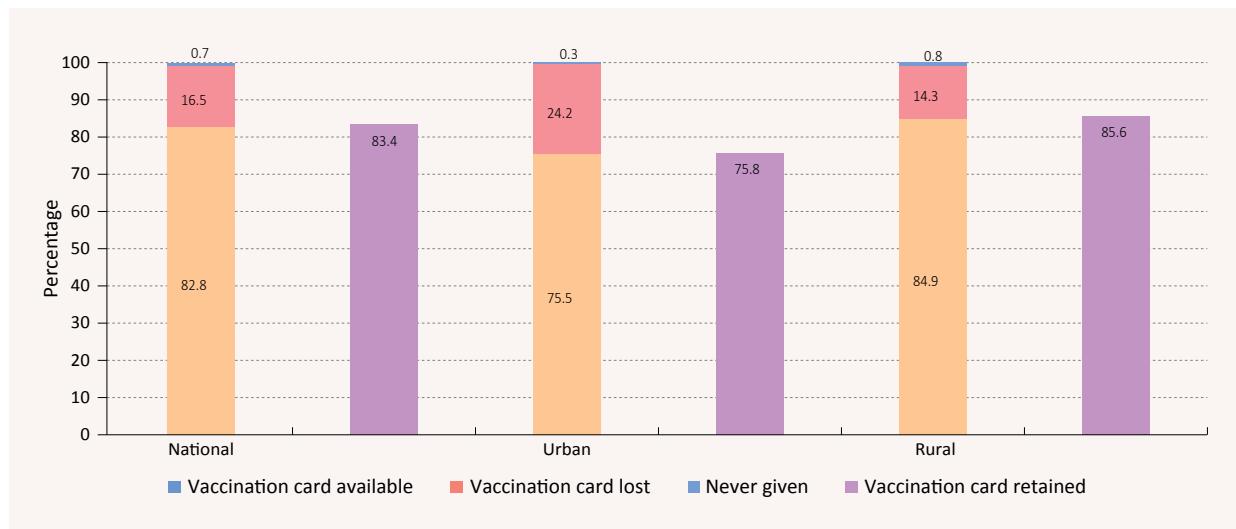


3.4 PROGRAMME QUALITY

3.4.1 Card Retention Rate

Vaccination cards were issued to all children at the time of their first vaccination. The card contains the dates of first vaccines given to the children, as well as the dates they received subsequent doses. The availability of the card was an important tool for the Coverage Evaluation Survey, as vaccination dates were obtained from the card to estimate the crude and valid coverage. The card retention rate was defined as the proportion of cards available during the survey from the number cards issued at the time of first vaccination. Nationally, 99.3 percent of children received the vaccination card and 83.4 percent of the mothers/caregivers retained it (see Figure 47). The retention rate was considerably higher in rural areas (85.6 percent) than urban ones (75.8 percent).

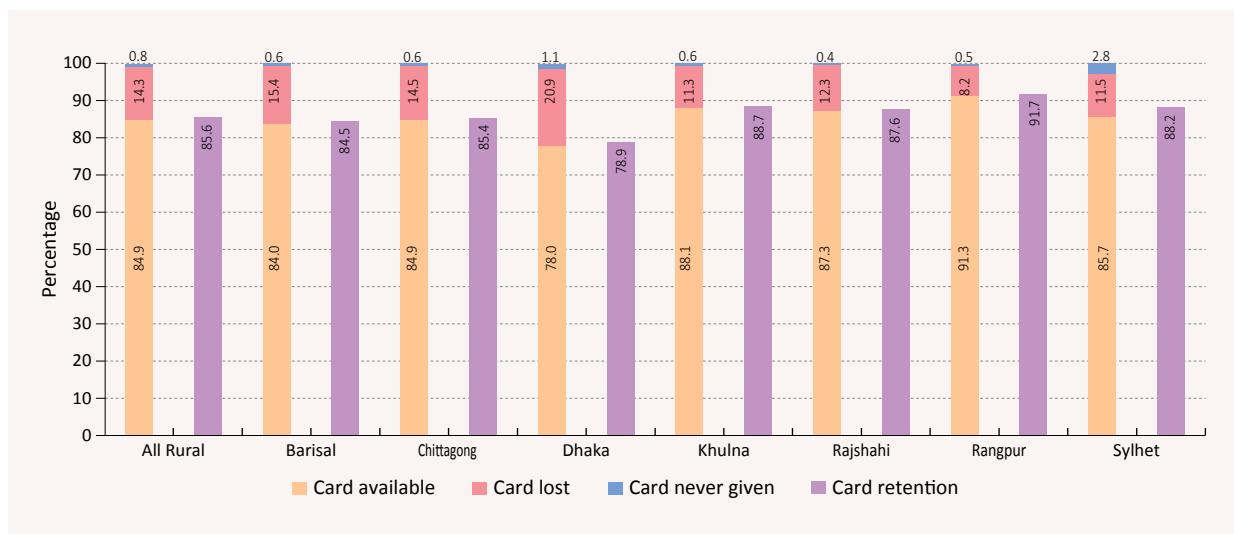
Figure 47: Vaccination Card Status by National, Rural and Urban Areas in 2014



Source: CES 2014

Among rural areas, the card retention rate was highest in Rangpur division (91.7 percent) and lowest in Dhaka (78.9 percent) divisions, with the others being in the upper to mid-80's percentages (see Figure 48).

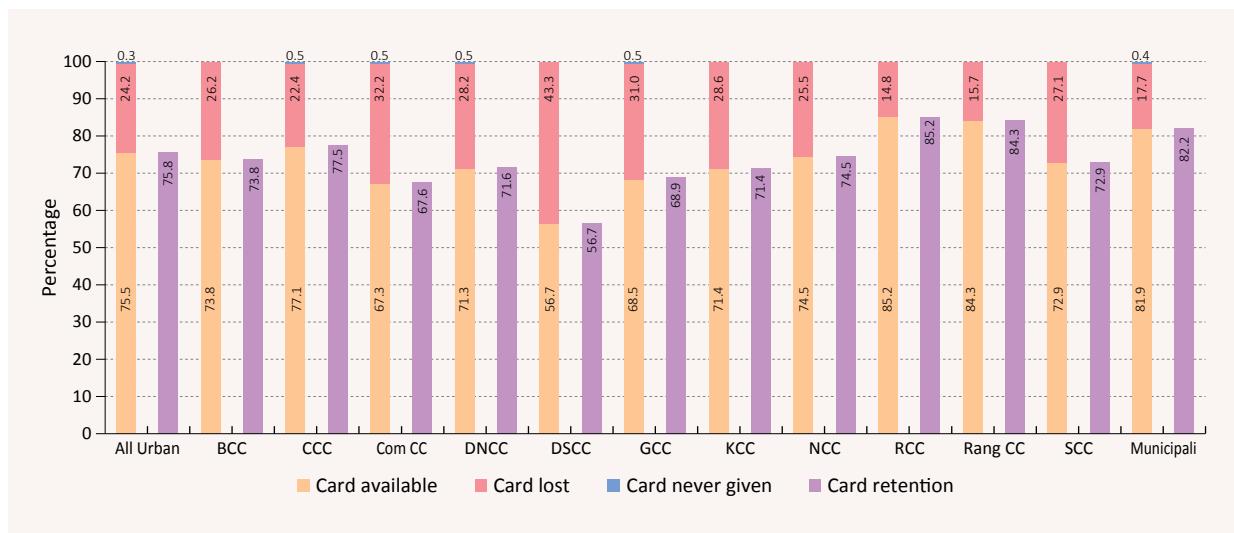
Figure 48: Vaccination Card Status in Rural Areas by Division in 2014



Source: CES 2014

Figure 49 depicts the card retention rate in urban areas by city corporation. It shows that card retention rate was highest in RCC (85.2 percent) and lowest in DSCC (56.7 percent) with great variation among the others between those two numbers.

Figure 49: Vaccination Card Status in Urban Areas by City Corporation and Municipality in 2014

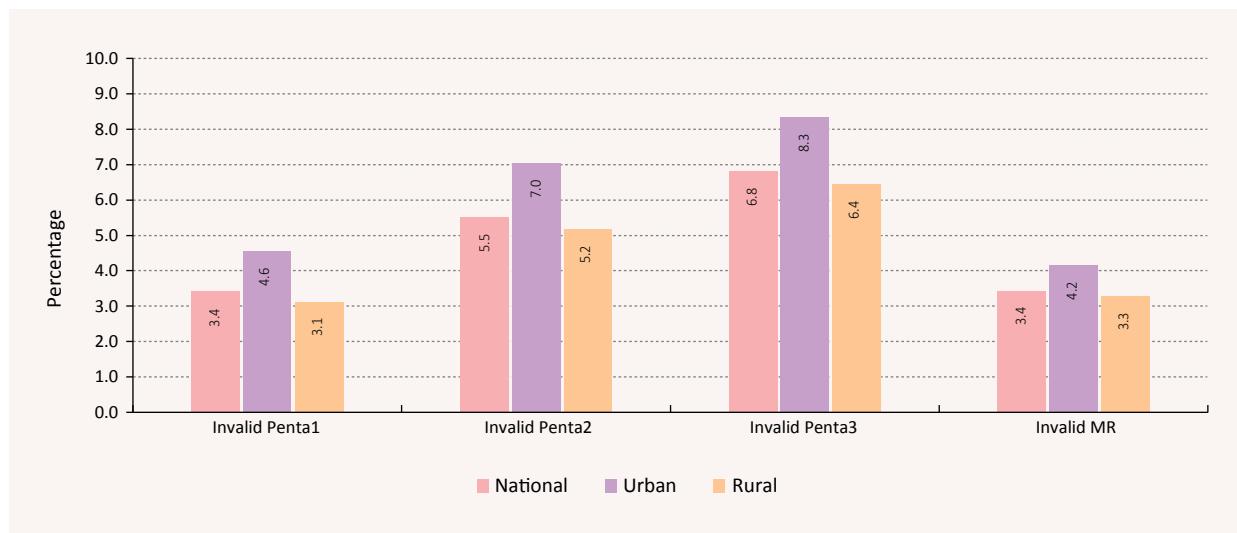


Source: CES 2014

3.4.2 Incidences of Invalid Doses

As it has been discussed earlier, a dose was considered to be invalid when the vaccine was administered without following the EPI-recommended childhood vaccination schedule, as outlined in Table 3. When any dose of any antigen is administered before the recommended age and/or interval, it is treated as an “invalid” dose. CES 2014-estimated invalid doses for Penta1, Penta2, Penta3, and MR vaccines are presented in Figure 50. The highest number of invalid doses were for Penta3 (6.8 percent) and the lowest numbers were for Penta1 and MR vaccines, both at 3.4 percent. There was a slight variation of invalid doses between urban and rural areas, with invalid doses found to be higher in urban areas for both Penta and MR vaccines.

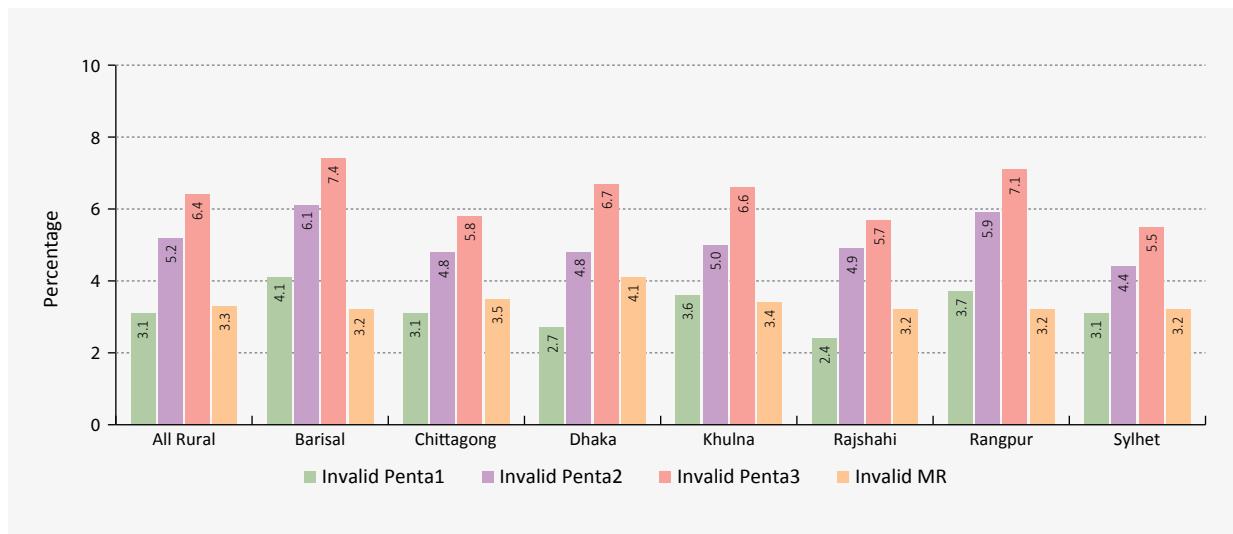
Figure 50: Incidence of Invalid Penta1, Penta2, Penta3, and MR by National, Rural and Urban Areas in 2014



Source: CES 2014

Figure 51 presents invalid doses of different antigens by rural division. It shows that the highest proportion of invalid Penta1 dose was administered in Barisal division (4.1 percent) and the lowest in Rajshahi division (2.4 percent). Similarly, invalid Penta2 and Penta3 doses were again highest in Barisal division (6.1 percent, and 7.4 percent) and lowest in Sylhet division (4.4 percent and 5.5 percent, respectively). Regarding invalid MR, Dhaka division administered the highest invalid dose (4.1 percent) and Barisal, Rangpur, Rajshahi, and Sylhet divisions administered the lowest (3.2 percent each).

Figure 51: Incidence of Invalid Penta1, Penta2, Penta3 and MR in Rural Areas by Division in 2014

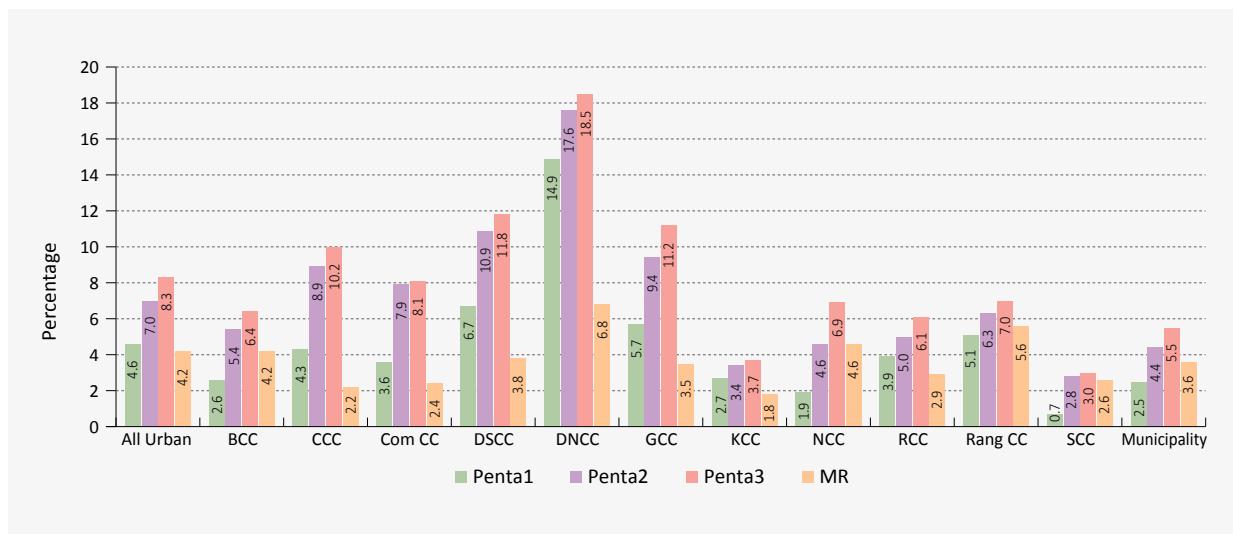


Source: CES 2014

By antigen, as shown in Figure 52, the highest percentage of invalid doses was in DNCC, for all antigens, with the highest rate being for invalid Penta3 (18.5 percent), and the next highest Penta3 dropping to 11.8 percent in DSCC. There was a wide range of percentages of invalid incidents, with the lowest rate being in SCC (0.7 percent).

According to the EPI-recommended childhood vaccination schedule, MR should be received after 270 days of age, but not later than 365 days. In DNCC, 6.8 percent of children received a MR vaccination outside of that range, the highest percentage. The lowest percentage was 1.8 percent in KCC (see Figure 52).

Figure 52: Incidence of Invalid Penta1, Penta2, Penta3 and MR in Urban Areas by City Corporation and Municipality in 2014



Source: CES 2014

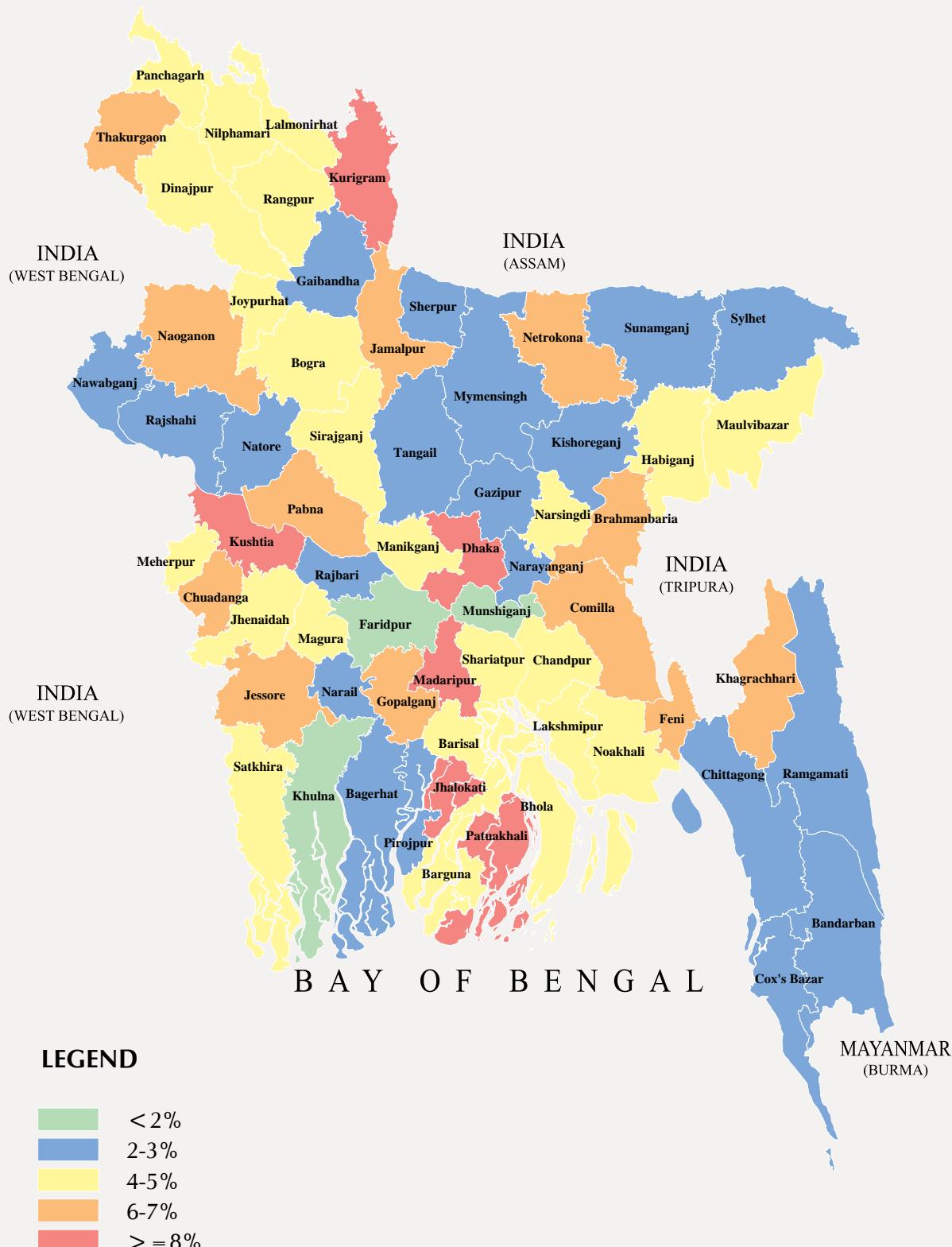
Map 11: Incidence of Invalid Penta 1 dose by Age of 12 Months by District



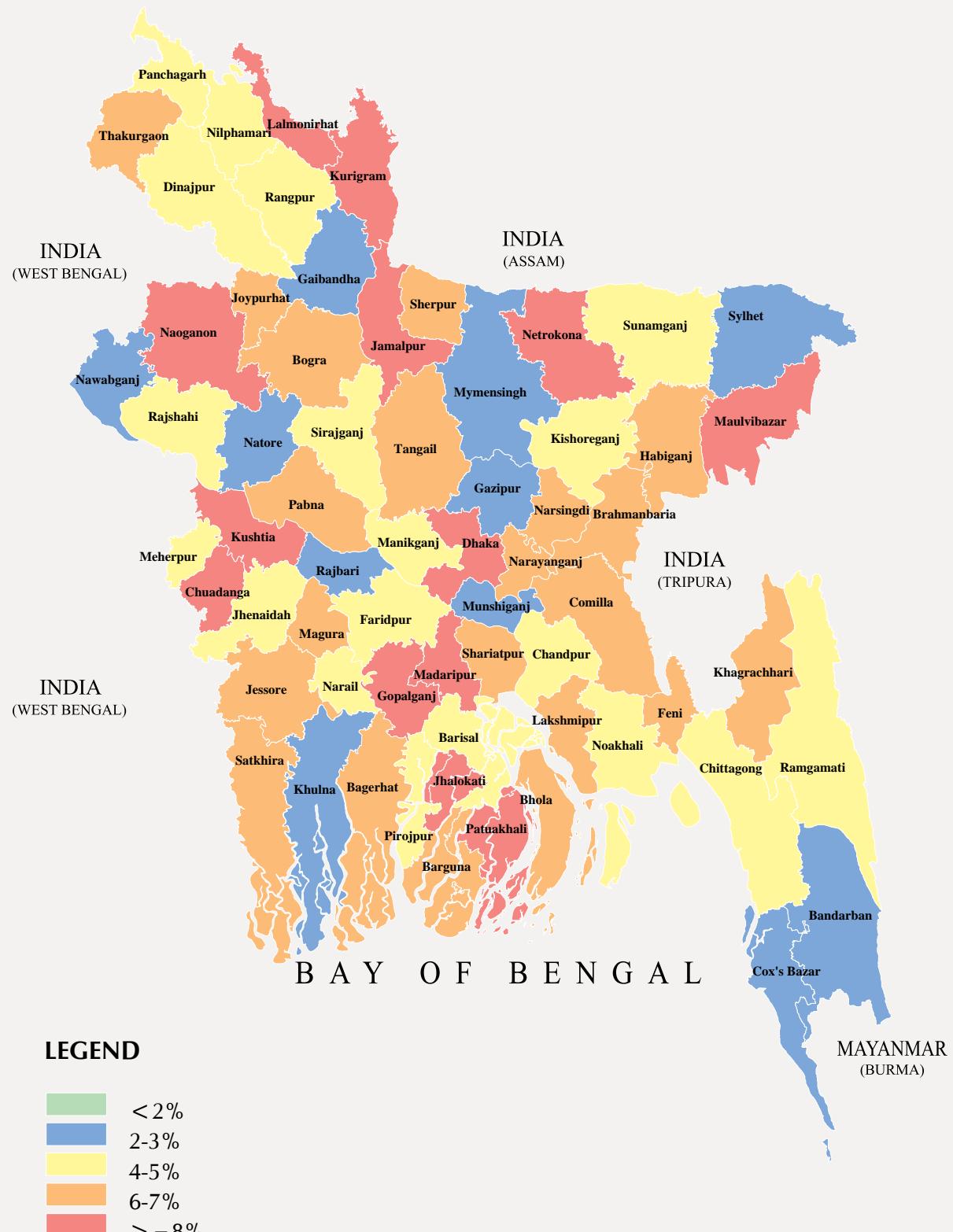
LEGEND

	< 2%
	2-3%
	4-5%
	6-7%
	> = 8%

Map 12: Incidence of Invalid Penta 2 doses by Age of 12 Months by District



Map 13: Incidence of Invalid Penta 3 doses by Age of 12 Months by District



Map 14: Incidence of Invalid MR Doses by Age of 12 Months by District

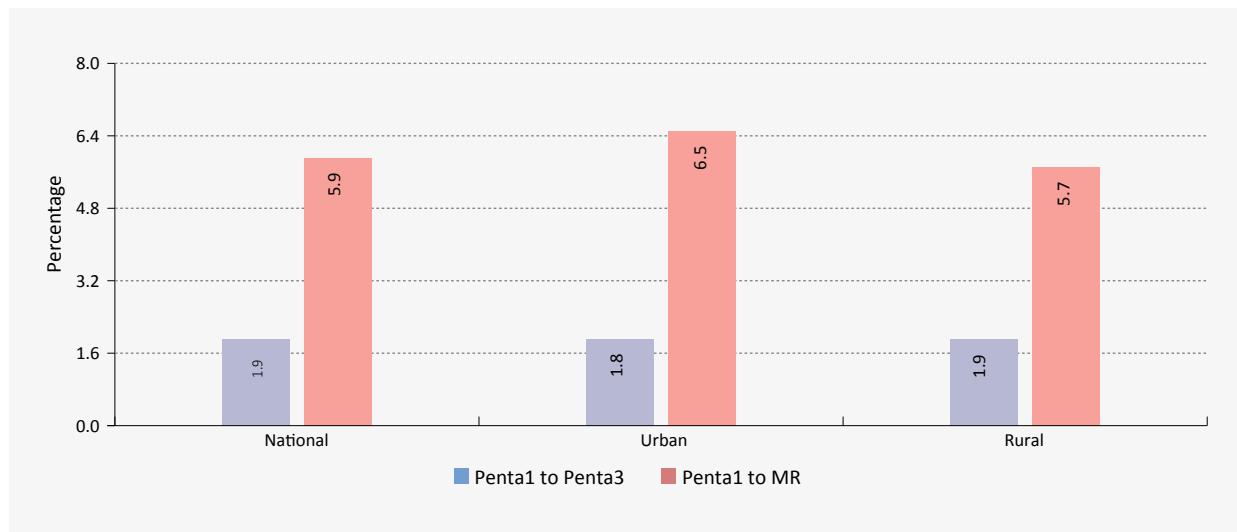


3.4.3 Vaccination Drop-Out Rates

A low vaccination drop-out rate is crucial to achieving the desired coverage target. To be fully vaccinated, children should receive all the antigens as per the EPI-recommended vaccination schedule before their first birthday. When a child fails to receive a subsequent dose of any one of the same or different recommended vaccines (one dose of BCG, three doses each of Penta and OPV, and one dose of MR vaccine), it is interpreted as a drop-out case. In CES 2014, the drop-out rate from Penta1-Penta3 was defined as the proportion of children who received Penta1, but failed to receive Penta3. Similarly, the drop-out rate from Penta1-MR was defined as the proportion of children who received Penta1 but failed to receive MR.

Figure 53 presents the drop-out rates from Penta1-Penta3 and Penta1-MR. Nationally, the Penta1-Penta3 drop-out rate was 1.9 percent, with the rate was slightly lower in urban areas (1.8 percent) than in rural areas (1.9 percent). In comparison, the Penta1-MR drop-out rate was 5.9 percent as a whole, and almost one percentage point higher in urban areas (6.5 percent) than rural (5.7 percent).

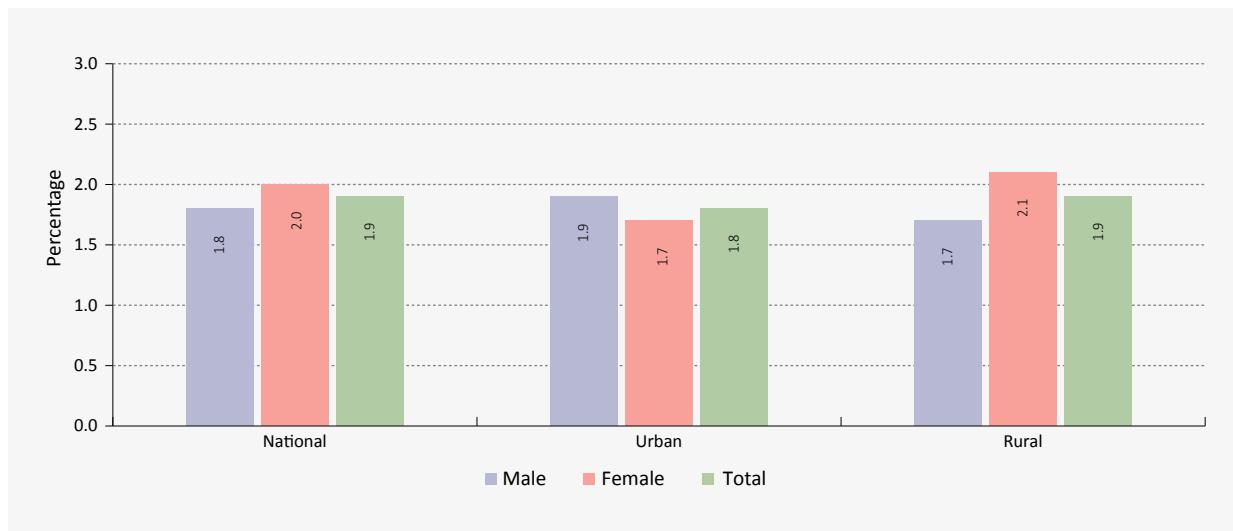
Figure 53: Vaccination Dropout Rates from Penta1-Penta3 and Penta1-MR by National, Rural and Urban Areas in 2014



Source: CES 2014

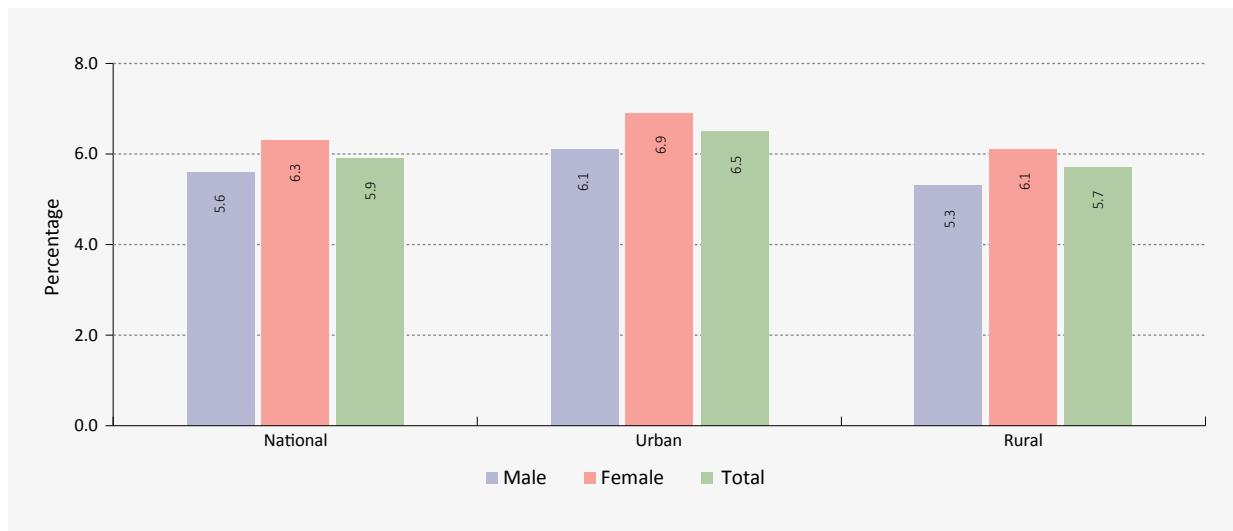
By sex, the drop-out rate from Penta1-Penta3 was slightly higher among females than among males (2.0 percent vs. 1.8 percent), a similar finding for the Penta1-MR drop-out rate. Nationally, a slightly higher proportion of females (6.3 percent) failed to receive MR, compared to their male counterparts (5.6 percent) (see Figures 53a and 53b).

Figure 53a: Vaccination Dropout Rate from Penta1-Penta3 by Sex at National Level in 2014



Source: CES 2014

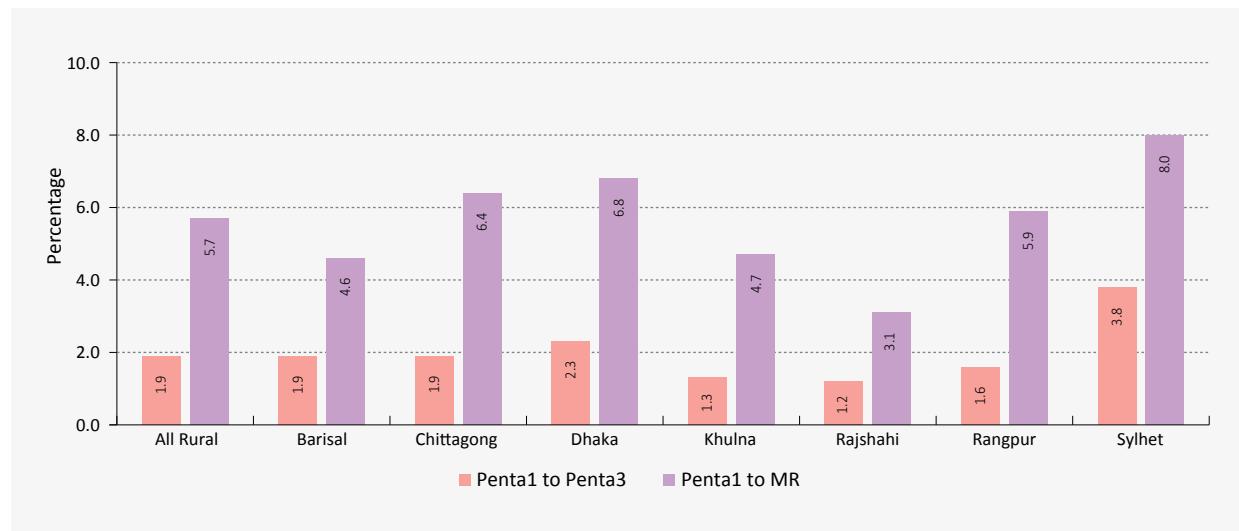
Figure 53b: Vaccination Dropout Rate from Penta1-MR by Sex at National Level in 2014



Source: CES 2014

Figure 54 presents the drop-out rate by rural division. Among the seven divisions, the Penta1-Penta3 drop-out rate was highest in Sylhet division, at 3.8 percent, with the next highest considerably lower, at 2.3 percent, in Dhaka and the lowest being 1.2 percent in Rajshahi division. Similarly, Penta1-MR drop-out rate was highest in Sylhet (8.0 percent) and lowest in Rajshahi divisions (3.1 percent). The Penta1-MR drop-out rate ranged between 4.6 percent and 6.8 percent in other divisions.

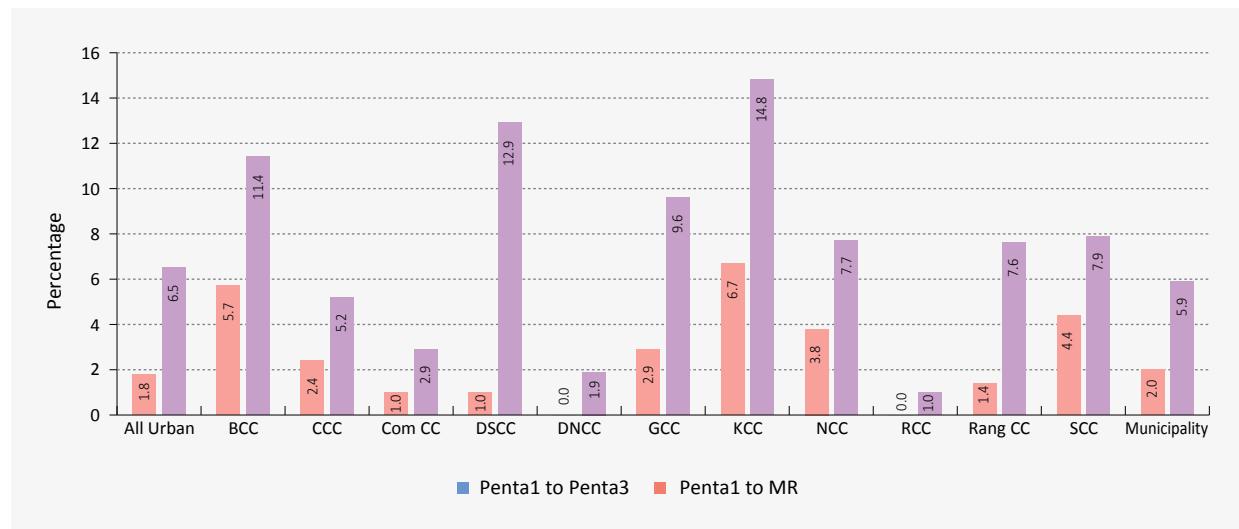
Figure 54: Vaccination Dropout Rates from Penta1-Penta3 and Penta1-MR in Rural Areas by Division in 2014



Source: CES 2014

Figure 55 illustrates the drop-out rate in the urban context by city corporation. Among the city corporations, the highest Penta1-Penta3 drop-out rate ranged from 6.7 percent in KCC to 1.0 percent in DSCC, with no drop-out rate observed in DNCC and RCC. Similarly, the Penta1-MR drop-out rate was again highest in KCC (14.8 percent) and the lowest in RCC (1.0 percent). In other city corporations, the Penta1-MR drop-out rate was between 1.9 percent and 12.9 percent.

Figure 55: Vaccination Dropout Rates from Penta1-Penta3 and Penta1-MR in Urban Areas by City Corporation and Municipality in 2014



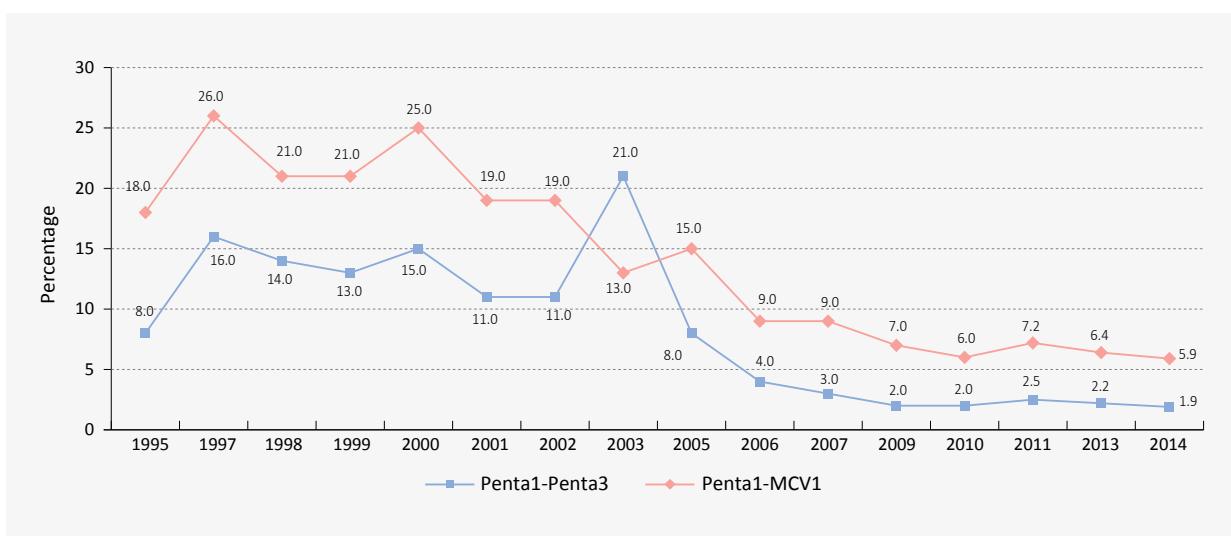
Source: CES 2014

3.4.3.1 Trend in National Drop-out Rates

In analysis of the trend in national drop-out rates, considerable improvement can be seen in the rates of over a decade ago. The drop-out rate for Penta1-Penta3 vaccinations fluctuated greatly from 1995 to 2003, when it rose from 8.0 percent to 21.0 percent (see Figure 56). After the high of 2003, it again dropped to 8.0 percent in 2005, and decreased down to 2.0 percent in 2009. Since then, it has ranged around 2.0 percent, including in 2014, when it was 1.9 percent.

The declining trend was also observed for Penta1-MCV1 drop-out rate. Penta1-MCV1 drop-out rate decreased by 3 percentage points- from 18.0 percent in 1995 to 15.0 percent in 2005, when it, too, began a sharp decline by 9 percentage points to 5.9 percent in 2014. While not as stable as the Penta1-Penta3 rate, it has ranged between 7.0 percent and 5.9 percent since 2009.

Figure 56: Annual Trend in National Vaccination Drop-out Rates for Penta1-Penta3 and Penta1-MCV1 from 1995-2014



Source: Coverage Evaluation Surveys 1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

3.4.3.2 Trend in the Divisional Drop-out Rates

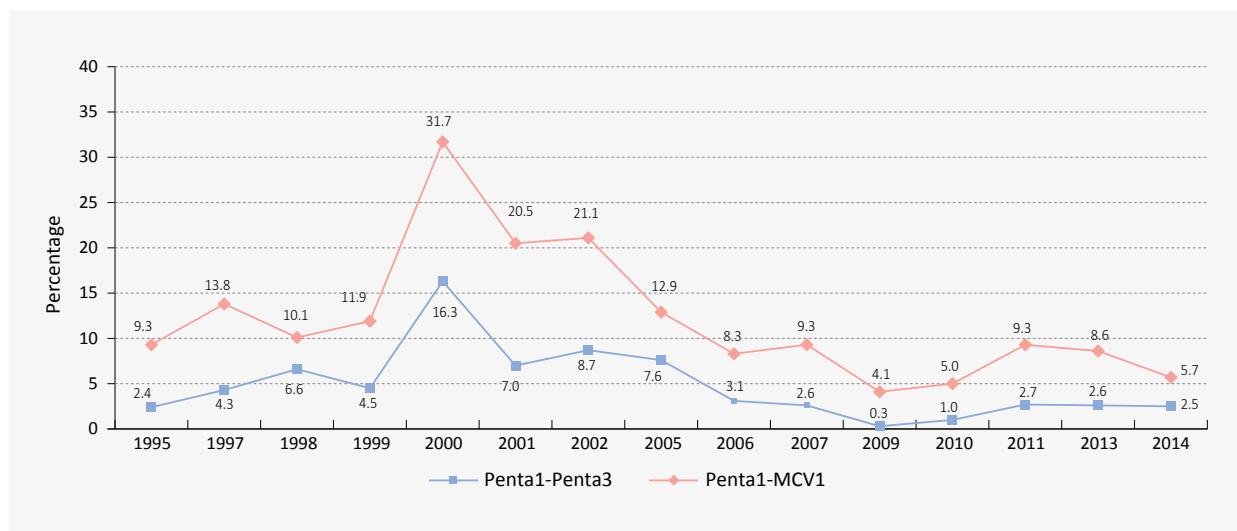
Figures 57-62 show the trend in the divisional drop-out rate from Penta1-Penta3 and Penta1-MCV1 (Rangpur divisions' figures are included in the Rajshahi divisions' figures before 2010, the year Rangpur became its own division). The figures suggest that the trend of both Penta1-Penta3 and Penta1-MCV1 drop-out rates are on a declining trend since 2005, but fluctuations remain in some divisions remain in some divisions more than others. While for most, with the exception of Barisal, have shown an overall decline in Penta1-Penta3 since 2005, with Rajshahi division reaching 1.0 percent in 2014, the lowest level of all the divisions. In Barisal, after hitting a low of 0.3 percent in 2009, its Penta1-Penta3 drop-out rate has risen to 2.5 percent, which was the second highest rate in 2014, after Sylhet's 4.3 percent.

During the same 1995 to 2014 period, the Penta1-MCV1 drop-out rate decreased at an even more rapid pace than Penta1-Penta3 for all divisions. After highs in the 2000 and 2001 that ranged from 18.2 percent in Khulna to 45.7 percent in Sylhet, most divisions experienced a very steep decline through the next decade. By 2010, Sylhet's rate was 37 percentage points lower, at 9.0 percent and Barisal had declined 26 percentage points to 5.0 percent, a trend that the other divisions shared. By 2010, the divisions had reached rates of 3.0 percent in Rajshahi to 9.0 percent in Sylhet. Since then, most experienced an increase in 2011, but have again either stabilised or declined. The exception is Khulna, which has increased each

CES from 4.0 percent in 2010 to 6.1 percent in 2014. As of the CES 2014, the lowest Penta1-MCV1 drop-out rate is in Rajshahi, at 2.8 percent, and the highest is in Sylhet, at 8.6 percent.

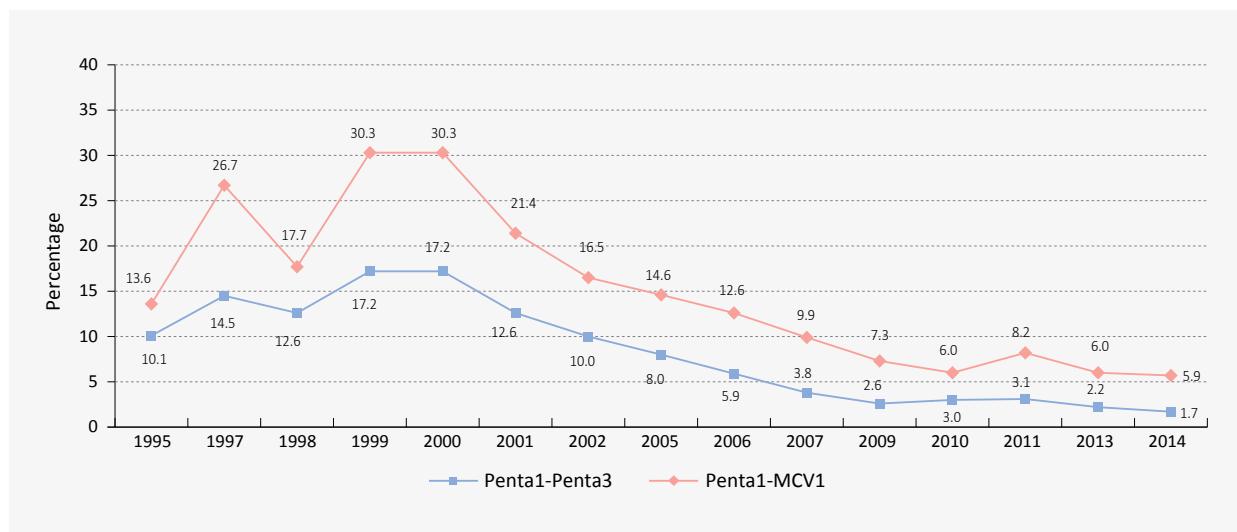
The trend analysis also suggests that compared to CES 2013, both Penta1-Penta3 and Penta1-MCV1 drop-out rates slightly decreased in Dhaka, Chittagong, Rajshahi and Barisal divisions. However, a slight increase in both the drop-out rates (Penta1-Penta-3 and Penta1-MCV1) was depicted in Sylhet and Khulna divisions which might be attributed to lower full vaccination coverage.

Figure 57: Annual Trend in Vaccination Drop-out Rates for Penta1-Penta3 and Penta1-MCV1 in Barisal Division from 1995 to 2014



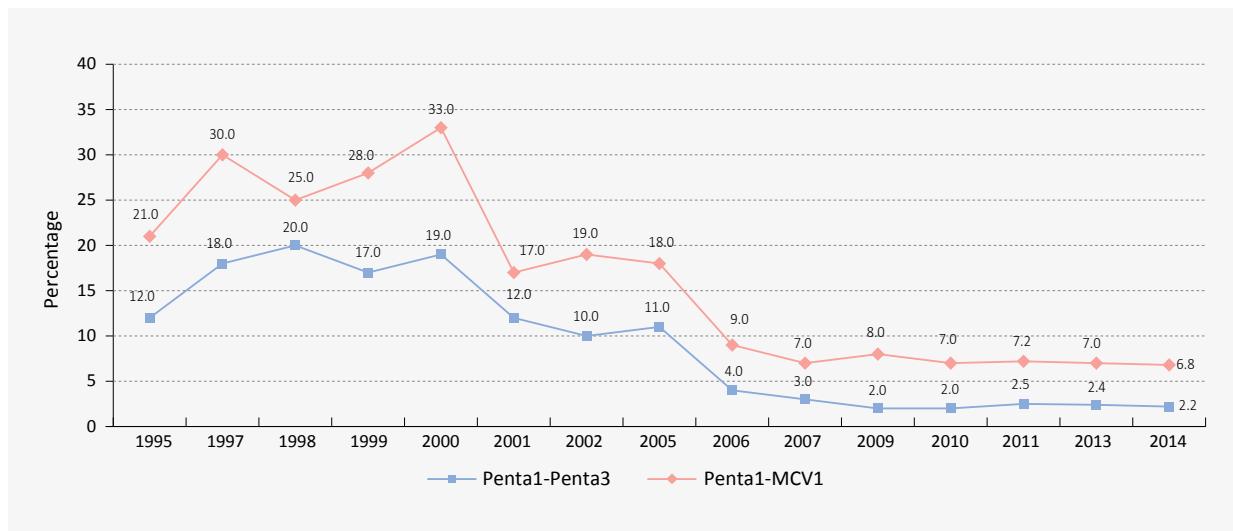
Source: Coverage Evaluation Surveys 1995, 1997-2002, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Figure 58: Annual Trend in Vaccination Drop-out Rates for Penta1-Penta3 and Penta1-MCV1 in Chittagong Division from 1995 to 2014



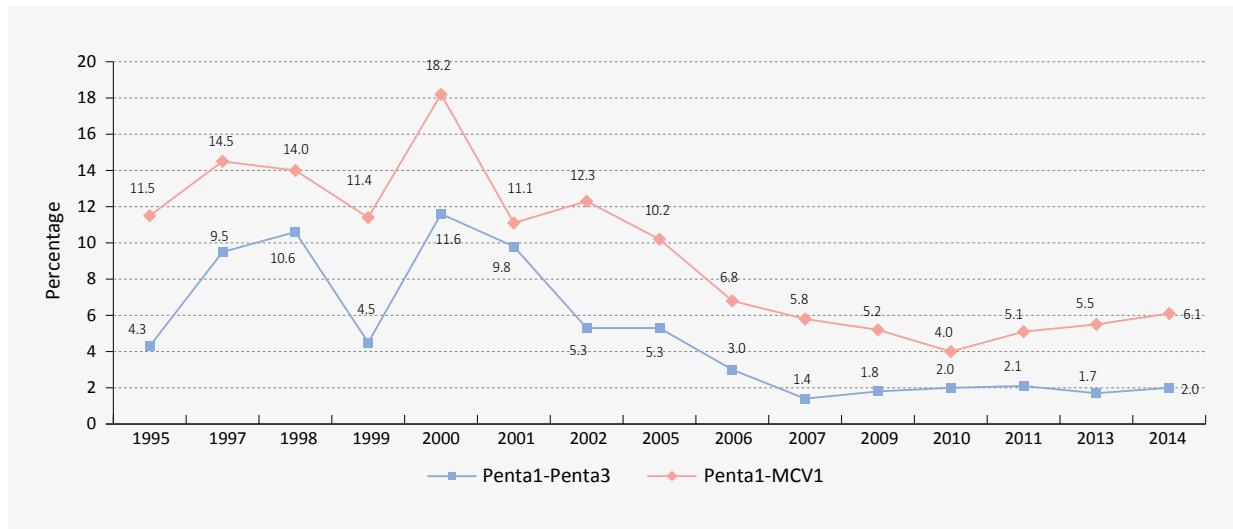
Source: CES 1995, 1997-2002, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Figure 59: Annual Trend in Vaccination Drop-out Rates for Penta1-Penta3 and Penta1-MCV1 in Dhaka Division from 1995 to 2014



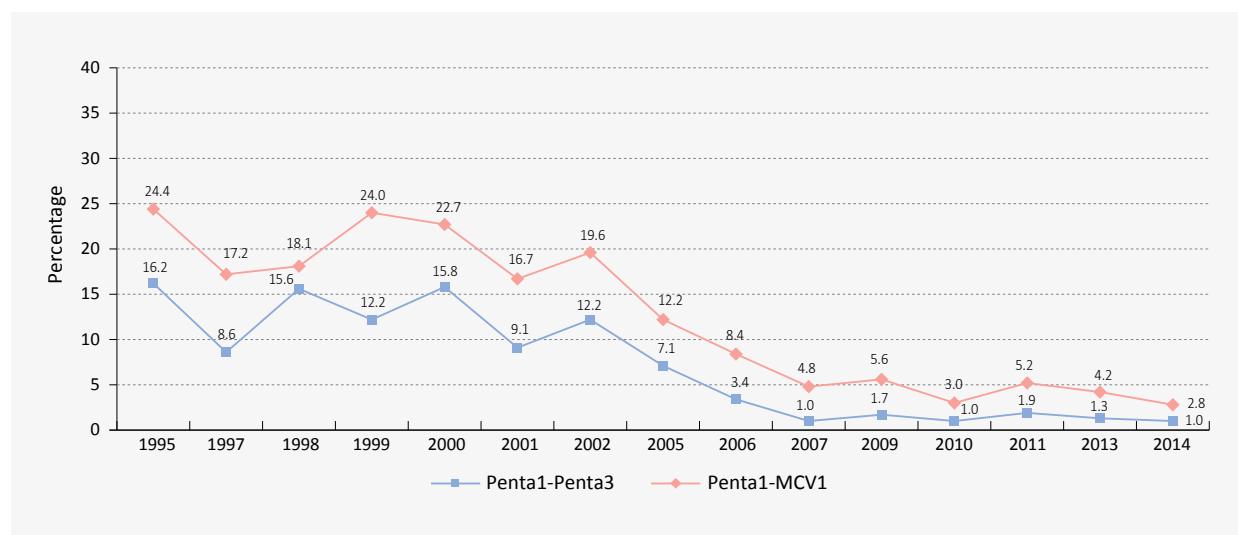
Source: CES 1995, 1997-2002, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Figure 60: Annual Trend in Vaccination Drop-out Rates for Penta1-Penta3 and Penta1-MCV1 in Khulna Division from 1995 to 2014



Source: Coverage Evaluation Surveys 1995, 1997-2002, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

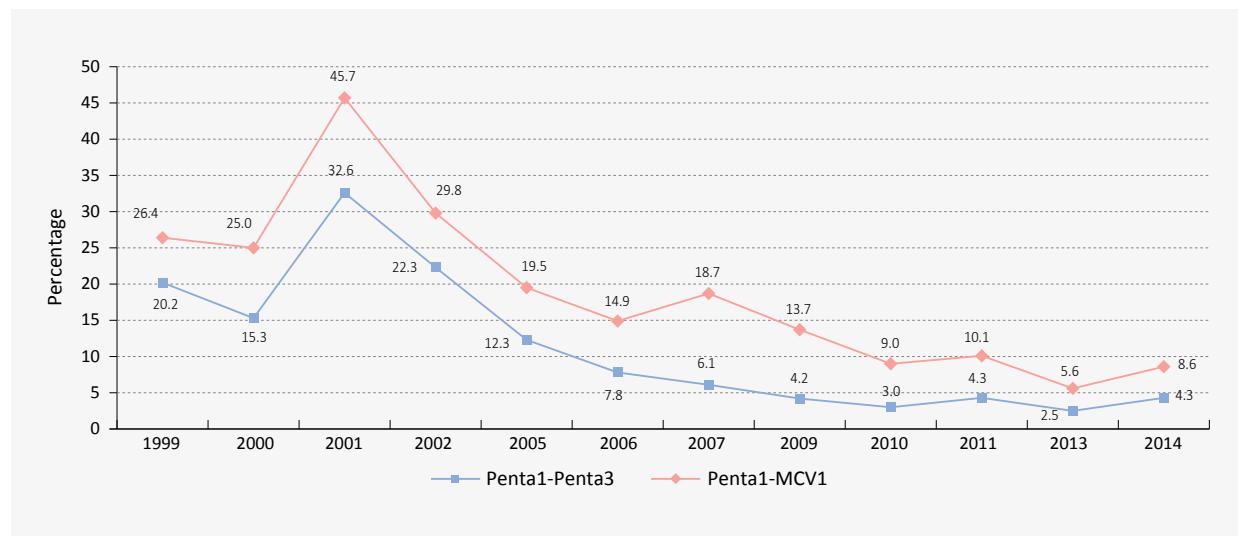
Figure 61: Annual Trend in Vaccination Drop-out Rates for Penta1-Penta3 and Penta1-MCV1 in Rajshahi Division* from 1995 to 2014



Source: CES 1995, 1997-2002, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

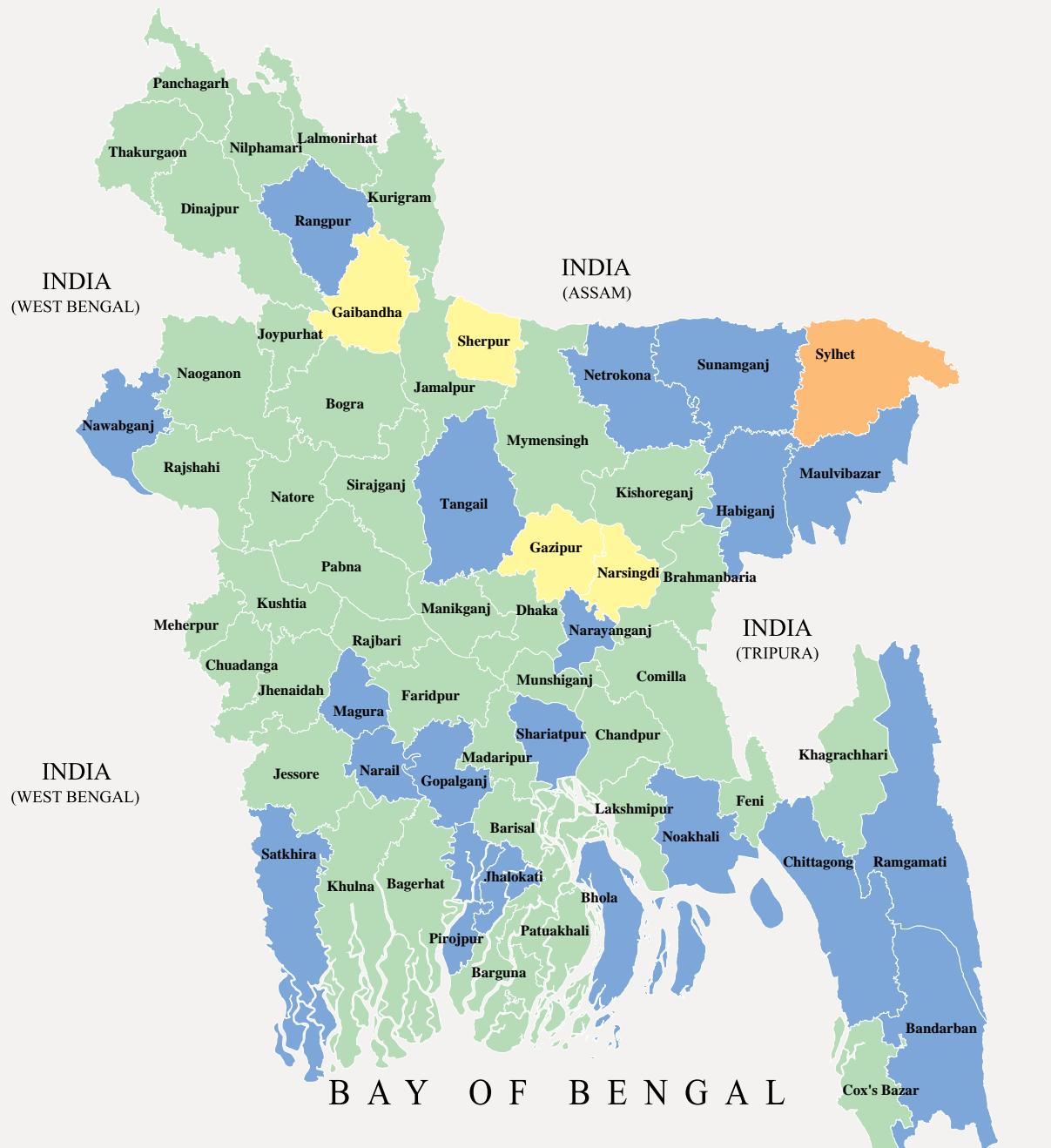
• Before 2010 Rangpur division included in Rajshahi division

Figure 62: Annual Trend in Vaccination Drop-out Rates for Penta1-Penta3 and Penta1-MCV1 in Sylhet Division from 1999 to 2014



Source: CES 1999-2002, 2005, 2006, 2007, 2009, 2010, 2011, 2013 and 2014

Map 15: Vaccination Drop-out Rate for Penta1-Penta3 by Age of 23 Months by District



LEGEND

- < 2%
- 2-3%
- 4-5%
- 6-7%
- > = 8%

Map 16: Vaccination Drop-out Rate for Penta1-MR by Age of 23 Months by District



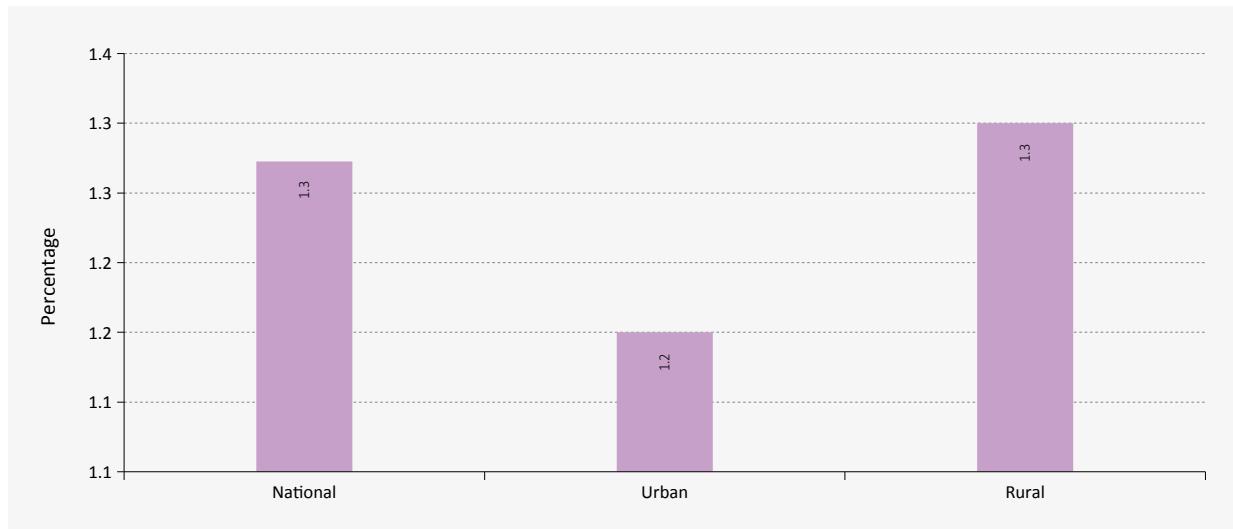
LEGEND

	< 2%
	2-3%
	4-5%
	6-7%
	> = 8%

3.4.4 Adverse Events Following the Immunization

In rare cases, adverse events may occur following vaccination. In CES 2014, mothers/caregivers at Penta or MR vaccinations were asked about adverse events. Nationally, 1.3 percent of the mothers/caregivers of vaccinated children reported that their children developed abscesses as a form of AEFI after receiving Penta or MR vaccines, with very little difference between children in urban (1.2 percent) and rural (1.3 percent) areas (see Figure 63).

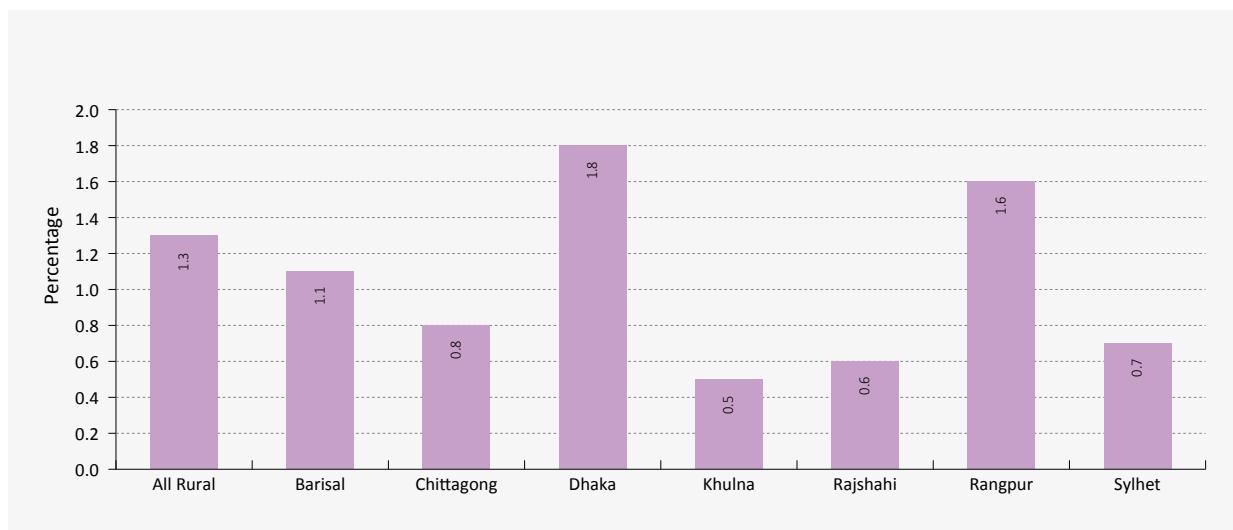
Figure 63: Incidents of Abscesses Following Pentavalent or MR Vaccination by National, Rural and Urban Areas



Source: CES 2014

In rural areas, the division with the highest proportion of children who experienced abscesses was Dhaka (1.8 percent) and the lowest proportion was in Khulna division (0.5 percent). In the other divisions, the rate ranged between 1.1 percent and 0.6 percent.

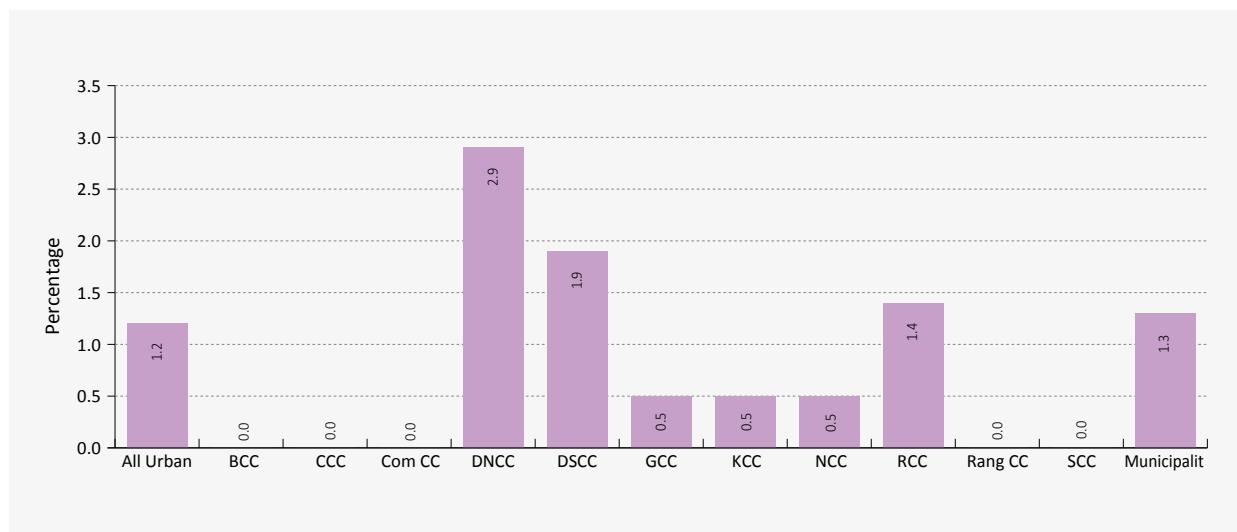
Figure 64: Incidence of Abscess Following Pentavalent or MR Vaccination in Rural Areas by Division in 2014



Source: CES 2014

Among the city corporations, the incidence of adverse events was highest in DNCC (2.9 percent), followed by DSCC (1.9 percent) and RCC (1.4 percent). However, there were no reports of children experiencing abscesses in Rang CC, CCC, BCC, Com CC and SCC.

Figure 65: Incidence of Abscess Following Pentavalent or MR Vaccination in Urban Areas by City Corporation and Municipality in 2014

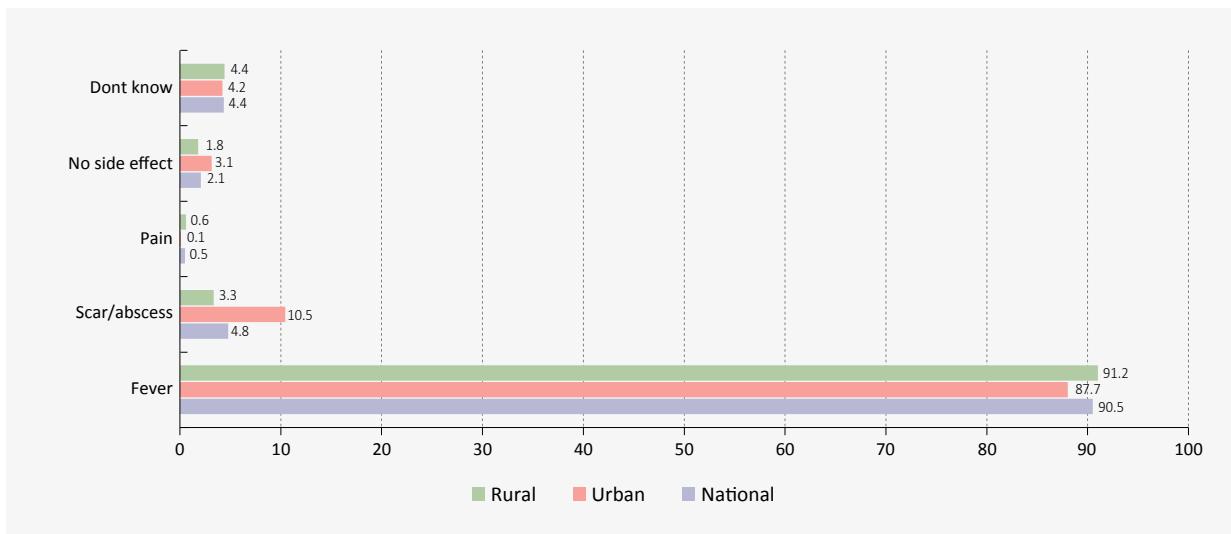


Source: CES 2014

3.4.5 Knowledge about the Common Side-Effects of Vaccination

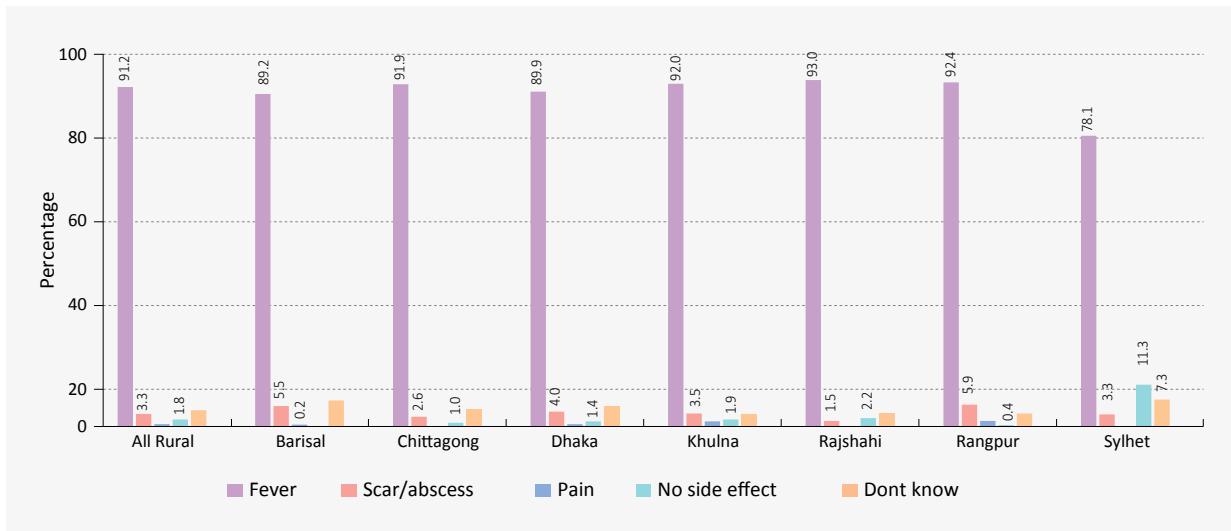
Vaccinations can cause minimal side-effects, such as fevers or local reactions at the injection site. CES 2014 assessed the knowledge of mothers/caregivers regarding the minor side-effects caused by vaccination. Overall, fever was the most reported known side-effect overall: nationally, by 90.5 percent of the mothers/caregivers and by 87.7 percent in urban areas and 91.2 percent in rural (see Figure 66). Among rural divisions, more than 90.0 percent of the mothers/caregivers from Rangpur, Rajshahi, Khulna, and Chittagong reported knowing that fever can be a side effect (see Figure 67). A little over three-quarters of the mothers/caregivers (78.1 percent) from Sylhet division reported it, followed by Barisal (89.2 percent) and Dhaka divisions (89.9 percent) (see Figure 67). Likewise, more than 90.0 percent of the mothers/caregivers from DSCC, CCC, RCC, BCC, KCC, Com CC, and Rang CC reported knowing about the possibility of fever. In the other city corporations, the proportion of the mothers/caregivers who reported knowing fever is a common side-effect ranged from 57.6 percent to 78.6 percent (see Figure 68).

Figure 66: Knowledge on Adverse Events Following Vaccination by National, Rural and Urban Areas in 2014 (%)



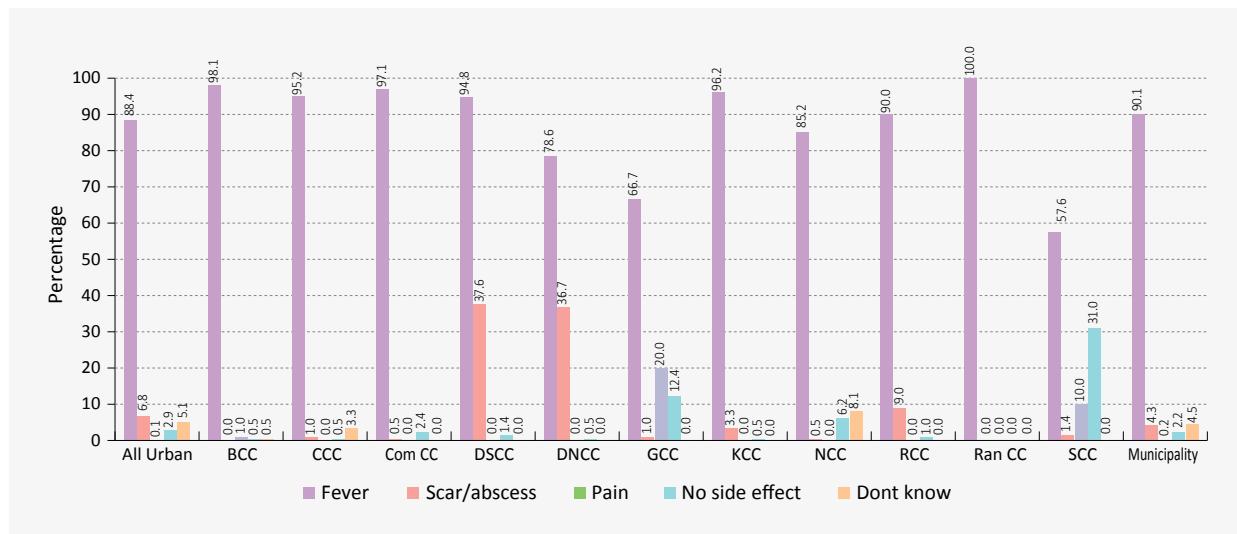
Source: CES 2014

Figure 67: Knowledge on Adverse Events Following Vaccination in Rural Areas by Division in 2014



Source: CES 2014

Figure 68: Knowledge on Adverse Events Following Vaccination in Urban Areas by City Corporation in 2014



Source: CES 2014

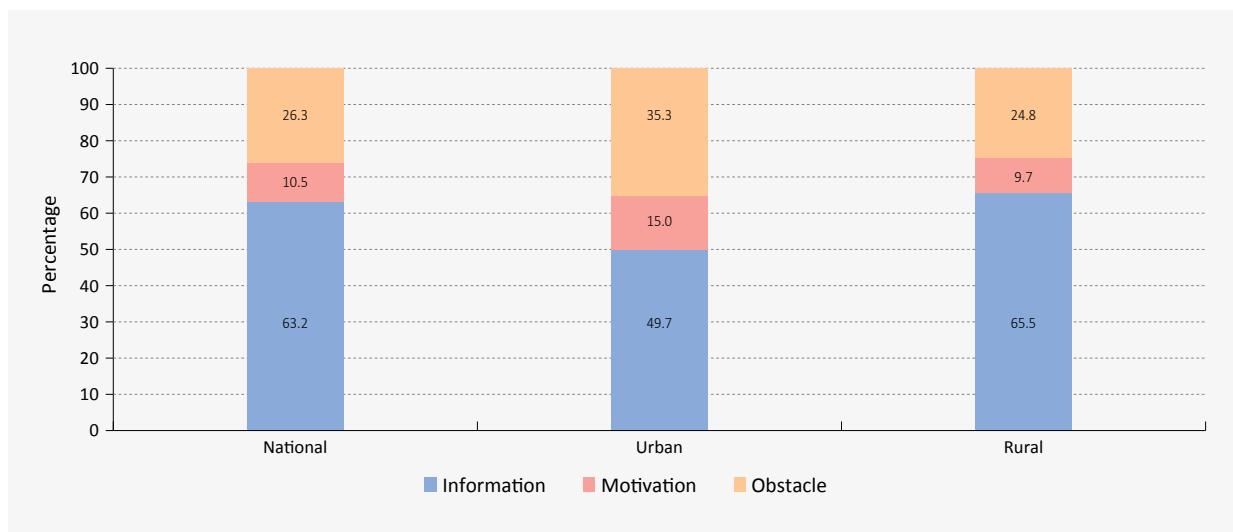
3.5 REASONS FOR NEVER VACCINATION OR PARTIAL VACCINATION

Left-outs, those who never received a vaccination, and drop-outs from subsequent doses result in low crude and valid vaccination coverage. CES 2014 addressed reasons for not receiving the vaccine. The findings are presented below.

3.5.1 Reasons for Never Vaccination

Among the surveyed children, less than 1 percent did not receive any vaccine. Figure 69 presents reasons for never vaccinating children, with the reasons mentioned by the mothers/caregivers grouped into three broad categories: lack of information; lack of motivation; and obstacles. The figure shows that nearly two-thirds (63.2 percent) of the mothers lacked information about the vaccination service, for example they did not know that the child should be given a vaccine, they feared side-effects, or they did not know where to go for vaccinations. A little over one-tenth of the mothers/caregivers reported the causes were related to the lack of motivation, and a little over one quarter (26.3 percent) mentioned obstacles either on the supply or demand sides.

Mothers/caregivers in rural areas (65.5 percent) were less aware of information on vaccinations and vaccination services than those living in urban areas (49.7 percent). Conversely, mothers/caregivers residing in urban areas (35.3 percent) reported more on obstacles as the major reason for never vaccinating their children than those living in rural areas (24.8 percent). Similarly, 15.0 percent of the mothers/caregivers from urban areas reported a lack of motivation, as against 9.7 percent of those who resided in rural areas (see Figure 69).

Figure 69: Reasons of Never Vaccination by National, Rural and Urvan Areas in 2014

Source: CES 2014

Table 5: Reasons for Never Vaccination by National, Rural and Urban Areas in 2014

Reasons		National	Urban	Rural
Lack of Information	Didn't know that my child should be given vaccine	33.9	14.6	37.2
	Didn't know when to go for the second/third dose	1.1	7.3	0.0
	Didn't know where to go for vaccine	3.5	10.2	2.3
	Fearing side effects	24.7	17.6	26.0
	Rumor	1.4	0.0	1.6
Lack of motivation	Don't believe in vaccination	9.1	15.0	8.1
	Was busy and so couldn't give vaccine to child	10.7	3.9	11.8
	Will give vaccine in future	0.3	0.0	0.3
	There was a long queue in the vaccination centre	0.0	0.0	0.0
	Don't remember	0.9	1.5	0.8
Obstacles	Vaccine centre was too far	1.5	0.0	1.7
	The child was sick, so was not taken to the vaccination cent	7.1	30.0	3.1
	The child was sick, so the vaccinator didn't give vaccine	3.7	0.0	4.4
	Mother was sick	1.6	0.0	1.9
	Vaccinator did not give	0.6	0.0	0.7
Total		120	18	102

Table 6: Reasons for Never Vaccination in Rural Areas by Division in 2014

Reasons		All Rural	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet
Lack of Information	Didn't know that my child should be given vaccine	37.2	0.0	46.5	42.3			100.0	42.4
	Didn't know where to go for vaccine	2.3	0.0	0.0	6.5	0.0	0.0	0.0	0.0
	Fearing side effects	26.0	0.0	34.6	16.8	81.5	18.8	0.0	26.8
Lack of motivation	Rumor (Please mention)	1.6	0.0	0.0	0.0	0.0	17.2	0.0	
	Don't believe in vaccination	8.1	30.3	0.0	9.4	0.0	14.0	0.0	13.5
Obstacles	Was busy and so couldn't give vaccine to child	11.8	39.4	12.4	9.5	7.7	17.2	0.0	10.7
	Will give vaccine in future	0.3	0.0	1.1	0.0	0.0	0.0	0.0	0.0
	There was a long queue in the vaccination centre		0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Don't remember	0.8	30.3	0.0	0.0	0.0	0.0	0.0	0.0
	Vaccine centre was too far	1.7	0.0	4.6	0.0	10.8	0.0	0.0	0.0
	The child was sick, so was not taken to the vaccination centre	3.1	0.0	0.7	3.3	0.0	18.8	0.0	0.0
	The child was sick, so the vaccinator didn't give vaccine	4.4	0.0	0.0	5.0	0.0	14.0	0.0	6.6
	Mother was sick	1.9	0.0	0.0	5.2	0.0	0.0	0.0	0.0
	Vaccinator did not give	0.7	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Total		102	3	28	37	5	10	1	20

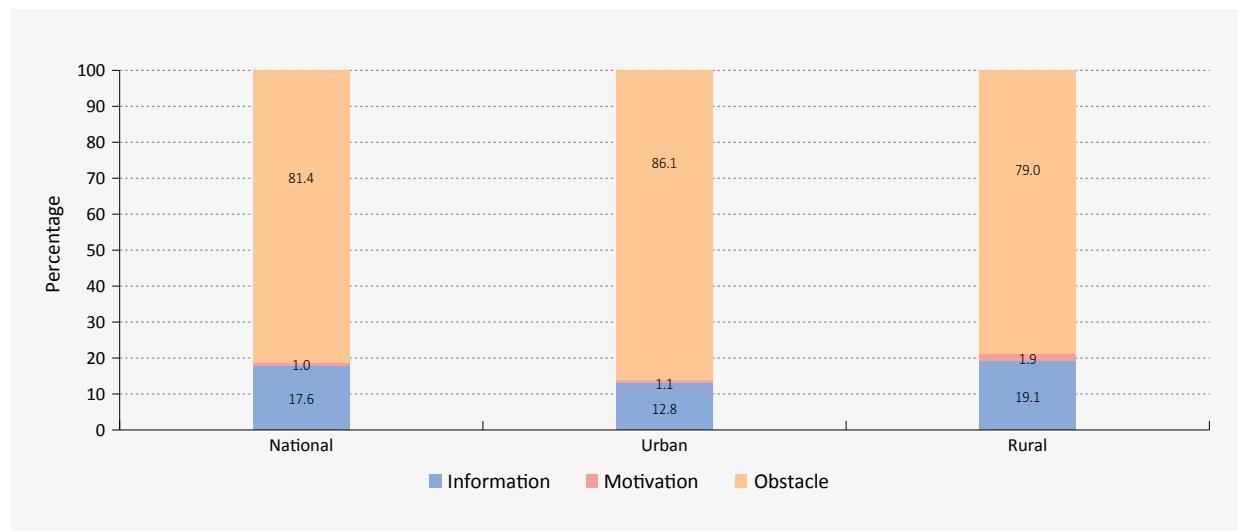
Table 7: Reasons for Never Vaccination by City Corporation and Municipality in 2014

Reasons	All Urban	BCC	CCC	Com CC	DNCC	DSCC	G CC	KCC	NCC	RCC	Rang CC	SCC	Municipality	
Lack of Information	Didn't know that my child should be given vaccine	14.6	0.0	0.0	0.0	100.0	0.0	0.0	0.0	50.0	0.0	0.0	14.3	0.0
	Didn't know when to go for the second/ third dose	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.1	
	Didn't know where to go for vaccine	10.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.0	
	Fear side effects	17.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.3	22.3	
	Don't believe in vaccination	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.6	16.6	
Obstacles	Was busy and so couldn't give vaccine to child	3.9	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	28.6	0.0	
	Don't remember	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.3	0.0	
	The child was sick, so was not taken to the vaccination centre	30.0	0.0	0.0	50.0	0.0	0.0	0.0	50.0	0.0	0.0		37.0	
Total	18	0.0	0.0	0	2	0.0	0.0	0.0	1	0.0	0.0	2	13	

3.5.2 Reasons for Partial Vaccination

Six percent of the surveyed children received partial vaccinations. Obstacles were the most common reason for partial vaccination, with four of every five mothers/caregivers reporting obstacles either on the supply or demand side. Eighty-six percent of the mothers/caregivers residing in urban areas reported obstacles for partial vaccination of their children, as compared to 79.0 percent in rural areas. Nationally, lack of information was reported by 17.6 percent of the mothers/caregivers as a reason for partial vaccination, 19.1 percent in rural areas and 12.8 percent in urban areas. Lack of motivation was the least reported reason for partial vaccinations (see Figure 70).

Figure 70: Reasons for Partial Vaccination by National, Rural and Urban Areas in 2014



Source: CES 2014

Table 8: Reasons for Partial Vaccination by National, Rural and Urban Areas in 2014

Reasons		National	Urban	Rural
Lack of information	Didn't know when to go for the second/third dose	2.1	2.6	2.0
	Didn't know when to go for vaccine of measles	5.3	4.0	5.7
	Fearing side effects	10.2	6.2	11.4
Lack of motivation	Rumor	1.0	0.3	1.2
	Don't believe in vaccination	0.7	0.8	0.7
Obstacles	Was busy and so couldn't give vaccine to child	41.2	42.4	40.9
	Will give vaccine in future	1.1	0.7	1.2
	Don't remember	20.1	17.4	20.8
	There was no vaccine in the center	0.6	1.4	0.4
	There was no vaccinator in the center	1.2	0.3	1.5
	Vaccine centre was too far	1.1	1.3	1.0
	Injection was too painful for the child	0.4	0.4	0.4
	Was abscess at the place of vaccine	0.3		0.3
	Faced difficulty after receiving vaccine	1.4	2.2	1.2
	Vaccinator was not friendly	0.1		0.2
	The child was sick, so was not taken to the vaccination cent	8.4	15.1	6.5
	The child was sick, so the vaccinator didn't give vaccine	1.9	1.5	2.0
	Mother was sick	0.2	0.1	0.2
	I thought the vaccinator would come home	0.9	0.1	1.1
	They charge money to take vaccine	0.3	0.6	0.2
	The session time was inconvenient	1.0	1.3	0.9
	Vaccinator did not give	0.1		0.1
	Not at home	0.1	0.1	0.1
	Card was not available	0.3	1.4	
Total		960	214	746

Table 9: Reasons for Partial Vaccination in Rural Areas by Division in 2014

Reasons		All Rural	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet
Lack of information	Didn't know when to go for the second/third dose	2.0	2.6	1.9	2.1		3.1	2.5	1.8
	Didn't know when to go for vaccine of measles	5.7	6.6	8.3	3.8	9.4	4.7	8.6	0.0
	Fearing side effects	11.4	3.8	15.9	8.8	19.6	2.8	2.6	23.0
Lack of motivation	Rumor	1.2	2.6	2.9	0.9			1.3	
	Don't believe in vaccination	0.7	0.0	0.0	0.8	1.2	1.5	0.0	1.8
Obstacles	Was busy and so couldn't give vaccine to child	40.9	29.3	36.3	42.7	36.4	55.0	38.4	46.2
	Will give vaccine in future	1.2	0.0	1.9	1.8	0.0	0.8	1.0	0.0
	Don't remember	20.8	32.4	19.4	22.3	27.0	18.3	25.4	6.2
	There was no vaccine in the center	0.4	0.0	1.2	0.0	0.0	0.0	1.3	0.0
	There was no vaccinator in the center	1.5	0.0	0.0	3.5	3.1	0.0	0.7	0.0
	Vaccine centre was too far	1.0	0.0	0.2	1.6	0.5	2.4	1.6	0.0
	Injection was too painful for the child	0.4	0.0	0.0	0.5	0.0	0.0	0.0	2.5
	Was abscess at the place of vaccine	0.3	0.0	0.0	0.0	0.0	0.0	2.6	0.0
	Faced difficulty after receiving vaccine	1.2	3.5	1.7	0.0	0.0	0.0	2.6	2.8
	Vaccinator was not friendly	0.2	3.8	0.0	0.0	0.0	0.0	0.0	0.0
	The child was sick, so was not taken to the vaccination cent	6.5	2.6	7.6	6.4	0.0	9.0	5.2	10.8
	The child was sick, so the vaccinator didn't give vaccine	2.0	0.0	2.1	2.4	1.3	2.3	1.3	3.0
	Mother was sick	0.2	0.0	0.0	0.0	0.0	0.0	1.3	0.0
	I thought the vaccinator would come home	1.1	5.1	0.2	1.8	0.0	0.0	0.0	1.8
	They charge money to take vaccine	0.2	0.0	0.0	0.5	0.0	0.0	0.0	0.0
	The session time was inconvenient	0.9	5.1	0.6	0.0	0.0	0.0	3.8	0.0
	Vaccinator did not give	0.1	2.6	0.0	0.0	0.0	0.0	0.0	0.0
	Not at home	0.1	0.0	0.0	0.0	1.5	0.0	0.0	0.0
Total		746	37	161	240	64	58	99	87

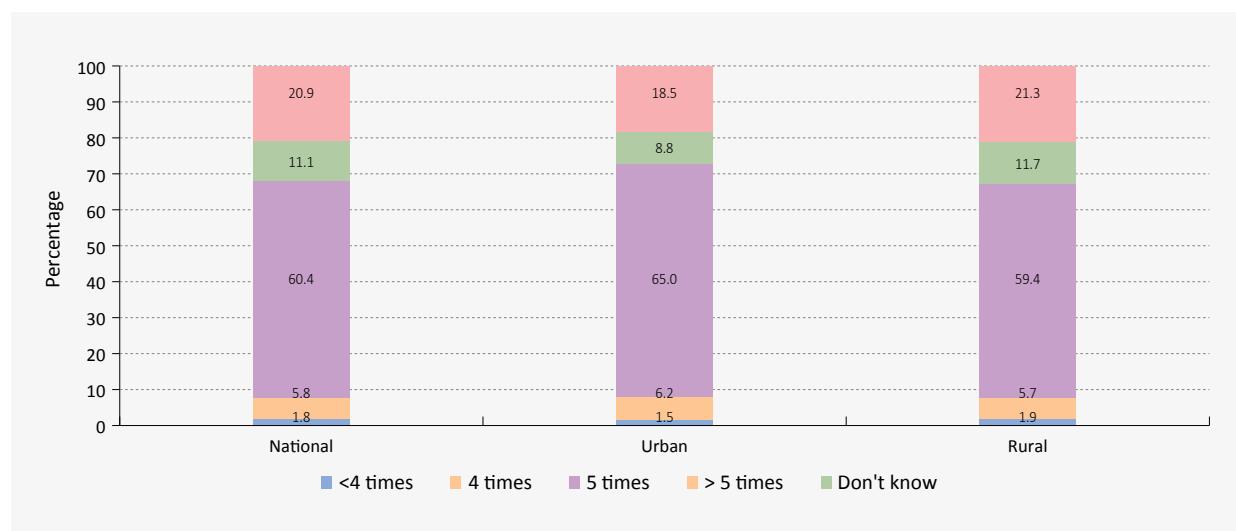
Table 10: Reasons for Partial Vaccination in Urban Areas by City Corporation and Municipality in 2014

Reasons		All Urban	BCC	CCC	Com CC	DNCC	DSCC	GCC	KCC	NCC	RCC	Rang CC	SCC	Municipality
Lack of information	Didn't know when to go for the second/third dose	2.6	4.2	0.0	16.7	0.0	0.0	9.5	6.5	0.0	0.0	0.0	6.3	1.6
	Didn't know when to go for vaccine of measles	4.0	4.2	0.0	16.7	0.0	0.0	4.8	6.5	0.0	0.0	0.0	0.0	6.5
	Fearing side effects	6.2		9.1		0.0	0.0		16.1	6.3	0.0	0.0	0.0	10.6
Lack of motivation	Rumor	0.3	4.2	0.0	0.0	0.0	0.0			6.3	0.0	0.0	0.0	
	Don't believe in vaccination	0.8	8.3	0.0	0.0	0.0	0.0	4.8		0.0	0.0	0.0	0.0	0.0
Obstacles	Was busy and so couldn't give vaccine to child	42.4	29.2	63.6	50.0	100.0	37.0	42.9	45.2	31.3	100.0	56.3	75.0	35.5
	Will give vaccine in future	0.7	4.2	0.0	0.0	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0
	Don't remember	17.4	8.3	9.1	16.7		3.7	19.0		37.5		18.8		27.0
	There was no vaccine in the center	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2
	There was no vaccinator in the center	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
	Vaccine centre was too far	1.3	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0	0.0	6.3	0.0	1.2
	Injection was too painful for the child	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
	Faced difficulty after receiving vaccine	2.2	8.3	0.0	0.0	0.0	0.0	4.8	6.5	6.3	0.0	0.0	0.0	1.9
	The child was sick, so was not taken to the vaccination cent	15.1	20.8	18.2	0.0	0.0	51.9		19.4	12.5		0.0	18.8	5.2
	The child was sick, so the vaccinator didn't give vaccine	1.5			0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5		2.8
	Mother was sick	0.1	4.2		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	I thought the vaccinator would come home	0.1	4.2											
	They charge money to take vaccine	0.6	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0
	The session time was inconvenient	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
	Not at home	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0
	Card was not available	1.4	0.0	0.0	0.0	0.0	7.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		214	4	13	1	8	40	28	11	6	0	4	4	94

3.6 KNOWLEDGE ABOUT THE NUMBER OF VISITS REQUIRED FOR COMPLETE VACCINATION

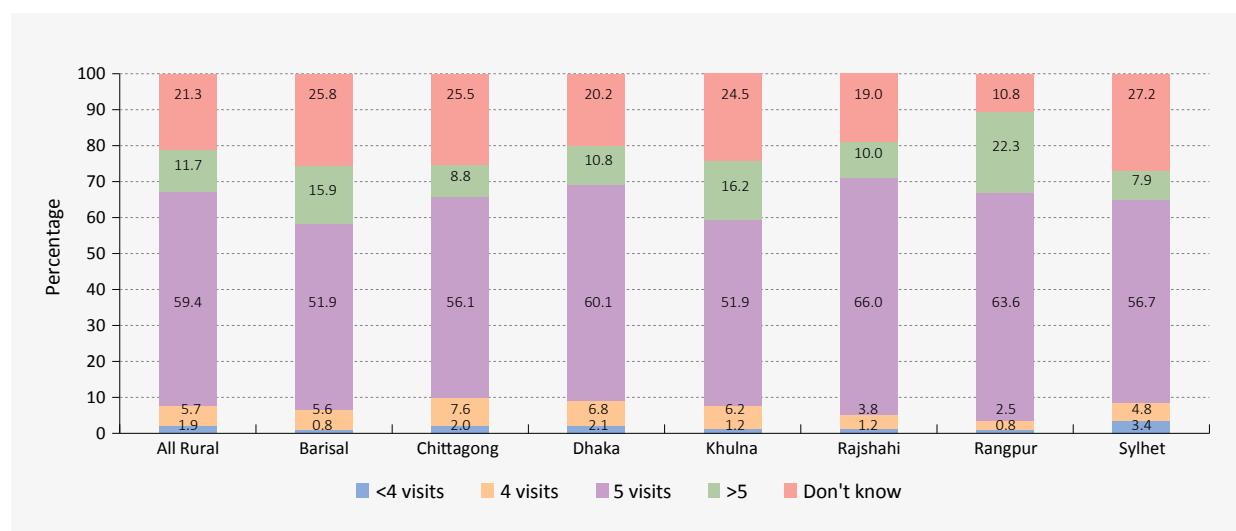
As a mother/caregiver should make five visits to a vaccination centre to complete all the scheduled vaccines for her or his children, CES 2014 appraised the knowledge of mothers/caregivers about the minimum number of visits required. More than half of the mothers/caregivers (60.4 percent) reported they knew about the required 5 visits to the vaccination center, with more knowledge in urban areas (65.0 percent) than rural (59.4 percent) (see Figure 71). Among the rural divisions, knowledge about the five visits was highest in Rajshahi division (66.0 percent) and lowest in Barisal and Khulna divisions (both 51.9 percent) (see Figure 72) (see Figure 72). In the urban context, the proportion of the mothers/caregivers from who had knowledge of the five required visits varied widely, from 90.5 percent in RCC to 33.7 percent in CC.

Figure 71: Knowledge of Number of Visits Required to Have Child Fully Vaccinated by National, Rural and Urban Areas in 2014



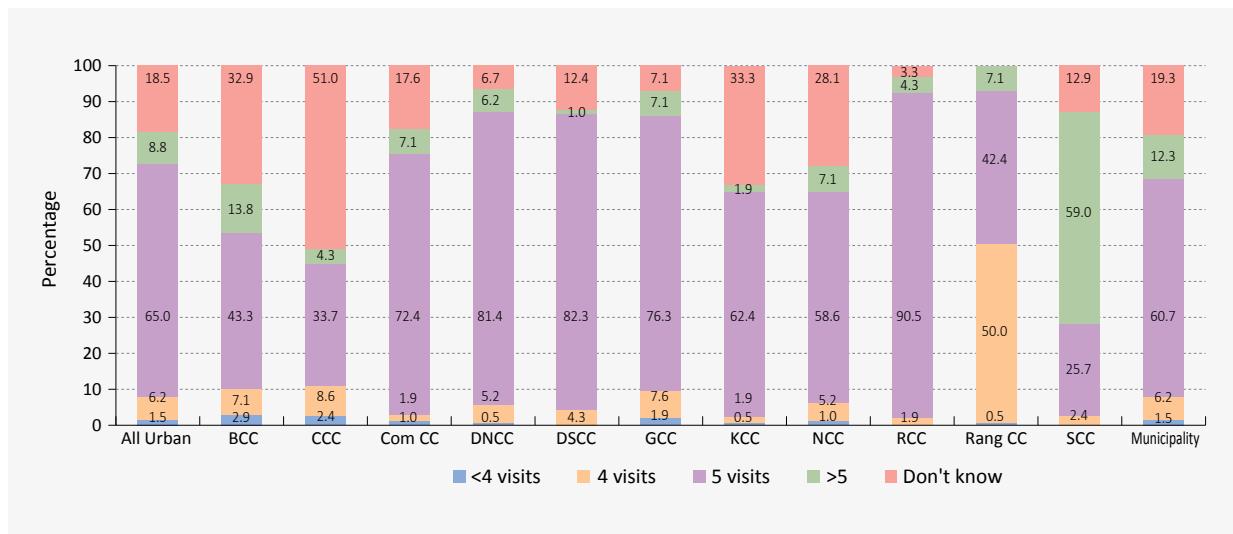
Source: CES 2014

Figure 72: Knowledge in Rural Areas on Number of Visits Required to Have a Child Fully Vaccinated by Division in 2014



Source: CES 2014

Figure 73: Knowledge on Number of Visits Required to Have a Child Fully Vaccinated in Urban Areas by City Corporation and Municipality in 2014

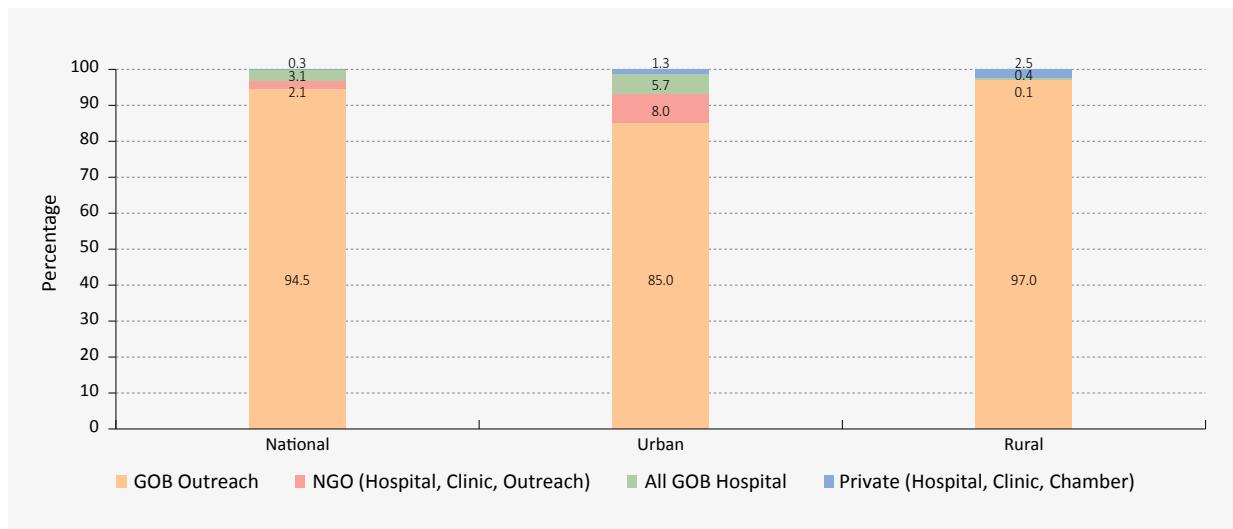


Source: CES 2014

3.7 SOURCES OF CHILDHOOD VACCINATION

Children can receive vaccinations from a number of sources: GoB outreach centres or hospitals; NGO hospitals, clinics or outreach centres; or private hospitals, clinics or outreach centres. These options for sources of Penta1 vaccine are presented in Figures 74 -76. Overall, 94.5 percent of the children received Penta1 vaccine from the GoB outreach centers, in 97.0 percent of cases in rural areas and 85.0 percent of cases in urban areas. Nationally, the other sources included GoB hospitals (3.1 percent) and NGO or private hospitals (2.4 percent) (see Figure 74).

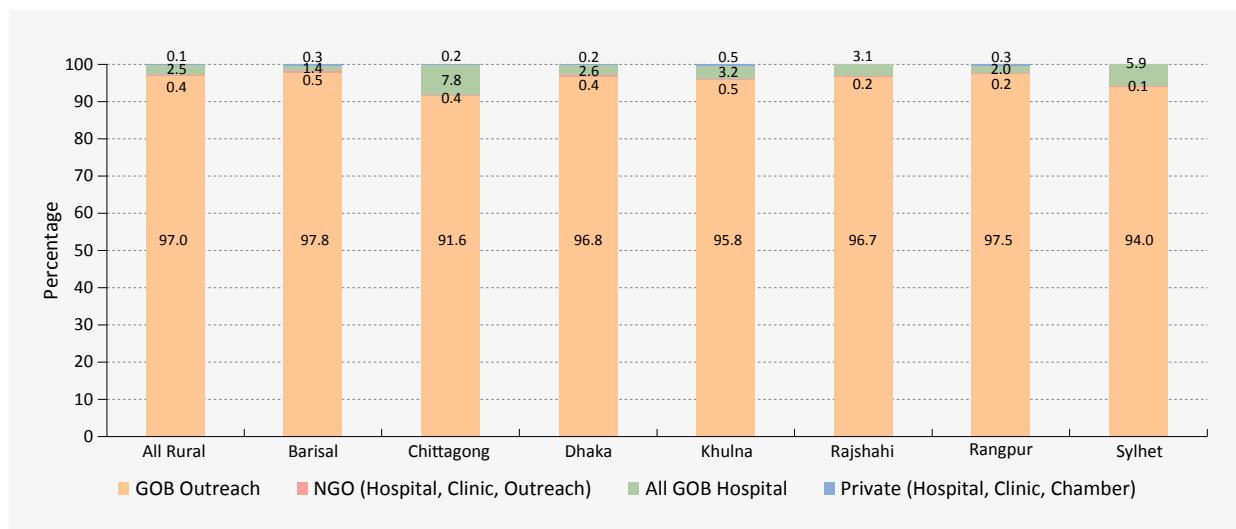
Figure 74: Source of Penta1 Vaccination by National, Rural and Urban Areas in 2014



Source: CES 2014

By rural divisions, the highest proportion of vaccine recipients who received Penta1 from GoB outreach centres ranged from 97.5 percent in Rangpur division to 91.6 percent in Chittagong. In rural divisions, private and NGO hospitals and clinics were the source of Penta1 vaccine in less than 1.0 percent of cases (see Figure 75).

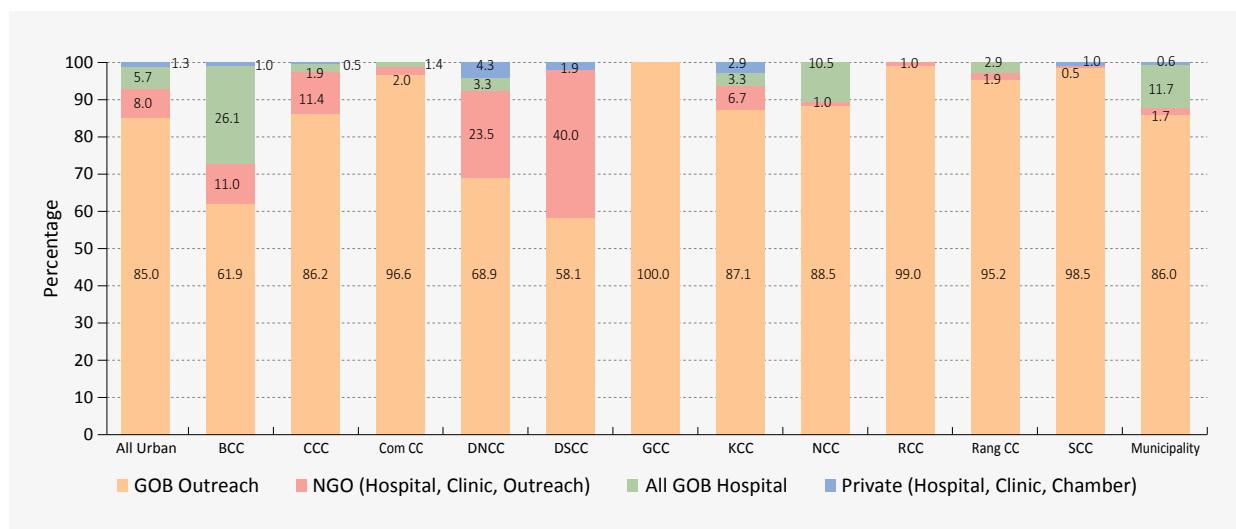
Figure 75: Source of Penta1 Vaccination in Rural Areas by Division in 2014



Source: CES 2014

In city corporations, government facilities were again the prime source of Penta1 vaccination, except in DNCC and DSCC, where 40.0 percent of the children in DSCC and 23.5 percent in DNCC received Penta1 from NGO clinics or hospitals. In other city corporations, the proportion of children who received Penta1 from NGO clinics or hospitals ranged between 11.4 percent and 0.5 percent. As for private sources, the highest proportion of the children who received Penta1 from private facilities was in DNCC (4.3 percent), while in RCC, NCC, Com CC, Rang CC, and GCC, no child received Penta1 from private clinics or hospitals (see Figure 76).

Figure 76: Source of Penta1 Vaccination in Urban Areas by City Corporation and Municipality in 2014



Source: CES 2014

3.8 RELATION BETWEEN SOURCE AND BCG VACCINATION GAP

Table 11 shows the gap between the date of a child's birth and the date of receiving BCG by the source of the BCG vaccination. It shows that 39 percent children received BCG vaccination with 42 days of birth. Also shows that children are more likely to receive the BCG vaccination within 7 days of birth in private (15.6 percent) or NGO (9.3 percent) facilities, as compared to GoB hospitals (6.9 percent) or outreach centre (3.4 percent). At GoB facilities 7 percent more children will have a gap of more than 42 days, compared to private or NGO facilities (61.7 percent vs 54.5 percent).

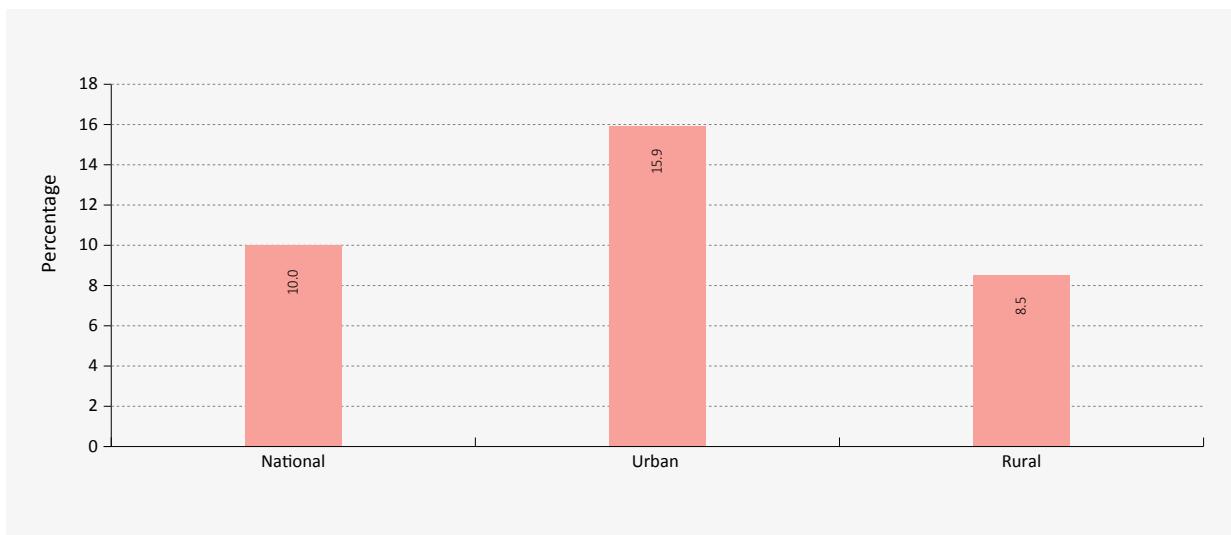
Table 11: Source of BCG by the Gap of BCG Vaccination after the Child Born

Gap in Vaccination from the Date Child Born	Source of BCG in percentage				Total
	GoB Outreach	NGO (Hospital, Clinic, Outreach)	All GoB Hospital	Private (Hospital, Clinic, Outreach)	
Up to 7 days	3.4	9.3	6.9	15.6	3.4
8-42 days	35.6	36	31.4	29.9	35.5
More than 42 days	61	54.7	61.7	54.5	60.9
Total Number of Respondents	15153	331	506	51	16041

3.9 AVAILABILITY OF BIRTH CERTIFICATES AMONG SURVEYED CHILDREN (12 - 23 MONTHS OLD CHILDREN)

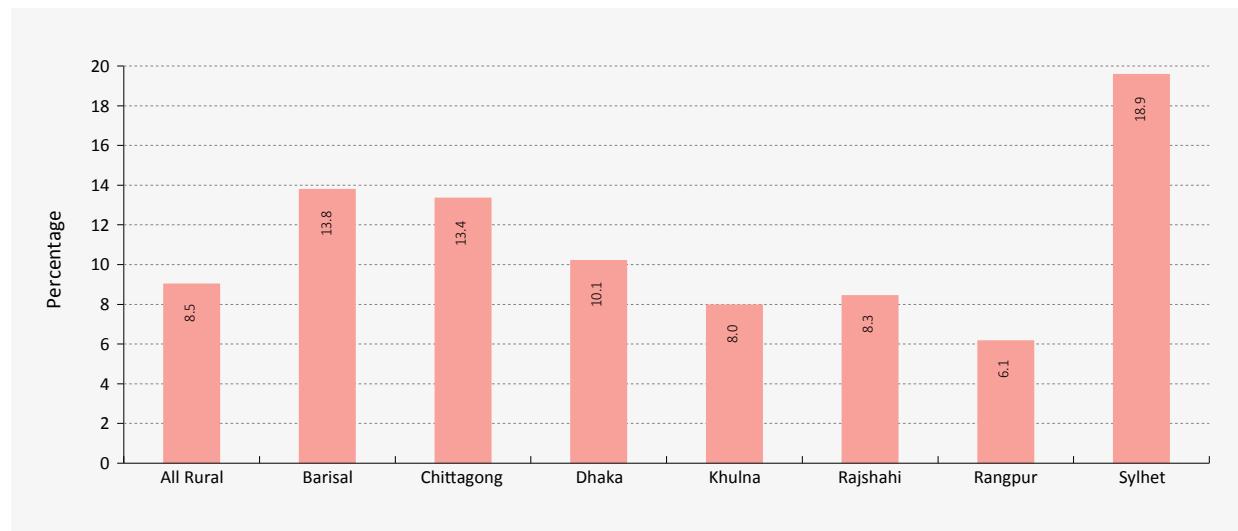
Nationally, 10.0 percent of children had their birth certificates available, with urban children twice as likely to have the certificates as compared to their rural counter parts (15.9 percent vs. 8.5 percent) (see Figure 77). Among the rural divisions, the availability of birth certificate was highest in Sylhet (18.9 percent) and lowest in Rangpur (6.1 percent) (see Figure 78). Among the city corporations, the availability of birth certificate was highest in RCC (33.8 percent) and the lowest in Com CC (6.2 percent). Moreover, 12.9 percent of children residing in municipality areas had birth certificate (see Figure 79).

Figure 77: Percentage Distribution of Children by Availability of Birth Certificate by National, Rural and Urban Areas in 2014



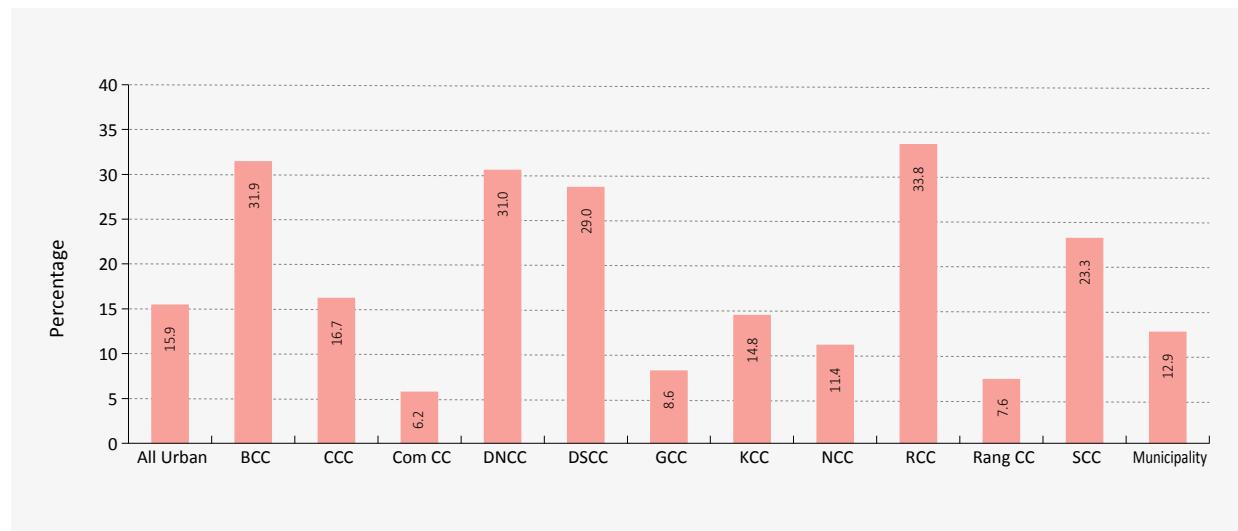
Source: CES 2014

Figure 78: Percentage Distribution of Children by Availability of Birth Certificate in Rural Areas by Division in 2014



Source: CES 2014

Figure 79: Percentage Distribution of Children by Availability of Birth Certificate in Urban Areas by City Corporation and Municipality by in 2014



Source: CES 2014

CHAPTER 4

**MSD Coverage among
15 -18 Month-old
Children**

MSD COVERAGE AMONG 15-18 MONTH-OLD CHILDREN

This section details the facts and findings of Measles Second Dose (MSD) vaccination coverage of children between 15 and 18 months old. In Bangladesh, this component was included for the very first time in the EPI Coverage Evaluation Survey (CES), since the first CES was carried out in 1991. The Government of Bangladesh has taken the initiative to introduce MSD in the routine childhood vaccination schedule under EPI. Accordingly, MSD was incorporated in the programme in September 2012. As such, MR is scheduled for the children 9 months old and MSD is scheduled for children 15 months old children .

4.1 OBJECTIVES OF MSD SURVEY

The MSD survey was carried out as a part of CES 2014 with a view to achieving the following objectives:

- To assess the MSD coverage among 18-29 months old children
- To assess the drop-out rate from MR to MSD

4.2 SAMPLE SELECTION

The MSD survey was carried out with representative national NID samples from 18-29months-old children drawn from the cluster samples of CES 2014. Interviewers listed all the eligible children (aged between 18-29 months) in every household of each cluster at the time of household visits in order to make the sampling frame. Afterwards, seven children were selected randomly from the sampling frame to administer the questionnaires.

4.3 SECOND DOSE OF MEASLES VACCINE

Measles remains one of the leading causes of death of the young children. 164,000 children died of measles worldwide in 2008. Ninety-five percent of all measles-related deaths occurred in low-income countries with weak health infrastructures.¹ In accordance with the Global and Regional strategy to reduce measles mortality to 2000 estimates, the national EPI prepared a national plan for the reduction of measles mortality in Bangladesh for 2004-2010. In the light with this plan and to ensure a second opportunity for receiving the measles vaccines, a measles catch-up campaign was held in 2005-2006, targeting more than 35 million children aged between 9 months and 10 years. Subsequently, another measles follow-up campaign was carried out in 2010 to vaccinate the children aged between 9 month and 5 years. The vaccination coverage was quite encouraging in both campaigns. It is expected that more than 80 percent of the death related to measles were averted through these supplementary activities.

Considering the national measles coverage rate under the CES 2010 and the measles vaccine effectiveness (85 percent at 9 months of age), actual protection in Bangladesh was ensured only up to 72 percent of those born annually (85 percent x 85 percent = 72 percent). Thus, it was estimated that at least 28 percent remain susceptible to measles annually.

¹ Koehlmoos, Tracey Pérez, Jasim Uddin and Haribondu Sarma. "Impact of Measles Eradication Activities on Routine Immunization Services and Health Systems in Bangladesh" in *Journal of Infectious Diseases* (2011) 204 (suppl 1): S90-S97.

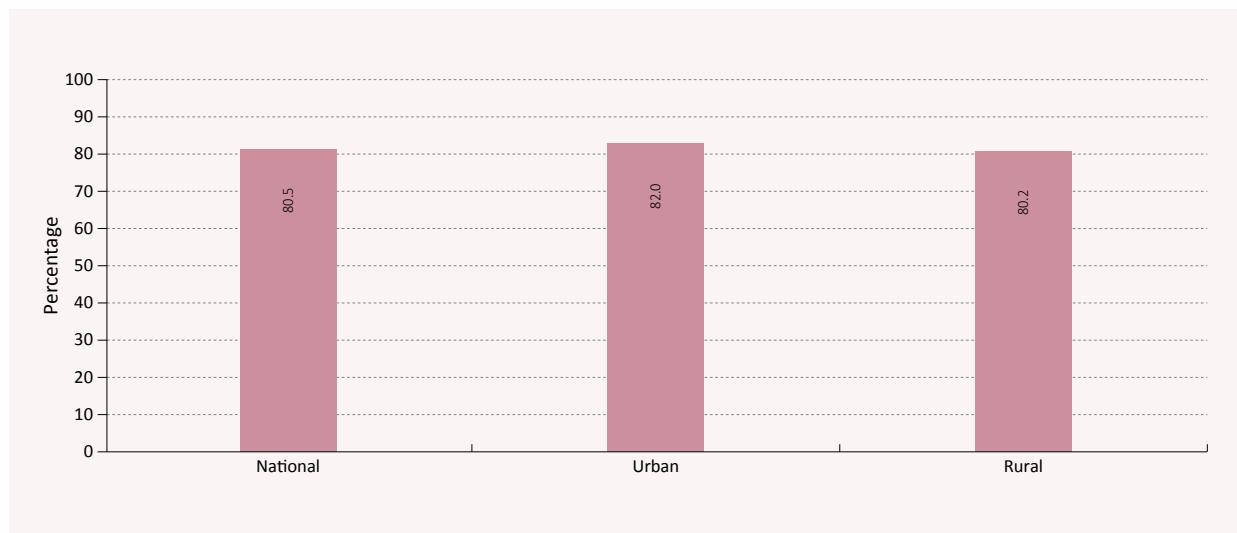
It was also highlighted in the National Measles Control Plan 2004-2005 that measles second dose would be introduced into the routine EPI after the follow-up campaign in order to sustain the achievement of measles mortality reduction.

Additionally, the national EPI supported the recommendation of SEARO (South East Asian Regional Office of WHO) to eliminate measles by 2015. The National Committee on Immunization Practices in a meeting in 2009 also supported the national EPI proposal to eliminate measles in Bangladesh by 2015.² However, as per recommendation of SEARO at present EPI targeted to eliminate measles by 2020.

4.4 CRUDE MSD VACCINATION COVERAGE BY THE AGE OF 29 MONTHS

Figure 80 presents the crude MSD coverage. Overall, 80.5 percent of the children received MSD. Urban children were a bit ahead of children from rural areas in receiving MSD (82.0 percent vs. 80.2 percent).

Figure 80: Crude MSD Coverage by Age of 29 Months by National, Urban and Rural Areas in 2014

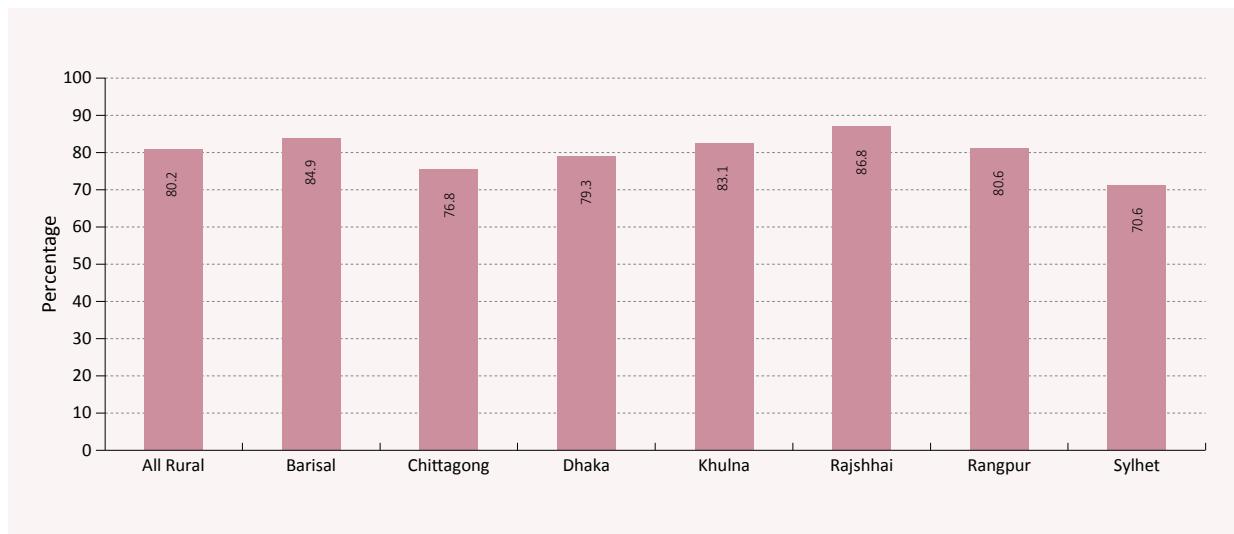


Source: CES 2014

Among the divisions, as shown in Figure 81 and Map 17, MSD coverage was rather evenly spaced from the high of 86.8 percent in Rajshahi to the second lowest of 76.8 percent in Chittagong. The biggest difference between divisions was for Sylhet divisions, which at 70.6 percent was a six percentage point difference from Chittagong.

² Comprehensive Multi-Year Plan of the National Immunization Programme of Bangladesh 2011 – 2016

Figure 81: Crude MSD Coverage in Rural Areas by Division in 2014



Source: CES 2014

For the city corporations, the crude MSD coverage had a wide range, from RCC at 94.8 percent to SCC at 71.9 percent. The biggest gap was 5 percentage points between the RCC, as the highest rate and DSCC at 89.5 percent (see Figure 82).

Figure 82: Crude MSD Coverage in Urban Areas by City Corporation and Municipality in 2014

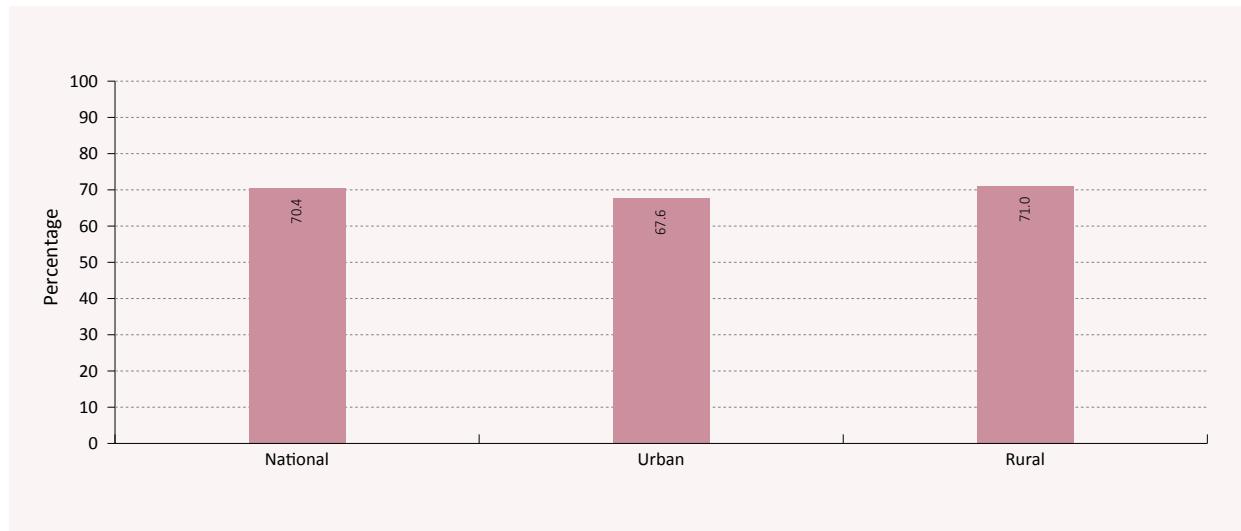


Source: CES 2014

4.5 VALID MSD VACCINATION COVERAGE BY THE AGE OF 18 MONTHS

Figure 83 provides valid MSD coverage by the age of 18 months. It shows that 70.4 percent of the children received valid doses of MSD across the country, with children from rural areas slightly more likely to receive the valid dose of MSD than those from urban areas (71.0 percent vs. 67.6 percent).

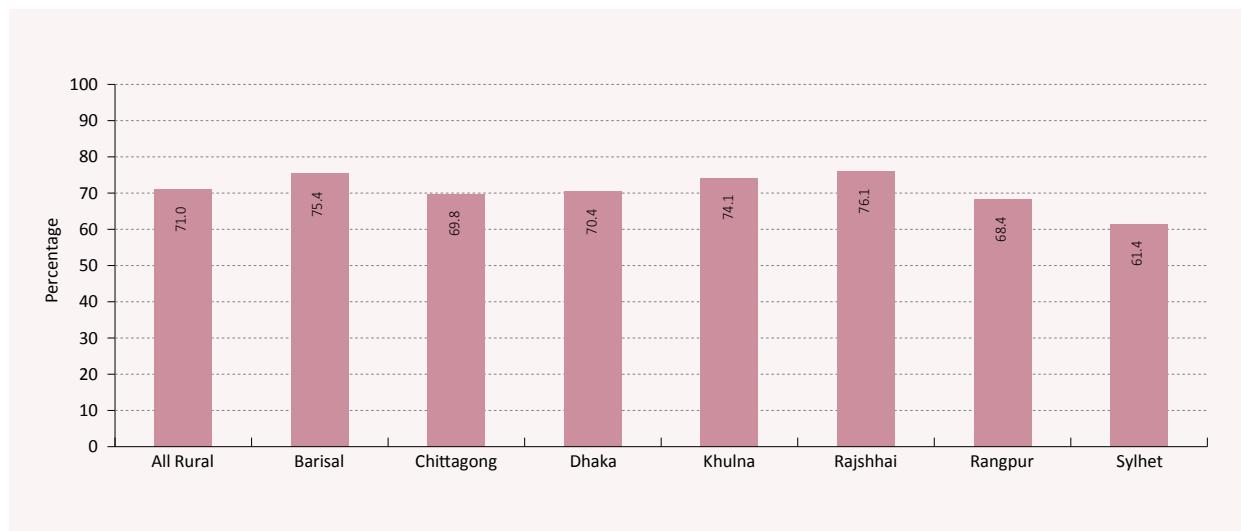
Figure 83: Valid MSD Coverage by Age of 18 Months by National, Rural and Urban Areas in 2014



Source: CES 2014

Figure 84 and Map 18 show the valid MSD coverage by division. It depicts that the valid MSD coverage was highest in Rajshahi (76.1 percent) and the lowest in Sylhet divisions (61.4 percent). The valid MSD coverage for the other divisions was in an intermediary level that ranged between 75.4 percent in Barisal and 68.4 percent in Rangpur division.

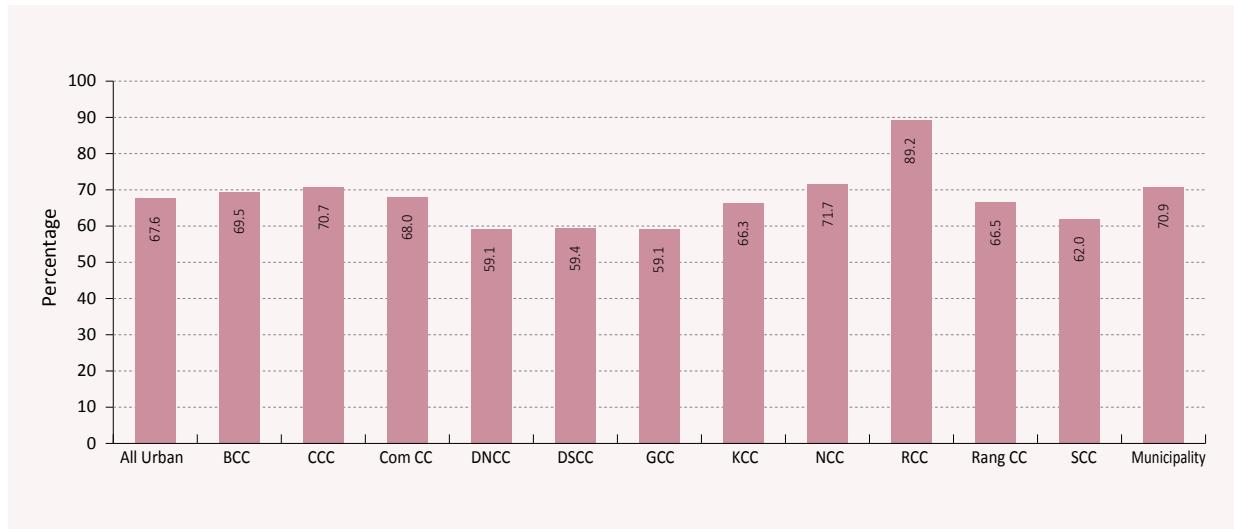
Figure 84: Valid MSD Coverage in Rural Areas by Division in 2014



Source: CES 2014

Across the city corporations, valid MSD coverage was the highest in RCC (89.2 percent). There was considerable difference between RCC and the next highest of 71.7 percent, in NCC. Other than RCC, the others ranged within 13 percentage points, with the lowest being GCC at 59.1 percent (see Figure 85).

Figure 85: Valid MSD Coverage in Urban Areas by City Corporation and Municipality in 2014

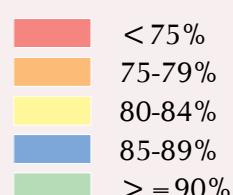


Source: CES 2014

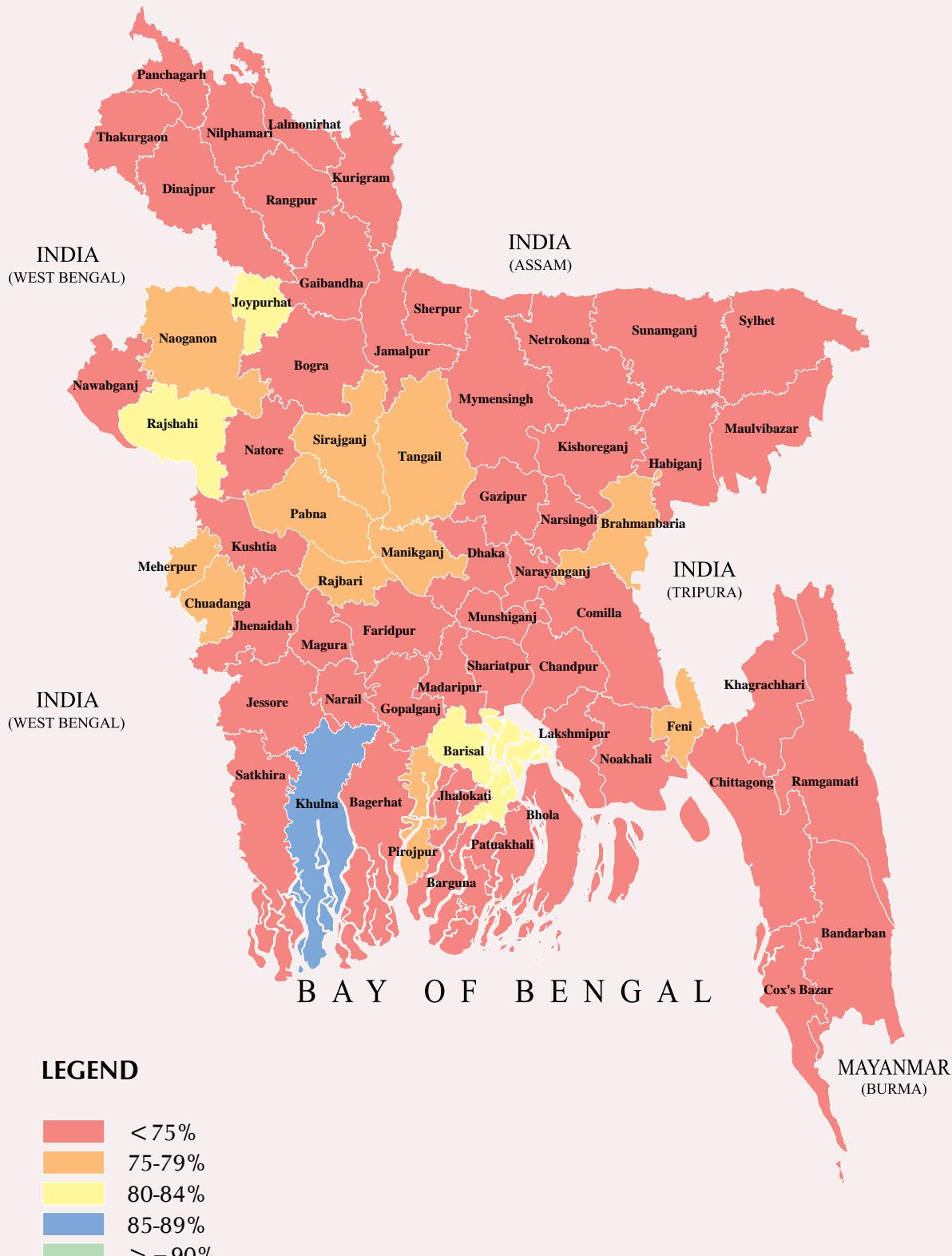
Map 17: Crude MSD Vaccination Coverage by District



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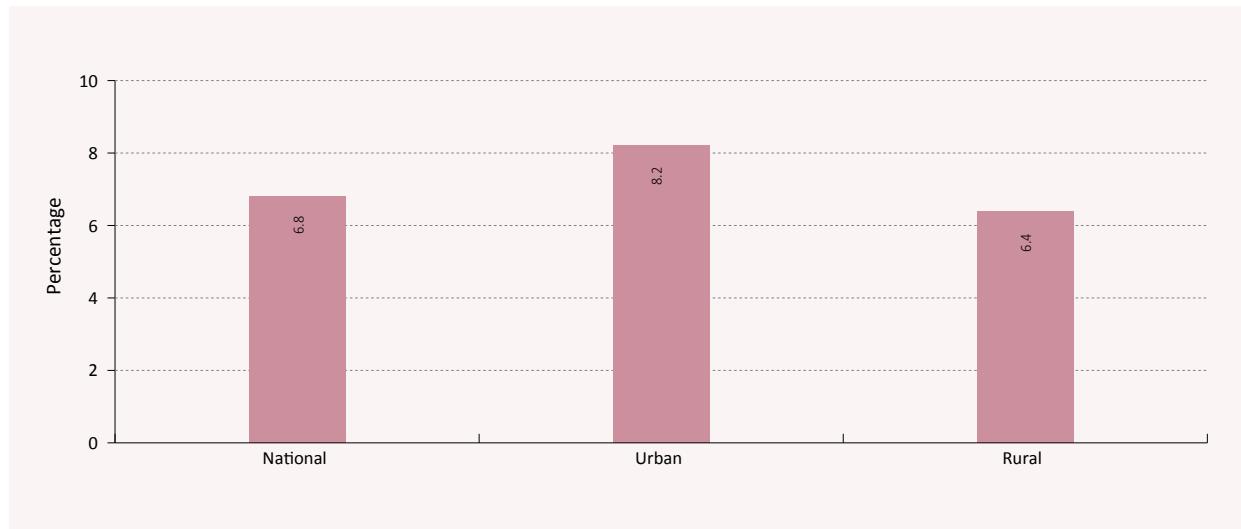
Map 18: Valid MSD Vaccination Coverage by District



4.6 INCIDENCE OF INVALID MSD

According to EPI vaccination schedule, a child should receive MSD between 15 months and 18 months of age. Therefore, children who received MSD before the age of 15 months or after 18 months were considered recipients of invalid doses in CES 2014. Nationally, 6.8 percent of the children received invalid MSD doses. A slightly higher percentage of the children in urban areas received invalid MSD, compared to their rural counterparts (8.2 percent vs. 6.4 percent) (see Figure 86).

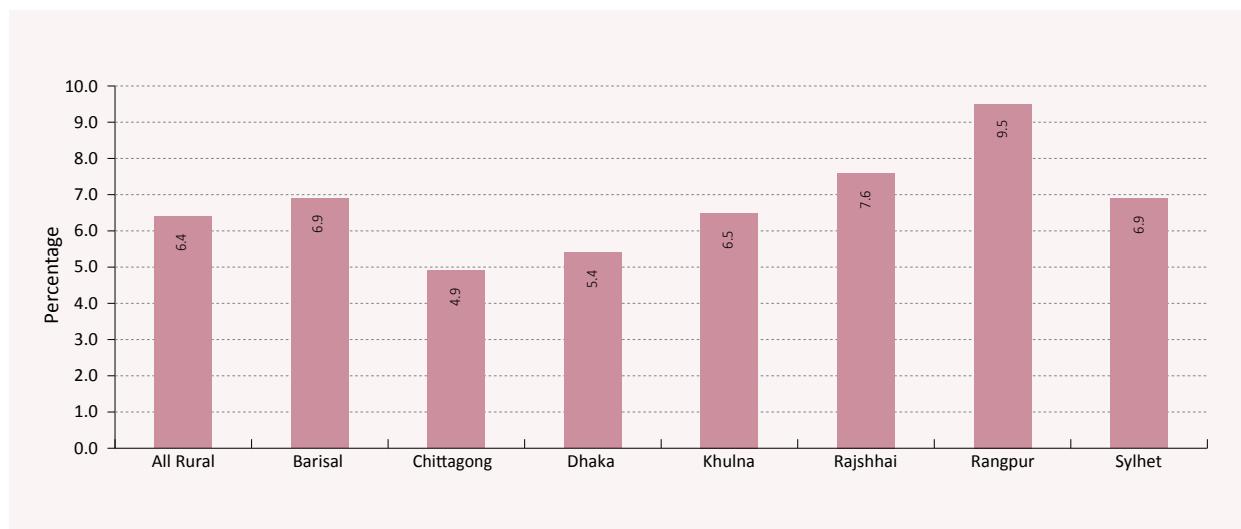
Figure 86: Incidence of Invalid MSD by National, Rural and Urban Areas in 2014



Source: CES 2014

Within the divisions, invalid doses were found to be the highest in Rangpur (9.5 percent) and the lowest in Chittagong divisions (4.9 percent). In other divisions, it was between 7.6 percent and 5.4 percent (see Figure 87).

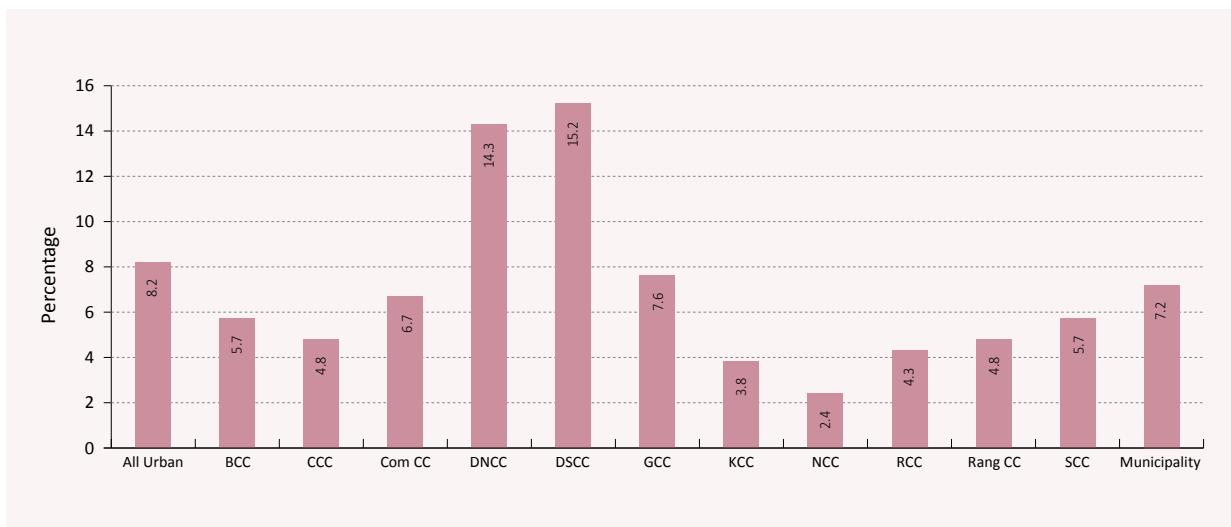
Figure 87: Incidence of Invalid MSD in Rural Areas by Division in 2014



Source: CES 2014

Among the city corporations, the highest invalid MSD coverage was found to be administered in DSCC (15.2 percent) and the lowest in NCC (2.4 percent). The second highest invalid dose was noticed in DNCC (14.3 percent). In other city corporations, it ranged between 3.8 percent in KCC and 7.6 percent in GCC (see Figure 88).

Figure 88: Incidence of Invalid MSD in Urban Areas by City Corporation and Municipality in 2014



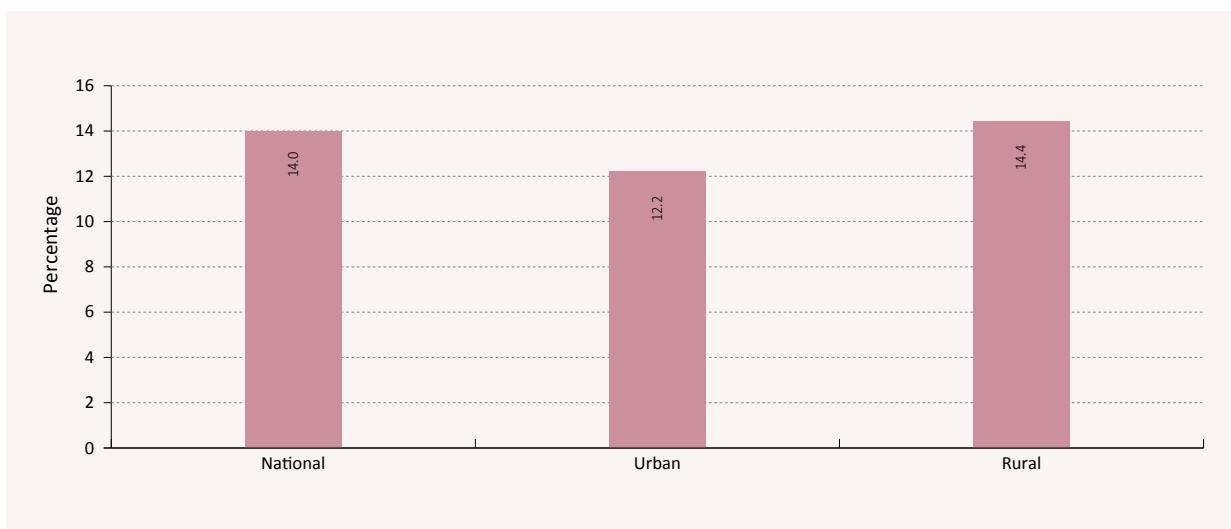
Source: CES 2014

4.7 DROP-OUT RATE FROM MR TO MSD

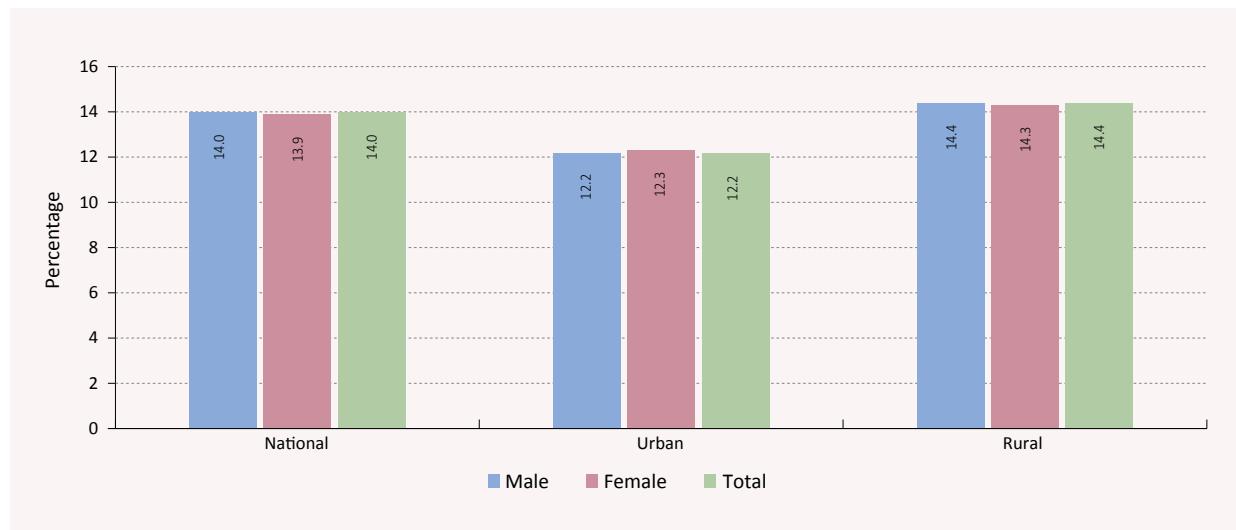
Drop-outs from subsequent dose(s) of the same antigen or different antigen is the most notable obstacle to achieving the desired coverage target. A child was considered as a drop-out from MR, if s/he failed to receive MSD after receiving MR.

Nationally, the MR-MSD drop-out rate was 14.0 percent, with the rate slightly lower in urban areas (12.2 percent) than rural areas (14.4 percent) (see Figure 89). By sex, no marked variation was observed in the MR-MSD drop-out rate across the country (see Figure 89a).

Figure 89: Dropout Rate from MR to MSD by National, Rural and Urban Areas in 2014

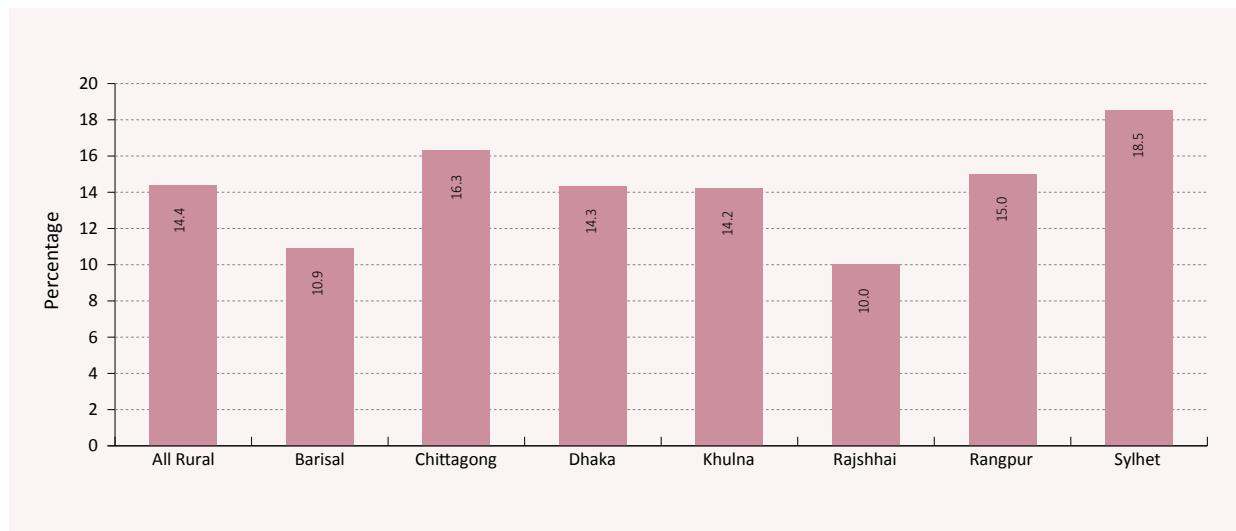


Source: CES 2014

Figure 89a: Vaccination Dropout Rate from MR to MSD by Sex at National Level in 2014

Source: CES 2014

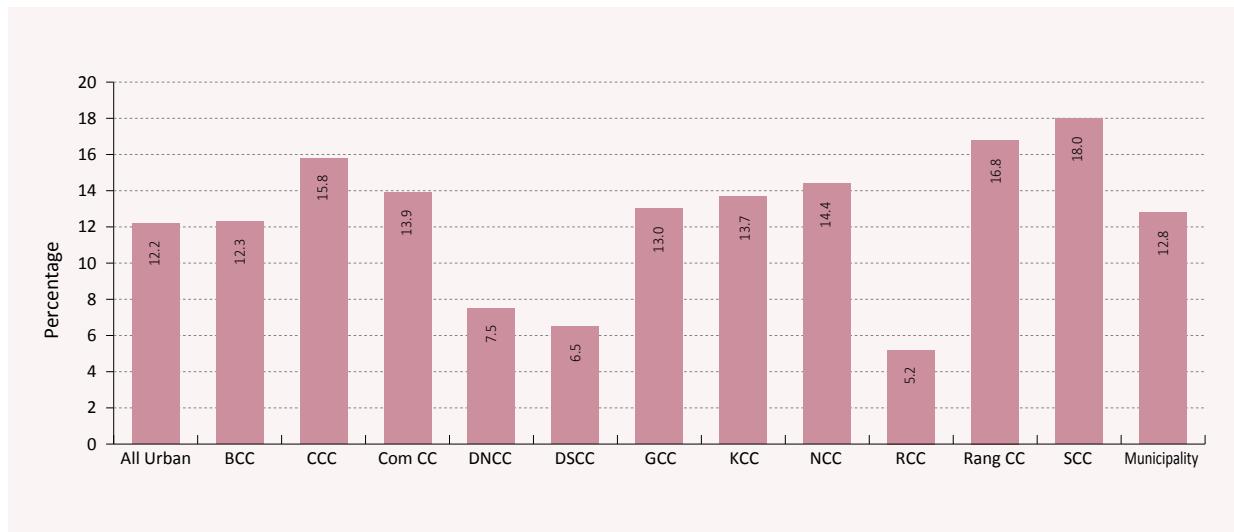
Figure 90 depicts the drop-out rate by rural division. Among the seven divisions, the MR-MSD drop-out rate was the highest in Sylhet (18.5 percent) and the lowest in Rajshahi (10.0 percent) divisions. The rates for the divisions in between ranged from 16.3 percent to 10.9 percent.

Figure 90: Dropout Rate from MR to MSD in Rural Areas by Division in 2014

Source: CES 2014

Figure 91 shows the drop-out rate by city corporation, which had a wider variation than the rural divisions did. Among the city corporations, the highest drop-out rate was observed in SCC (18.0 percent) and the lowest in RCC (5.2 percent). In other city corporations, it ranged between 16.8 percent in Rang CC and 6.5 percent in DSCC.

Figure 91: Dropout Rate from MR to MSD in Urban Areas by City Corporation and Municipality in 2014



Source: CES 2014

CHAPTER



5

**TT Vaccination Coverage
Among Mothers with
Children 0-11 Months**

TT VACCINATION COVERAGE AMONG MOTHERS WITH CHILDREN 0-11 MONTHS

Neonatal Tetanus (NT) remains a serious public health 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 for infection with "Clostridium tetani", Bangladesh achieved neonatal tetanus elimination status in 2008 by administering five doses of TT vaccine to women of childbearing age (15-49 years). UNICEF and WHO provided extensive financial and technical support to EPI to achieve this status. In order to maintain this NT elimination status, EPI in Bangladesh, in strong partnership with UNICEF and WHO, is continuing to strengthen its monitoring and supervision system. Although NT is included in the EPI disease surveillance system, it is important to identify the critical areas where the programme needs to be given special attention or monitor the status of TT during the birth of the latest child. In this context, CES is an important avenue to provide strategic direction to the programme personnel. CES 2014 gathered information and provided an estimate of the children who were protected at birth (PAB) against NT. All the relevant information is presented in this chapter. Therefore, along with TT vaccination coverage status, this chapter provides information about the quality of programme, card retention rate, and invalid doses, as well as PAB of children.

5.1 OBJECTIVE OF TT SURVEY

The following survey objectives were set under the TT coverage survey among the mothers having 0-11 month's children:

- to estimate TT vaccination coverage
- to estimate TT card retention
- to estimate the incidence of invalid TT doses
- to know the sources of TT vaccination
- to estimate the proportion of the newborn babies who were protected at birth against neonatal tetanus
- to estimate post-partum Vitamin A coverage among the mothers having 0-11 months children (results of this last point covered in Chapter 10)

5.2 SELECTION OF SAMPLES

In this survey component, mothers who delivered children between 01-07-2013 and 30-06-2014 were targeted for selecting the samples. The aforesaid samples were selected from the same clusters where the samples for other survey components in CES 2014 were selected. First, a list was made after identifying the mothers who delivered children between 01-07-2013 and 30-06-2014 while visiting every household of the selected cluster. After that, a sampling frame was constructed by including all the eligible mothers from the list. From all the eligible mothers, seven mothers were randomly selected for interviews to gather the required information through the survey tool, which in this case was a questionnaire.

5.3 TT VACCINATION

With an aim to achieving its maternal and neonatal tetanus elimination objective, the Government of Bangladesh has provided TT vaccination services through its Expanded Programme on Immunization under the Directorate General of Health Services (DGHS) since 1979. The vaccine is given to women of child-bearing age (15-49 years) to protect them from tetanus and their newborn babies from neonatal tetanus during their whole reproductive period. A woman needs a total of five TT doses to provide protection through her whole reproductive period. These should be administered by following the TT vaccination schedule recommended by WHO: TT1- the first dose- as soon as she reaches the age of 15 years; TT2- four weeks after TT1 is given; TT3- six months after TT2; TT4- one year after T3; and TT5- one year after TT4. Since only one TT dose does not offer any protection, TT2 must be administered after TT1, providing a woman of reproductive age protection for a period of three years that begins after the administration of TT2. With the TT3 dose, the protection period is for five years after the administration of TT3 and with TT4 for 10 years after the administration of TT4. With TT5, the woman is protected for the rest of her reproductive period. Table 12 below shows the EPI-recommended TT vaccination schedule in Bangladesh.

Table 12: TT Vaccination Schedule

TT Doses	Minimum Interval between Doses	Years Protected
TT1	At 15 years age	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

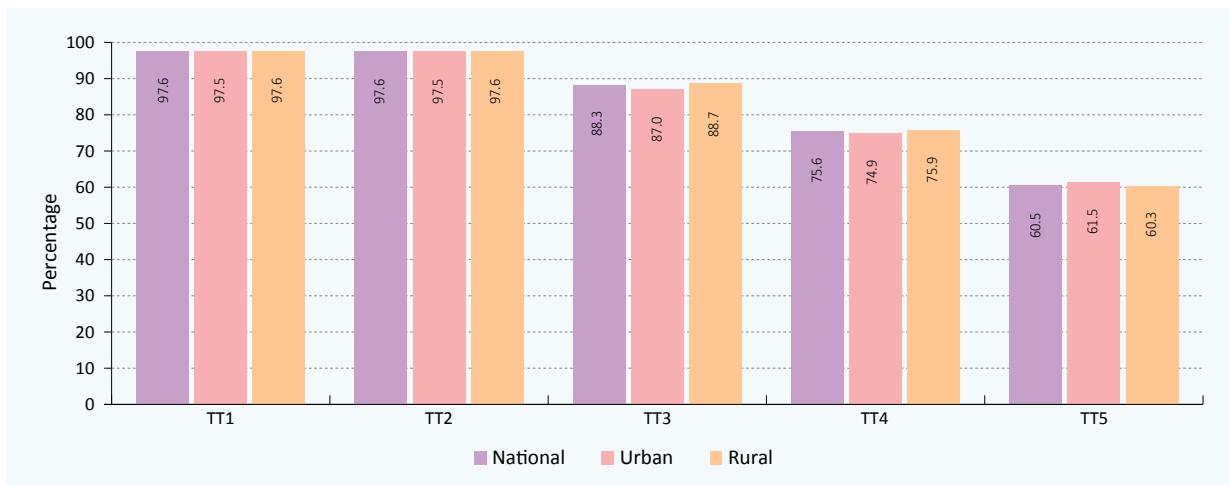
5.4 TT VACCINATION COVERAGE (CARD+ HISTORY)

Like the childhood vaccination coverage, TT vaccination coverage was assessed as crude and valid coverages. The valid TT coverage was assessed in terms of the valid doses that a woman received. And, the crude TT coverage was assessed in terms of all TT doses - both valid and invalid - that a woman received. A TT dose administered before the recommended interval was considered invalid. Thus, a TT3 dose given earlier than the recommended 6-month interval after a valid TT2 was enumerated as an invalid TT3 dose. The information of TT vaccination was obtained from a woman's TT card (if available). If it was not available, the information was collected from the woman's vaccination history reported by her.

5.4.1 Levels of the Crude TT Vaccination Coverage

The distribution of crude TT vaccination coverage is presented in Figure 92 and Map 19. It shows that TT1 and TT2 vaccination coverage were almost universal and did not vary between rural and urban areas. However, TT3, TT4, and TT5 coverages were comparatively lower than TT1 and TT2 across the country. The coverages of TT3, TT4, and TT5 were 88.3 percent, 75.6 percent and 60.5 percent, respectively. By residence, a slight difference was noticed in TT3, TT4, and TT5 coverage between rural and urban areas.

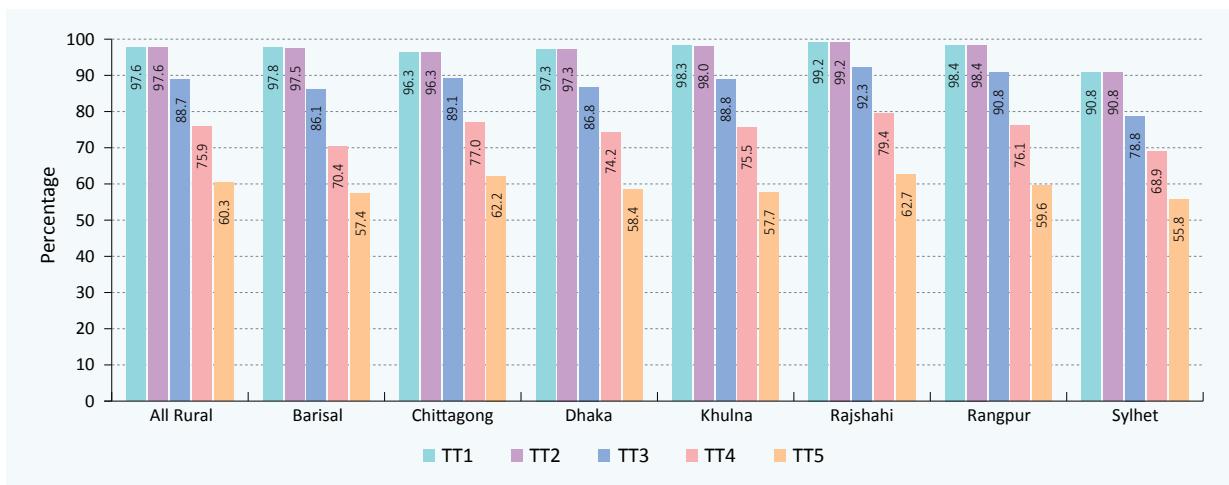
Figure 92: Crude TT Vaccination Coverage by National Rural and Urban Areas in 2014



Source: CES 2014

Among the divisions, no marked variation was noticed in crude TT1 and TT2 coverage, except in Sylhet. Both TT1 and TT2 coverages were 90.8 percent in Sylhet division, which was six points lower than the next lowest. However, crude TT3 coverage was highest in Rajshahi (92.3 percent) and the lowest in Sylhet division (78.8 percent), again with Sylhet being considerably less than the next lowest. By TT4 coverage the gap between the highest, 79.4 percent in Rajshahi and the lowest, 68.9 percent in Sylhet had narrowed, and the coverage gap was again smaller by TT5, ranging from 62.7 percent in Rajshahi to 55.8 percent in Sylhet (see Figure 93).

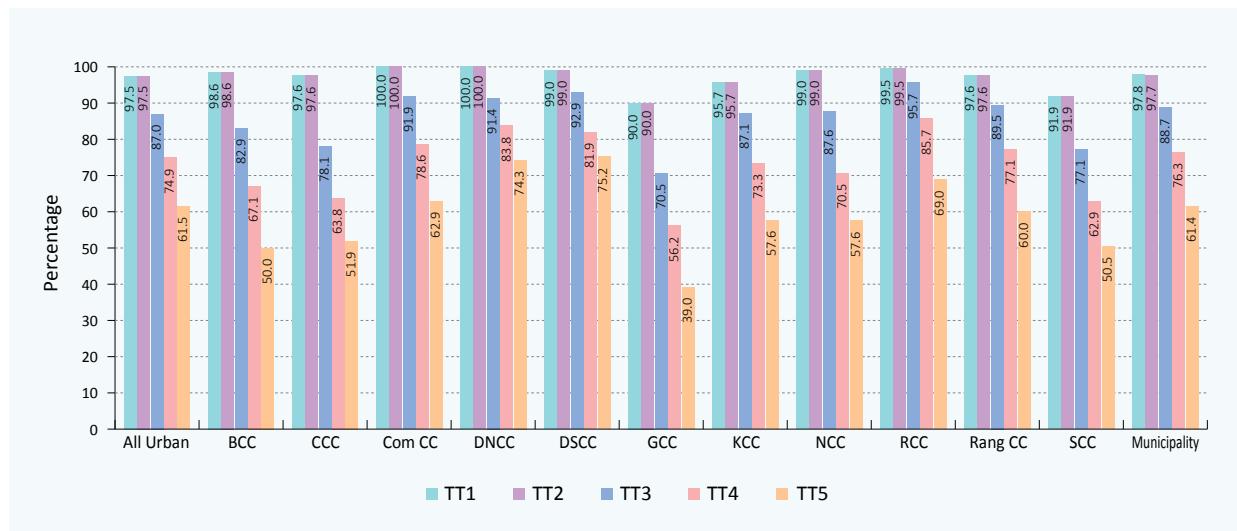
Figure 93: Crude TT Vaccination in Rural Areas by Division in 2014



Source: CES 2014

Among the city corporations, crude TT1 and TT2 coverage was at or above 90 percent for all, with coverage highest in DNCC and Com CC (100 percent) and lowest in SCC (91.9 percent). By TT3 coverage, the gap had widened substantially, with the highest in RCC (95.7 percent) and the lowest in GCC (70.5 percent). Likewise, TT4 coverage was again highest in RCC and lowest in GCC (85.7 percent and 56.2 percent, respectively). In the intermediary level, the rates ranged between 83.8 percent in DNCC and 62.9 percent in SCC. Regarding crude TT5, three-quarters of the women in DSCC (75.2 percent) and DNCC (74.3 percent) received it. Except for RCC at 69.0 percent, most of the other city corporations ranged from 62.9 percent to 50.0 percent. The exception on the significantly lower side was GCC at 39.0 percent (see Figure 94).

Figure 94: Crude TT Vaccination Coverage in Urban Areas by City Corporation and Municipality in 2014

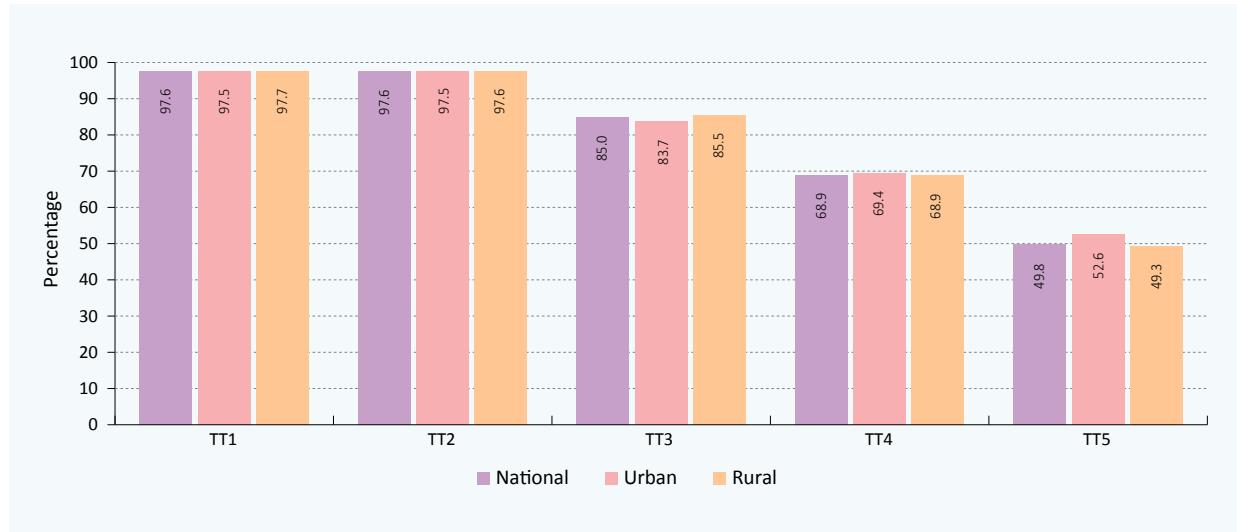


Source: CES 2014

5.4.2 Levels of Valid TT Vaccination Coverage

Valid TT coverage was defined as the coverage a woman received when the EPI-recommended TT vaccination schedule was followed. Nationally, valid TT2 vaccination coverage was 97.6 percent. However, the valid coverage rate was found to drop to 85.0 percent for TT3, 68.9 percent for TT4, and 49.8 percent for TT5. Urban-rural analysis shows that valid TT2 and TT3 coverage was slightly higher in rural areas than that in urban areas. In contrast, valid TT5 coverage was 3.3 percentage points higher in urban areas compared to that in rural areas (52.6 percent vs. 49.3 percent) (see Figure 95 and Map 20).

Figure 95: Valid TT Vaccination Coverage by National Rural and Urban Areas in 2014

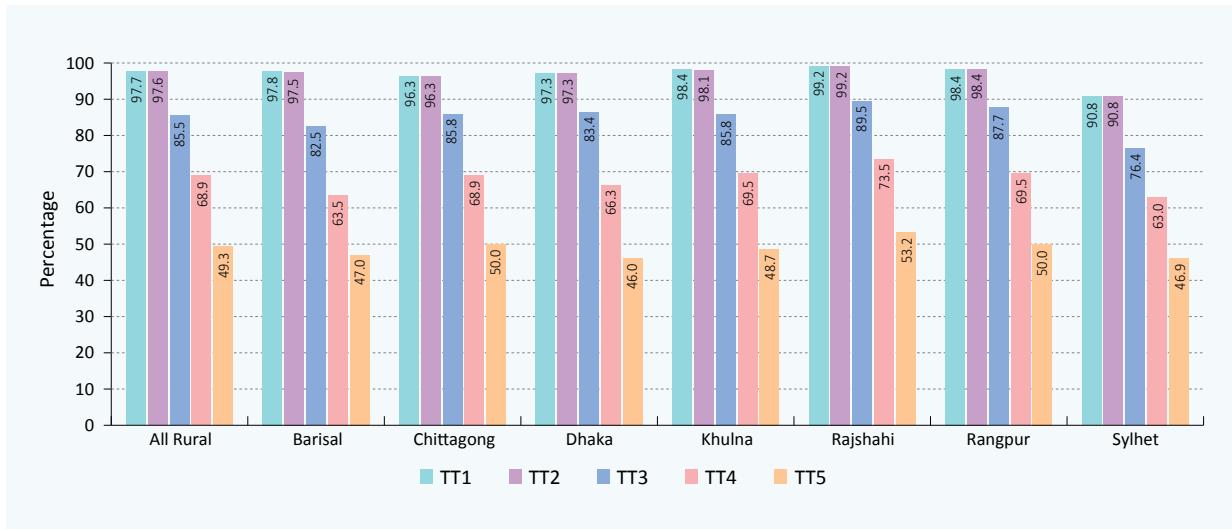


Source: CES 2014

Among the divisions, more than 96.0 percent of women received two doses of valid TT vaccine in all the divisions, except Sylhet. Consistent with other TT findings, valid TT2 and TT3 coverage was highest in

Rajshahi (99.2 and 89.5 percent, respectively) and lowest in Sylhet (90.8 and 76.4 percent, respectively). As regards valid TT3, the rate ranged between 82.5 percent and 87.7 percent in other divisions. For TT4 and TT5, the gap between the highest and lowest narrowed, although Rajshahi continued to have the highest rate (73.5 percent and 53.2 percent, respectively) and Sylhet the lowest (63.0 percent and 46.9 percent, respectively). Consequently, Rajshahi was the only division where over half the women had protection against tetanus throughout their reproductive lives (see Figure 96).

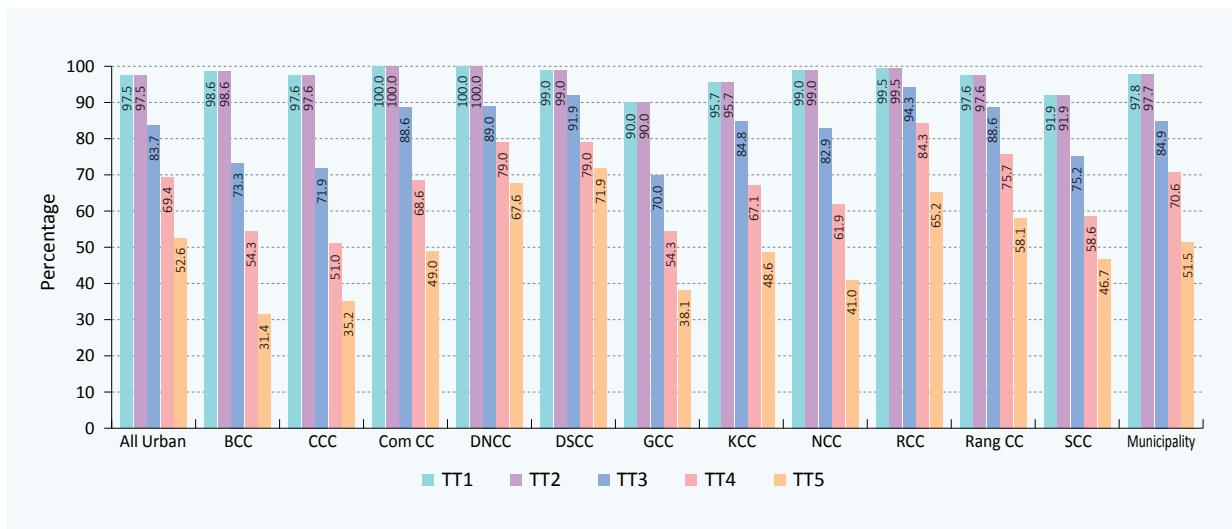
Figure 96: Valid TT Vaccination Coverage in Rural Areas by Division in 2014



Source: CES 2014

By city corporation, 90 percent or more of women in all the city corporations received valid TT2 vaccine. However, again, there was significant divergence for valid TT3 coverage, with the highest rate in RCC (94.3 percent) and the lowest in GCC (70.0 percent). It ranged from 71.9 percent to 91.9 percent in other CCs. In terms of valid TT4, it was found to be highest in RCC (84.3 percent) and lowest in CCC (51 percent). By valid TT5 coverage, the spread between highest and lowest was substantial, with DSCC at 71.9 percent and BCC at less than half that at 31.4 percent (see Figure 97).

Figure 97: Valid TT Vaccination Coverage in Urban Areas by City Corporation and Municipality in 2014



Source: CES 2014

Map 19: Crude TT5 Vaccination Coverage among Mothers of 0-11 Month-Old Children by District



LEGEND

■	< 60%
■	60-64%
■	65-69%
■	70-74%
■	> = 75%

Map 20: Valid TT5 Vaccination Coverage among Mothers of 0-11 Month-Old Children by District

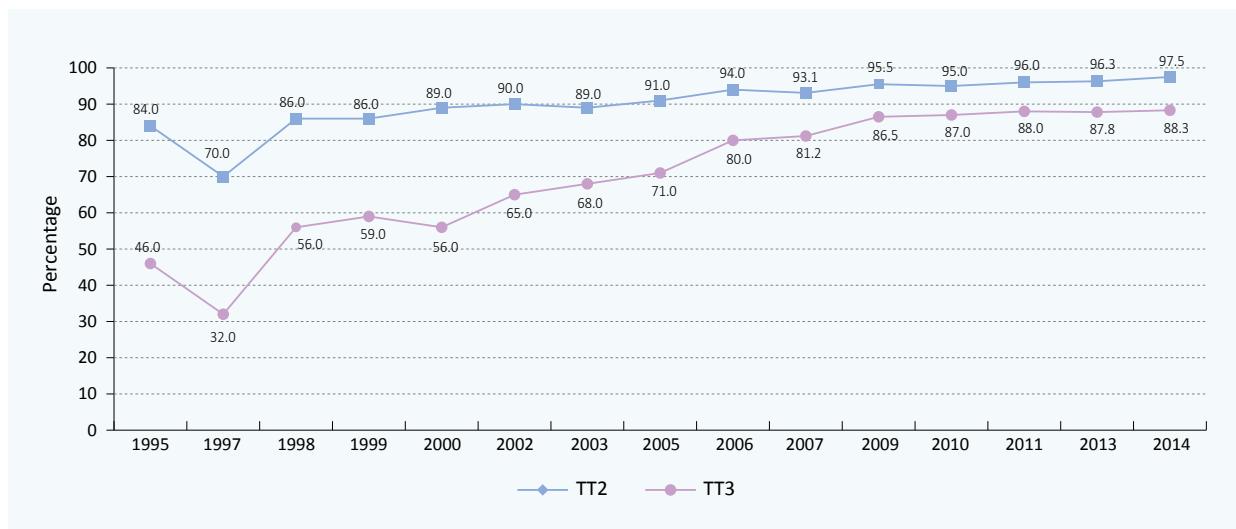


5.5 TRENDS IN THE CRUDE TT2 AND TT3 COVERAGE

Figure 98 shows the national trend of crude TT2 and TT3 vaccination coverage from 1995 to 2014. It indicates that crude TT3 coverage gradually increased from 56.0 percent in 2000 to 88.0 percent in 2011, without any fluctuation. After a slight decline to 87.8 percent in 2013, it again rose in 2014 to 88.3 percent.

In contrast, TT2 coverage started higher and increased at a slower pace, with fluctuations, since 2003. Between 2003 and 2014, it increased by 8.5 percentage points to 97.5 percent in 2014.

Figure 98: Annual Trend in Crude TT2 and TT3 Vaccination Coverage at National Level from 1995 to 2014 (Card +History)



Source: CES 2014

The trends of crude TT2 vaccination coverage by division is presented in Figures 99 to 105. While some, such as Dhaka and Rajshahi started at lower levels in 1995 (82.0 percent and 77.0 percent, respectively), all the divisions now reach coverage levels 97 percent and above. The exception is Sylhet (see Figure 105), which began even lower in 1999 (72.0 percent), did reach 98.9 percent in 2013, and then dropped again in 2014 to 91.0 percent.

After early wide fluctuations, Barisal divisions crude TT vaccination coverages have generally increased since 2000. Barisal's crude TT2 coverage has experienced a continuous slow pace of improvement since then, increasing by 10 percentage points to 98.0 percent in 2014 (see Figure 99).

In Chittagong division, crude TT2 coverage has increased with frequent fluctuations between 1995 and 2011. It increased from 81.0 percent in 2000 to 95.0 percent in 2011, and again increased to 99.2 percent in 2013. In 2014, it again fluctuated the other way, with a 2.3 percentage point decrease (to 96.9 percent) (see Figure 100).

In Dhaka division, crude TT2 coverage fluctuated considerably during the years 1999 to 2005 and was then almost static in 2006 to 2011, ranging between 95.0 percent and 96.0 percent in 2010. After a decrease to 89.7 percent in 2013, the rate further increased to 97.3 percent in 2014 (see Figure 101).

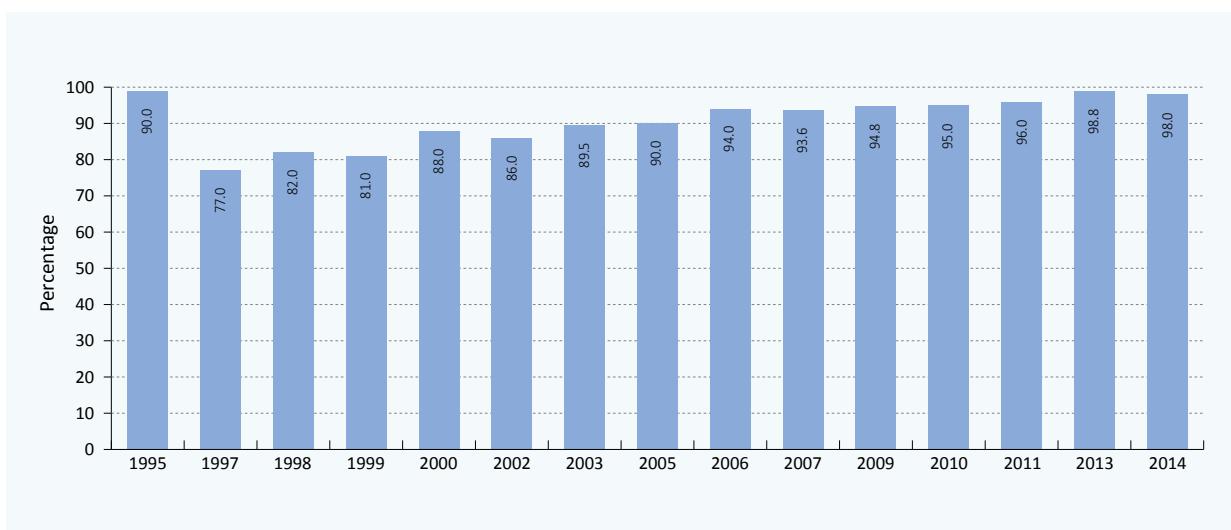
In Khulna division, crude TT2 coverage began higher, at 90.0 percent in 1995, and, except for 1997, has steadily increased, with some slight fluctuations. By 2014, the rate was 98.2 percent, having increased by 2.9 percentage points over 2013 (see Figure 102).

Rajshahi division, like Barisal, has experienced slow, steady growth in the last decade, with crude TT2 coverage increasing by 5 percentage points from 2005 to 99.0 percent in 2014. Almost universal coverage was observed in the division during the last 5 years (96.5 percent-99.0 percent) (see Figure 103).

The crude TT2 coverage in Rangpur division was 97.0 percent in 2011 and 99.3 percent in 2013. However, it decreased down to 98.3 percent in 2014 (see Figure 104). It is to be noted here that before 2011 Rangpur division was a part of Rajshahi division. Therefore, the earlier findings for Rangpur division were presented under Rajshahi division.

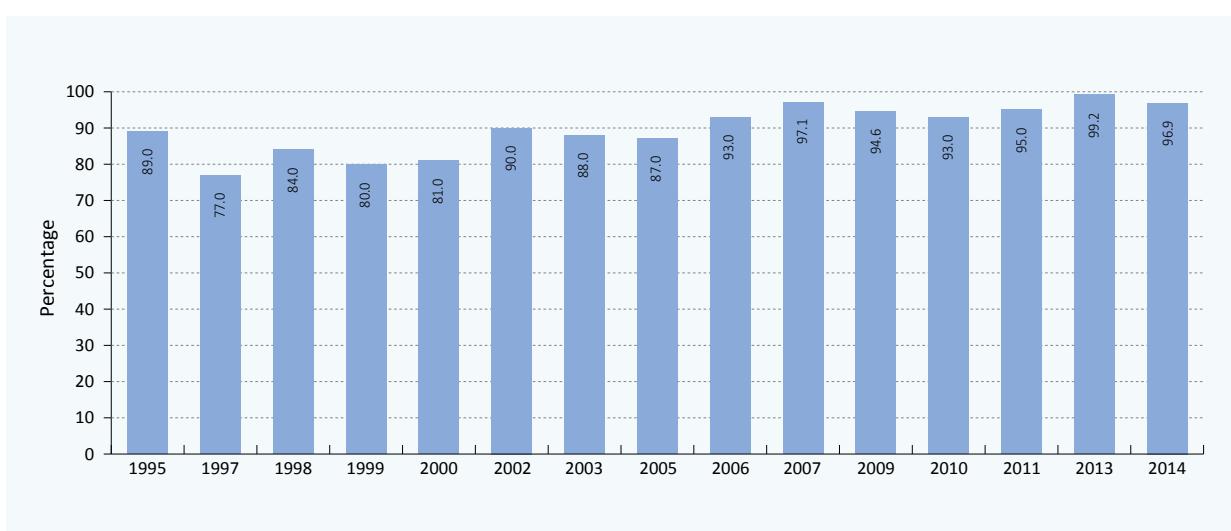
In Sylhet division, a fluctuating but upward trend was observed in crude TT2 coverage. Crude TT2 coverage increased from 85.0 percent in 2005 to 91.0 percent in 2014. Conversely, it decreased by 7.9 percentage points in the past two surveys, from 98.9 percent in 2013 to 91.0 percent in 2014 (see Figure 105).

Figure 99: Crude TT2 Vaccination Coverage in Barisal Division from 1995 to 2014

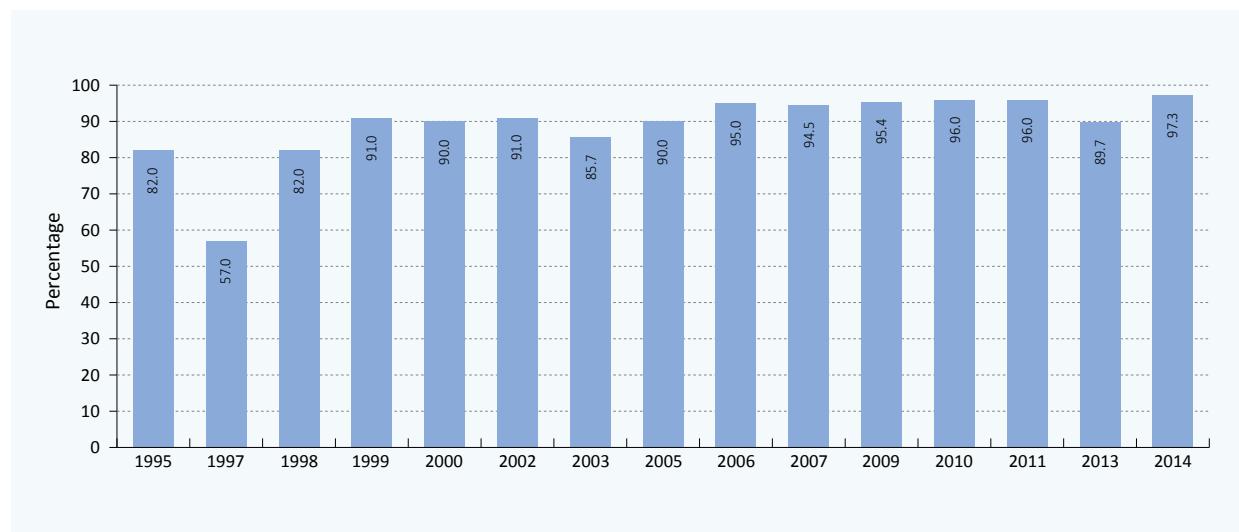


Source: CES 2014

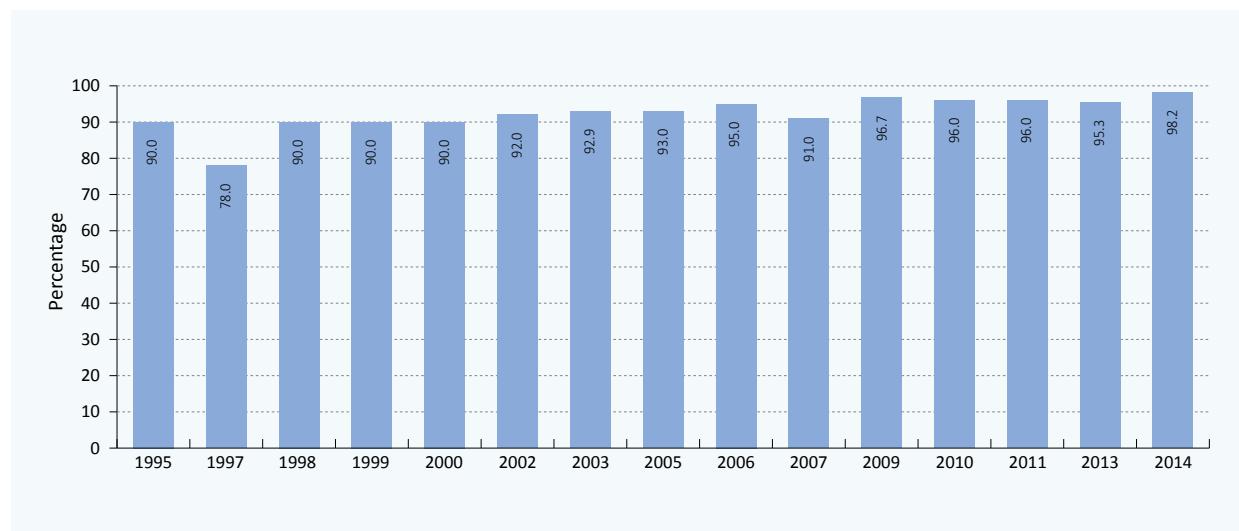
Figure 100: Crude TT2 Vaccination Coverage in Chittagong Division from 1995 to 2014



Source: CES 2014

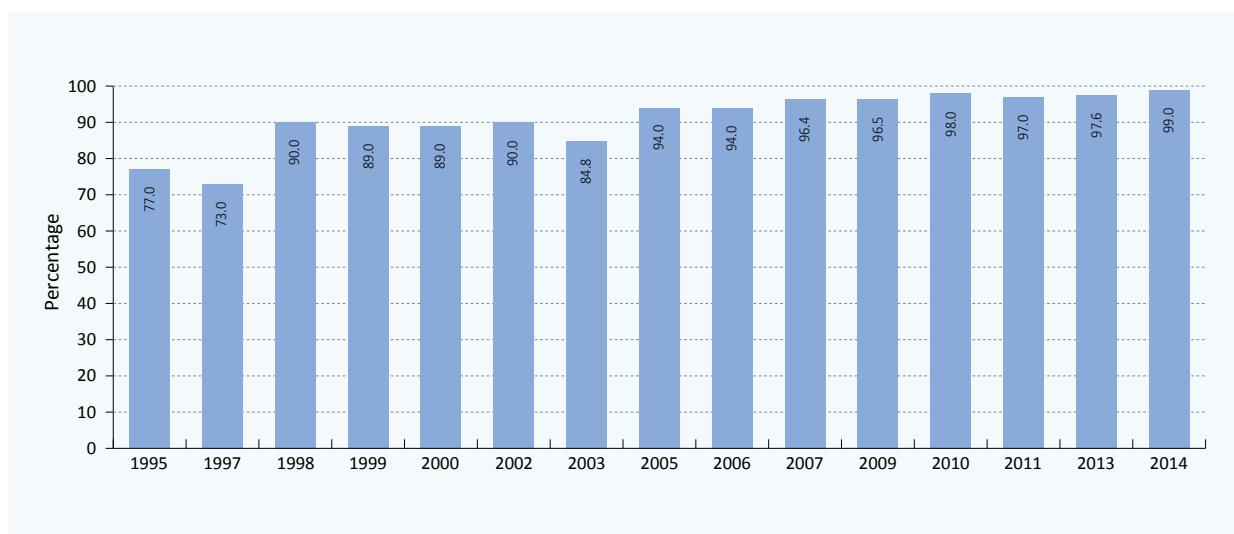
Figure 101: Crude TT2 Vaccination Coverage in Dhaka Division from 1995 to 2014

Source: CES 2014

Figure 102: Crude TT2 Vaccination Coverage in Khulna Division from 1995 to 2014

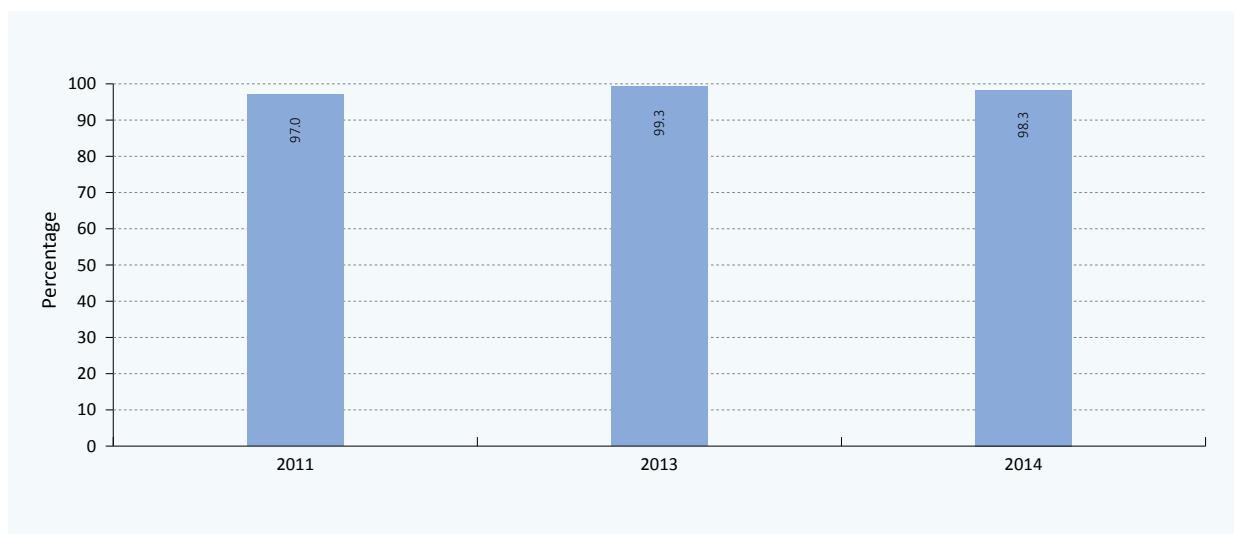
Source: CES 2014

Figure 103: Crude TT2 Vaccination Coverage in Rajshahi Division from 1995 to 2014

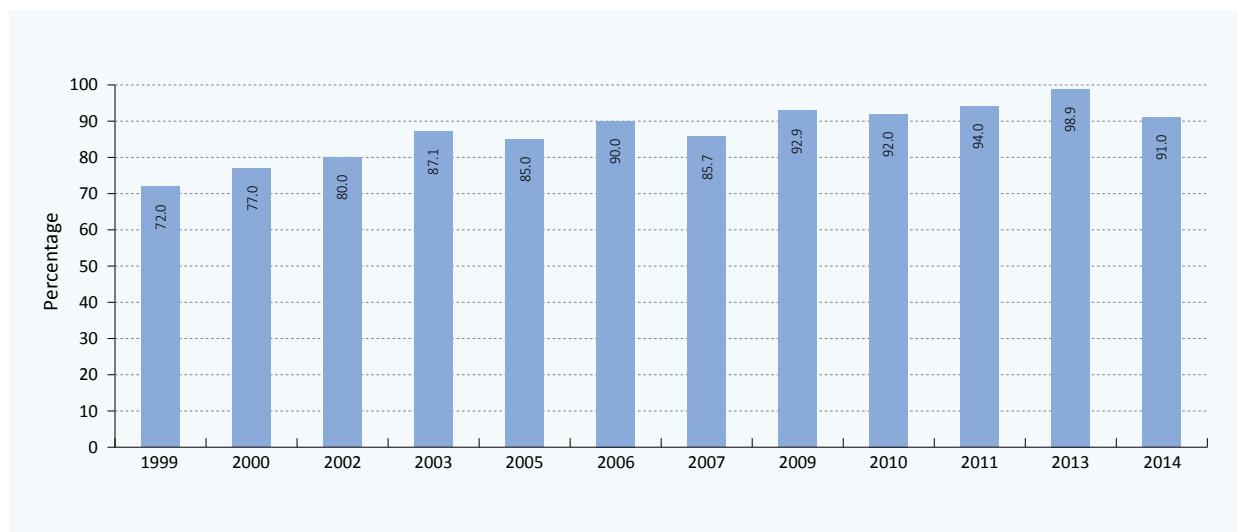


Source: CES 2014

Figure 104: Crude TT2 Vaccination Coverage in Rangpur Division from 2011 to 2014



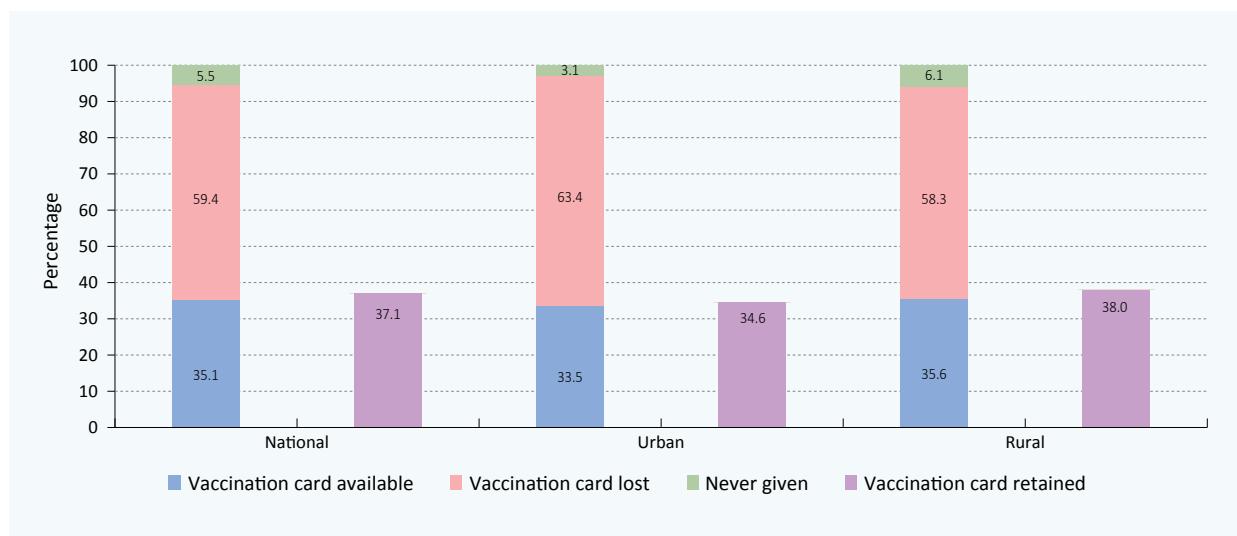
Source: CES 2014

Figure 105: Crude TT2 Vaccination Coverage in Sylhet Division from 1999 to 2014

Source: CES 2014

5.6 TT CARD STATUS AMONG MOTHERS

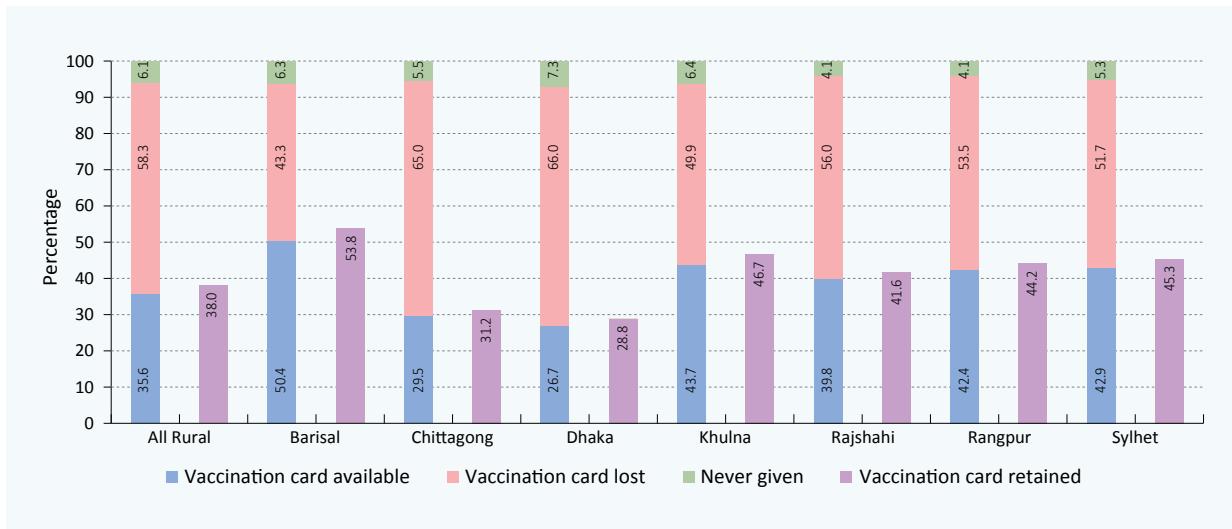
Nationally, 35.1 percent cards were available during the time of data collection and 59.4 percent appeared to be lost. In 94.5 percent cases, cards were issued at the time of vaccination and that the cards were not given to the rest 5.5 percent vaccine recipients. TT vaccination cards were found to be retained (percentage of cards available at the time of the survey against the total number available and lost, but not those never given) in 37.1 percent cases nationally (see Figure 106). Rural mothers were more likely to retain TT vaccination cards (38.0 percent) compared to their urban counterparts (34.6 percent)

Figure 106: TT Vaccination Card Status by National, Rural and Urban Areas in 2014

Source: CES 2014

Among the rural divisions, the availability of TT vaccination cards during the period of data collection was found to be highest in Barisal division (50.4 percent) and lowest in Dhaka division (26.7 percent), which is the same pattern for the card retention rate (53.8 percent and 28.8 percent, respectively). The highest proportion of vaccination cards reported to be lost was the inverse, with Dhaka division the highest (66.0 percent) Barisal division the lowest (43.3 percent). (see Figure 107).

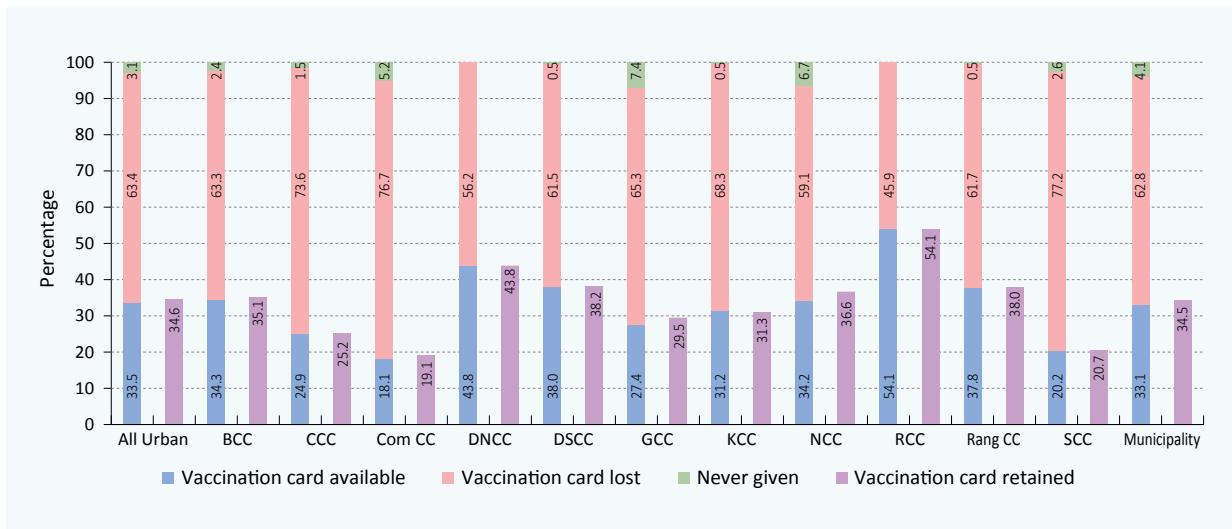
Figure 107: TT Vaccination Card Status in Rural Areas by Division in 2014



Source: CES 2014

The TT vaccination card status by city corporation found that 54.1 percent cards were available, and retained, during the time of data collection by mothers residing in RCC. The lowest percentages of available retained cards were in Com CC, at 18.1 percent and SCC, at 20.2 percent. While the lowest number of lost cards was in RCC (45.9 percent), the highest number was in SCC (77.2 percent) and Com CC (76.7 percent). The lowest rate of vaccination cards found to be retained was in Com CC (19.1 percent), followed by CCC (25.2 percent) (see Figure 108).

Figure 108: TT Vaccination Card Status in Urban Areas by City Corporation and Municipality in 2014

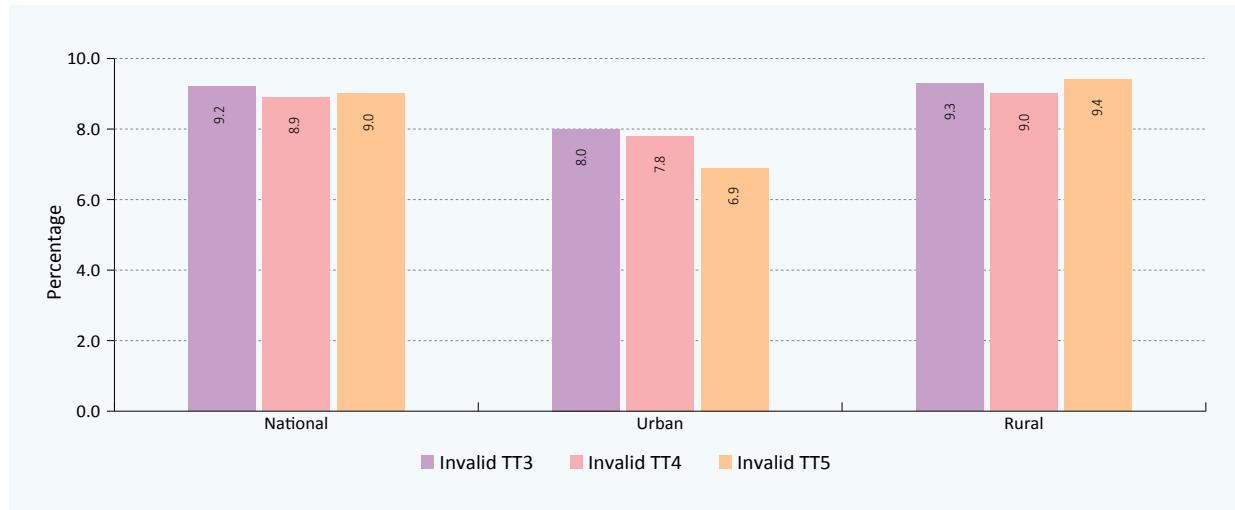


Source: CES 2014

5.7 INCIDENCE OF INVALID DOSES

Nationally, the incidence of invalid doses was about one in ten for each of TT3, TT4 and TT5. By residence, the incidence of invalid TT3, TT4, and TT5 was slightly higher in rural areas than urban areas. In rural areas, the incidence of invalid TT3 was 9.3 percent, TT4 9.0 percent, and TT5 9.4 percent, while the corresponding figures in urban areas were 8.0 percent, 7.8 percent, and 6.9 percent (see Figure 109).

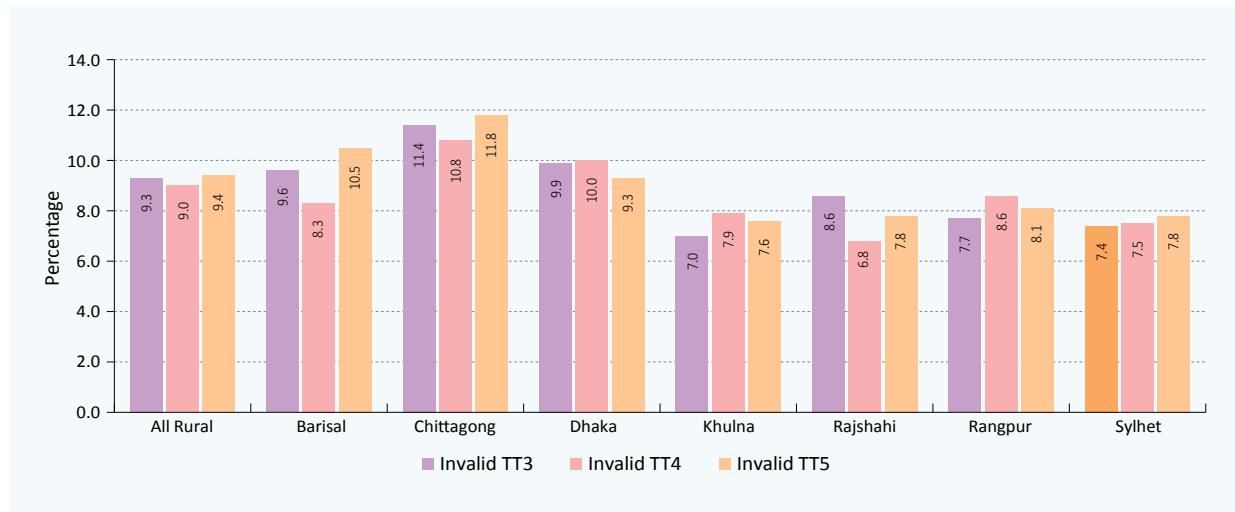
Figure 109: Incidence of Invalid TT Doses by National, Rural and Urban Areas in 2014



Source: CES 2014

Among rural divisions, no marked variation within the invalid doses of TT3, TT4, and TT5 was noticed within divisions. However, a slight differentiation was observed between the divisions by invalid dose, where the incidence of invalid TT3 ranged from 11.4 percent in Chittagong division to 7.0 percent in Khulna division. Similarly, the incidence of invalid TT4 ranged from 10.8 percent in Chittagong division to 6.8 percent in Rajshahi division. The highest incidence of invalid TT5 was again in Chittagong (11.8 percent), but the lowest was in Khulna divisions (7.6 percent). (see Figure 110).

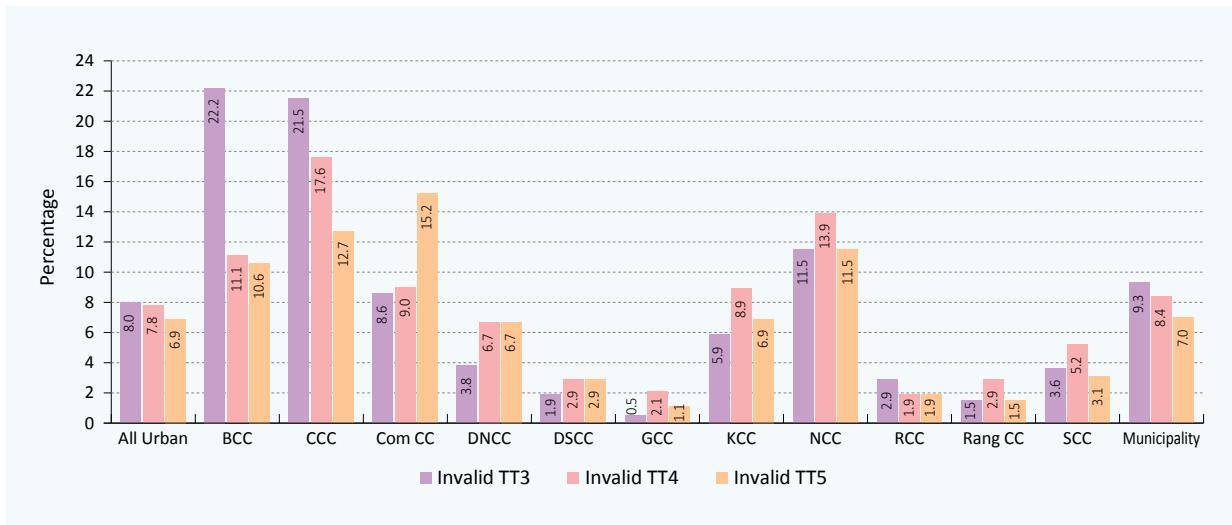
Figure 110: Incidence of Invalid TT Doses in Rural Areas by Division in 2014



Source: CES 2014

Among the city corporations, the highest and lowest rates of invalid TT doses varied greatly. For instance, the incidence of invalid TT3 dose was the highest in BCC (22.2 percent) and the lowest in GCC (0.5 percent), while for invalid TT4, it was highest in CCC (17.6 percent) and lowest in RCC (1.9 percent). However, invalid TT5 was the highest in Com CC (15.2 percent) and the lowest in GCC (1.1 percent). In general BCC, CCC, Com CC, and NCC had amongst the higher figures, while DNCC, DSCC, GCC, RCC, Rang CC and SCC had the lower figures (see Figure 111). KCC tended to be middling.

Figure 111: Incidence of Invalid TT Doses in Urban Areas by City Corporation and Municipality in 2014

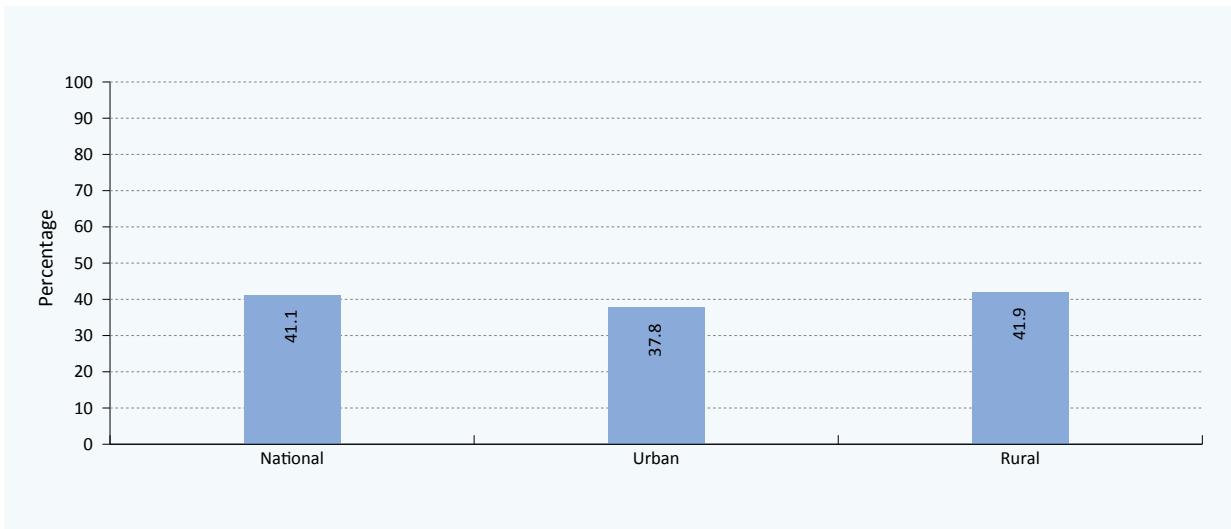


Source: CES 2014

5.8 SCREENING THE TT VACCINATION OF THE MOTHERS

Screening the mothers' TT status is an important means to addressing the missed opportunity of subsequent TT doses. CES 2014 assessed the screening status by the vaccinator, and the results are presented in Figures 112 to Figure 114. Overall, 41.1 percent of the mothers across the country reported that their TT status was screened. Rural mothers (41.9 percent) were more likely to be screened, compared to those who resided in urban areas (37.8 percent) (see Figure 112).

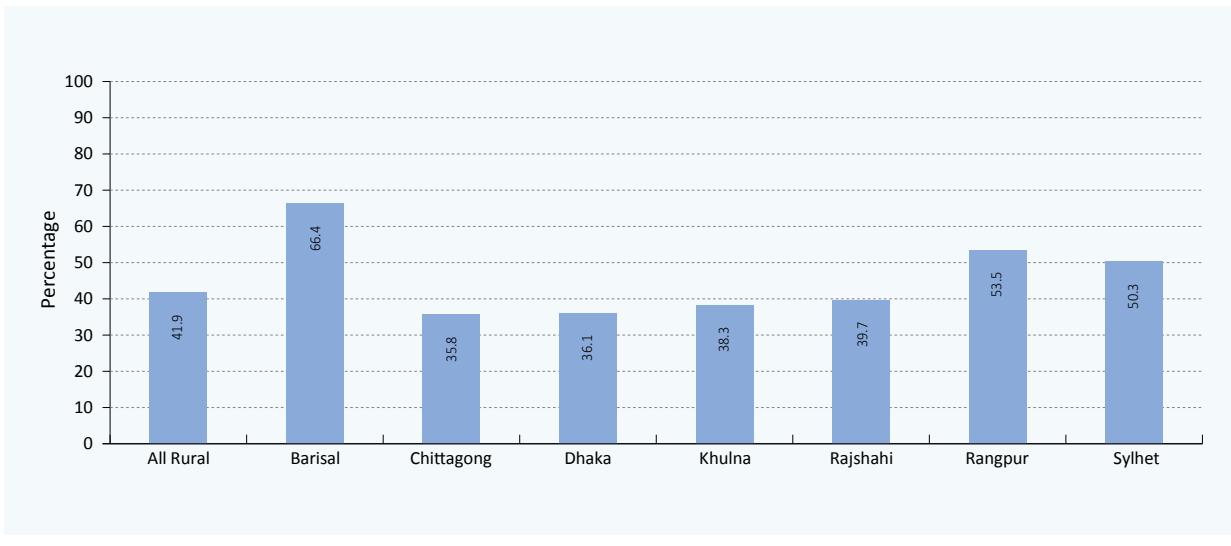
Figure 112: Percentage Distribution of Mothers Screened for TT Status by National, Rural and Urban Areas in 2014



Source: CES 2014

By rural divisions, the highest proportion of mothers who reported that their TT vaccination status was screened by the vaccinator (66.4 percent) were from Barisal division. The proportion of the screened mothers was the lowest in Chittagong division (35.8 percent). The others ranged between 36.1 percent and 53.5 percent in other divisions (see Figure 113).

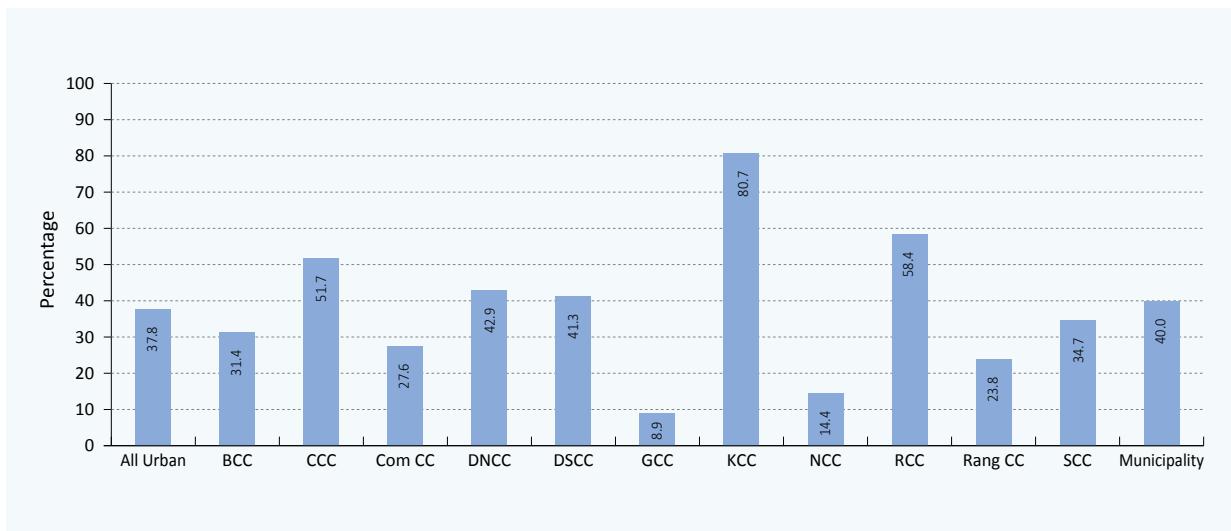
Figure 113: Percentage Distribution of Mothers Screened for TT Status in Rural Areas by Division in 2014



Source: CES 2014

Among the city corporations, the proportion of screened mothers was the highest by far in KCC (80.7 percent), followed next by RCC (58.4 percent), and with a steady decline in the other division to the lowest, held by GCC (8.9 percent) (see Figure 114).

Figure 114: Percentage Distribution of Mothers Screened for TT Status in Urban Areas by City Corporation and Municipality in 2014



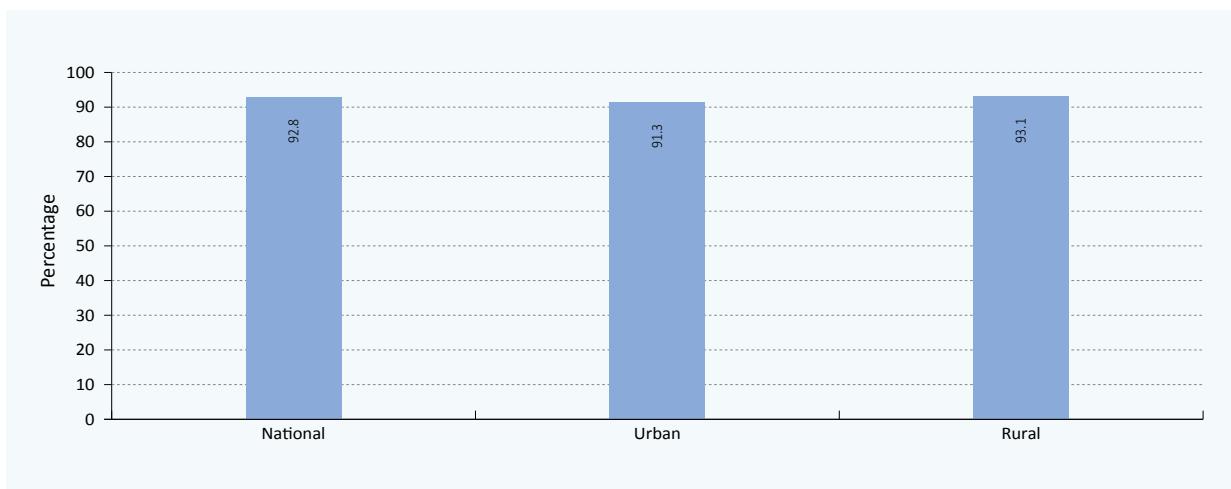
Source: CES 2014

5.9 CHILDREN'S PROTECTION AT BIRTH (PAB) AGAINST TETANUS

The status of Protection at Birth against tetanus of the surveyed children is presented in Figures 115 to 117. Nationally 92.8 percent of the children were protected at their birth against tetanus, with rural children were a very slightly ahead of urban children in this context (93.1 percent vs. 91.3 percent). Among the divisions, also shown on Map 21, PAB against tetanus was the highest in Barisal (94.5 percent), Rajshahi (94.4 percent), Chittagong (94.3 percent). The children living in Sylhet division were found comparatively less protected (89.5 percent) (see Figure 116).

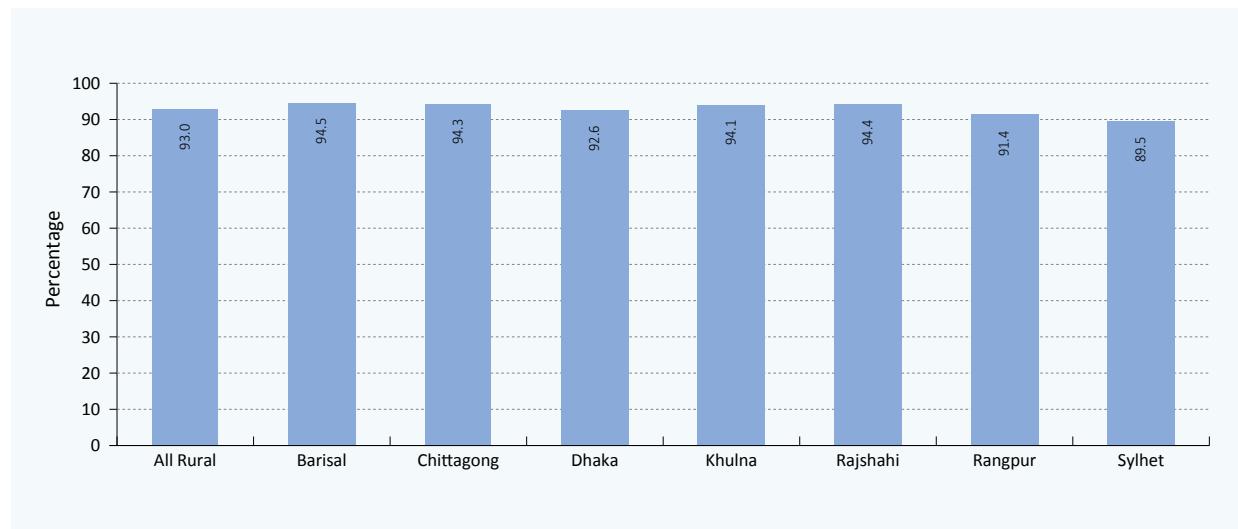
Among the city corporations, PAB status was found to be almost universal in RCC (98.6 percent). Most of the divisions were above 95.0 percent, but four ranged from 87.9 percent to 80.0 percent: GCC, DSCC, SCC, and DNCC (see Figure 117).

Figure 115: Percentage of Children Protected at Birth against Tetanus by National, Rural and Urban Areas in 2014



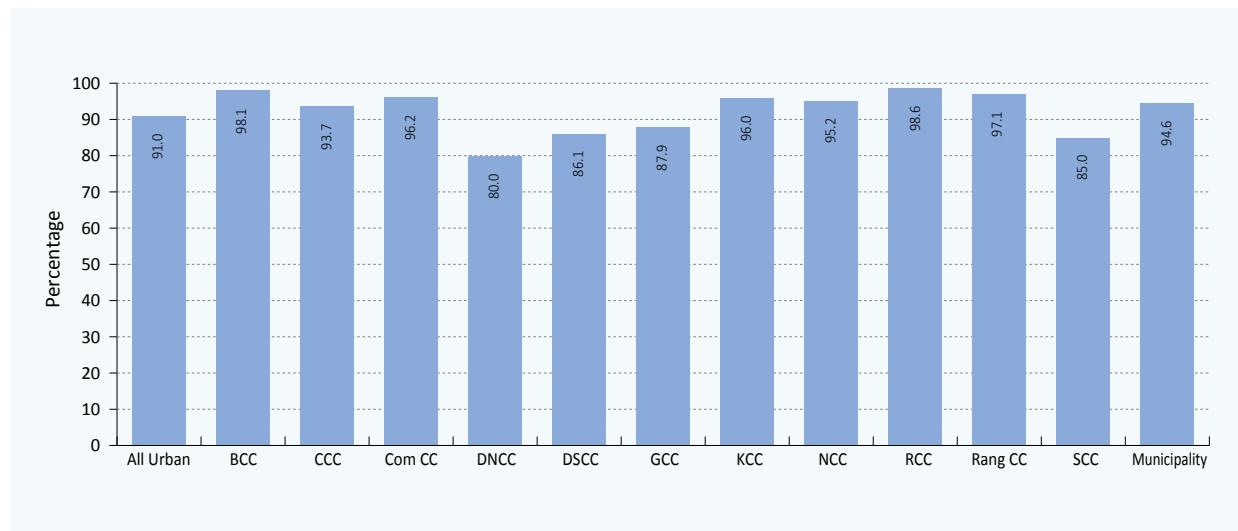
Source: CES 2014

Figure 116: Percentage of Children Protected at Birth against Tetanus in Rural Areas by Division in 2014



Source: CES 2014

Figure 117: Percentage of Children Protected at Birth against Tetanus in Urban Areas by City Corporation and Municipality in 2014



Source: CES 2014

Map 21: Newborn Protected at Birth against Tetanus by District



LEGEND

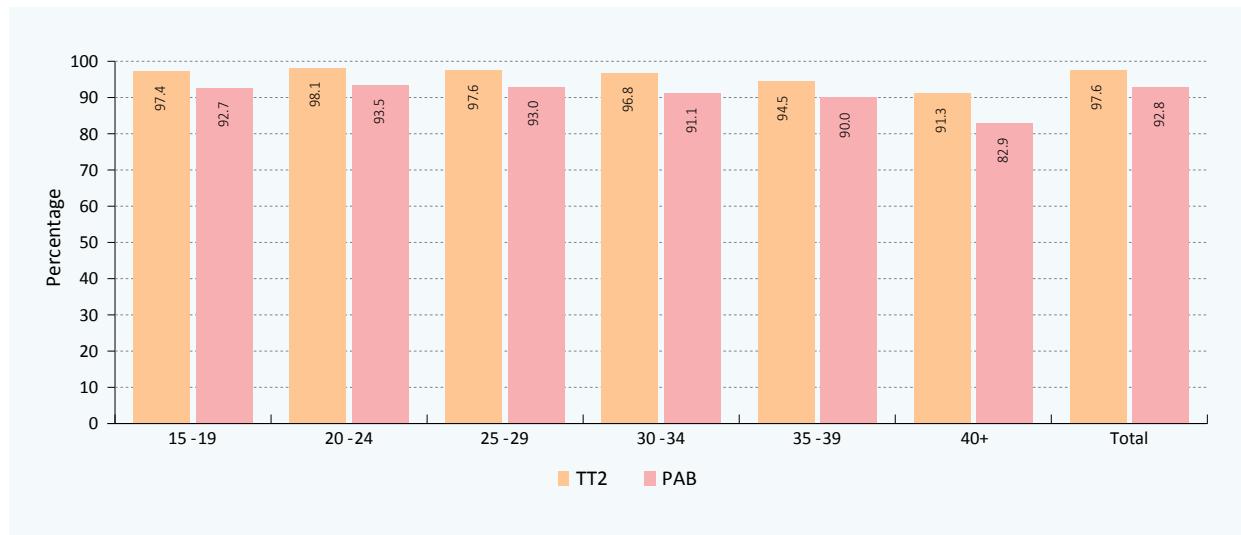
- < 75%
- 75-79%
- 80-84%
- 85-89%
- > = 90%

5.10 TT2 COVERAGE AND PAB STATUS

Figure 118 presents TT2 coverage by mothers' age and the status of PAB of newborn babies. It shows that 92.8 percent of the newborn babies were protected at their birth, as against 97.6 percent of TT2 coverage. By the age of mothers, the gap between TT2 coverage and PAB was the highest among the mothers aged 40 years and above (8.4 percentage points). For the other age groups the gap between TT2 coverage and PAB had little variation. In urban areas, the gap between TT2 coverage and PAB among mothers who were 40 years of age and above was 15.7 percentage points. The gap among rural mothers who were 40 years old and above was not as wide (12.9 percentage points), but still much wider than for other age groups (see Figure 119).

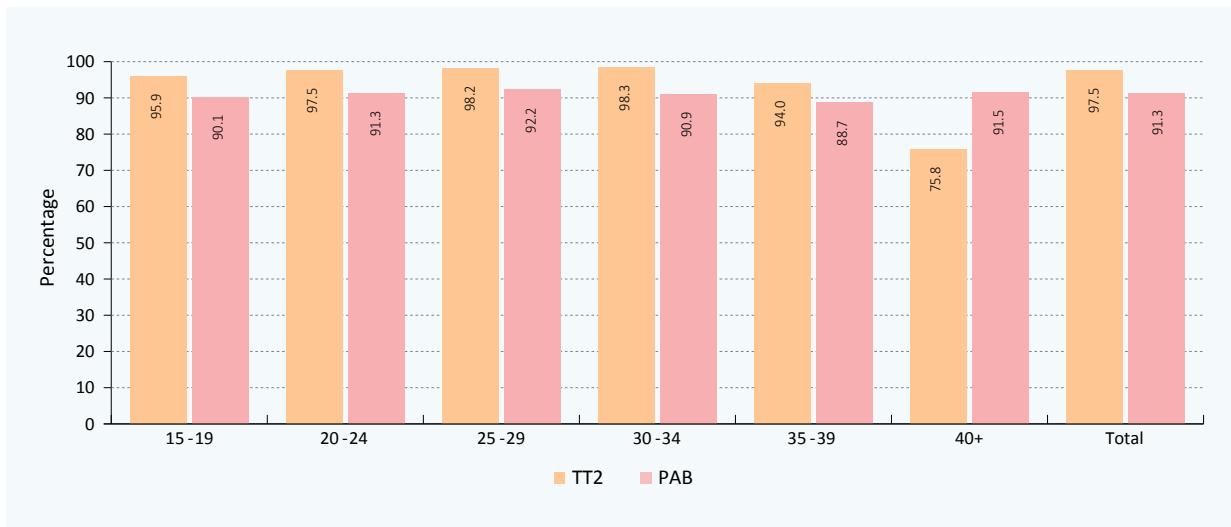
The analysis of TT2 coverage and PAB indicates that TT2 coverage and PAB are not inter-related. In relation to TT2 coverage, PAB was found lower nationally. This might be due to giving birth to the child more than 3 years after receiving TT2 (see Figure 120).

Figure 118: Percentage Distribution of Mothers Received TT2 and of Newborn Protected at Birth against Tetanus by Age Group of Mothers at National Level in 2014



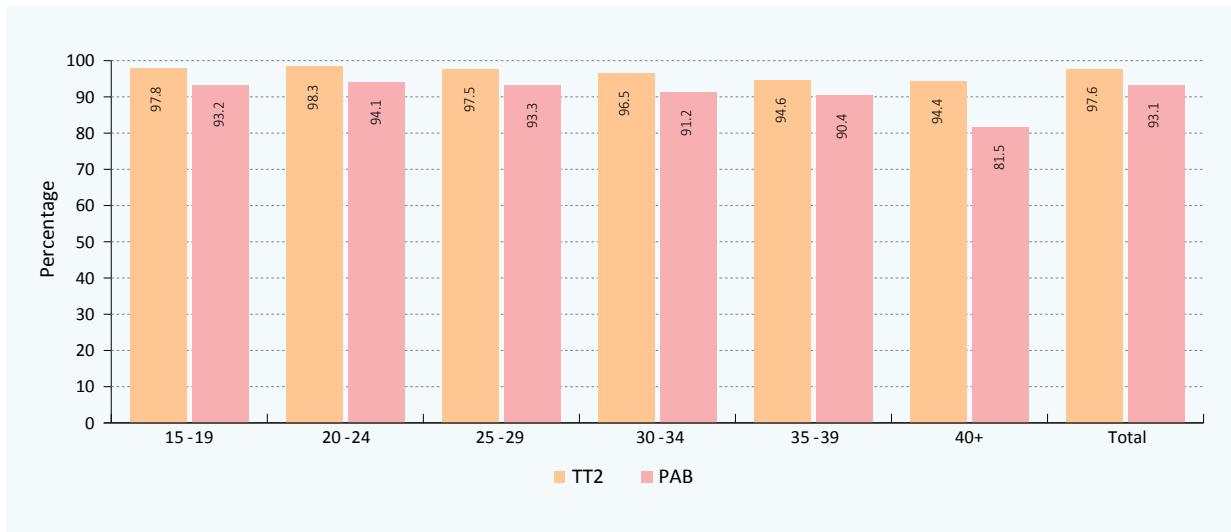
Source: CES 2014

Figure 119: Percentage Distribution of Mothers Received TT2 and of Newborn Protected at Birth against Tetanus by Age Group of Mothers by Urban Areas in 2014



Source: CES 2014

Figure 120: Percentage Distribution of Mothers Received TT2 and of Newborn Protected at Birth against Tetanus by Age Group of Mothers by Rural Areas in 2014

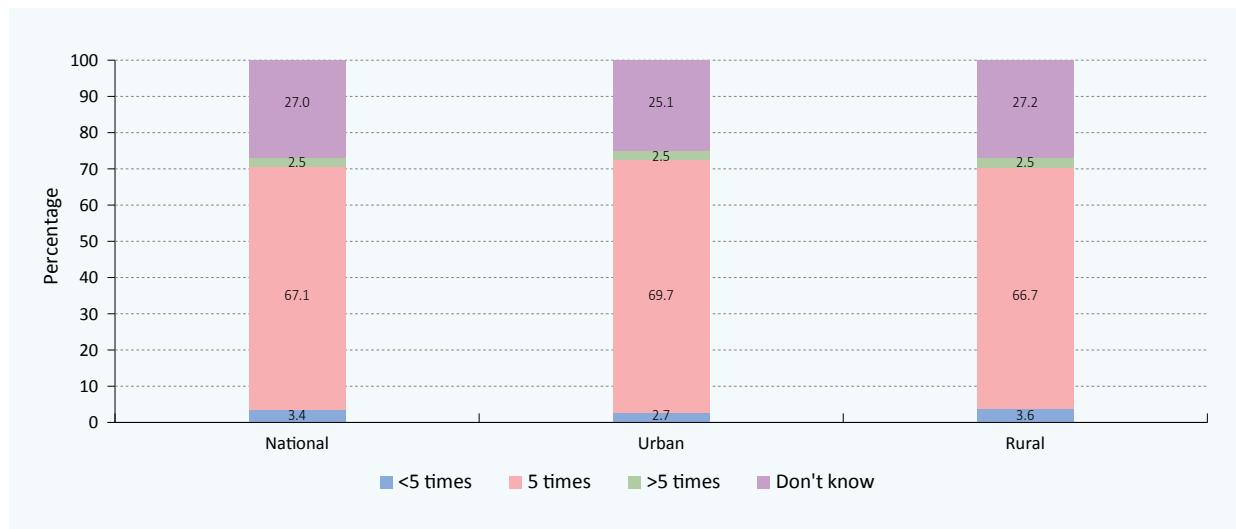


Source: CES 2014

5.11 MOTHERS' KNOWLEDGE OF NUMBER OF TT DOSES

Figure 121 presents the mothers' knowledge of the number of TT doses required for their protection against tetanus through their reproductive age. Nationally, a little over two-thirds of the respondents (67.1 percent) reported knowing five doses of TT vaccine are required. The respondents living in urban areas had better knowledge than those living in rural areas (69.7 percent vs. 66.7 percent). Overall, 27.0 percent of the respondents reported that they did not know anything about the number of doses.

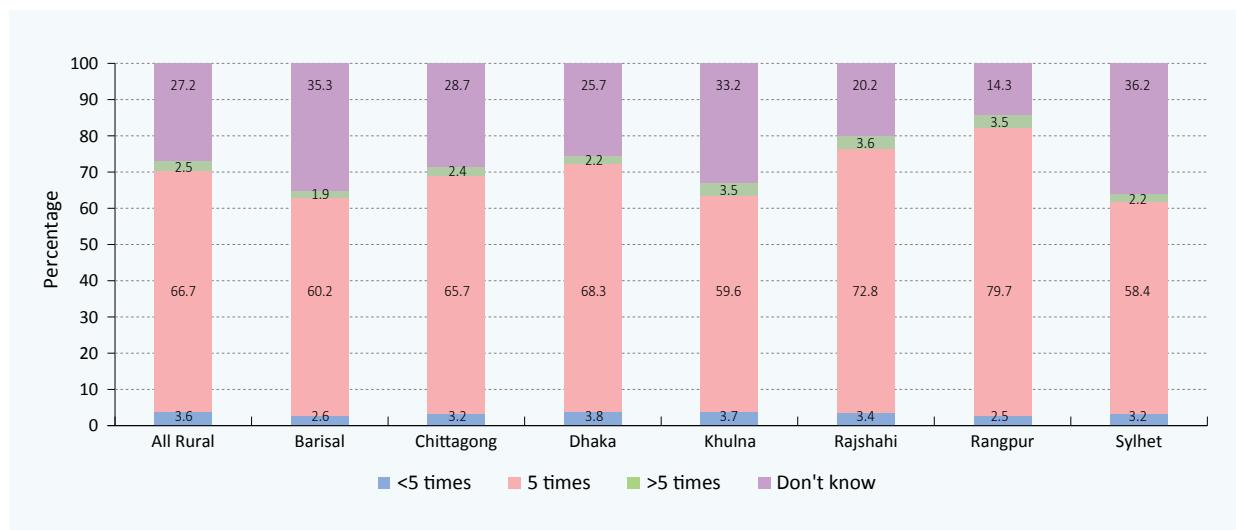
Figure 121: Knowledge about Number of TT Doses Required to Protect a Woman against Tetanus by National, Rural and Urban Areas in 2014



Source: CES 2014

Among the divisions, awareness about the five required doses of TT vaccine was highest among mothers in Rangpur division (79.7 percent); the mothers in Sylhet divisions (58.4 percent) had the least awareness of the recommended doses (see Figure 122).

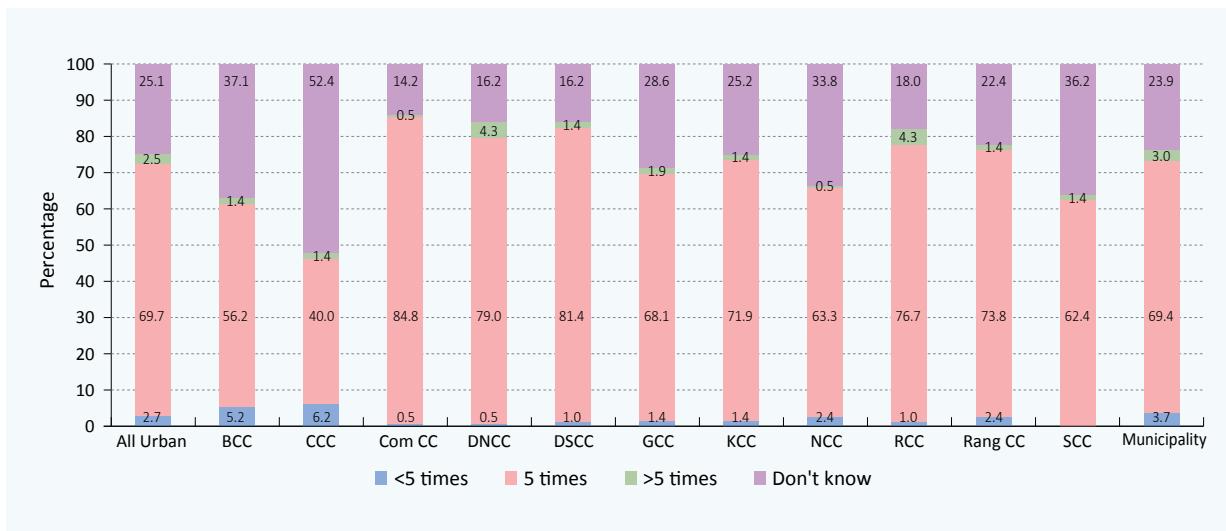
Figure 122: Knowledge about Number of TT Doses Required to Protect a Woman against Tetanus in Rural Areas by Division in 2014



Source: CES 2014

The respondents who were living in Com CC (84.8 percent), DSCC (81.4 percent), and DNCC (79.0 percent) possessed better knowledge about the required number of TT doses than those were residing in other city corporations. It was found that 40.0 percent among those residing in CCC knew about the correct required number of TT doses, while 52.4 percent could not mention the required number of TT dose (see Figure 123).

Figure 123: Knowledge about Number of TT Doses Required to Protect a Woman against Tetanus in Urban Areas by City Corporation and Municipality in 2014

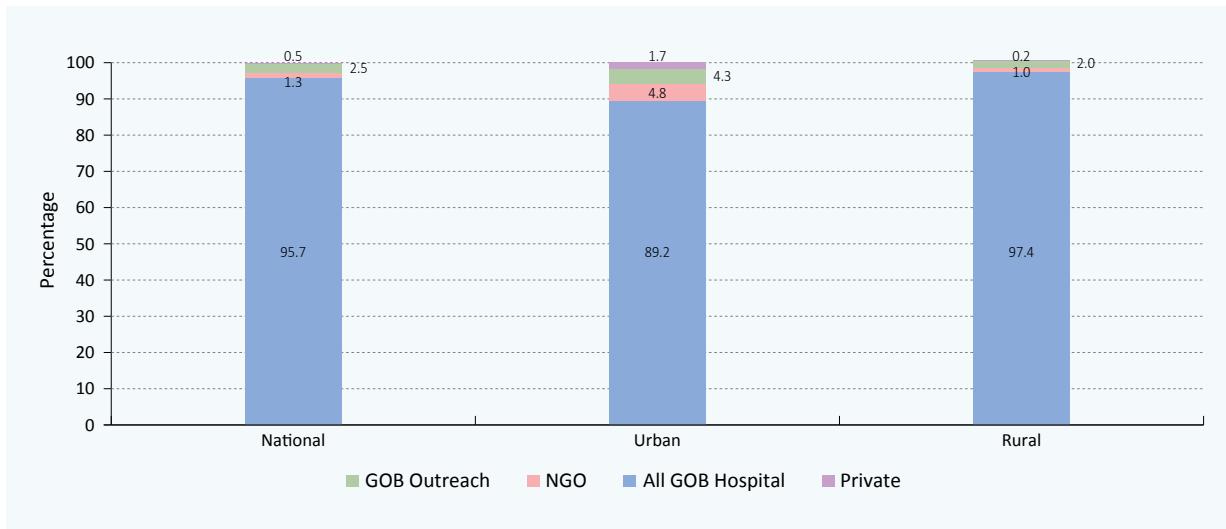


Source: CES 2014

5.12 SOURCES OF TT VACCINATION

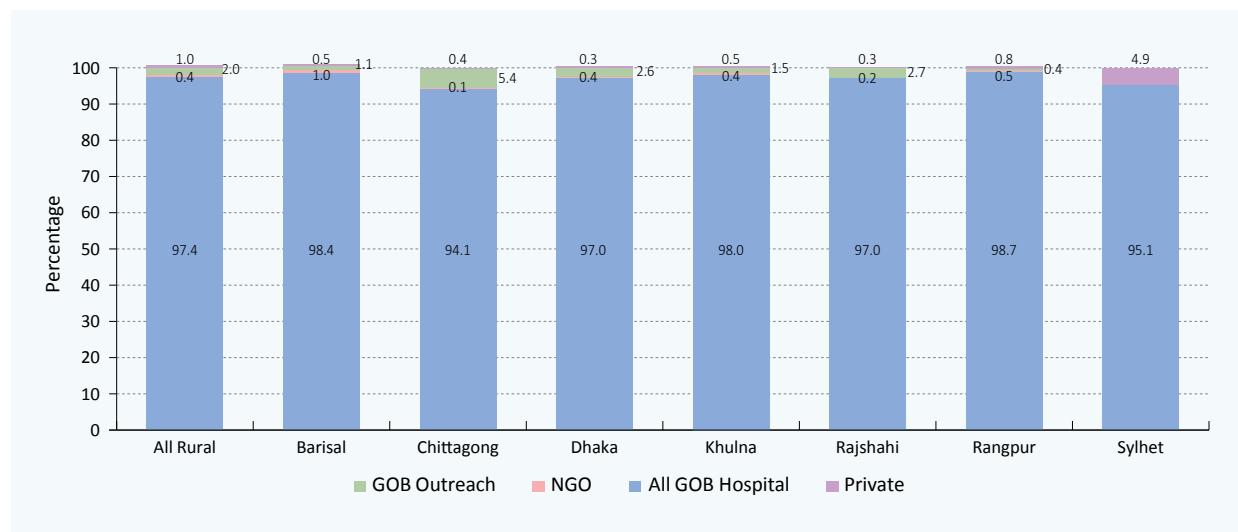
The sources for TT1 vaccine are presented in Figure 124. Overall, in 95.7 percent cases, TT1 vaccine was received from GoB outreach centres, more so in rural areas (97.4 percent) than urban areas (89.2 percent). Nationally, other sources included GoB hospitals (2.5 percent), and NGOs and private clinics/ hospitals (1.8 percent).

Figure 124: Sources of TT1 Vaccination by National, Rural and Urban Areas in 2014



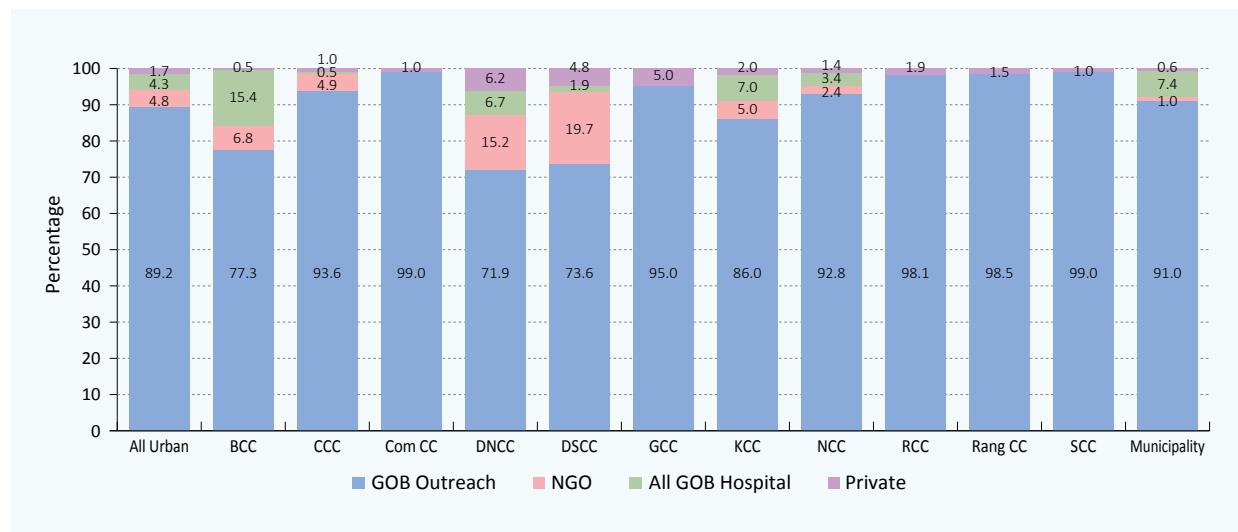
Source: CES 2014

Figure 125 shows the distribution of sources of TT1 doses by rural divisions. Again, the vast majority received their TT1 doses from GoB outreach centres, with rates ranging from 98.7 percent in Rangpur division to 95.1 percent in Sylhet division. NGO and private sources were very low in all divisions.

Figure 125: Sources of TT1 Vaccination in Rural Areas by Division in 2014

Source: CES 2014

By city corporations, the distribution of sources of TT1 dose were again for the most part GoB outreach centres but there was more variety than in rural areas. The data show that 99.0 percent respondents in Comilla and Sylhet City Corporations received TT1 from GoB outreach centres. At the other end of the scale, 71.9 percent go to GoB outreach centres in DNCC. A significant portion of respondents from DNCC (15.2 percent) and DSCC (19.7 percent) received TT1 from NGO health centres (see Figure 126).

Figure 126: Sources of TT1 Vaccination in Urban Areas by City Corporation and Municipality in 2014

Source: CES 2014

CHAPTER 6

**TT5 Vaccination
Coverage among
18-49 Year-old
Women**

TT5 VACCINATION COVERAGE AMONG 18-49 YEAR-OLD WOMEN

EPI provides TT vaccine to all women of child bearing age (15-49 years) through its routine vaccination programme. To confirm adequate protection of newborn babies against neonatal tetanus, EPI aims to complete all five doses of TT to all the target women at the shortest possible interval. Based on the vaccination schedule, the shortest possible interval would be at least two years and seven months. If a woman starts the TT vaccinations at the age of 15 and keeps to the exact scheduled intervals, she would be able to complete all the required doses before the age of her marriage, and she would be protected from tetanus through her reproductive years.

6.1 OBJECTIVES OF THE TT VACCINATION COVERAGE

The Tetanus Toxoid (TT) survey was undertaken to achieve the following objectives with relation to women aged between 18 to 49 years:

- the number who had completed all five doses of TT
- rates of TT card retention
- sources of TT vaccination
- reasons for those not receiving TT

6.2 SELECTION OF SAMPLES

The survey samples for TT5 were selected from the same clusters as were the samples for Chapter 5, where the samples were selected following WHO 30 clusters sampling technique. First, a list was compiled from women 18-49 years old who were identified within each household. From that list, 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.

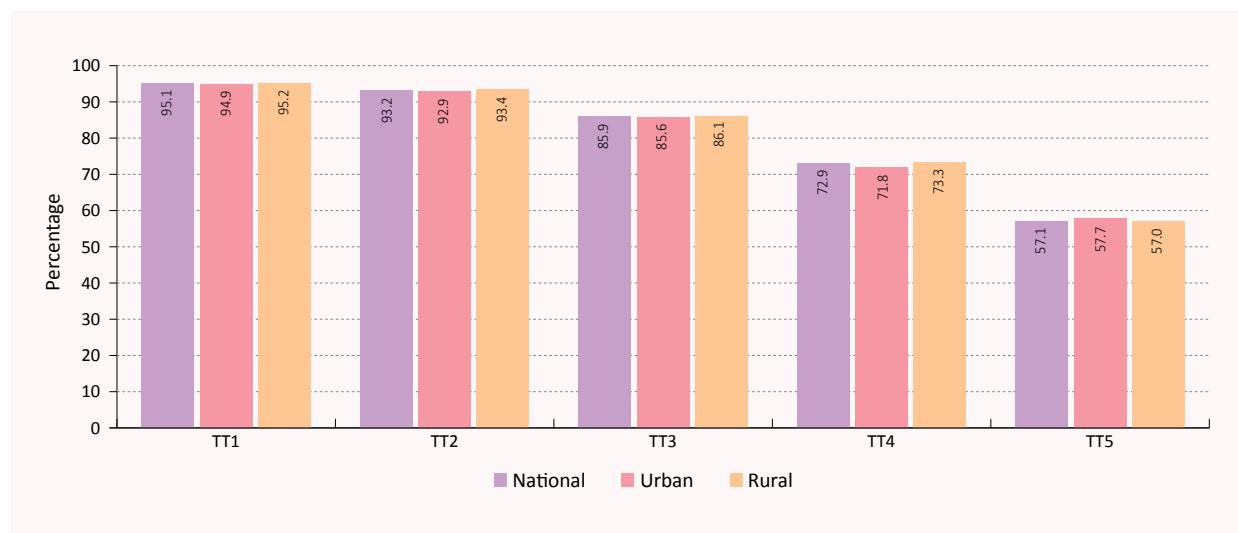
6.3 LEVELS OF TT VACCINATION COVERAGE

The Coverage Evaluation Survey 2014 estimated two types of TT vaccination coverage: crude and valid. Crude TT vaccination coverage includes all TT vaccines administered to a recipient, although the EPI-recommended TT vaccination schedule may not have been followed. On the other hand, valid coverage is estimated from only those doses of vaccine which were administered according to the EPI-recommended TT vaccination schedule. Both types of the coverage are discussed below.

Crude Vaccination Coverage

Figure 127 shows that nationally 57.1 percent of the women received all the 5 doses of TT vaccines with a slight variation in coverage between rural (57.0 percent) and urban (57.7 percent) women. On the way to TT5, there had been a steep downward trend in crude coverage between TT doses. Having started with TT1 at 95.1 percent nationally, the rate had dropped about 10 percentage points for each subsequent dose. A similar picture was observed both in rural and urban areas, where the numbers were very alike.

Figure 127: Crude TT5 Vaccination Coverage for Women 18-49 Years by National, Rural and Urban Areas in 2014

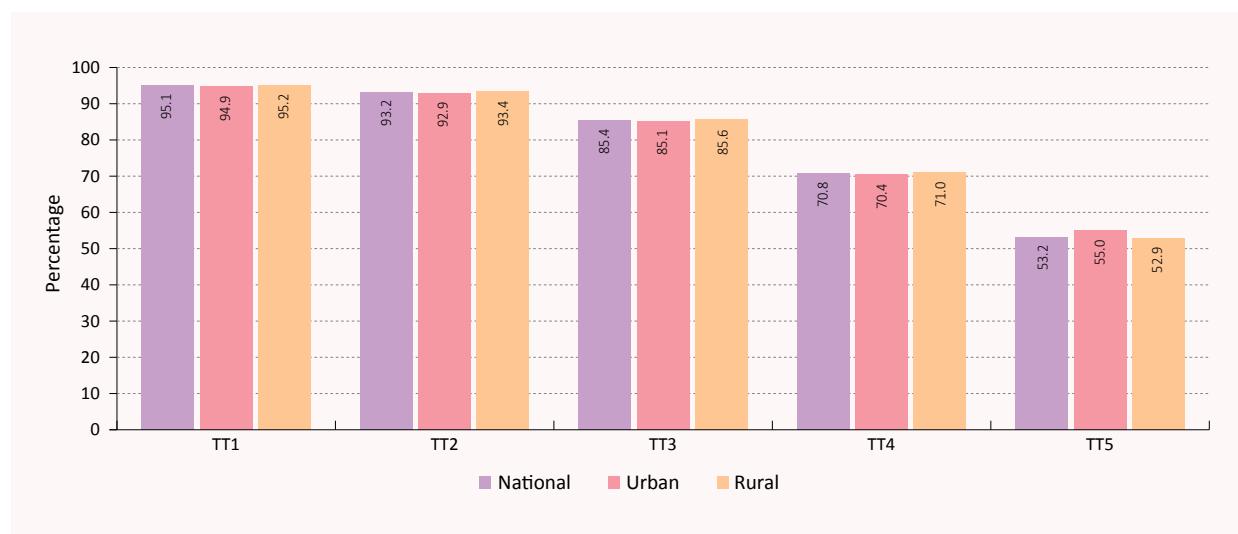


Source: CES 2014

As regards valid TT vaccination coverage, more than half (53.2 percent) of the surveyed women received all five doses of valid TT vaccine across the country 52.9 percent in rural and 55.0 percent in urban areas. Like crude TT coverage, valid TT coverage for the subsequent doses were also found to have decreased substantially, from 95.1 percent for TT1 to 53.2 percent for TT5. (see Figure 128).

By residence, valid TT coverage was almost the same in both urban and rural areas for the first four TT vaccinations, with the gaps between subsequent vaccinations followed closely the crude vaccination pattern. Of interest, while the rural rates of coverage were slightly higher in the first four doses, TT5 coverage reversed and was 2 percentage points higher in urban areas compared to rural (55.0 percent vs. 52.9 percent).

Figure 128: Valid TT5 Vaccination Coverage for Women 18-49 Years by National, Rural and Urban Areas in 2014



Source: CES 2014

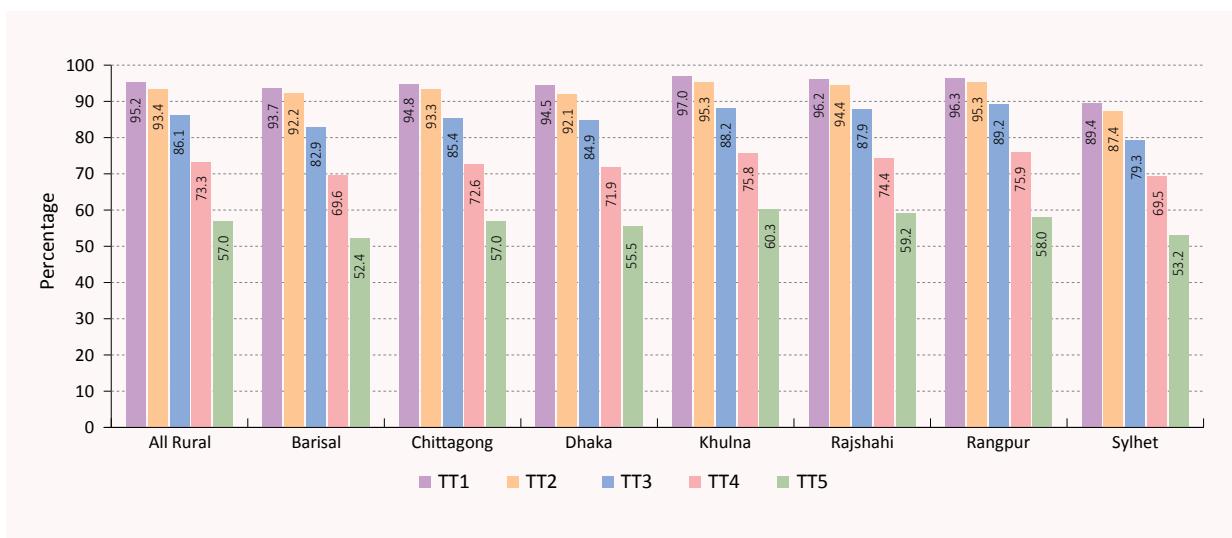
6.4 TT VACCINATION COVERAGE BY RURAL DIVISION

Crude TT Vaccination Coverage

Figure 129 and Map 22 show crude TT5 vaccination coverage in rural areas by division. Crude TT5 coverage was the highest in Khulna (60.3 percent) and the lowest in Barisal divisions (52.4 percent) and ranged between 53.2 percent and 59.2 percent in other divisions.

As the initial dose, TT1 coverage was at or above 94.0 percent in all divisions, except in Sylhet where it was 89.4 percent. The pattern of decreasing coverage by subsequent dosage seen in other TT evaluations is repeated here. Until TT5, Sylhet had the lowest coverage of each TT dose; at TT5, Sylhet was replaced by Barisal with the lowest rate (52.4 percent).

Figure 129: Crude TT5 Vaccination Coverage for Women 18-49 Years in Rural Areas by Division in 2014

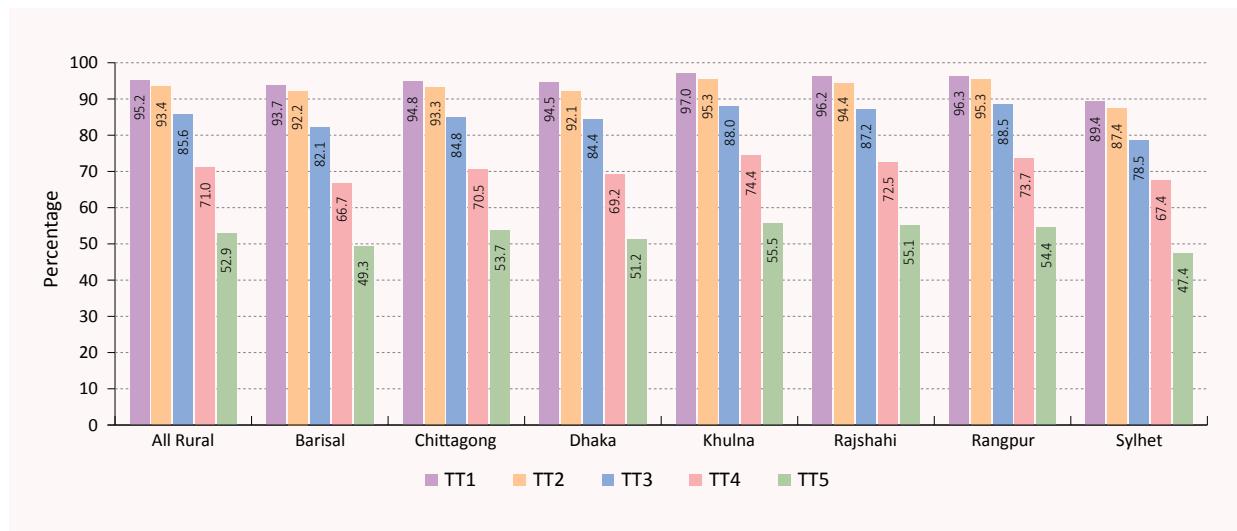


Source: CES 2014

Valid TT Vaccination Coverage

Valid TT vaccination coverage was defined as the vaccination coverage obtained by administering the TT vaccines as per the EPI-recommended TT vaccination schedule. Valid TT vaccination coverage for women 18-49 years in rural areas by division is presented in Figure 130 and Map 23. Five doses of valid TT vaccine ensure immunity against tetanus for the entire reproductive life of a woman. While first and second rounds of TT coverage was above 90.0 percent for all rural divisions, except Sylhet, by TT5 it had dropped to no higher than 55.5 percent in Khulna and as low as 47.4 percent in Sylhet.

Figure 130: Valid TT5 Vaccination Coverage for Women 18-49 Years in Rural Areas by Division in 2014



Source: CES 2014

6.5 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 C at Tables 11 & 12.

6.6 TT VACCINATION COVERAGE BY CITY CORPORATION

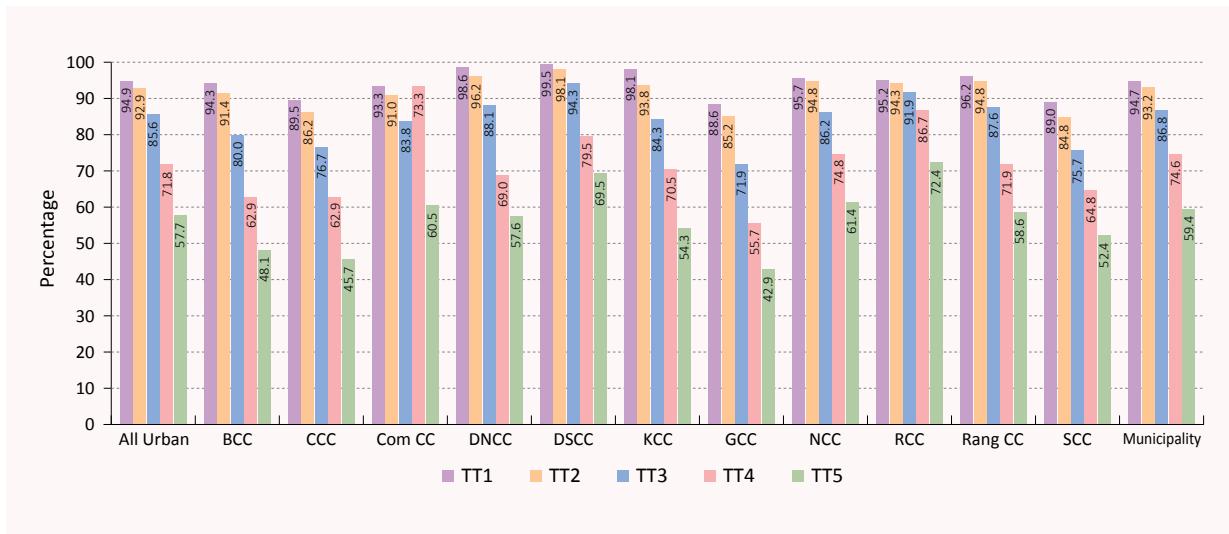
In CES 2014, similar to rural divisions, assessments of TT vaccination coverage were conducted for 11 city corporations. The TT vaccination coverage scenario across the city corporations is presented in Figure 131 and 132. Figure 131 presents the crude TT vaccination coverage, while Figure 132 shows the valid vaccination coverage.

Crude TT Vaccination Coverage

Figure 131 highlights crude TT vaccination coverage by city corporations. It shows that almost all women (99.5 percent) in DSCC received TT1, as compared to those in CCC (89.5 percent), SCC (89.0 percent), and GCC (88.6 percent). TT1 coverage in the intermediary level ranged between 93.3 percent and 98.6 percent in other city corporations (see Figure 131).

Similarly, crude TT5 coverage was the highest in RCC (72.4 percent) and the lowest in GCC (42.9 percent), a spread of 30 percentage points, which is considerably wider than the 8 percentage points between the highest and lowest TT5 rates in the rural divisions.

Figure 131: Crude TT5 Vaccination Coverage for Women 18-49 Years in Urban Areas by City Corporation and Municipality in 2014



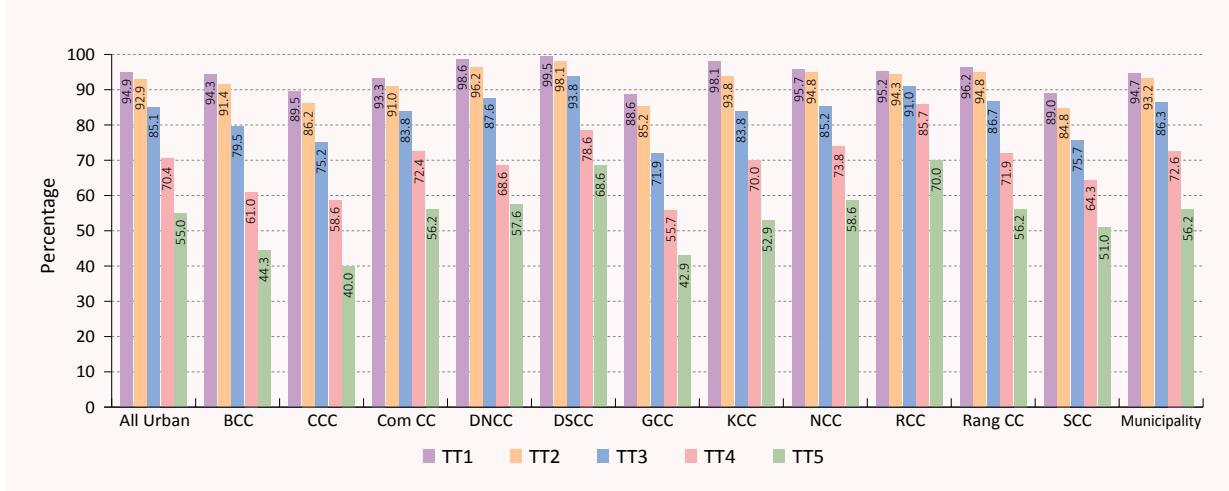
Source: CES 2014

Valid TT Vaccination Coverage

Valid TT vaccination coverage by city corporations is presented in Figure 132. As TT1 is the gateway for receiving all the other doses of TT vaccine, discussion about valid TT1 dose is not necessary in this section. As for valid TT2, coverage was highest in DSCC (98.1 percent) and the lowest in SCC (84.8 percent) and ranged between 96.2 percent and 85.2 percent in other city corporations.

Figure 132 depicts reproductive life-time protection against tetanus with five valid TT doses. It shows that the highest proportion of women achieved this status in RCC (70.0 percent) and the lowest proportion in CCC (40.0 percent), with the intermediary level ranging between 68.6 percent in DSCC and 42.9 percent in GCC.

Figure 132: Valid TT5 Vaccination Coverage for Women 18-49 Years in Urban Areas by City Corporation and Municipality in 2014



Source: CES 2014

Map 22: Crude TT5 Vaccination Coverage for Women 18-49 Years by District



LEGEND

- < 60%
- 60-64%
- 65-69%
- 70-74%
- > = 75%

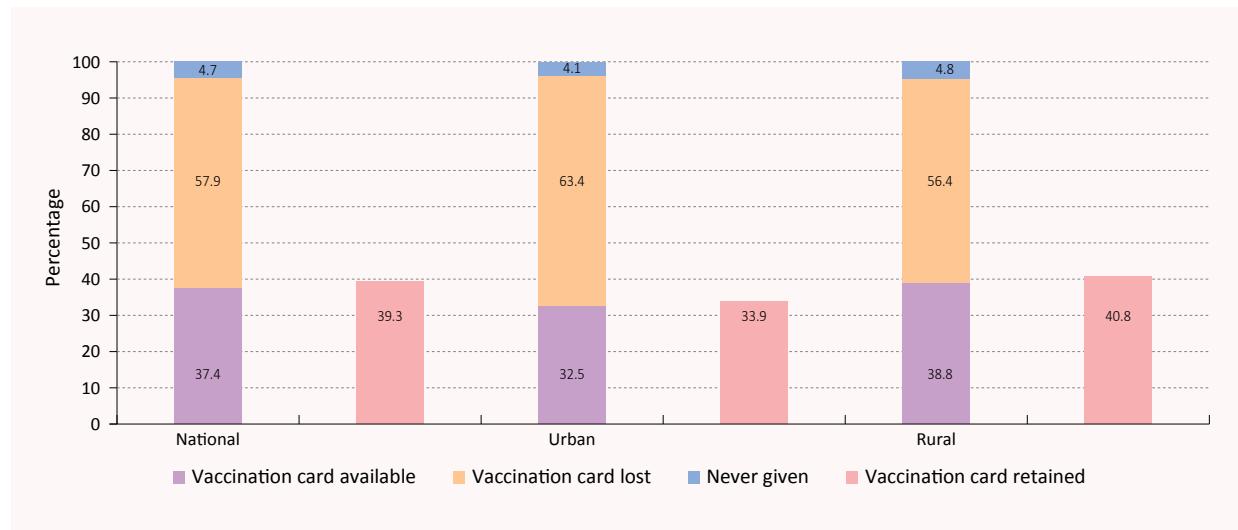
Map 23: Valid TT5 Vaccination Coverage for Women 18-49 Years by District



6.7 STATUS OF RETENTION OF TT CARD BY WOMEN

The TT vaccination card is an important document; its availability helps avoid unnecessary administrations of TT doses, as well as saves vaccines. Nationally, more than one-third of women reported to having the vaccination card during the survey. Availability of TT vaccination card was higher (38.8 percent) in rural areas than in urban areas (32.5 percent). CES 2014 calculated card retention rate through a separate analysis, presented in Figure 133. It shows that nationally 39.3 percent of the women retained the TT vaccination card. Rural women were more likely to retain the vaccination card (40.8 percent) as opposed to 33.9 percent of those residing in urban areas (see Figure 133).

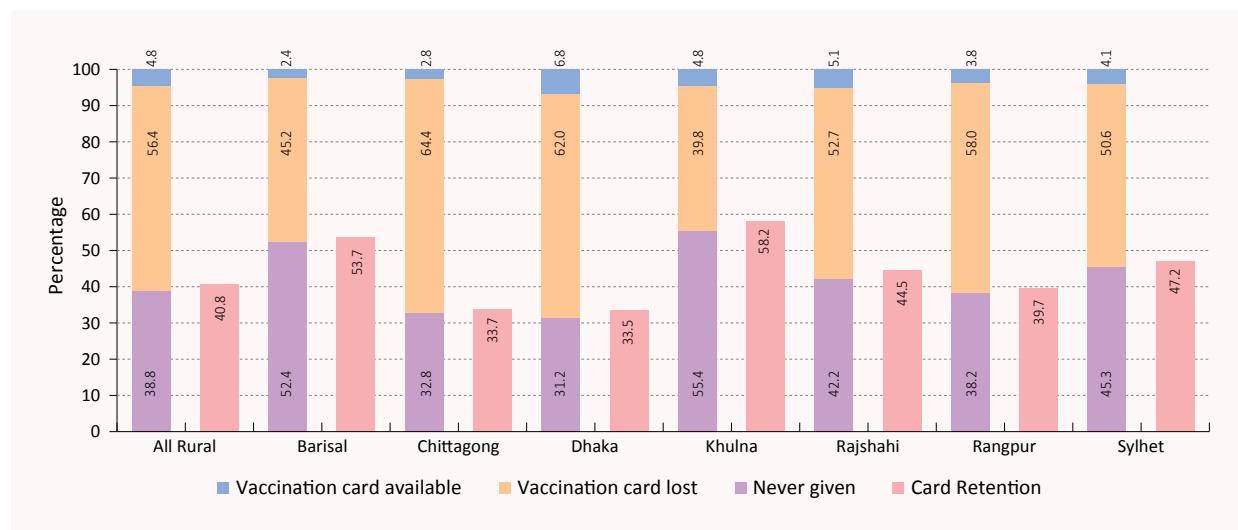
Figure 133: TT Vaccination Card Status for Women 18-49 Years by National, Rural and Urban Areas in 2014



Source: CES 2014

Among rural divisions, card retention rate was the highest in Khulna (58.2 percent) and the lowest in Dhaka (33.5 percent). It ranged between 39.7 percent and 53.7 percent in the other divisions (see Figure 134).

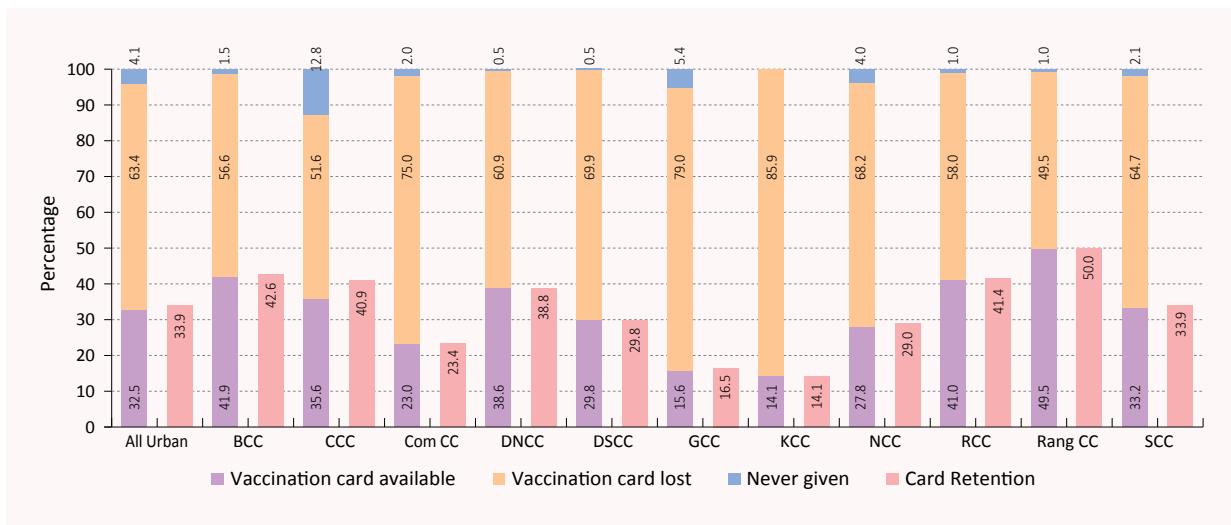
Figure 134: TT Vaccination Card Status for Women 18-49 Years in Rural Areas by Division in 2014



Source: CES 2014

In the city corporations, the card retention rate was found to be the highest in Rang CC (50.0 percent) and the lowest in KCC (14.1 percent), with the other divisions covering a range from 42.6 percent in BCC to 16.5 percent in GCC (see Figure 135).

Figure 135: TT Vaccination Card Status for Women 18-49 Years in Urban Areas by City Corporation and Municipality in 2014

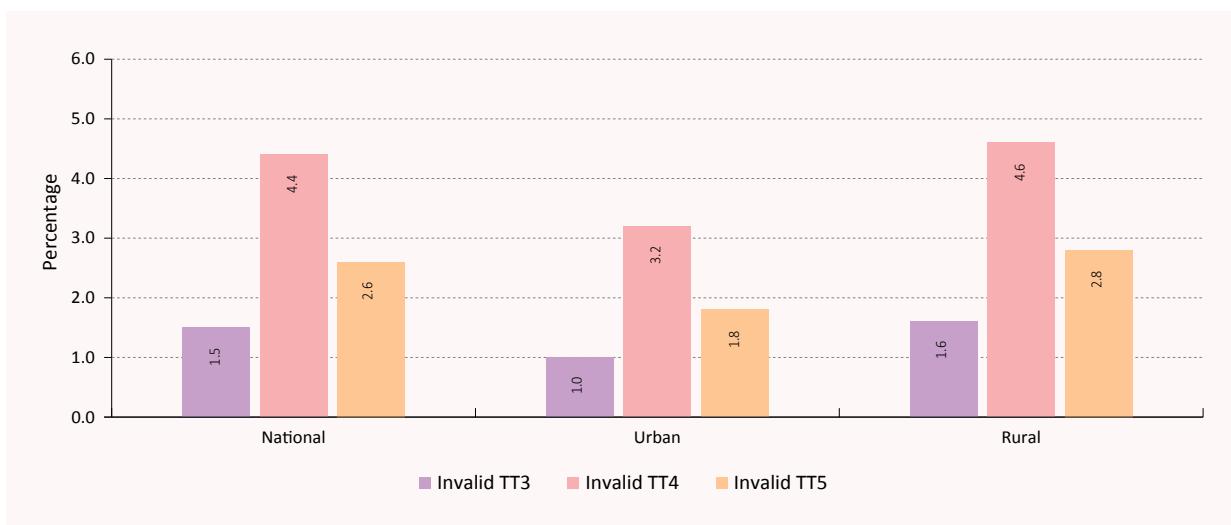


Source: CES 2014

6.8 INCIDENCES OF INVALID DOSES

An invalid dose occurs if a woman receives any subsequent dose of TT vaccine before the minimum interval between two doses as recommended by the EPI schedule. Invalid TT doses were estimated by analyzing the gap between the consecutive doses (see Figure 136). Nationally, the incidence of invalid doses was most prevalent for TT4 (4.4 percent) but also occurred for TT3 (1.5 percent) and TT5 (2.6 percent). The proportion of women who received invalid doses was higher in rural areas compared to those living in urban areas and in both cases was again most prevalent for TT4 (4.6 percent in rural areas and 3.2 percent in urban).

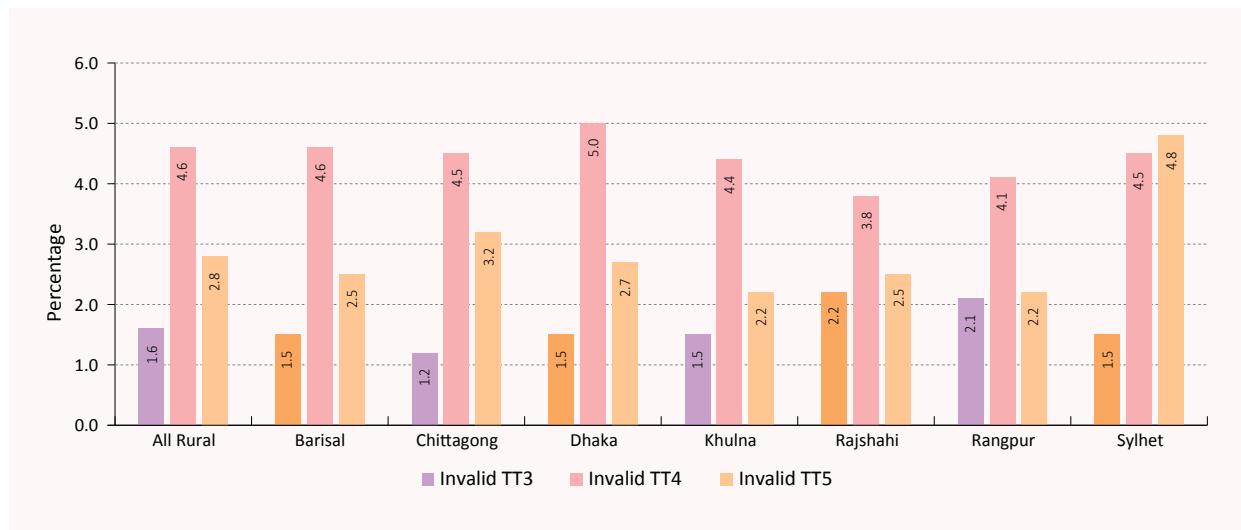
Figure 136: Incidence of Invalid TT Doses for Women 18-49 Years by National, Rural and Urban Areas in 2014



Source: CES 2014

As with the national findings, the incidence rate of invalid TT4 was higher than for TT3 and TT5 in all divisions, except for Sylhet. There, the invalid TT5 rate was significantly higher than the other divisions: 4.8 percent, as compared to 3.2 percent in the next closest division of Chittagong (see Figure 137).

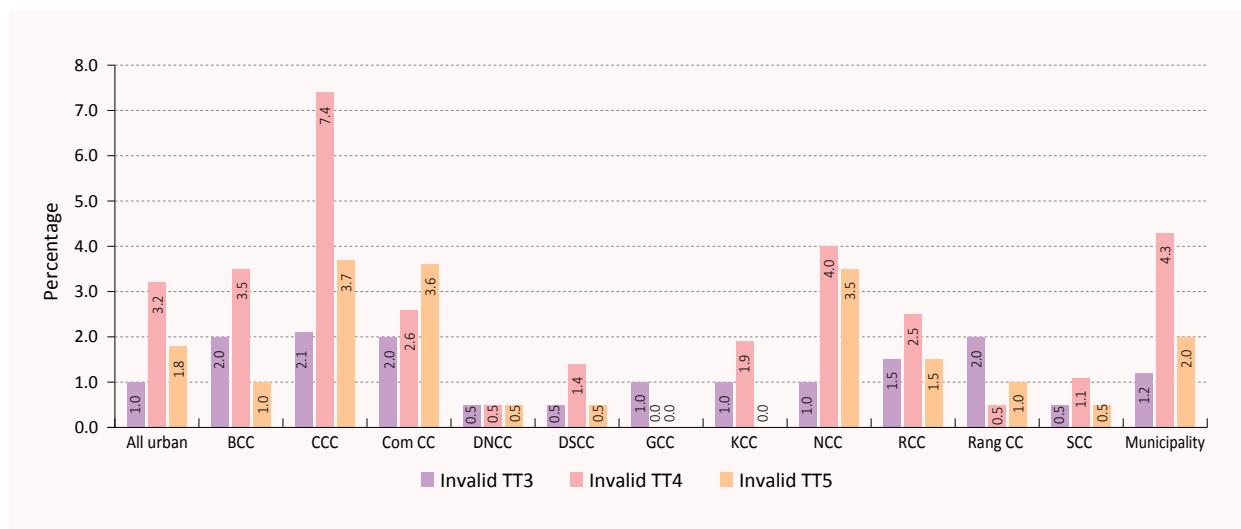
Figure 137: Incidence of Invalid TT Doses for Women 18-49 Years in Rural Areas by Divisions in 2014



Source: CES 2014

Among the city corporations, invalid TT dose were generally lower than their rural counterparts, with some noticeable exceptions: the TT4 rate for CCC was as high as 7.4 percent and three, CCC, Com CC and NCC, all had rates just above 3.5 percent for TT5. Otherwise, the exceptions went the other ways, with DNCC, DSCC, GCC, KCC and SCC having low rates. For TT5, both GCC and KCC indicated that no woman received invalid doses (see Figure 138).

Figure 138: Incidence of Invalid TT Doses for Women 18-49 Years in Urban Areas by City Corporation and Municipality in 2014

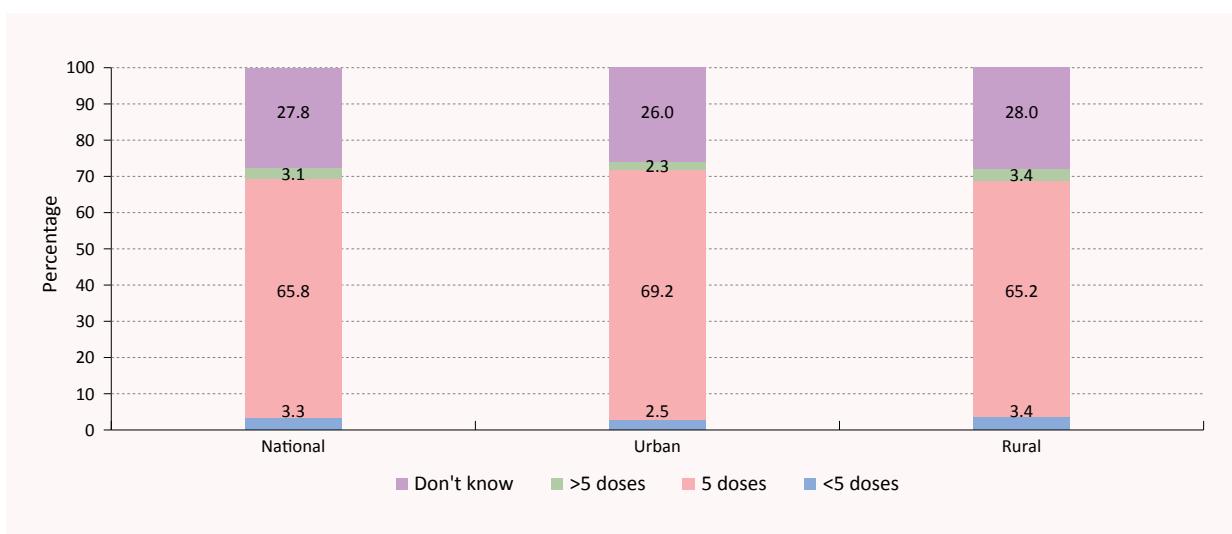


Source: CES 2014

6.9 WOMEN'S KNOWLEDGE OF TT DOSES

According to the EPI, to attain adequate lifetime protective antibody against tetanus, a woman should receive five doses of TT vaccine. On this point, women's knowledge of the required number of TT vaccines was assessed in CES 2014. Nationally, about two-thirds (65.8 percent) of women reported that five doses of TT vaccine are needed to be administered for one's life-time protection. Urban women were found to be more aware about the requirement than women residing in rural areas (69.2 percent in urban and 65.2 percent in rural areas). However, a little over one-quarter of the women (27.8 percent) was unaware of the required number of TT doses, with little variation between urban (26.0 percent) and rural (28.0 percent) areas (see Figure 139).

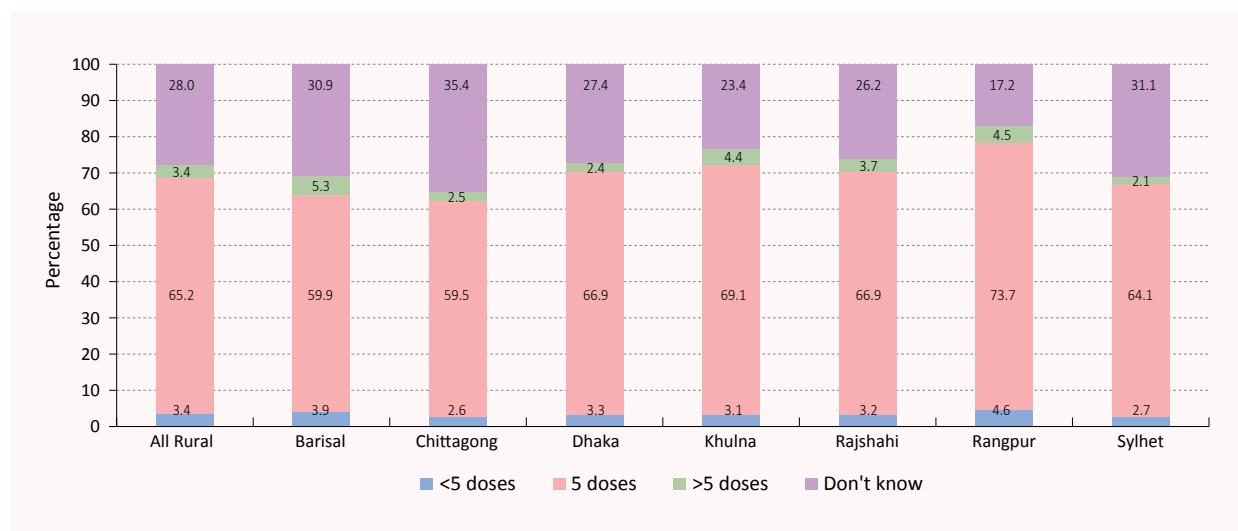
Figure 139: Knowledge by Women 18-49 Years about Number of TT Doses Required during Reproductive Period to Protect against Tetanus by National, Rural and Urban Areas in 2014



Source: CES 2014

Among the rural divisions, the highest proportion of women to know of the required five doses of TT vaccine was in Rangpur division (73.7 percent) and the lowest was in Chittagong division (59.5 percent). Overall, 28.0 percent of women from rural areas were not aware that TT vaccines required a particular number of doses. This proportion was highest in Chittagong (35.4 percent) and lowest in Rangpur division (17.2 percent) (see Figure 140).

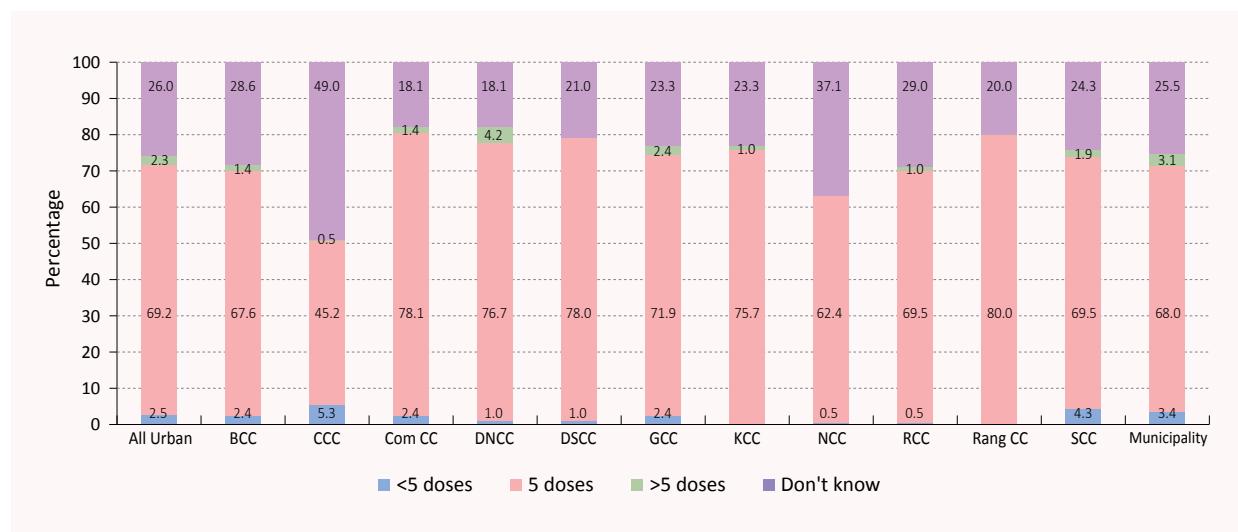
Figure 140: Knowledge by Women 18-49 Years about Number of TT Doses Required during Reproductive Period to Protect against Tetanus in Rural Areas by Division in 2014



Source: CES 2014

In urban areas, overall, 69.2 percent of the women had knowledge of the five required doses of TT vaccination, while 26.0 percent of them had no knowledge about required doses at all. Knowledge of the five doses was highest in Rang CC (80.0 percent) and lowest in CCC (45.2 percent), with the intermediary levels ranging from 78.0 percent in DSCC to 62.4 percent in NCC (see Figure 141).

Figure 141: Knowledge by Women 18-49 Years about Number of TT Doses Required during Reproductive Period to Protect against Tetanus in Urban Areas by City Corporation and Municipality in 2014

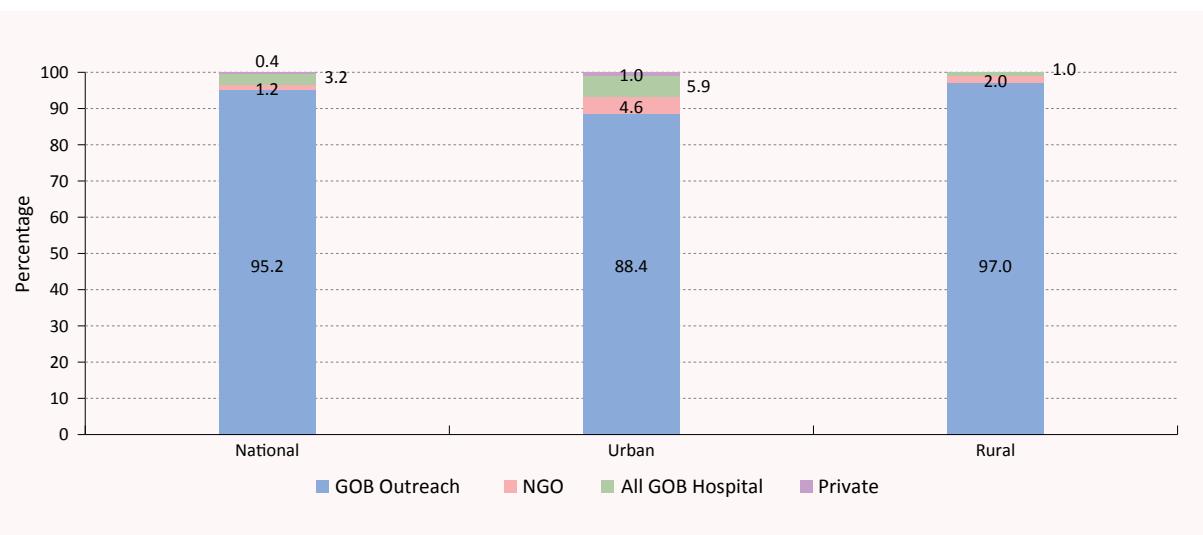


Source: CES 2014

6.10 SOURCES OF TT VACCINATION

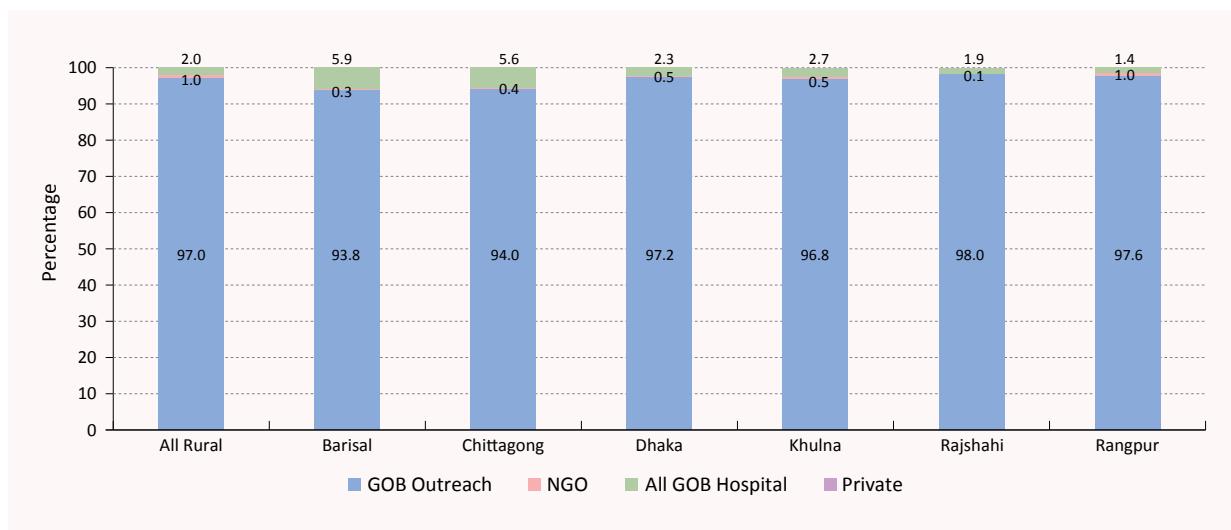
Nationwide, 95.2 percent of the women received TT1 vaccines from the government outreach centres, with little difference between rural (97.0 percent) and urban (88.4 percent) areas (see Figure 142). Little variation from this pattern was also observed between rural divisions (see Figure 143). GOB outreach centres were the most common source of TT1 vaccination in Rajshahi for the greatest number (98.0 percent); the smallest proportion received their TT1 vaccines from GOB outreach centres in Barisal (93.8 percent). Among the city corporations, government outreach centres were also the most prominent source for TT1 vaccination, being most common in Com CC (100 percent) and it was the least in DNCC (74.4 percent) (see Figure 144).

Figure 142: Sources of TT1 Vaccination for Women 18-49 Years by National, Rural and Urban Areas in 2014



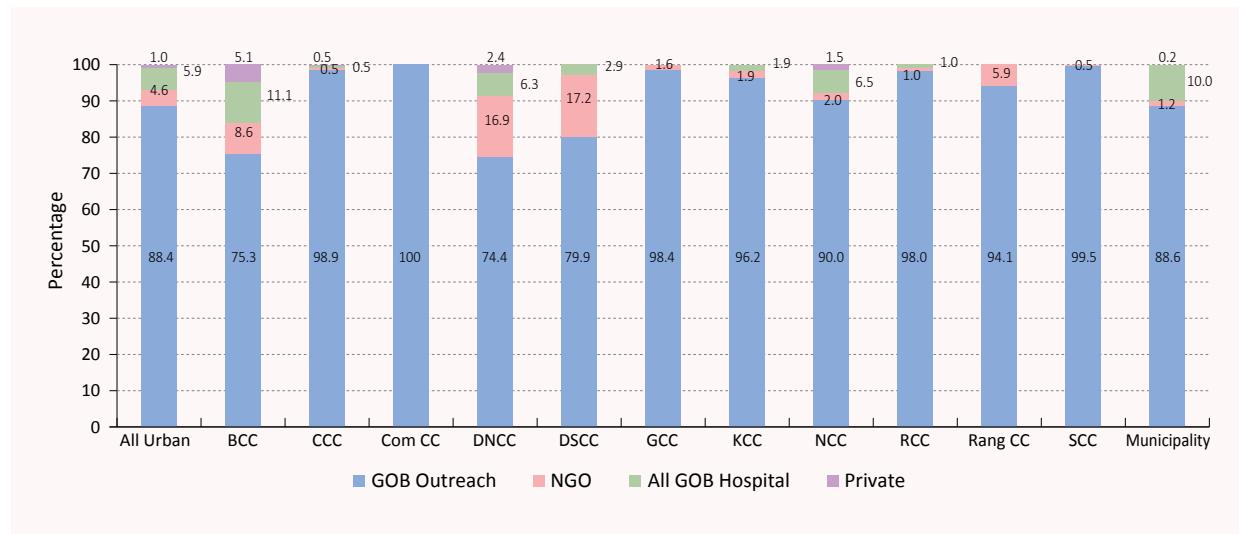
Source: CES 2014

Figure 143: Sources of TT1 Vaccination for Women 18-49 Years in Rural Areas by Division in 2014



Source: CES 2014

Figure 144: Sources of TT1 Vaccination for Women 18-49 Years in Urban Areas by City Corporation and Municipality in 2014



Source: CES 2014

CHAPTER

7

Maternal and Newborn Care

MATERNAL AND NEWBORN CARE

Pregnancy and child-birth related complications are responsible for the majority of maternal mortalities. In Bangladesh, one in three women does not receive any antenatal care during pregnancy, and about three in five deliver their babies without the assistance of a skilled birth attendant. The enabling environment for safe motherhood and child birth depends on the care and attention provided to pregnant women and newborns by communities and families, the acumen of skilled health personnel, and the availability of adequate healthcare facilities, equipment, medicines, and emergency care when needed. CES 2014 examined the enabling environment for safe motherhood and child births. This chapter provides information on the issues related to maternal and new-born health, such as ANC, micronutrient supplementaion, delivery, PNC, continuum of care, etc.

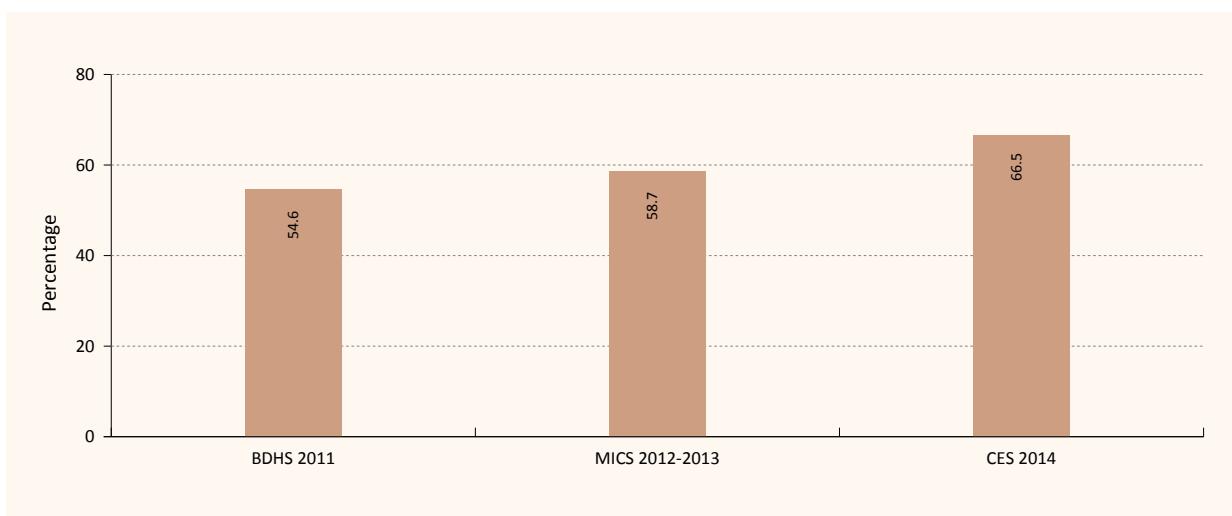
7.1 ANTENATAL CARE (ANC)

Antenatal care (ANC) from a medically-trained provider is important to monitor the status of a pregnancy, identify the complications associated with the pregnancy, and prevent adverse pregnancy outcomes. To be most effective, there should be regular ANC throughout pregnancy. CES 2014 assessed the ANC status of mothers with children aged between 0-11 months.

7.1.1 Antenatal Care Coverage

Table 13 summarizes ANC coverage provided by a medically-trained³ provider, as provided by three surveys. It shows that two-third of pregnant women received some ANC from a medically-trained providers/skilled health providers throughout the country. According to the Bangladesh Demographic and Health Survey (BDHS) 2011, 54.6 percent of the women who gave birth within three years preceding the survey received ANC from a medically-trained provider. However, the Multiple Indicator Cluster Survey (MICS) 2012-2013 shows that 58.7 percent of the women who gave birth two years preceding the survey received ANC at least once from skilled health personnel. It is worth mentioning that CES 2014 included mothers who gave birth to the children between July 2013 and June 2014.

Figure 145: ANC Coverage by Medically Trained Providers in BDHS 2011, MICS 2012-2013 and CES 2014



Source: CES 2014

³ Medically-trained providers include qualified doctor, nurse, midwife, paramedic, FWV, CSBA, and MA/SACMO.



By residence, ANC by medically-trained providers was more prominent among urban women than rural women (75.2 percent vs. 64.3 percent). Among the divisions, women from Khulna were more likely to receive ANC from medically-trained providers (71.7 percent), followed by Dhaka (69.6 percent), Chittagong and Rajshahi (67.7 percent), Barisal (67.0 percent), Rangpur (58.6 percent), and Sylhet (49.7 percent) divisions. As regards the wealth quintile, marked variation was observed between the richest and the poorest quintile in this regard. Eighty-three percent of the women from the richest wealth quintile received ANC from medically-trained providers, as opposed to 49.6 percent of those who belonged to the lowest wealth quintile. Similarly, large differences were also noticed between highly educated and illiterate mothers. Forty-four percent of the mothers who had no education received ANC from a medically-trained provider, a proportion more than doubled among mothers who obtained post-graduation degrees (91.9 percent).

Table 13: Women Age 15-49 with Children 0-11 Months Old Attended by Antenatal Care Providers during Pregnancy and Received Antenatal Care from a Medically-trained Provider, according to Background Characteristics, by Percent, Bangladesh, CES 2014

Background Characteristics	MBBS doctor	Nurse/ midwife /paramedics	Medically-trained provider	FWV	CSBA	Medical assistant/ SACMO	HA/ FWA	Trained traditional birth attendant	Traditionally birth attendant	Unqualified provider	NGO worker	None	Don't know/ can't say	Any Provider	ANC from medically-trained provider ^a	Number of women
Mother's Age																
<20 yrs	49.2	10.9	7.0	1.1	1.3	6.1	1.8	0.4	1.3	7.2	13.3	0.3	86.7	69.5	1800	
20-34 yrs	51.0	9.5	5.0	0.5	0.8	6.9	1.5	0.2	1.7	5.4	17.4	0.3	82.6	66.7	13665	
35-49 yrs	42.5	7.7	4.5	0.2	0.7	7.9	2.1	0.1	1.5	4.7	27.9	0.1	72.1	55.6	705	
Number of Births																
1	54.9	9.7	5.1	0.7	1.0	7.0	1.4	0.3	1.6	5.5	12.7	0.2	87.3	71.4	6598	
2-3	49.5	9.9	5.1	0.4	0.8	7.0	1.6	0.2	1.7	5.9	17.5	0.3	82.5	65.8	7990	
4-5	38.3	7.4	6.2	0.0	0.3	6.1	2.4	0.1	1.5	4.0	33.6	0.2	66.4	52.1	1328	
6+	24.7	5.6	5.1	0.5	0.4	5.6	1.1	0.0	0.6	6.4	49.2	0.8	50.8	36.3	254	
Residence																
Urban	60.3	12.1	2.1	0.2	0.5	6.7	0.9	0.0	1.0	4.5	11.4	0.1	88.6	75.2	3271	
Rural	47.9	8.8	6.0	0.6	0.9	6.8	1.7	0.3	1.8	5.9	18.9	0.3	81.1	64.3	12783	
Division																
Barisal	45.4	8.9	10.6	0.4	1.7	5.0	0.0	0.0	1.0	4.9	22.0	0.1	78.0	67.0	935	
Chittagong	55.0	7.7	4.4	0.4	0.3	8.1	0.2	0.3	1.2	1.7	20.3	0.4	79.7	67.7	3142	
Dhaka	55.4	10.2	3.0	0.6	0.5	6.6	0.3	0.1	1.5	4.1	17.5	0.2	82.5	69.6	5256	
Khulna	54.4	13.3	2.8	0.5	0.8	5.1	0.2	0.3	1.1	10.0	11.1	0.4	88.9	71.7	1761	
Rajshahi	49.4	8.4	7.3	0.8	1.8	7.2	1.6	0.5	2.5	8.7	11.5	0.3	88.5	67.7	2075	
Rangpur	33.4	11.4	11.6	0.5	1.7	7.5	10.9	0.1	1.8	11.0	9.9	0.1	90.1	58.6	1772	
Sylhet	41.4	4.0	3.5	0.5	0.2	6.6	0.0	0.2	2.8	3.2	37.1	0.4	62.9	49.7	1112	
Education																
Illiterate	27.4	8.7	6.7	0.6	0.7	7.6	1.9	0.1	1.8	6.4	37.7	0.4	62.3	44.1	1883	
Primary	39.4	10.5	6.1	0.5	1.1	7.2	2.0	0.3	2.3	6.3	24.1	0.3	75.9	57.7	4502	
Secondary	54.1	10.0	5.2	0.6	1.0	6.6	1.6	0.3	1.5	5.9	13.1	0.3	86.9	70.9	6878	
SSC	70.3	8.2	3.7	0.2	0.2	6.4	0.6	0.1	1.3	3.8	5.0	0.1	95.0	82.6	1548	
HSC	75.5	7.1	1.9	0.4	0.1	6.1	0.4	0.1	0.6	3.0	3.4	0.4	96.6	85.0	951	
Graduate	79.2	6.0	2.1	0.7	0.8	5.4	0.9	0.0	0.0	3.2	1.7	0.0	98.3	88.8	282	
Post graduate	86.8	4.0	1.1	0.0	0.0	5.8	0.5	0.0	0.0	0.5	1.3	0.0	98.7	91.9	126	
Wealth quintile																
Poorest	31.5	8.7	7.6	0.7	1.0	6.3	4.0	0.4	1.8	6.5	31.1	0.3	68.9	49.6	3115	
Second	39.9	9.8	7.2	0.8	1.2	7.8	1.6	0.2	1.8	6.4	23.0	0.2	77.0	58.9	3256	
Middle	50.1	10.8	5.0	0.4	1.2	7.5	1.1	0.2	1.8	6.1	15.5	0.3	84.5	67.6	3344	
Fourth	57.8	10.0	4.2	0.5	0.6	6.8	0.9	0.2	1.3	6.0	11.3	0.4	88.7	73.1	3289	
Richest	72.3	8.2	2.0	0.2	0.2	5.9	0.3	0.1	1.4	3.0	6.4	0.1	93.6	82.9	3167	
Total	50.4	9.5	5.2	0.5	0.8	6.9	1.6	0.2	1.6	5.6	17.4	0.3	82.6	66.5	16170	

⁴ Medically-trained provider includes qualified doctor, nurse, midwife, paramedic, FWV, CSBA and MA/SACMO

7.1.2 Places for Antenatal Care

Table 14 shows the CES's findings as to the percentage of women who received ANC by the place where it was received. The public and private sectors were found to be the main sources of ANC. Public sector venues⁵ include all GoB health facilities, such as medical college hospitals, district sadar hospitals, Maternal and Child Welfare Centres (MCWC), UHC, Union sub-centres, Family Welfare Centres (FWC), and Community Clinics. Private sector venues⁶ include private clinics and hospitals. It is evident from the table that a little over half of the mothers (52.2 percent) received ANC from the public sector, and 39.7 percent of the mothers received ANC from the private sectors. Far fewer received ANC at home (4.4 percent) or at places in the NGO sector (3.5 percent). The likelihood of receiving ANC from the public sector was higher in all the divisions than from the private sector (see Table 14).

In contrast to the CES findings, BDHS 2011 shows that 43.0 percent of the women received ANC from the private sector, 41.0 percent from the public sector, 9.0 percent from NGO sectors and 16.0 percent from home. However, BMMHS 2010 shows that 41.9 percent of the women received ANC from the public sector, 36.9 percent from the private sector, 13.2 percent from NGO sector, and 18.7 percent from home. The above findings suggest that ANC at home decreased over the time. By CES 2014, the public sector had emerged as a leading source of ANC. The decrease of ANC at home and the increase use of the public sector may be the effect of the establishment of community clinics, demand side financing and the thrust of GoB health workers to increase utilization of government health facilities by pregnant mothers at the Upazila level. The percentage of private places used was similar across the surveys.

By residence, rural mothers were more likely to utilize government health facilities than private ones (52.8 percent vs. 38.3 percent). In contrast, women who had the highest educational attainment tended to use private facilities more (55.0 percent private and 43.6 percent public), as did those who belonged to the richest wealth quintile (52.3 percent private vs. 44.2 percent public).

Table 14: Places ANC Conducted

Percentage Distribution of Women who Received ANC during Pregnancy by Place of ANC Care, according to Background Characteristics in CES 2014

	Place of antenatal care					Number of women
	Home	Public Sector	Private Sector	NGO Sector	Others	
Mother's Age						
<20 yrs	4.9	55.0	37.2	3.4	0.5	1561
20-34 yrs	4.3	51.7	40.2	3.5	0.7	11292
35-49 yrs	5.2	53.6	36.4	4.2	1.4	508
Number of Birth						
1	3.4	52.8	40.0	3.8	0.5	5763
2-3	5.0	51.9	39.8	3.1	0.8	6587
4-5	6.6	50.5	38.3	4.1	1.1	882
6+	4.6	51.7	35.0	6.7	2.9	129
Residence						
Urban	1.7	49.6	45.1	3.4	0.6	2898
Rural	5.2	52.8	38.3	3.5	0.7	10365
Division						
Barisal	3.4	54.9	37.6	3.4	0.7	729
Chittagong	1.1	50.5	44.6	2.9	1.1	2503
Dhaka	3.9	48.1	45.4	2.4	0.6	4335
Khulna	5.1	58.0	35.8	2.0	0.2	1565

⁵ Public sector includes all GoB health facilities such as medical college hospital, district sadar hospital, MCWC, UHC, Union sub-center, FWC, and Community Clinics

⁶ Private sector includes private clinics and hospitals

Table 14: Places ANC Conducted Continued

	Place of antenatal care					Number of women
	Home	Public Sector	Private Sector	NGO Sector	Others	
Rajshahi	4.5	50.3	42.9	3.5	0.6	1836
Rangpur	12.6	61.3	14.7	10.5	1.0	1596
Sylhet	0.2	51.1	47.8	0.2	0.4	700
Education						
Illiterate	5.9	61.5	26.9	4.9	0.8	1173
Primary	6.4	55.9	34.1	3.3	0.7	3419
Secondary	4.4	51.3	40.8	3.3	0.8	5978
SSC	1.1	47.3	49.0	3.3	0.2	1471
HSC	1.5	41.8	52.0	4.1	0.9	919
Graduate	1.8	49.9	44.1	4.5	0.9	277
Post graduate		43.6	55.0	1.5	0.2	124
Wealth quintile						
Poorest	9.0	60.3	26.2	4.0	1.1	2146
Second	5.7	56.4	32.4	5.1	1.0	2508
Middle	4.7	53.0	39.4	2.9	0.6	2825
Fourth	3.1	49.9	43.6	3.1	0.7	2916
Richest	0.8	44.2	52.3	2.8	0.3	2966
Total	4.4	52.2	39.7	3.5	0.7	13361

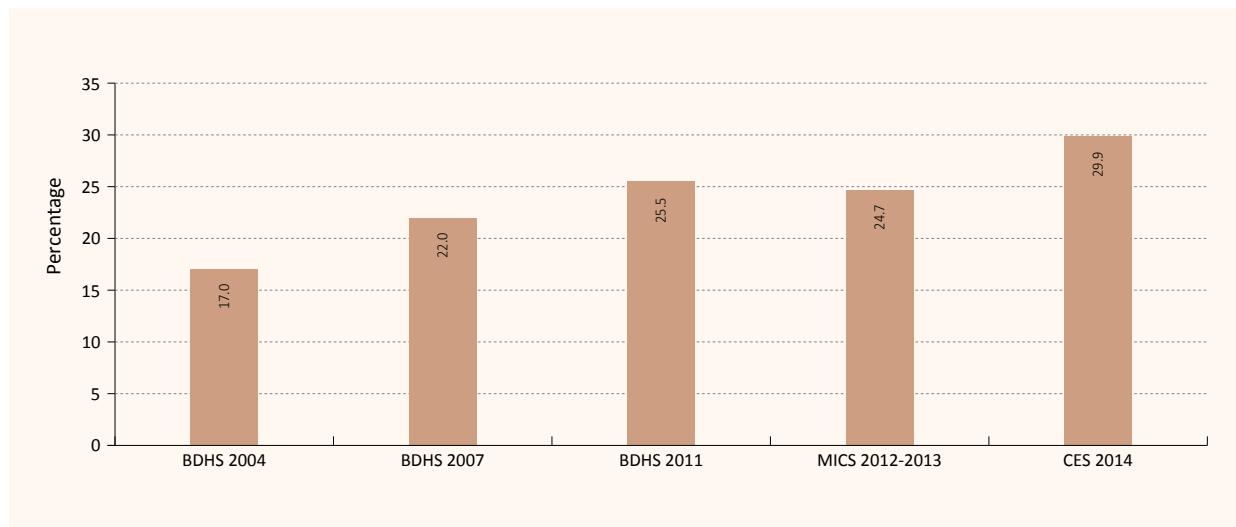
7.1.3 Number of Antenatal Visits

Antenatal care visits help provide key service to pregnant women, including measures to detect and treat anemia; tetanus immunization; and provision of vital information to pregnant women on risks in pregnancy and delivery. The minimum number of antenatal care visits during a pregnancy recommended by UNICEF and WHO is four. Table 15 presents the number of ANC visits made by women. It shows that about one-third of the mothers (29.9 percent) made four or more ANC visits across the country. Urban mothers were a little bit ahead than rural mothers in question of four or more ANC visits (urban 34.5 percent and rural 28.2 percent). Figure 146 presents findings of 4 and more number of ANC obtained in BDHS 2011, MICS 2012-2013, and CES 2014. Between BDHS 2011 and MICS 2012-2013, no marked difference in the findings observed. However, difference between CES 2014 and MICS 2012-2013 was 5.2 percentage points. And, the difference between BDHS 2011 and CES 2014 was 4.4 percentage points. The findings of CES 2014 were found to be matched with the trend in antenatal care visit (see Figure 146).

Table 15: Number of Antenatal Care Visits during Pregnancy, as Percentage Distribution of Women Aged 15-49 who had Children 0-11 Months during Survey according to Residence, in CES 2014

Number of ANC	Residence		Total
	Urban	Rural	
None	24.7	15.9	17.4
1	10.7	17.8	16.2
2	15.0	19.6	18.6
3	15.1	18.6	17.9
4+	34.5	28.2	29.9
Mean	3	3	3
Total	100	100	100
Number of Women	3850	12320	16170

Figure 146: 4+ Antenatal Care Visits in BDHS 2004, 2007, 2011, MICS 2012 and CES 2014



Source: CES 2014

7.1.4 Content of Antenatal Care

The components of ANC are presented in Table 16. Overall 89.1 percent of the women surveyed measured their blood pressure, 60.7 percent gave urine samples for testing, 49.1 percent provided blood sample for testing, and 91.1 percent measured their weight during ANC. Compared to the Bangladesh Maternal Health Services and Maternal Mortality Survey (BMMS) 2010, these proportions were higher in CES 2014, except for the measurement of blood pressure. BMMS 2010 showed that 90.5 percent of the women measured their blood pressure, 50.1 percent gave urine samples for testing, 37.4 percent provided blood sample for testing, and 83.5 percent measured their weight during ANC.

CES 2014 findings show that urban women were slightly ahead of their rural counterparts in these practices. Ninety percent of urban mothers measured blood pressure, 65.9 percent had their urine tested, 56.7 percent had their blood tested, and 94.6 percent had their weight measured, as compared to 88.9 percent, 59.3 percent, 47.0 percent, 90.1 percent, respectively, of rural mothers. Similar to urban areas, disparity in the findings was observed between the highest and lowest wealth quintile, as well between the highest and the lowest educational attainment among the mothers. In all the components, the highest proportion of mothers who performed these procedures were those with higher educational attainment and in the richest wealth index, especially when compared to those who had no education or belonged to the lowest wealth index.

Among the divisions, the highest proportion of mothers who gave blood and urine samples to be tested was in Sylhet (62.4 percent and 70.8 percent, respectively). While Dhaka, Chittagong, and Khulna divisions were quite alike in the proportions of mothers who gave sample (between 51.0 percent and 54.0 percent for blood and between 63.3 percent and 64.1 percent for urine), Barisal (49.3 percent blood and 55.7 percent urine) and Rajshahi divisions (39.6 percent blood and 54.3 percent urine) were lower. However, the women of Rangpur division were far behind from the national average (32.7 percent and 51.0 percent).

Table 16: Women who Received Specific Antenatal Care Service by Background Characteristics, by Percentage, CES 2014

Background Characteristics	Percentage receiving ANC	Procedure performed during antenatal care				Number of Women
		Blood Pressure measured	Urine tested	Blood tested done	Weighed	
Mother's Age						
<20 yrs	86.7	88.0	56.3	44.4	89.5	1,561
20-34 yrs	82.6	89.3	61.4	49.8	91.3	11,293
35-49 yrs	72.1	87.4	59.1	48.5	90.3	508
Number of Birth						
1	87.3	89.8	62.9	51.8	92.2	5,763
2-3	82.5	89.0	60.0	47.5	90.7	6,588
4-5	66.4	86.0	52.5	45.1	86.8	882
6+	50.8	88.5	56.2	37.5	89.3	129
Residence						
Urban	88.6	89.8	65.9	56.7	94.6	2,898
Rural	81.1	88.9	59.3	47.0	90.1	10,366
Division						
Barisal	78.0	93.9	55.7	49.3	94.4	4,335
Chittagong	79.7	87.1	64.1	53.1	88.1	2,503
Dhaka	82.5	86.5	63.3	54.0	90.3	1,837
Khulna	88.9	91.4	63.5	50.9	92.9	729
Rajshahi	88.5	91.0	54.3	39.6	92.5	1,565
Rangpur	90.1	90.3	51.0	32.7	92.2	700
Sylhet	62.9	94.0	70.8	62.4	92.4	1,596
Education						
Illiterate	62.3	85.5	47.1	33.4	86.5	1,173
Primary	75.9	85.4	51.8	38.7	89.3	3,419
Secondary	86.9	89.6	62.0	49.6	90.8	5,979
SSC	95.0	92.3	72.4	64.5	94.9	1,471
HSC	96.6	95.7	76.6	69.3	96.2	919
Graduate	98.3	96.1	80.2	71.6	98.6	277
Post graduate	98.7	98.7	77.2	78.5	97.8	124
Wealth quintile						
Poorest	68.9	84.2	45.7	31.7	86.4	2,146
Second	77.0	84.6	53.2	38.7	87.9	2,508
Middle	84.5	90.3	60.9	48.4	91.0	2,826
Fourth	88.7	90.3	64.8	53.7	92.3	2,916
Richest	93.6	94.1	73.9	66.6	95.9	2,966
Total	82.6	89.1	60.7	49.1	91.1	13362

The providers of ANC components are presented in Table 17. It shows that measuring blood pressure and weight were most common done by qualified doctors, nurses, and Community Skilled Birth Attendants (CSBA), SACMOs and community health workers. For the urine and blood tests, they were most frequently done by qualified doctors.

Table 17: Components of antenatal care by providers of ANC, by Percentage of Women who received Antenatal Care, by ANC Provider, CES 2014

ANC provider	Procedure performed during antenatal care				Number
	Blood pressure measured	Urine tested	Blood test done	Weighed	
Qualified doctor	92.2	76.0	70.8	92.9	8017
Nurse/midwife/paramedic/FWV	86.7	43.3	27.5	91.2	2549
CSBA	86.4	37.0	17.3	91.4	81
MA/SACMO	86.9	42.0	26.9	91.7	145
Community Health Worker	89.6	33.5	7.8	92.0	2135
Other	80.3	35.4	6.6	79.4	548
Total	90.7	61.2	49.5	92.4	13394

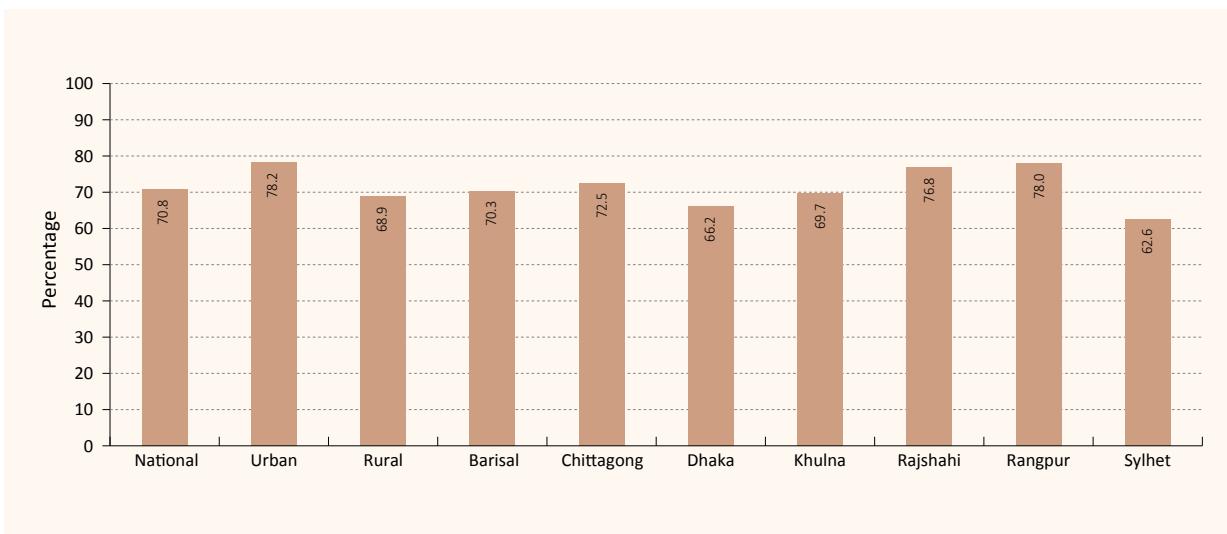
7.1.5 Iron and Calcium Supplementation

Adequate nutrition for pregnant women is critical for the health and survival prospects of both the mothers and the newborns. Malnutrition increases the health risks of both mothers and children. A low body mass index for pregnant women increases the risk of both maternal and neonatal mortality; low body mass can also restrict the growth of the fetus, which is a risk factor for neonatal conditions, such as low birth weight. Nutritional supplements for calcium, folic acid, and iron provided by health workers can have beneficial effects against these risks. They can reduce the likelihood of malnutrition and anemia in the mother and low birth weight in the newborn. CES 2014 investigated the iron and calcium intake during pregnancy. The findings are presented below.

Iron Supplementation

Nationally 70.8 percent women took iron tablets during their last pregnancy (see Figure 147). A notable variation was observed between rural and urban areas (68.9 percent and 78.2 percent, respectively). The percentage of women who took iron tablets was higher in Rangpur (78.0 percent) and Rajshahi (76.8 percent) division than in other divisions and lowest in Sylhet division (62.6 percent).

Figure 147: Percentage of Mothers Took Iron Tablet during Pregnancy in 2014



Source: CES 2014

Number of Days Iron Tablets Taken

Nationally, on average women took iron tablets for 86 days. Women living in urban areas took the tables for longer than those living in rural areas (106 days and 81 days, respectively). It was also observed that nationally around one in every three women (32.6 percent) took iron tablets for 61-120 days, while only 9.3 percent of women took them for more than 180 days. Among the seven divisions, on average woman from Chittagong, Barisal, and Rangpur divisions took more iron tablets. Women from Khulna division took the iron tablets comparatively for a shorter duration, on an average (71 days).

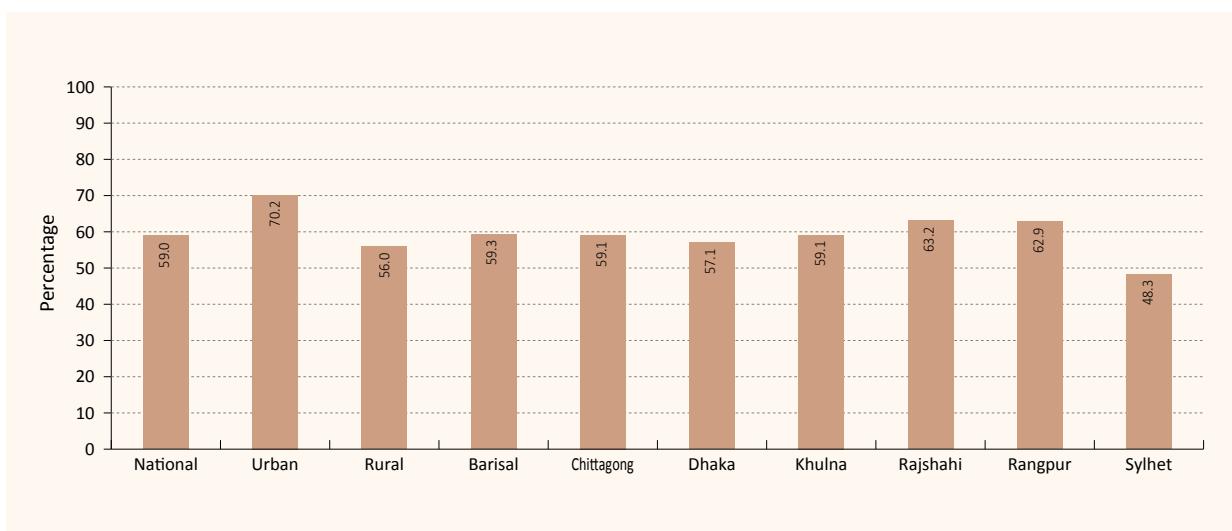
Table 18: Number of Days Mothers Take Iron Tablets, by Percentage

	01-15 days	16-30 Days	31-60 Days	61-120 Days	121-180 Days	180+ Days	Don't know	Average
National	6.3	17.4	15.3	32.6	16.6	9.3	2.4	86.2
Urban	6.4	16.5	12.2	29.6	17.9	14.6	2.8	106.4
Rural	6.3	17.7	16.3	33.5	16.1	7.8	2.3	81.1
Division								
Barisal	7.6	15.4	15.1	28.9	17.0	14.4	1.6	90.0
Chittagong	4.9	14.4	14.4	37.6	19.1	7.3	2.3	90.0
Dhaka	6.1	17.5	15.4	30.4	14.8	11.9	4.0	84.0
Khulna	8.2	19.6	14.9	32.0	14.2	10.7	0.5	71.1
Rajshahi	7.7	19.6	15.4	31.3	17.0	7.8	1.2	85.9
Rangpur	4.7	17.9	16.4	34.7	19.4	4.4	2.5	90.2
Sylhet	7.8	19.9	17.0	31.1	14.0	8.4	1.9	72.0

Calcium Supplementation

Figure 148 shows that nationally about two-thirds of the women (59.0 percent) took calcium tablets during their last pregnancy. A fourteen percentage points variation was observed between rural and urban women (70.2 percent and 56.0 percent, respectively). By division, the percentage of women who took calcium tablets was higher in Rajshahi (63.2 percent) and Rangpur (62.9 percent) than those in other divisions and lowest in Sylhet division 48.3 percent for the same.

Figure 148: Mothers Who Took Calcium Tablets during Pregnancy, by Percentage in 2014



Source: CES 2014

Number of Days Calcium Tablets Taken

Calcium supplementation is recommended to women from 20 weeks of pregnancy to the end of the pregnancy. Table 19 shows that at the national level, on average, women took calcium tablets for 71 days and was higher among the women in urban areas than those living in rural areas (93 days and 66 days, respectively). It was seen that 32.9 percent of the women took calcium tablets for two to four months (61-120 days) while only 9.6 percent of those took it for more than six months (180 days) duration. Among the divisions, the majority of the women in Chittagong (35.6 percent), Rangpur (34.1 percent), Rajshahi (32.4 percent), Khulna (31.6 percent), Sylhet (31.4 percent), Dhaka (29.7 percent) and Barisal (29.0 percent) took calcium tablet for longer durations (61-120 days).

Table 19: Number of Days Mothers Take Calcium Tablets, by Percentage

	01-15 days	16-30 Days	31-60 Days	61-120 Days	121-180 Days	180+ Days	Don't know	Average number of day
National	5.7	17.2	15.6	32.9	16.8	9.6	2.2	71
Urban	5.7	16.1	12.7	30.1	17.7	15.3	2.3	93
Rural	5.8	17.6	16.5	33.9	16.4	7.7	2.2	66
Division								
Barisal	7.8	15.8	15.0	29.0	16.7	12.8	2.8	77
Chittagong	3.7	13.6	15.4	35.6	20.2	9.5	2.0	74
Dhaka	5.8	19.8	15.9	29.7	14.7	11.1	3.1	73
Khulna	8.1	18.8	16.8	31.6	12.8	11.0	0.8	60
Rajshahi	7.1	18.6	14.2	32.4	18.9	8.7		64
Rangpur	5.2	17.2	18.1	34.1	19.2	4.0	2.1	70
Sylhet	4.3	17.4	17.4	31.4	15.6	12.2	1.8	58

7.2 DELIVERY CARE

Childbirth can be a time of risk not only for the newborns but also for delivering mothers. The majority of maternal deaths occur from complications either during the time of delivery or in the immediate post-partum period. These complications include the following: hemorrhage; infection; eclampsia; sepsis, and obstructed labour. Effective management of delivery complications is required to reduce risks of maternal, as well as newborn, death. Institutional delivery and/or delivery with a medically-trained provider at home can address and manage the complication associated with childbirth. CES 2014 investigated the delivery place and assistance provided during the time of delivery. The findings are presented in this section.

7.2.1 Place of Delivery

The findings in Table 20 reveal that nationally 41.2 percent deliveries were made at a health facility, while 58.8 percent were at home. However, BDHS 2011 shows that 29.0 percent of the births in Bangladesh were delivered at a health facility and 71 percent at home. Among the health facility deliveries recorded by CES 2014, 14.7 percent were conducted at public health facilities, 24.7 percent at private hospital/clinics, and 1.8 percent at NGO clinics. Increased use of public health facilities for delivery was also found by BDHS to be the trend. According to BDHS 2007 7.1 percent of the deliveries were conducted at a public health facility, but had increased to 11.8 percent in BDHS 2011.

By residence, urban women were more likely than rural women to utilize the health facility for delivery (59.8 percent and 36.4 percent, respectively). Private hospitals/clinics were the main places for institutional delivery (24.7 percent). Among the divisions, women from Khulna, Rajshahi, and Dhaka

divisions (54.0 percent, 45.8 percent, and 44.5 percent, respectively) conducted more deliveries at health facilities than those living in the other divisions. The percentage of institutional delivery was lagging behind for women living in Sylhet (26.6 percent), Barisal (29.4 percent), Rangpur (35.8 percent), and Chittagong (37.1 percent) division.

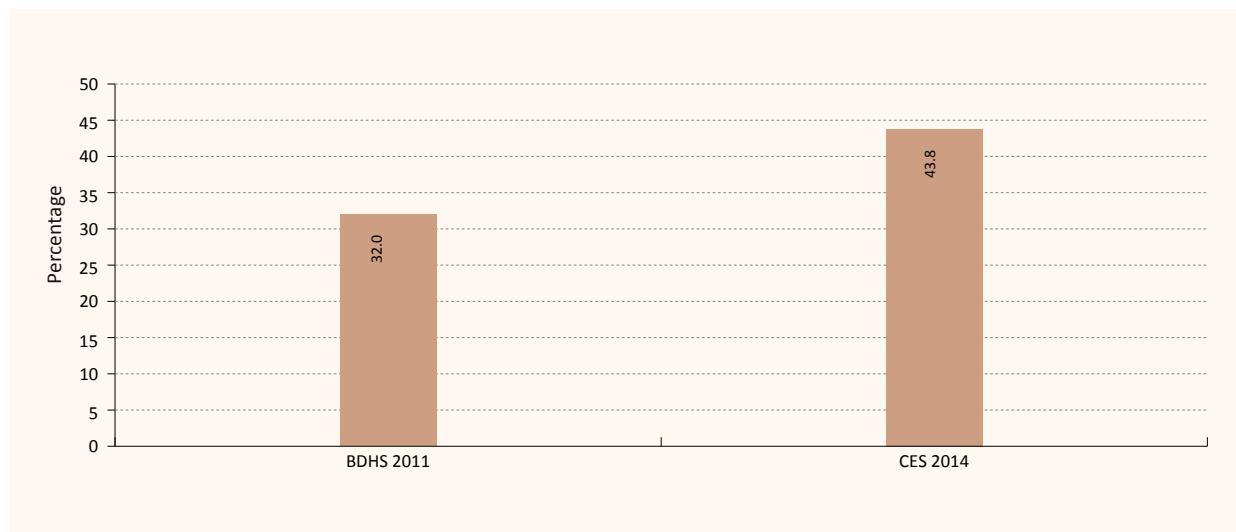
Table 20: Births by Place of Delivery according to Background Characteristic, by Percentage, in CES 2014

Background Characteristic	Health facility			Home	Percentage delivered in health facility	Number of Women
	Public Sector	Private hospital/ clinic	NGO clinic			
Mother's Age						
<20 yrs	16.4	26.3	2.1	55.2	44.8	1800
20-34 yrs	14.5	24.8	1.8	59.0	41.0	13665
35-49 yrs	14.2	19.4	2.1	64.4	35.6	705
Number of Birth						
1	17.0	30.6	2.0	50.4	49.6	6598
2-3	14.0	22.2	1.7	62.1	37.9	7990
4-5	8.3	14.1	1.5	76.2	23.9	1328
6+	10.3	4.8	1.7	83.3	16.8	254
Residence						
Urban	20.7	35.1	3.9	40.2	59.8	3271
Rural	13.1	22.1	1.2	63.6	36.4	12783
Division						
Barisal	13.1	15.3	1.0	70.6	29.4	935
Chittagong	13.1	22.4	1.5	63.0	37.1	3142
Dhaka	14.5	27.6	2.4	55.6	44.5	5256
Khulna	19.5	33.4	1.2	46.0	54.0	1761
Rajshahi	15.1	29.0	1.6	54.2	45.8	2075
Rangpur	15.1	18.5	2.2	64.2	35.8	1772
Sylhet	11.6	14.2	0.8	73.4	26.6	1112
Education						
Illiterate	8.7	9.4	1.7	80.3	19.8	1883
Primary	11.3	15.9	1.6	71.3	28.7	4502
Secondary	16.2	25.5	1.8	56.5	43.5	6878
SSC	20.5	40.0	2.0	37.5	62.5	1548
HSC	17.3	53.2	2.8	26.8	73.3	951
Graduate	26.4	52.7	2.3	18.6	81.4	282
Post graduate	24.4	61.2	1.5	13.0	87.1	126
Wealth quintile						
Poorest	9.3	11.3	0.8	78.7	21.3	3115
Second	12.3	14.8	0.9	72.0	28.0	3256
Middle	15.4	21.8	1.4	61.4	38.7	3344
Fourth	16.3	30.8	2.4	50.6	49.4	3289
Richest	20.1	44.8	3.6	31.6	68.4	3167
Total	14.7	24.7	1.8	58.8	41.2	16170

7.2.2 Delivery Assistant

Reducing maternal deaths from birth complications is possible by increasing the number of births attended by a medically-trained provider – a doctor, nurse, or trained midwife. CES 2014 investigated those who assisted deliveries. The findings are shown in Table 21 by type of providers. The table shows that medically-trained providers attended 43.8 percent of the total number of births nationally a number higher in urban areas (61.9 percent) than in rural areas (39.2 percent). Among the medically-trained providers, MBBS doctors were the main service providers in both urban and rural areas (45.5 percent and 26.7 percent), followed by nurses/midwives (16.0 percent and 11.8 percent). The findings of CES 2014 were similar to the trend in delivery attendance by medically-trained providers shown in BDHS 2011. There has been a remarkable increase in the number of deliveries attended by medically-trained providers, as was observed in BDHS 2011. It shows that the delivery attended by a medically-trained provider increased by 11 percentage points- from 21.0 percent in 2007 to 32.0 percent in 2011. CES 2014 reveals that 43.8 percent of the deliveries were attended by medically-trained providers.

Figure 149: Deliveries Conducted by Skilled Attendance in BDHS 2011 and CES 2014, by Percentage



Of the unqualified health providers, traditional birth attendants played a major role in deliveries (43.3 percent). In the divisions, the proportion of deliveries attended by medically-trained providers was the highest in Khulna division (55.7 percent), followed by Rajshahi division (48.3 percent); and was the lowest in Sylhet division (29.4. percent).

However, disparities in attending the delivery by a medically-trained provider were again observed between the highly educated and the illiterate mothers, and between the richest and the poorest wealth quintile. For instance, 82.8 percent of the deliveries of postgraduate mothers were attended by a doctor, while in the case of mothers who were illiterate the figure was only 12.3 percent. In contrast, women from the poorest quintile of households were about one-fourth (13.7 percent) as likely to be attended by a doctor, compared to those from the richest households (55.9 percent).

Table 21: Assistance during Delivery

Percentage Distribution of Live Birth by Person Providing Assistance during Delivery by Background Characteristic in CES 2014

	Qualified doctor	Nurse/ midwife/ paramedic	FWV	CSBA	HA/ FWA	Assistance during Delivery					Percentage Delivered by a medically-trained provider ⁷	Number of women
						Trained traditional birth attendant	Traditional birth attendant	Unqualified Doctor	Relatives or friends	NGO Worker	Total	
Mother's Age												
<20 yrs	31.4	15.9	0.3	0.5	0.5	4.9	40.2	2.6	3.3	0.2	100	48.1
20-34 yrs	30.6	12.3	0.3	0.4	0.3	5.4	43.5	1.9	4.9	0.1	100	43.6
35-49 yrs	26.2	11.5	0.1	0.3	0.2	5.8	48.6	2.3	5.0	0.1	100	38.1
Number of Birth												
1	36.7	15.2	0.4	0.5	0.3	4.4	36.7	1.9	3.4	0.1	100	52.8
2-3	28.4	11.3	0.3	0.4	0.3	6.3	45.2	2.0	5.4	0.1	100	40.4
4-5	16.1	9.2	0.1	0.0	0.1	4.7	60.1	2.6	6.7	0.1	100	25.4
6+	9.5	8.3	0.0	0.4	1.1	3.2	68.0	0.9	6.2	0.1	100	18.2
Residence												
Urban	45.5	16.0	0.2	0.4	3.0	30.0	0.7	3.7	0.1	100	61.9	3271
Rural	26.7	11.8	0.3	0.4	0.3	6.0	46.6	2.3	5.0	0.1	100	39.2
Division												
Barisal	16.8	16.6	0.1	0.6	0.2	0.1	59.3	2.1	4.2	0.1	100	34.1
Chittagong	29.8	10.1	0.3	0.4	0.1	2.0	43.9	4.3	8.7	0.1	100	40.6
Dhaka	33.9	11.9	0.3	0.3	0.4	5.0	43.3	1.7	2.6	0.1	100	46.4
Khulna	41.6	13.6	0.2	0.3	0.2	5.9	35.4	1.0	1.4	0.4	100	55.7
Rajshahi	30.4	17.6	0.1	0.2	0.3	9.7	35.9	1.1	4.3	0.2	100	48.3
Rangpur	26.2	11.1	0.8	0.8	0.6	12.8	39.0	1.9	6.3	0.2	100	38.9
Sylhet	17.1	11.7	0.2	0.4	0.1	0.2	60.5	0.6	7.4	0.2	100	29.4

⁷ Medically-trained provider includes doctor, nurse, midwife, paramedic, FWV, CSBA, and MA/SACMO

Table 21: Assistance during Delivery continued

	Qualified doctor	Nurse/ midwife/ paramedic	FWV	CSBA	HA/ FWA	Assistance during Delivery				Percentage Delivered by a medically-trained provider	Number of women
						Trained traditional birth attendant	Traditional birth attendant	Unqualified Doctor	Relatives or friends	NGO Worker	
Education											
Illiterate	12.3	8.7	0.3	0.2	0.2	6.4	62.5	1.8	7.0	0.2	100
Primary	18.6	11.3	0.2	0.4	0.3	6.5	55.1	1.9	5.2	0.1	100
Secondary	31.9	13.5	0.4	0.5	0.3	5.3	40.5	2.4	4.6	0.1	100
SSC	50.6	15.6	0.3	0.4	0.7	3.3	24.0	1.8	3.0	0.1	100
HSC	61.4	14.9	0.1	0.0	0.1	3.0	16.0	0.9	3.0	0.1	100
Graduate	69.2	16.4	0.0	0.3	0.5	1.7	11.3	0.4	0.3	0.1	100
Post graduate	82.8	9.0	0.0	0.0	0.1	1.8	5.8	0.6	0.0	0.2	100
Wealth quintile											
Poorest	13.7	8.9	0.2	0.5	0.2	6.8	61.6	1.9	5.5	0.2	100
Second	18.4	10.7	0.5	0.4	0.3	6.9	53.8	2.8	5.8	0.2	100
Middle	27.4	13.2	0.2	0.3	0.3	5.4	44.7	2.4	5.7	0.1	100
Fourth	37.1	14.8	0.3	0.5	0.4	5.1	36.2	1.5	3.6	0.1	100
Richest	55.9	15.6	0.3	0.2	0.3	2.5	20.6	1.3	2.8	0.1	100
Total	30.5	12.6	0.3	0.4	0.3	5.3	43.3	2.0	4.7	0.1	100
										43.8	16170

7.3 POSTNATAL CARE (PNC) FOR MOTHERS AND NEWBORNS

Postnatal checkups and care are recognized as an integral component of comprehensive maternity care. Post-natal checkups provide an opportunity to assess and treat delivery complications and to counsel mothers on how to care for themselves and their babies. Evidence indicates that the risks of maternal mortality and morbidity are high in the 48 hours immediately after the child's birth. Around three-quarters of neonatal deaths take place in the first week; and most of these occur within 24 hours of birth. Therefore, there is an urgent need for care for both mothers and children in the immediate post-partum period. CES 2014 assessed the postnatal care for mothers and children. The findings are presented in the table below.

Postnatal Checkups for Mothers and Newborns

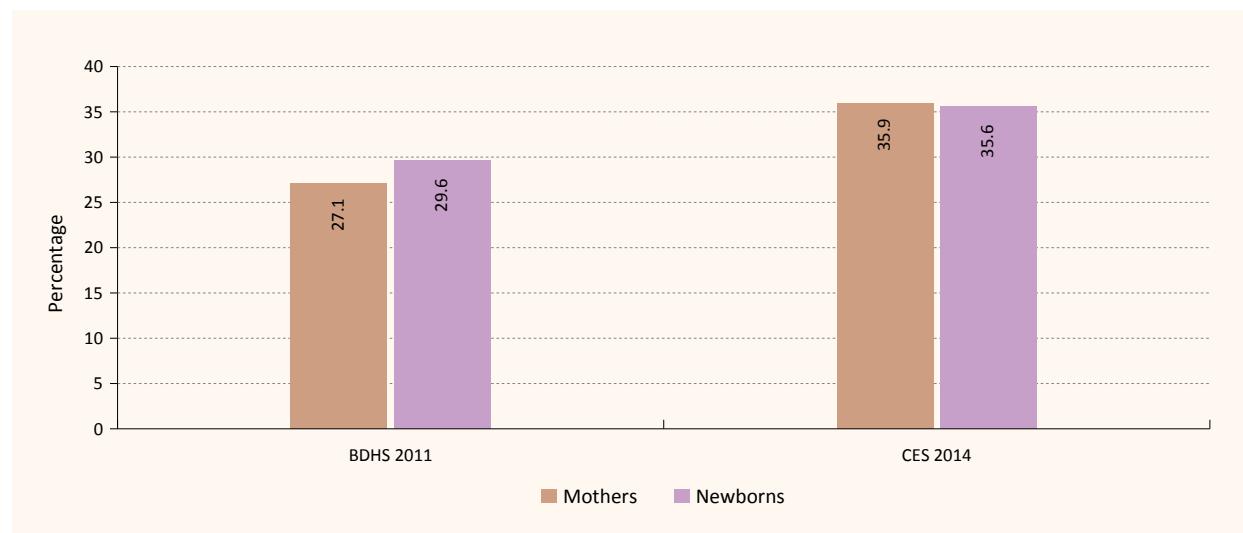
Table 22 illustrates the percent distribution of mothers and newborns who received PNC by providers. Nationally 35.9 percent of women and 35.6 percent of newborns received PNC within two days after delivery from medically-trained providers. In contrast, 44.6 percent of the mothers and 35.0 percent of the newborns did not receive any postnatal care. Figure 150 shows a comparison between BDHS 2011 and CES 2014. It shows an 8.8 percentage points increase in PNC for the mothers and 6 percentage points for the children in CES 2014. The 2011 BDHS data show that 27.1 percent of the mothers and 29.6 percent of the children received postnatal care from a medically-trained provider within the crucial first two days of the delivery. These were found to be 16.0 percent and 13.0 percent, respectively, in BDHS 2004; 20.0 percent for both mothers and newborn infants in BDHS 2007. Between BDHS 2007 and 2011, PNC for mothers increased by 7 percentage points and 10 percentage points for newborn.

Table 22: Postnatal Care for Mother and Newborn

Timing	Mother		Newborn	
	Any provider	Medically-trained provider	Any	Medically-trained provider ¹
Within 2 days	42.9	35.9	42.3	35.6
3-6 days	1.2	0.8	2.4	1.6
7-41 days	9.2	5.7	17.0	9.4
Didn't receive	44.6	56.2	35.0	51.5
Don't know	2.1	1.4	3.0	1.9
Number	9423	7397	11942	9551

Note: Mother and newborn who received a checkup after 41 days are assumed to have not received post natal care.

Figure 150: Postnatal Care for Mothers and Newborns from Medically-Trained Provider within Two Days of Delivery in BDHS 2011 and CES 2014



Source: CES 2014

CHAPTER 8

**MR Coverage among
16-17 Year-Old
Adolescent Girls**

MR COVERAGE

This section presents the detailed findings, with pertinent discussion, on Measles-Rubella (MR) vaccination coverage. This survey component was included in CES 2014 for the very first time in the history of EPI CES. MR vaccines were scheduled for 15-year old adolescent girls in the routine immunization programme beginning in September 2012, when MR vaccine was incorporated in the routine child vaccination programme targeting 9 month-old children. The aim of incorporating this MR vaccine among 15 years old adolescent girls was to control congenital rubella syndrome (CRS) and to minimize wastage. According to the service delivery strategy of EPI, adolescent girls of 15 years age are eligible to receive one dose of MR vaccine, along with a TT vaccination, when she comes for the scheduled TT dose, regardless of her TT vaccination status.

8.1 OBJECTIVES OF THE MR COVERAGE SURVEY

The MR coverage was carried out among the adolescent girls aged 16-17 years old as a part of CES 2014, with a view to achieve the following objectives:

- to assess the MR vaccination coverage in routine EPI among the adolescent girls aged 16-17 years old
- to know the reasons for not receiving MR vaccine
- to know the dose number of TT with which MR vaccine was received

8.2 SAMPLE SELECTION

MR coverage survey was carried out with a representative national NID samples among the 16-17 year-old adolescent girls drawn from the cluster samples of CES 2014. Interviewers listed all the eligible adolescent girls (aged between 16-17 years) in every household of each cluster at the time of the household visit for making the sampling frame. Afterwards, seven adolescent girls were selected randomly from the sampling frame to administer the questionnaire.

8.3 EDUCATION OF THE ADOLESCENT GIRLS

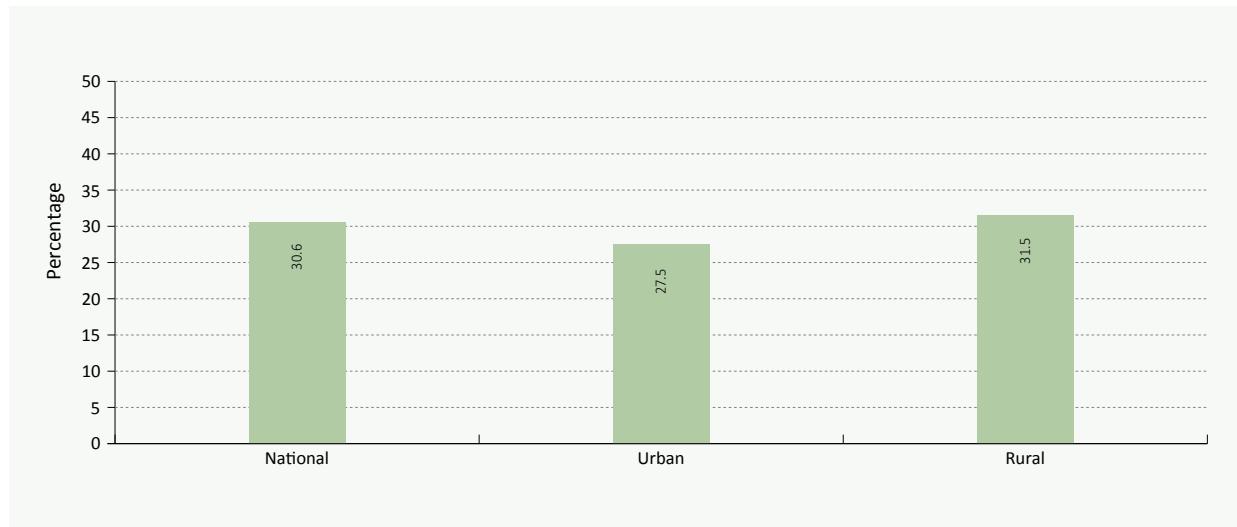
Ninety-seven percent of the surveyed adolescent girls had primary education, and a little over half of them had secondary level education. About one-quarter of the girls had obtained SSC-level education and one in ten had completed the higher secondary level.

8.4 MR VACCINATION COVERAGE

One-third of the adolescent girls confirmed they had received their MR vaccination. Respondents from rural areas were more likely to have receive MR compared to those residing in urban areas (31.5 percent in rural areas and 27.5 percent in urban areas).



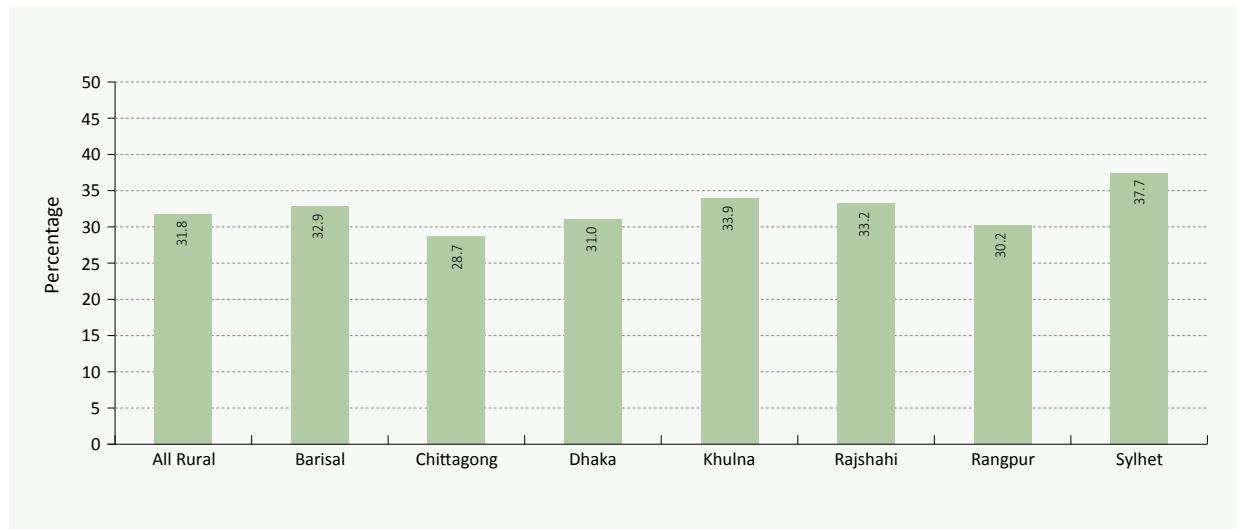
Figure 151: MR coverage among 16-17 Year-Old Adolescent Girls by National, Rural and Urban Areas in 2014



Source: CES 2014

Among the divisions, MR coverage was the highest in Sylhet (37.7 percent) and the lowest in Chittagong (28.7 percent) divisions. In other divisions, it was between 30.2 percent and 33.9 percent (see Figure 152 and Map 24).

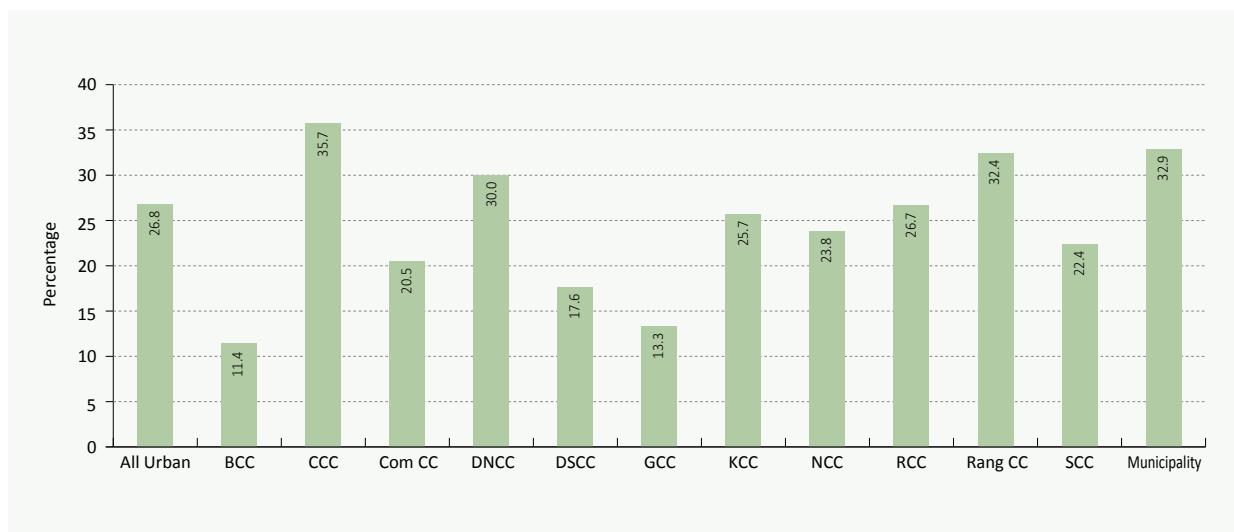
Figure 152: MR Coverage among 16-17 Year-Old Adolescent Girls in Rural Areas by Division in 2014



Source: CES 2014

Among the city corporations, CCC obtained the highest MR coverage, at 35.7 percent. Rang CC achieved the second highest position, with 32.4 percent MR coverage, BCC had the lowest coverage (11.4 percent). In the other city corporations, the intermediate level ranged between 13.3 percent in GCC and 30.0 percent in DNCC (see Figure 153).

Figure 153: MR Coverage in Urban Areas by City Corporation and Municipality in 2014

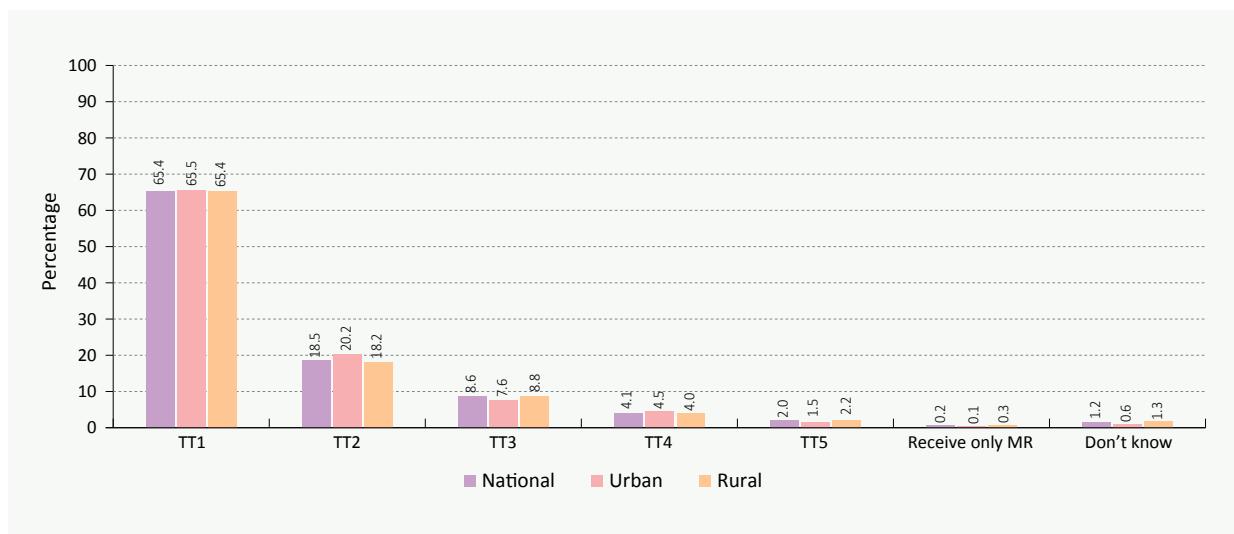


Source: CES 2014

8.5 MR VACCINATION AT THE TIME OF TT VACCINATION

MR vaccination among the adolescent girls was scheduled to be received along with TT vaccine. Two in three of the respondents who had received the MR vaccine reported that they had been vaccinated with the MR vaccine when they received the first dose of TT vaccine whereas 18.5 percent received MR with TT2. Among the remaining MR recipients, 8.6 percent received the MR vaccine with TT3, 4.1 percent with TT4, and 2.0 percent with TT5. There was no notable difference in the MR coverage between urban and rural adolescent girls (see Figure 154).

Figure 154: Administration of MR with TT Vaccination, by National, Rural and Urban Areas in 2014

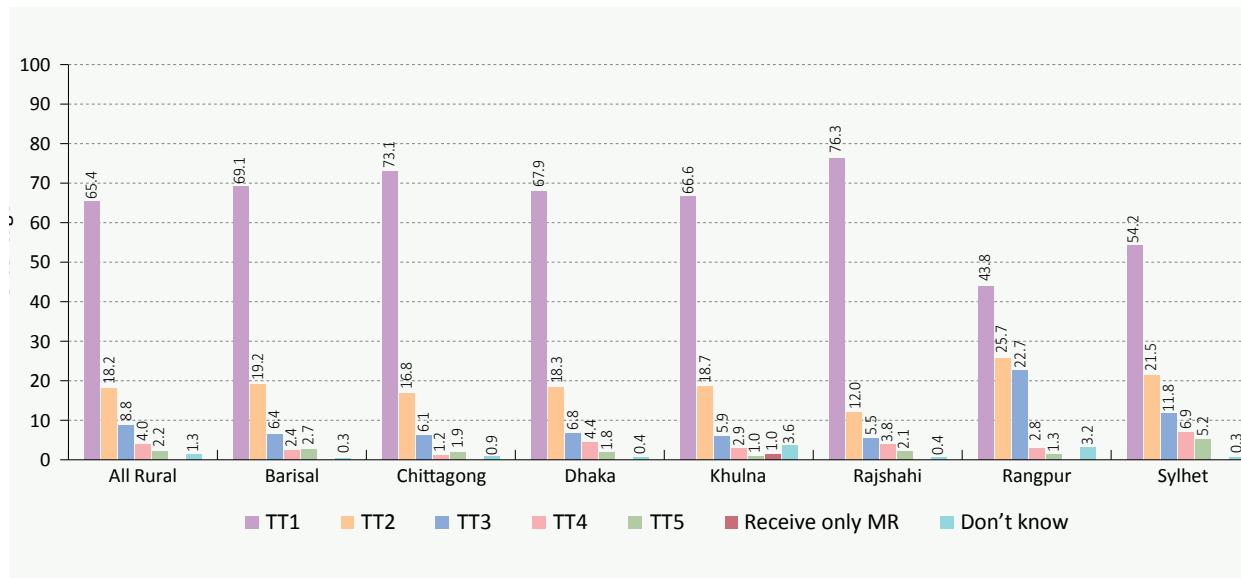


Source: CES 2014



In administering MR vaccine with specific TT vaccines, the divisional findings were similar to the national findings. According to the divisional findings, the majority of the adolescent girls received MR with the first dose of TT vaccination. The highest proportion of the adolescent girls who received MR with TT1 was observed in Rajshahi division (76.3 percent). It was the lowest in Rangpur division (43.8 percent); in other divisions, it ranged between 73.1 percent in Chittagong and 54.2 percent in Sylhet divisions. Adolescent girls who reported receiving their MR vaccination with the second dose of TT ranged between 25.7 percent and 12.0 percent across the divisions. The proportion who received MR with TT3 was the highest in Rangpur (22.7 percent) and the lowest in Rajshahi division (5.5 percent). Only 1.0 percent of the adolescent girls received MR vaccine along with either TT4 or TT5 (see Figure 155).

Figure 155: Administration of MR with TT Vaccination in Rural Areas, by Division in 2014

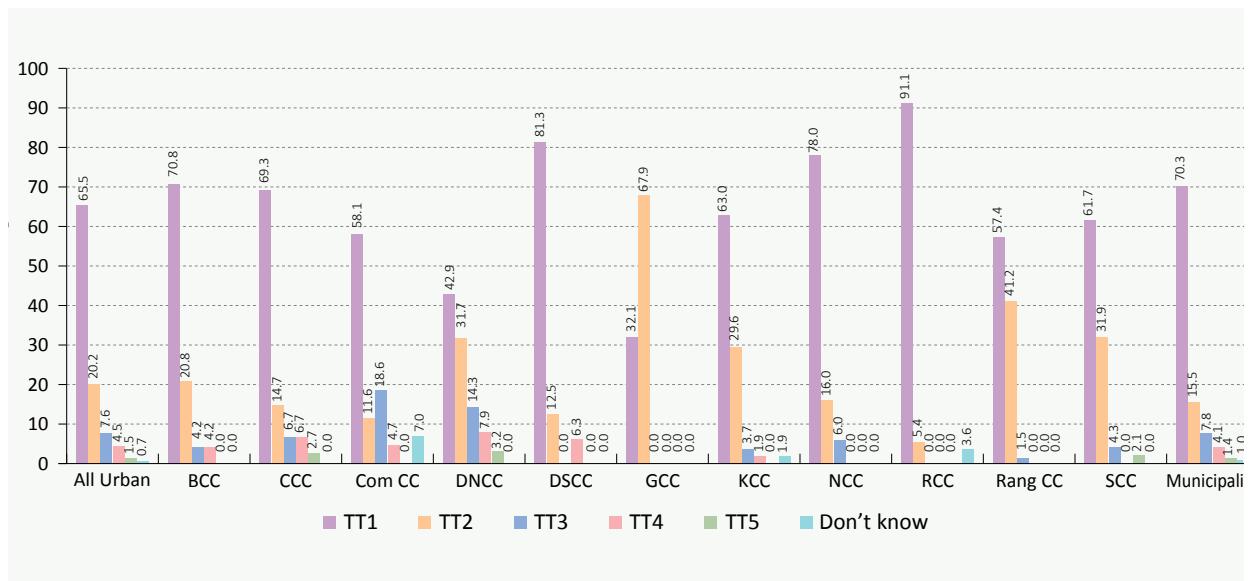


Source: CES 2014

Of the city corporations, RCC had the highest proportion of adolescent girls who received MR with TT1 (91.1 percent), and GCC had the lowest (32.1 percent). It was between 81.3 percent and 42.9 percent in the other city corporations. Furthermore, overall, 20.2 percent of the adolescent girls received MR with TT2 in urban areas, ranging from a high of 67.9 percent in GCC to a low of 11.6 percent in Com CC.

In contrast, 18.6 percent of the adolescent girls from Com CC received MR vaccine along with TT3. No one in DSCC, GCC, or RCC received MR vaccine along with TT3. For those who did receive it, the next lowest proportion was in Rang CC (1.5 percent). Moreover, no adolescent girl from GCC, NCC, RCC, SCC, or Rang CC reported receiving MR with TT4, and only a small proportion from CCC (2.7 percent), DNCC (3.2 percent), and SCC (2.1 percent) reported receiving it with the TT5 vaccine (see Figure 156).

Figure 156: Administration of MR with TT Vaccination in Urban Areas by City Corporation and Municipality in 2014



Source: CES 2014

8.6 REASONS FOR NOT RECEIVING MR VACCINATION

Table 23 presents reasons for not receiving MR vaccination. It shows that the majority of adolescent girls (45.3 percent) were unaware of the MR vaccine. Other reasons for not receiving MR vaccination included the following: were scared (14.2 percent), received it from school (13.5 percent), would receive the vaccine in the future (3.1 percent), did not think it was necessary (2.8 percent); and the vaccinator did not inform them about the vaccination (2.3 percent), among other reasons. The data show no significant difference in answers between rural and urban areas.

Similarly, the lack of awareness about MR vaccination was given as the most prevalent reason for non-vaccination in all rural divisions. More than half of the adolescent girls in Dhaka (52.3 percent) were unaware of the vaccine, followed by Chittagong (51.8 percent), Sylhet (46.1 percent), Rangpur (41.0 percent), Rajshahi (36.9 percent), Barisal (34.5 percent), and Khulna (29.9 percent) divisions (see Table 24).

Likewise, among the city corporations, 'lack of awareness' was reported as the major cause for non-vaccination of MR. This cause was reported the highest in Rang CC (77.5 percent) and the lowest in RCC (17.5 percent). It ranged between 28.8 percent and 76.9 percent in the other city corporations (see Table 25).

Table 23: Reasons Why Adolescent Girls Did Not Receive MR by National, Rural and Urban Areas in 2014

Reasons	National	Urban	Rural
Did not know	45.3	47.4	44.8
Not aware of TT vaccination	14.5	12.9	14.9
Feel fear	14.2	12.8	14.6
Was given at school	13.5	15.8	12.9
Will receive vaccine in the future	3.1	1.9	3.4
Do not think it necessary	2.8	2.9	2.8
Vaccinator did not inform about the vaccination	2.3	1.6	2.4
Was busy	1.4	1.0	1.5
Vaccinator did not give the vaccine	1.3	1.2	1.4
MR received separately	0.7	1.8	0.4
Due to illness	0.4	0.4	0.4
Vaccination centre is too far from home	0.2	0.0	0.2
Not aware of vaccination centre	0.1	0.3	0.1
Forbade by family	0.1	0.0	0.2
Want money	0.0	0.0	0.0
Do not believe in vaccination	0.0	0.1	0.0
Total	11,131	2,373	8,758

Table 24: Reasons as to Why Adolescents' Girl did not Receive MR in Rural Areas by Division in 2014

Reasons	All Rural	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet
Did not know	44.8	34.5	51.8	52.3	29.9	36.9	41.0	46.1
Not aware of TT vaccination	14.9	9.7	7.7	5.2	25.9	23.7	34.0	14.8
Feel fear	14.6	23.6	14.2	18.4	11.5	12.4	3.4	20.0
Was given at school	12.9	20.4	17.0	8.7	21.2	16.7	5.2	3.0
Will receive vaccine in the future	3.4	2.8	0.6	7.5	1.0	1.6	4.0	3.4
Do not think it necessary	2.8	2.7	2.9	3.2	2.4	2.2	2.7	2.6
Vaccinator did not inform about the vaccination	2.4	1.9	2.3	1.0	3.6	4.7	3.0	2.2
Was busy	1.5	1.6	0.9	1.3	0.8	0.6	3.7	3.5
Vaccinator did not give the vaccine	1.4	1.3	1.9	0.6	0.9	0.4	2.3	3.6
MR received separately	0.4	1.5	0.0	0.9	0.4	0.0	0.0	0.0
Due to illness	0.4	0.0	0.3	0.4	0.6	0.5	0.6	
Vaccination centre is too far from home	0.2	0.0	0.1	0.3	0.2	0.4	0.0	0.0
Forbade from family	0.2	0.0	0.1		0.8	0.0		0.7
Not aware of vaccination centre	0.1	0.0	0.0	0.1	0.4	0.0	0.1	0.2
Others	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Want money	0.0	0.0	0.2	0.0		0.0	0.0	0.0
Do not believe in vaccination	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	8,758	561	1,930	2,482	967	1,164	1,055	600

Table 25: Reasons as to Why Adolescents' Girl did not Receive MR in Urban Areas by City Corporation and Municipality in 2014

Reasons	Urban	BCC	CCC	Com CC	DNCC	DSCC	GCC	KCC	NCC	RCC	Ran CC	SCC	Municipality
Did not know	47.4	36.0	66.7	38.3	28.6	35.6	76.9	44.9	32.5	17.5	77.5	28.8	48.2
Was given at school	15.8	0.5	8.9	7.2	23.1	50.0		19.2	30.6	60.4	0.7	22.1	8.1
Not aware of TT vaccination	12.9	30.1	13.3	38.9	23.8	0.5		9.6	15.0	7.1	3.5	17.8	15.3
Feel fear	12.8	14.0	4.4	9.0	7.5	11.3	20.3	14.7	8.1	8.4	0	18.4	14.7
Do not think it necessary	2.9	7.0	1.5	1.8	1.4	0	2.2	1.9	8.1	0.6	0	6.7	4.0
Will receive vaccine in future	1.9	0.5	0	4.2	0.7	0	0	0.6	1.3	4.5	0	1.2	3.4
MR received separately	1.8	0	0		12.2	1.0		5.1	0.6	0	0	0	0.1
Vaccinator did not inform about the vaccination	1.6	9.1	1.5	0	0	0	0	0.6	0	0	16.9	0.6	2.4
Vaccinator did not give	1.2	0.5	0.7	0	0.7	1.0	0	0.6	0.6	0	0	1.2	1.8
Was busy	1.0	1.6	3.0		2.0	0.5	0	0	2.5	0	0	1.8	0.8
Due to illness	0.4	0.5	0	0	0	0	0.5	1.9	0.6	0.6	1.4		0.5
Not aware of vaccination centre	0.3	0	0	0	0	0		0.6	0	0	0	0	0.6
Do not believe in vaccination	0.1	0	0	0	0	0	0	0	0	0	0	0	0.1
Forbade by family	0.0	0	0	0	0	0	0	0	0	0.6	0	0.6	0
Vaccination centre is too far from home	0.0	0	0	0.6	0	0	0	0	0	0	0	0.6	0
Total	2,373	33	155	29	284	285	243	55	61	37	37	42	1,111

Map 24: MR Vaccination Coverage among Adolescent Girls of 16-17 years by District



LEGEND

■	< 20%
■	20-29%
■	30-39%
■	40-49%
■	> = 50%

CHAPTER 9

**OPV Coverage
during the 21st NID
and MR Campaign**

OPV COVERAGE

To achieve its polio eradication goal, Bangladesh has been organizing National Immunization Day (NIDs) since 1995 as a supplementary activity to the routine immunization programme. By 2014, 21 NIDs had been conducted in Bangladesh, with the first conducted in 1995, and the latest between 2013 and 2014. This chapter provides detailed information on OPV coverage among 0-59 month's old children during the 21st NID and the MR campaign. In order to present the national OPV coverage during the 21st NID and the MR campaign as well as for an understanding of the methodology and findings of the OPV coverage survey under CES 2014, a brief description of OPV coverage survey is provided in the following section. It describes the objectives of OPV coverage survey, OPV coverage, child-to-child search, source of OPV, reasons as to why children did not receive OPV, and sources of information about 21st NID.

9.1 OBJECTIVES OF THE OPV COVERAGE SURVEY

The survey on OPV coverage survey was carried out as a part of CES 2014 with a view to achieve the following objectives:

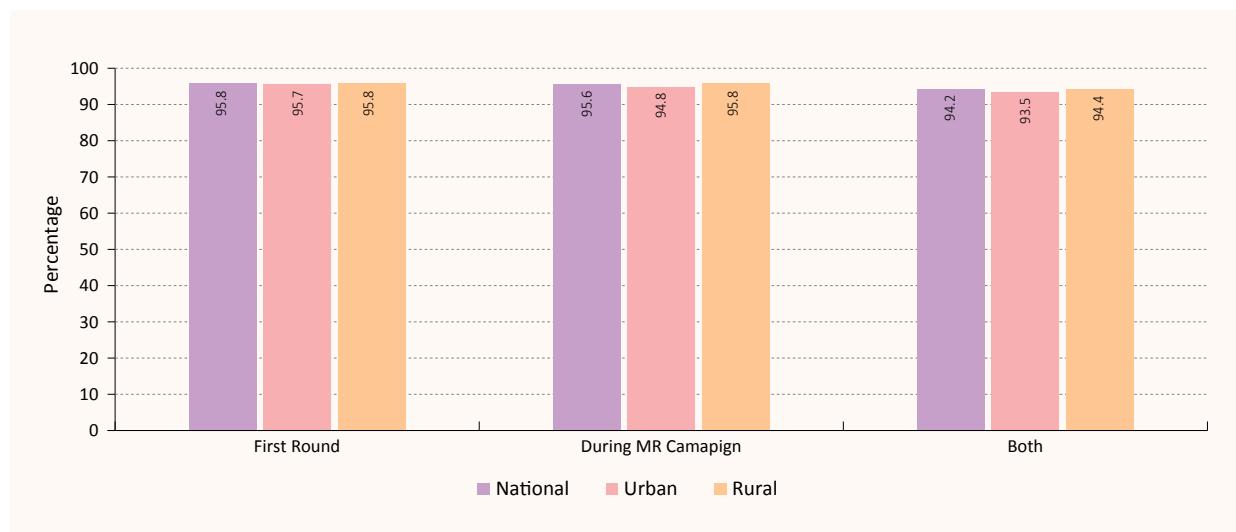
- to assess the OPV coverage among 0-59 month-old children during the 21st NID, held in December 2013, and during the MR campaign held January-February 2014
- to know the reasons for not having OPV vaccination

9.2 SAMPLE SELECTION

The OPV coverage survey on the 21st NID was carried out with representative national samples from 0-59 month-old children drawn from the cluster samples of CES 2014. Interviewers listed all the eligible children (aged between 0-59 months) in every household of each cluster at the time of household visits in order to make the sampling frame. Afterwards, seven children were selected randomly from the sampling frame to administer the questionnaire.

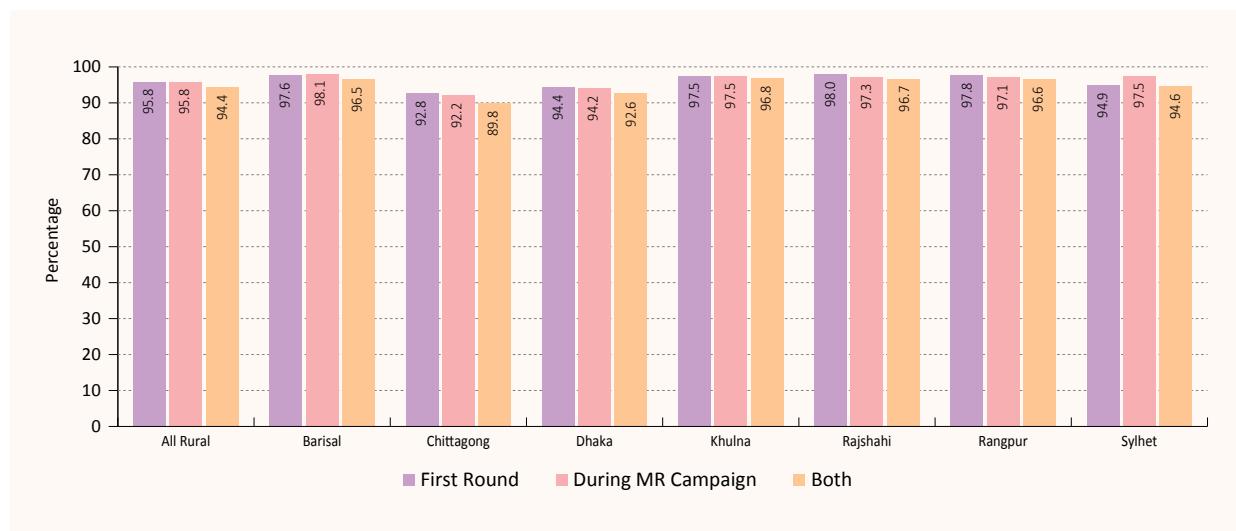
9.3 OPV COVERAGE

Overall, 95.8 percent of children received OPV during the first round of the 21st NID, and another 95.6 percent of them received it in the second round, held during the MR campaign. Furthermore, 94.2 percent of children received OPV during both the first round of 21st NID and the second round (MR campaign period). No marked variation in OPV coverage was observed between urban and rural areas (see Figure 157 and Maps 25, 26 and 27).

Figure 157: OPV Coverage by National, Rural and Urban Areas in 2014

Source: CES 2014

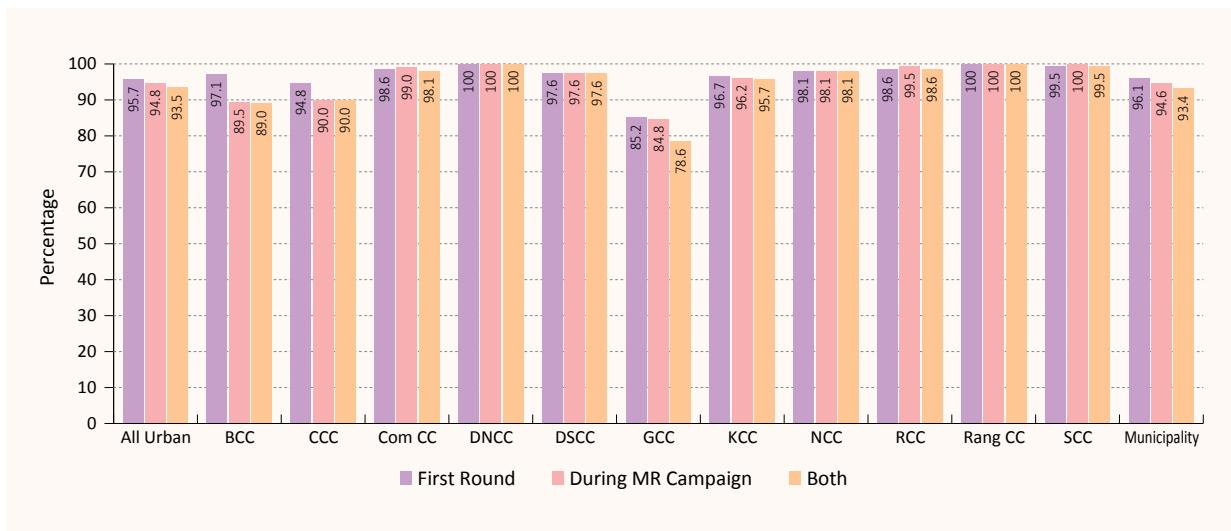
Among the divisions, Barisal, Khulna, Rajshahi, and Rangpur had the highest OPV coverage (about 97.0 percent), while the lowest coverage was in Chittagong (89.8 percent) in both rounds, with OPV coverage at 92.6 percent in Dhaka and 94.6 percent in Sylhet divisions in both rounds. By round, a slightly higher proportion of children received OPV during the first round of the 21st NID, compared to the MR campaign period in all the divisions, except in Barisal and Sylhet. OPV coverage during the first round of the 21st NID was highest in Rajshahi (98.0 percent) and lowest in Chittagong (92.8 percent) division. In the intermediary level, the proportion ranged between 94.4 percent in Dhaka and 97.8 percent in Rangpur divisions. The coverage of OPV during the MR campaign period was similar to that achieved during the first round (see Figure 158).

Figure 158: OPV Coverage in Rural Areas by Division in 2014

Source: CES 2014

Among the city corporations, the OPV coverage in both rounds was universal (100 percent) in DNCC, SCC, and Rang CC and between 98.6 percent and 78.6 percent in the other city corporations. By round, there was no marked variation between the two rounds (see Figure 159).

Figure 159: OPV Coverage in Urban Areas by City Corporation and Municipality in 2014

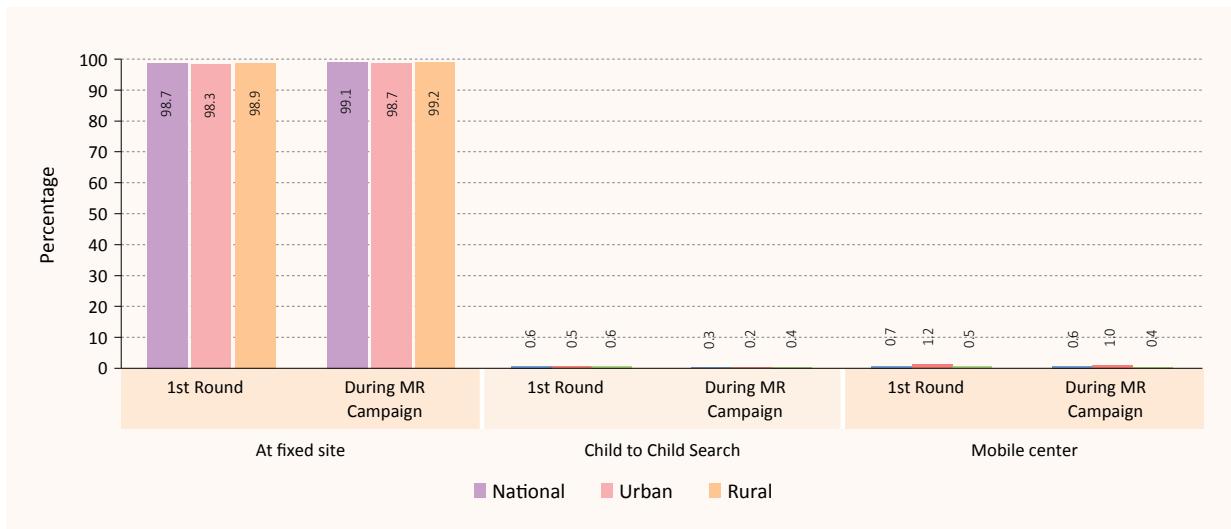


Source: CES 2014

9.4 CHILD-TO-CHILD SEARCH

A four-day child-to-child search activity was undertaken after the first day of the first round of the 21st NID, to identify and vaccinate children who were eligible for OPV during NIDs. Among the surveyed children, almost all (98.9 percent) received two drops of OPV from the fixed site in both rounds. Nationally, less than 1 percent of children received OPV from mobile centres and during the child-to-child search. No marked variation in the OPV coverage was observed between rural and urban areas.

Figure 160: OPV Coverage by Place of Vaccination in 2014



Source: CES 2014

9.5 REASONS FOR NOT VACCINATING WITH OPV AT THE FIXED SITES

The reasons for not being vaccinated with OPV at the fixed sites were investigated in CES 2014 and are presented in Table 26. The table shows that the majority of mothers/caregivers (41.5 percent) who did not vaccinate at the fixed sites were unaware of the NID, while 12.7 percent reported that they were scared of the side-effects. A further 11.9 percent of the mothers/caregivers reported that they were not at home and a similar proportion were busy with their household chores (11 percent). However, other reasons included mothers/caregivers travelling at that time (8.9 percent), they waited at home (2.3 percent), the vaccination site was too far for them (2.3 percent), and they did not believe in vaccination (2.0 percent).

Table 26: Reasons as to Why Children did not Receive OPV during 21st NID, by National, Rural and Urban Areas in 2014

Reasons	National	Urban	Rural
Did not know	41.5	44.7	40.6
Fear of side effects	12.7	11.2	13.2
Was not at home	11.9	7.4	13.2
Was very busy	11.0	15.1	9.8
Was traveling	8.9	8.0	9.1
Waited for home visit	2.3	1.1	2.6
The centre was too far	2.3	0	2.9
Do not believe in vaccine	2.0	2.5	1.9
The child was sick, so s/he was not taken	1.7	1.3	1.8
The child was sick, so vaccine was not given	1.6	3.3	1.1
No vaccine at sites	1.3	1.1	1.3
Session time was inconvenient	1.2	2.4	0.9
No vaccinator	0.6	0	0.8
The child received vaccine on a previous NID	0.4	0.3	0.4
Vaccinator did not give	0.3	0	0.4
There was a long queue	0.3	1.3	0
Total	873	194	679

Similar to the first round, 41.3 percent of the mothers/caregivers reported that they were unaware of the NID, while observing the second round during the MR campaign period. Being scared of side-effects was the second most cited reason given by mothers/caregivers (16.6 percent). The other major reasons were not being at home (11.3 percent), busy (9.4 percent), travelling at that time (7.1 percent), vaccination centre was too far for them (2.9 percent), and the child was sick, so the vaccine was not given (2.3 percent).

Table 27: Reasons as to Why Children did not Receive OPV during MR Campaign, by National, Rural and Urban Areas in 2014

Reasons	National	Urban	Rural
Did not know	41.3	49.6	38.6
Fear of side effects	16.6	15.0	17.1
Was not at home	11.3	7.0	12.8
Was very busy	9.4	7.8	9.9
Was traveling	7.1	8.8	6.6
The centre was too far	2.9	0.9	3.6
The child was sick, so vaccine was not given	2.3	3.2	2.0
Does not believe in vaccine	1.6	1.6	1.7
The child was sick , so s/he was not taken	1.5	0.8	1.8
Session time was inconvenient	1.5	0.2	2.0
Waited for home visit	1.5	0.3	1.9
No vaccine at site	0.8	2.3	0.3
No Vaccinator	0.6	0	0.8
The child received vaccine on a previous NID	0.5	1.3	0.3
There was a long queue	0.4	0.6	0.3
Vaccinator did not give	0.3	0	0.4
Religious/Social obstacles	0.2	0.8	0
Total	833	209	624

9.6 SOURCES OF INFORMATION ABOUT 21ST NIDS

Nationally, miking from the mosque was reported as the most prominent (38.5 percent) source of information about NID, while 34.0 percent of mothers reported that they were informed about NID by the GOB field workers. Other notable sources include the following: family/neighbours/friends (22.0 percent), health worker's home visit (18.7 percent), mobile miking (16.6 percent), and television (13.2 percent) (see Table 28).

In urban areas, television/family members/neighbours were shown as the major (29.3 percent) source of information. More than one-quarter (26.7 percent) of the mothers/caregivers mentioned mobile miking, 24.6 percent miking from the mosque, and 21.8 percent GoB field workers, while 3.7 percent mothers/caregivers reported hearing about NID on the mobile phone.

In rural areas, miking from the mosque was the most prominent source of information about NID (42.0 percent), followed by GoB health workers (37.2 percent). One-fifth of mothers/caregivers (20.1 percent) mentioned that they knew about NID from family/neighbours/friends, and another 18.9 percent learnt from a health worker's home visit, 14.1 percent from mobile miking, 9.1 percent from television, and 3.7 percent mentioned volunteers were their source of information.

Table 28: Sources of Information about 21st NID and MR Campaign by National, Rural and Urban Areas in 2014

Source	National	Urban	Rural
Mosque miking	38.5	24.6	42.0
GOB/ City corporations' FW visit	34.0	21.8	37.2
Family/neighbour/friends	22.0	29.3	20.1
Health Workers' home visit	18.7	18.3	18.9
Mobile miking	16.6	26.7	14.1
Television	13.2	29.2	9.1
Other volunteer's visit	3.5	2.5	3.7
Through mobile SMS	2.7	3.7	2.5
NGO worker visit	2.0	2.3	1.9
Told during first round	1.5	1.0	1.6
Teacher's visit	0.8	0.7	0.9
Newspaper	0.7	2.4	0.3
City Corporation's Health Worker	0.6	1.9	0.2
Poster	0.4	0.3	0.4
Radio	0.2	0.1	0.2
Total	15,599	3,170	12,429

Map 25: OPV Coverage during 21st NID among children <5 years



LEGEND

- < 80%
- 80-84%
- 85-89%
- 90-94%
- > = 95%

Map 26: OPV Coverage during MR campaign among Children <5 years



LEGEND

	< 80%
	80-84%
	85-89%
	90-94%
	> = 95%

Map 27: OPV Coverage during both 21st NID and MR Campaign among Children <5 years



CHAPTER 10

**Vitamin A
Supplementation
Coverage**

VITAMIN A SUPPLEMENTATION COVERAGE

Vitamin A deficiency poses a major threat to the health and survival of children and mothers. WHO recognizes it as the leading cause of preventable childhood blindness and a major public health concern. It also increases the risk of child death from diseases such as measles and diarrhea. Because sustained control of Vitamin A deficiency is essential to meeting the Millennium Development Goal for the reduction of child mortality, EPI has been conducting national Vitamin A Plus campaigns countrywide periodically on a regular basis. Most recently, GoB conducted a national Vitamin A Plus Campaign in April 2014, with technical and financial support from UNICEF, Micronutrient Initiative, and WHO. During the campaign, CES 2014 made an assessment of Vitamin A coverage among children aged 6-59 months.

10.1 OBJECTIVES OF VITAMIN A COVERAGE SURVEY

Vitamin A Coverage survey was carried out as one of the components of CES 2014 with a view to accomplishing the following objectives:

- to estimate Vitamin A coverage among children aged 6-11 months and 12-59 months
- to know the reasons for not taking Vitamin A

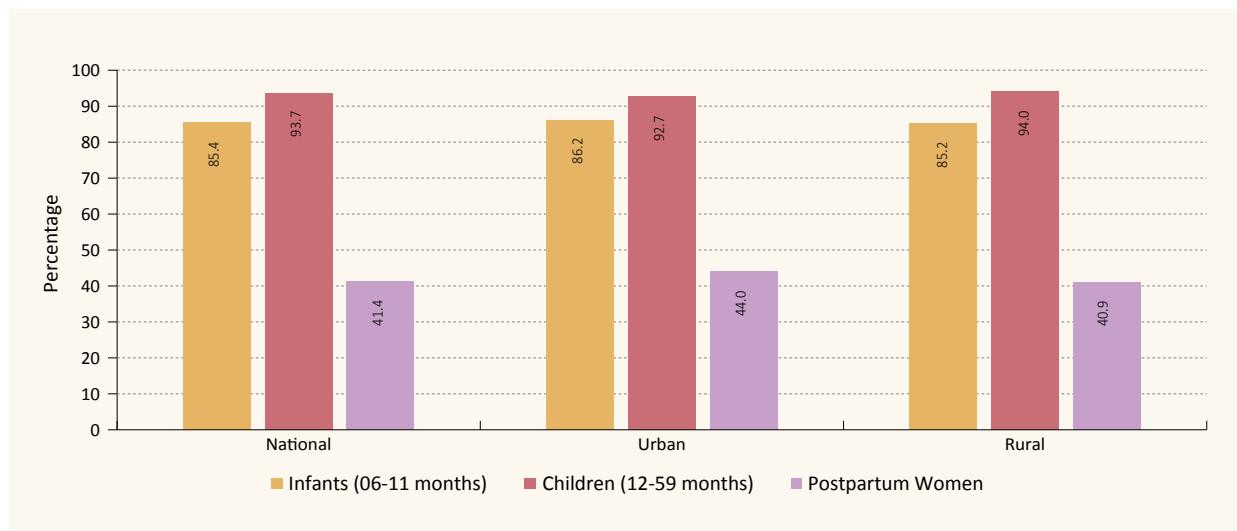
10.2 SAMPLE SELECTION

The Vitamin A coverage survey was carried out with representative national NID samples from among the 6-59 months old children drawn from the cluster samples of CES 2014. Interviewers listed all the eligible children (aged between 6-59 months) in every household of the selected cluster during their household visit in order to make the sampling frame. Afterwards, seven children were selected randomly from the sampling frame to administer the questionnaire.

10.3 VITAMIN A SUPPLEMENTATION COVERAGE

CES 2014 found that nationally, 85.4 percent of infants aged 6-11 months and 93.7 percent of children aged 12-59 months received Vitamin A capsules, with no significant variation in proportions between urban and rural areas. As for the mothers with 0-11 month-old children, nationally, 41.4 percent (44.0 percent urban and 40.9 percent rural) received VAC after delivering their latest child (see Figure 161 and Maps 28 and 29).

Figure 161: Vitamin A Supplementation Coverage among 06-11 Month-old Infants, 12-59 Month-old Children, and Postpartum Women, by National, Rural and Urban Area in 2014



Source: CES 2014

10.4 VAC COVERAGE BY RURAL DIVISIONS

Infants Aged 6-11 Months

VAC coverage was found to be highest in Rajshahi (93.4 percent) and lowest in Dhaka division (79.0 percent). In the other divisions, it ranged from 91.0 percent in Sylhet to 79.1 percent in Chittagong division.

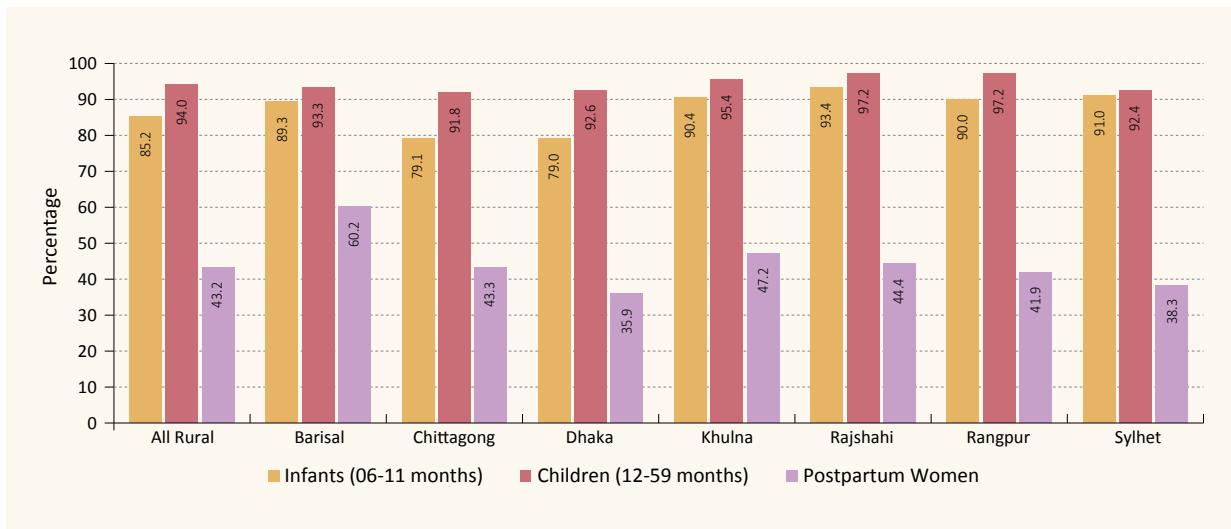
Children Aged 12-59 Months

Figure 162 presents VAC coverage by rural division. It shows that VAC coverage for infants 12 to 59 months old was at or above 90.0 percent in all the divisions. It was the highest in Rajshahi and Rangpur (97.2 percent) and the lowest in Chittagong (91.8 percent) and ranged between 92.4 percent and 95.4 percent in the other divisions.

Postpartum Women

In all the divisions, postpartum VAC coverage was found to be lower compared to VAC coverage among the children during the Vitamin A Plus campaign. About two-thirds of the postpartum mothers (60.2 percent) in Barisal division received Vitamin A capsules after delivering their last child, while only about one-third (35.9 percent) did so in Dhaka division.

Figure 162: Vitamin A Supplementation Coverage among 06-11 Month-old Infants, 12-59 Month-old Children, and Postpartum Women in Rural Areas by Division in 2014



Source: CES 2014

10.5 VAC COVERAGE BY CITY CORPORATIONS

Infants 6-11 Months

Among the city corporations, as presented in Figure 163, VAC coverage for 6-11 month olds was found the highest in Rang CC (100 percent), and the lowest in GCC (61.4 percent). It ranged between 61.9 percent and 99.0 percent in other city corporations.

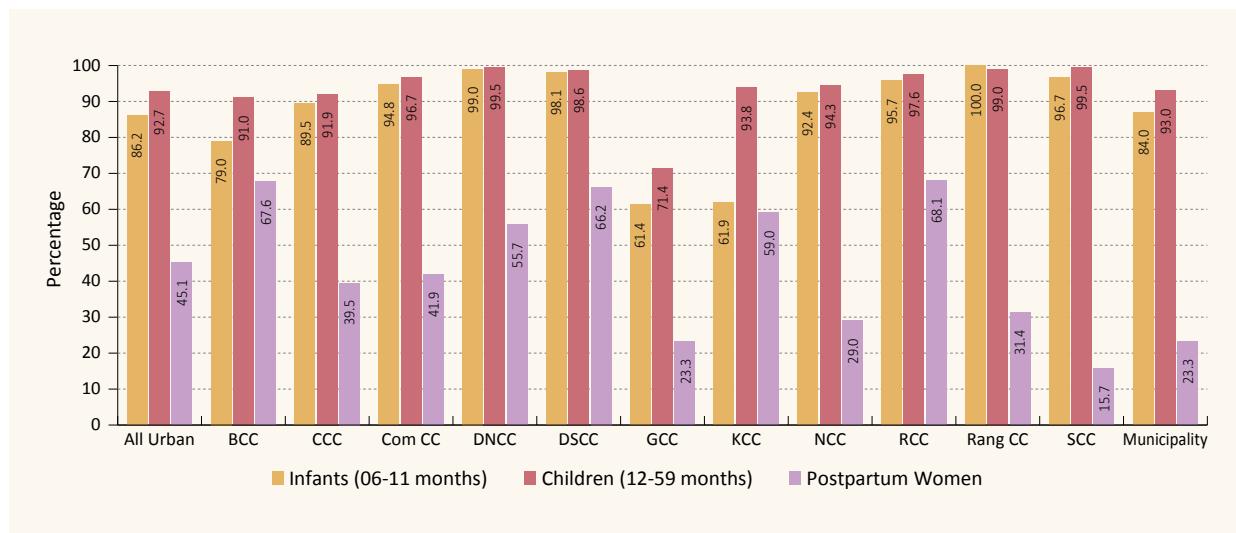
Children 12-59 Months

VAC coverage for 12-59 month olds was at or above 90.0 percent in all the city corporations, except in GCC (71.4 percent). It was the highest in DNCC and SCC (99.5 percent) and went as low as 91.0 percent in BCC.

Postpartum Women

Postpartum Vitamin A coverage was found to have a great range. The highest in proportion was in RCC (68.1 percent), followed by BCC (67.6 percent) and DSCC (66.2 percent). The numbers for the other divisions then fell considerably, until only 15.7 percent were covered in SCC (see Figure 163).

Figure 163: Vitamin A Coverage among 06-11 Month-old infants, 12-59 Month-old Children, and Postpartum Women in Urban Areas by City Corporation and Municipality in 2014



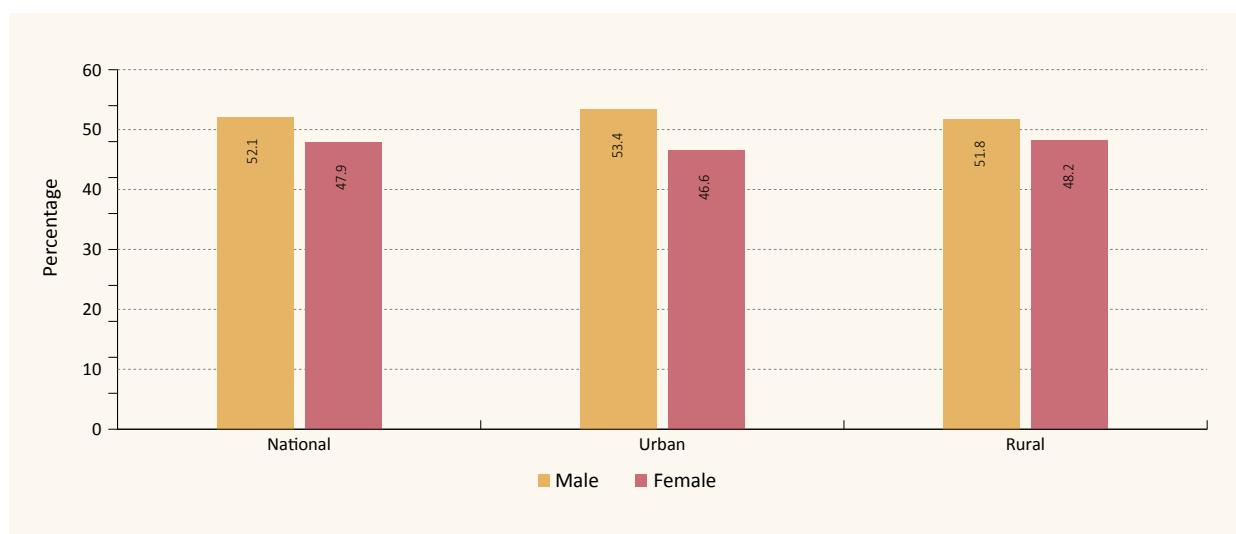
Source: CES 2014

10.6 SEX DIFFERENTIALS IN VITAMIN A COVERAGE

Infants Aged 6-11 Months

By sex, it is evident in Figure 164 that males were more likely to receive Vitamin A (52.1 percent) during the Vitamin A Plus Campaign than their female counterparts (47.9 percent). Moreover, by residence a slight difference was again noticeable between males and females .

Figure 164: Vitamin A Supplementation Coverage among 06-11 Month-old Infants by Sex in 2014



Source: CES 2014

Children Aged 12-59 Months

Figure 165 presents VAC coverage among the 12-59 months old children by sex. It shows that 51.9 percent of the males received Vitamin A capsules during the Vitamin A plus Campaign as against 48.1 percent of the females. Similar findings were observed between urban and rural areas.

Figure 165: Vitamin A Supplementation Coverage among 12-59 Month-old Children by Sex in 2014



Source: CES 2014

10.7 REASONS FOR CHILDREN NOT RECEIVING VAC DURING THE VITAMIN A PLUS CAMPAIGN

Reasons for not receiving Vitamin A during the Vitamin A Plus campaign were also investigated in CES 2014 and presented in Table 29. It shows that around three-quarters of the mothers/caregivers (73.7 percent) were unaware of the Vitamin A Plus campaign. Less frequently given reasons were that they were not at home (7.2 percent), the mothers/caregivers were scared of the side-effects (4.9 percent), mothers/caregivers were travelling (2.5 percent) or busy with household chores (2.4 percent).

Table 29: Reasons Why Children did not Receive Vitamin A Supplementation during Vitamin A Plus Campaign, by National, Rural and Urban Areas in 2014

Reasons	National	Urban	Rural
Did not know	73.7	75.3	73.3
Was not at home	7.2	4.7	7.9
Fear of side effects	4.9	6.6	4.4
Was traveling	2.5	3.8	2.1
Was very busy	2.4	2.6	2.3
Vaccinator did not give	1.9	0.7	2.2
The child was sick, so did not take to the vaccination centre	1.2	1.8	1.1
Vitamin A was not available	1.2	1.1	1.2
Does not believe in Vitamin A	0.9	0.4	1.0
The child was sick, so the health worker did not give vaccine	0.8	0.8	0.9
Health worker was not available	0.8	0.3	1.0
The centre was too far	0.8	0.2	0.9
The session time was inconvenient	0.7	0.5	0.8
Was waiting to come back home with Vitamin A	0.5	0.2	0.6
There was a long queue	0.2	0.6	0.0
Religious/Social obstacles	0.1	0.3	0.1
The child received Vitamin A on a previous time	0.1	0.1	0.1
Total	3,356	691	2,665

Table 30: Reasons Why Children did not Receive Vitamin A Supplementation during Vitamin A Plus Campaign in Rural Areas, by Division in 2014

Reasons	All Rural	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet
Did not know	73.3	73.2	75.3	77.8	66.5	62.2	67.9	62.3
Was not at home	7.9	9.6	7.8	6.2	9.2	6.3	13.6	10.0
Fear of side effects	4.4	3.0	4.1	3.9	5.0	5.0	4.2	9.6
Was very busy	2.3	6.6	2.5	1.8	2.1	2.3	1.0	3.2
Vaccinator did not give	2.2	0.7	1.7	2.2	1.8		9.3	
Was traveling	2.1	2.0	1.1	2.2	1.3	11.1		0.8
Vitamin A was not available	1.2	0.0	1.4	1.2	0.5	3.7	1.0	
The child was sick, so did not take to the vaccination centre	1.1	0.7	0.8	1.0	0.7	2.2	0.6	3.5
Don't believe in Vitamin A	1.0	2.1	0.4	0.4	0.8	1.1		7.3
Health worker was not available	1.0	0.0	0.5	1.3	1.9	0.3	0.3	2.1
The centre was too far	0.9	0.4	0.3	0.2	6.8	0.3	1.3	1.3
The child was sick, so the health worker did not give vaccine	0.9	0.3	0.7	0.8	1.9	2.4	0.3	0.0
The session time was inconvenient	0.8	0.0	1.3	0.4	1.2	2.5	0.0	0.0
Was waiting to come back home with Vitamin A	0.6	1.5	1.6	0.2		0.5	0.3	
The child received Vitamin A on a previous time	0.1	0.0	0.1	0.1	0.3	0.0	0.0	0.0
Religious/Social obstacles	0.1	0.0	0.1	0.1		0.0	0.0	0.0
There was a long queue	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.0
Total	2,665	143	747	1,043	212	163	199	158

Table 31: Reasons Why Children did not Receive Vitamin A Supplementation during Vitamin A Plus Campaign in Urban Areas, by City Corporation and Municipality in 2014

Reasons	All Urban	BCC	CCC	Com CC	DNCC	DSCC	GCC	KCC	NCC	RCC	Rang CC	SCC	Municipality
Did not know	75.3	60.3	59.0	66.7	33.3	28.6	85.8	84.9	60.7	35.7	100.0	25.0	74.6
Was afraid of side effects	6.6	1.6	20.5		66.7	57.1	3.5	6.5	21.4	14.3	0.0	37.5	3.7
Was not at home	4.7	3.2	12.8	16.7	0.0	0.0	0.0	2.2	3.6	28.6	0.0	0.0	6.3
Was traveling	3.8		2.6	0.0	0.0	14.3	2.8	1.1	0.0	0.0	0.0	0.0	4.7
Was very busy	2.6	11.1	2.6	5.6	0.0	0.0	2.1	2.2	3.6	14.3	0.0	12.5	2.6
The child was sick, so did not take to the vaccination centre	1.8	3.2	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	12.5	2.9
Vitamin A was not available	1.1	3.2	0.0	0.0	0.0	0.0	2.1		3.6	0.0	0.0	0.0	0.8
The child was sick, so health worker did not give vaccine	0.8	1.6	2.6	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Vaccinator did not give	0.7	1.6	0.0		0.0	0.0	1.4	0.0	3.6	0.0	0.0	0.0	0.4
There was a long queue	0.6		0.0	5.6	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0
The session time was inconvenient	0.5	3.2	0.0	0.0	0.0	0.0	0.0	0.0	3.6	7.1	0.0	0.0	0.7
Do'nt believe in Vitamin A	0.4	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Health worker was not available	0.3	1.6	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.5
Religious/Social obstacles	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
The centre was too far	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.4
Was waiting to come back home with Vitamin A	0.2	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
The child received Vitamin A on a previous time	0.1	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	691	11	45	3	6	10	188	33	11	3	1	2	378

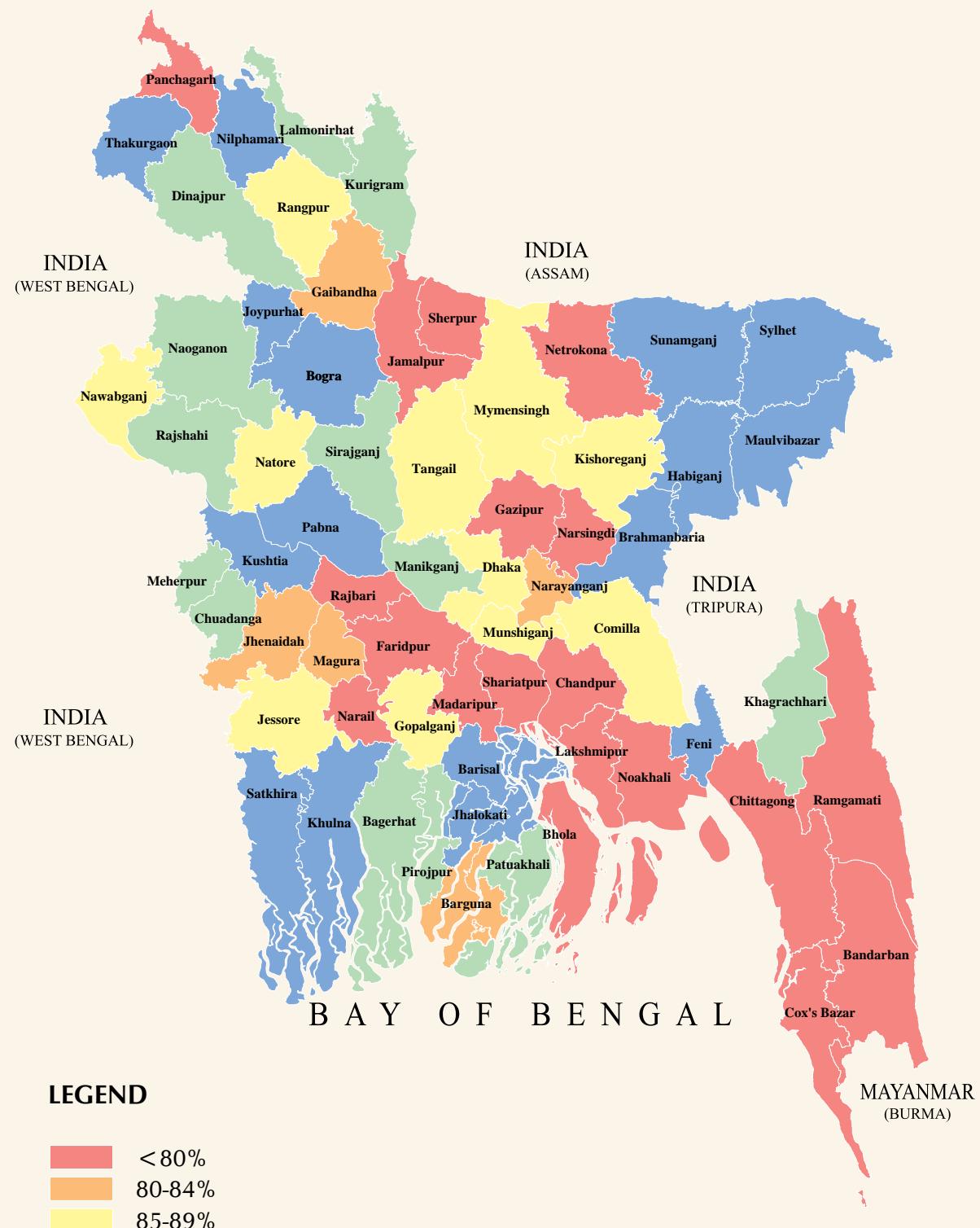
10.8 SOURCE OF VITAMIN A PLUS CAMPAIGN

According to the results shown in Table 30 mosque miking was the most prominent source of information about the Vitamin A Plus Campaign. Thirty-eight percent of mothers/caregivers mentioned it. The other major sources were GoB health worker's visit (34.5 percent), family/neighbours/friends (21.7 percent), health worker's home visit (18.8 percent), mobile miking (14.8 percent), television (11.8 percent), and volunteers (4.0 percent).

Table 32: Sources of Information about Vitamin A Plus Campaign, by National, Rural and Urban Areas in 2014

Source	National	Urban	Rural
Mosque miking	38.0	24.5	41.5
GOB/ City corporations FW visit	34.5	21.3	37.9
Family/neighbour/friends	21.7	28.8	19.9
Health Workers' home visit	18.8	16.9	19.3
Mobile miking	14.8	23.0	12.7
Television	11.8	29.5	7.3
Other volunteers visit	4.0	2.7	4.3
NGO worker visit	2.5	2.9	2.4
Mobile SMS	1.9	2.9	1.6
Told during first round	1.6	1.3	1.7
Newspaper	1.2	3.4	0.7
Teacher visit	0.8	0.6	0.8
Poster	0.4	0.3	0.4
City Corporation's Health Worker	0.3	1.2	0.1
Radio	0.2	0.1	0.2
Did not know	0.0	0.1	0.0
UNICEF Para worker	0.0	0.0	0.0
From school	0.0	0.0	0.0
Total	28,840	5,871	22,969

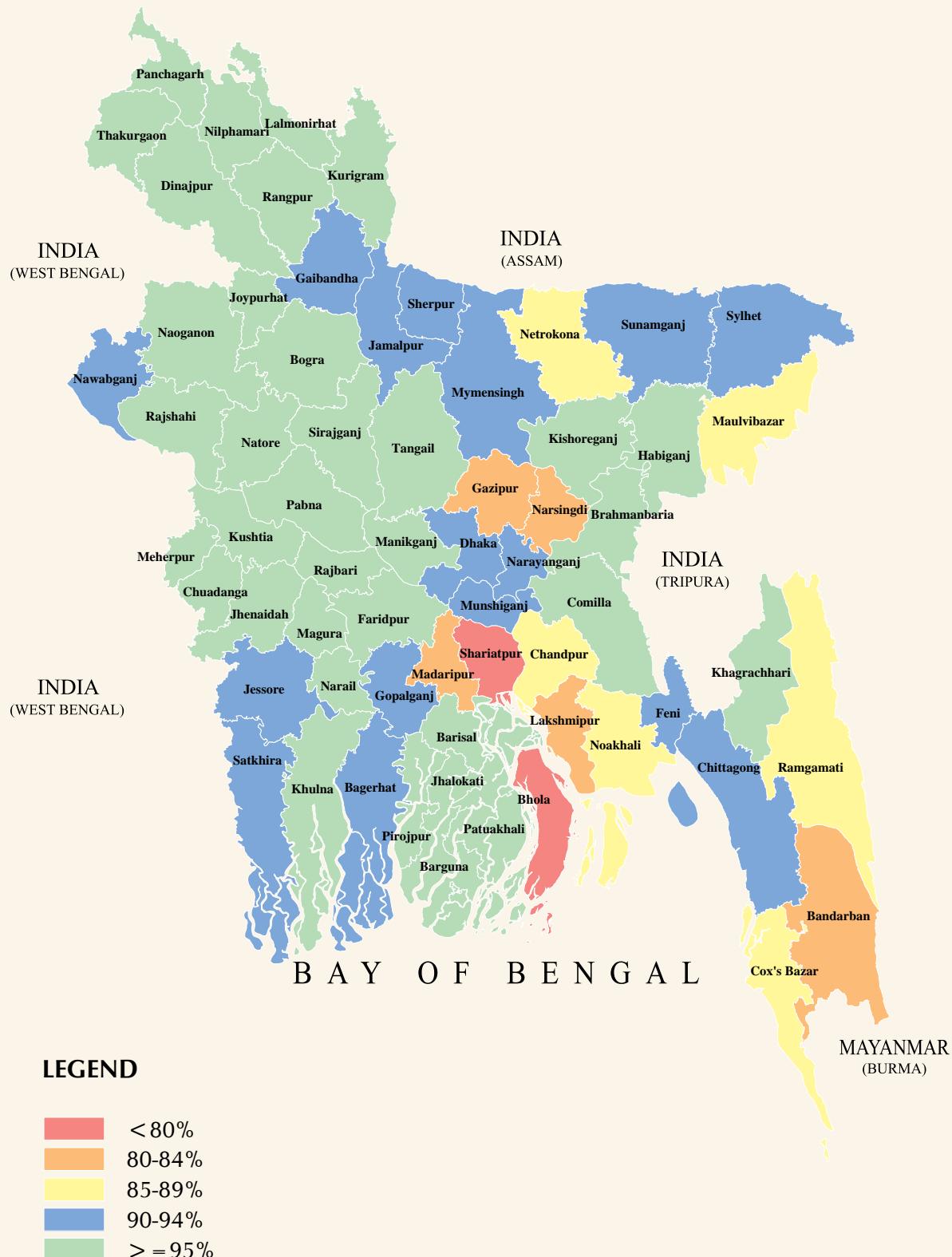
Map 28: Vitamin A Coverage of 6-11 months infants



LEGEND

- < 80%
- 80-84%
- 85-89%
- 90-94%
- > = 95%

Map 29: Vitamin A Coverage of 12-59 months children





CHAPTER **11**

Discussions and Recommendations

DISCUSSIONS AND RECOMMENDATIONS

11.1 DISCUSSION

For the Government of Bangladesh, in collaboration with its relevant partners, to meet its vaccination coverage objectives, it needs to continue to build on the impressive progress it has made in EPI in the past decade. The Coverage Evaluation Survey 2014, carried out between August 16 and November 10, 2014, is an important component in meeting those objectives. The key findings of that survey are discussed and followed by recommendations in this chapter.

Nationally, by crude vaccination rates, 93.2 percent children received all the eligible vaccines, irrespective of the age for starting the vaccination and/or minimum intervals between doses. Antigen specific, BCG had the highest coverage (99.2 percent) followed by Penta1 (99.0 percent), Penta2 (98.4 percent), Penta3 (97.1. percent), and MR (93.2 percent). No marked variation was observed between rural (93.3 percent) and urban areas (92.9 percent).

In terms of valid coverage, which is the coverage for which Bangladesh is attempting to reach 90 percent at the national level by 2016, 81.6 percent of the children across the country received all the scheduled vaccines by the age of 12 months following EPI-recommended age and valid interval between the doses. By antigen, valid BCG coverage was 99.2 percent, Penta1 92.6 percent, Penta2 93.3 percent and Penta3 93.0 percent. The coverage for the three doses of OPV was 95.8 percent, 95.1 percent, and 92.7 percent, respectively. Among all the antigens, valid MR coverage was the lowest (86.6 percent). Urban-rural analysis shows that rural children were more likely to receive valid doses (82.3 percent) compared to their urban counterparts (78.8 percent).

For the districts, the objective is that all reach 85 percent by 2016. By both crude vaccination coverage by age of 23 months and valid vaccination coverage by age of 12 months, the division found to have the highest rate was Rajshahi division (96.8 percent and 87.0 percent, respectively) and the lowest was Sylhet division (88.6 percent and 78.6 percent). Rajshahi was the only one of the divisions to reach the 85 percent target.

The data show that those left out and who dropped out of the vaccination schedule contributed to the lower crude coverage. For BCG, the first dose of childhood vaccination schedule, coverage was 99.2 percent, which indicates that about 1.0 percent of the surveyed children still remained fully unvaccinated. However, the crude coverage was 93.2 percent nationally, which means that 6.0 percent of the surveyed children dropped before receiving any subsequent dose of vaccination after receiving BCG. In contrast, BCG coverage was 99.2 percent nationally. It. Since the national finding is the reflection of the divisional finding and the divisional finding is a result of the district coverage, the same interpretation can be applicable in general to the divisions and district. However, the left-out and drop-out rates do vary from one district to another. As an example of the impact the drop-rate can have, crude coverage was the lowest in Narsingdhi district (81.0 percent) among all the districts, with the Penta1-MR drop-out rate of 17.0 percent to be the highest among all the districts and significantly limiting the district's crude coverage. Because of the impact it could have on the crude vaccination rade, reducing the drop-out rate should be given special attention by the EPI programme.



Drop outs from vaccinations are caused mostly from the demand side. CES 2014 findings show that obstacles are the most prevailing reason for partial vaccinations, while four of every five mothers/caregivers reported obstacles on both the supply or demand sides. As nationally, 18.0 percent of the mothers/caregivers reported lacking awareness of information about the vaccination service, community-level health workers should visit households and monitor the drop-out cases during the vaccination session.

As well, administering lower invalid doses accelerates the rise in vaccination coverage. Nationally, valid coverage was 12 percentage points lower than crude coverage (81.6 percent and 93.2 percent, respectively), with, 3.4 percent of Penta1, 5.5 percent of Penta2, 6.8 percent of Penta3, and 3.4 percent of MR found to be invalid. The highest valid vaccination coverage was observed in Rajshahi district (91.0 percent), where invalid rates by antigen were for Penta1 at 0.6 percent, Penta2 3.9 percent, Penta3 5.1 percent, and MR 1.2 percent. In contrast, among the districts, the lowest valid vaccination coverage was found in Narsingdhi (71.6 percent), the district that also had the highest drop-out rate; its invalid Penta1 was 3.0 percent, Penta2 4.2 percent, Penta3 6.8 percent, and MR 4.5 percent. The analysis suggests that both the drop-out rate and the invalid dose contributed to the lower full vaccination coverage in Narsingdhi, a combination common in districts where full valid vaccination coverage was poorer. Since the act of administering invalid doses was mainly caused on the supply side, EPI should identify the causes of administering invalid doses and counteract those causes accordingly.

MSD drop-out rates and invalid doses also play into the national figures. Overall, 80.5 percent of children received crude MSD, with 70 percent children receiving the valid doses of MSD. However, the MR-MSD drop-out rate was found to also be 14.0 percent nationally. Likewise, 6.8 percent of the children received invalid MSD nationally.

The discussion above indicates that both the administration of higher invalid doses and higher drop-out rates contribute to lower fully valid vaccination coverage.

Regarding TT coverage among the mothers with children aged 0-11 months old, nationally valid TT2 vaccination coverage was 97.6 percent, TT3 85.0 percent, TT4 68.9 percent, and TT5 50.0 percent, meaning 50.0 percent of mothers have immunity status against tetanus through their reproductive lives. Naturally 93.2 percent newborn were protected against tetanus. Children from Barisal (94.5 percent), Khulna (94.1 percent), Rajshahi (94.4 percent), and Rangpur (91.4 percent) were in higher positions in terms of PAB than other divisions.

The TT vaccination card is an important tool to estimate valid and invalid doses, as well as PAB status of newborn babies. Nationally, 37.1 percent of TT vaccination cards were found to be retained. In 94.5 percent cases, cards had been issued at the time of the first TT vaccination. However, 59.4 percent of the recipients had lost their cards, so only 35.1 percent of the cards were available during the time of data collection. The poor card retention rate may be the result of the mothers' lack of awareness about the importance of TT vaccination card.

One-third of the adolescent girls aged 16-17 years had received MR vaccination. Respondents from urban areas were more likely to receive MR, compared to those from rural areas (31.5 percent in rural areas and 27.5 percent in urban areas). CES 2014 investigated the reasons for not receiving MR and found that many of the adolescent girls were unaware of MR vaccinations (45.3 percent).

Overall, 95.8 percent of the children received OPV during the 1st round of the 21st NID and 95.6 percent received it during the 2nd round (MR campaign period). Ninety-four percent of the respondents received OPV during both the 1st round of 21st NID and the second round (MR campaign period).

Nationally, 85.4 percent of the infants aged 6-11 months and 93.7 percent of the children aged 12-59 months received Vitamin A capsule. No remarkable variation was observed between urban and rural areas. However, 41.4 percent of the mothers with children 0-11 months - 44.0 percent in urban and 40.9 percent in rural areas received Vitamin A Capsule after delivering their last child.

11.2 RECOMMENDATIONS

Based on the above detailed discussion of the findings on the various survey components of CES 2014, the EPI authorities may consider the following recommendations for further betterment of the program:

- Listing of the drop-outs for every vaccination dose should be prepared on a regular basis through domiciliary visits by assigned health workers and ensuring the vaccinations align with the EPI-recommended vaccination schedule. Special crush programmes could be introduced, depending upon the numbers of dropped-out children, geographical locations, and seasonal factors.
- Reduction of invalid doses and drop-out rates would significantly improve vaccination coverage. To avoid invalid doses, children's vaccination cards and vaccination histories should be carefully reviewed. Additionally, effective supportive supervision, on-the-job training and needs-based refresher training for the service providers should be ensured.
- Biometric or mobile phone technology can be used to help avoid invalid doses and ensure timely vaccinations.
- Gap analyses should be conducted on a regular basis so appropriate measures may be taken to reduce invalid doses and drop-out rates, with special focus given to the hard-to-reach and chronically low performing districts and city corporations.
- Regular and effective domiciliary visits by health workers should be ensured to capture all the target groups for EPI service and update their vaccination status.
- To maintain equities while sustainably increasing EPI in the chronically and emerging low performing divisions, districts, and city corporations, special attention should be given to those areas. Needs-based alternative session planning should be ensured in the areas where holding monthly sessions is not possible, due to natural calamities, geographical conditions, and human and other resource challenges, etc.
- Based on the local context, experience could be shared with the low performing areas to replicate the ideas or ways of working of the high performing areas.
- Workers should be encouraged and a competitive mentality should be upheld to provide better services; within government rules, rewards may be given to better performers.
- Workers should maintain interpersonal communication with those in the target group until the completion of the last dose of scheduled vaccination. It is most important for MR, MSD, and TT3, TT4, and TT5, as the gap or interval is more important for these doses than others of the scheduled vaccines.
- EPI authorities should take appropriate measures to coordinate with the authorities of the local government ministries, city corporations, NGOs, and private health facilities, with the aim to ensure increased vaccination coverage in urban and slum areas.
- A TT campaign programme at schools, colleges, and garments factories could be established to ensure increased TT coverage, in particular TT 2 coverage.
- EPI authorities may set mechanisms to ensure a periodic review of the micro plan by upazilas through a bottle-neck analysis. Then, needs-based measures should be taken to address the weaknesses of the programme in the respective upazilas.

APPENDIX

Appendix A : Tables, Figures and Maps

**APPENDIX B : Vaccination coverage by
survey units (in figures)**

**APPENDIX C : Vaccination coverage by
survey units (in Tables)**

APPENDIX D : Questionnaires

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APPENDIX B: VACCINATION COVERAGE BY SURVEY UNITS (IN FIGURES)

Figure 1. Valid Full Vaccination Coverage by 12 Months of Age among 12-23 Month-Old Children by Districts in Barisal Division (Fully Immunized Arranged in Ascending Order by All Districts)

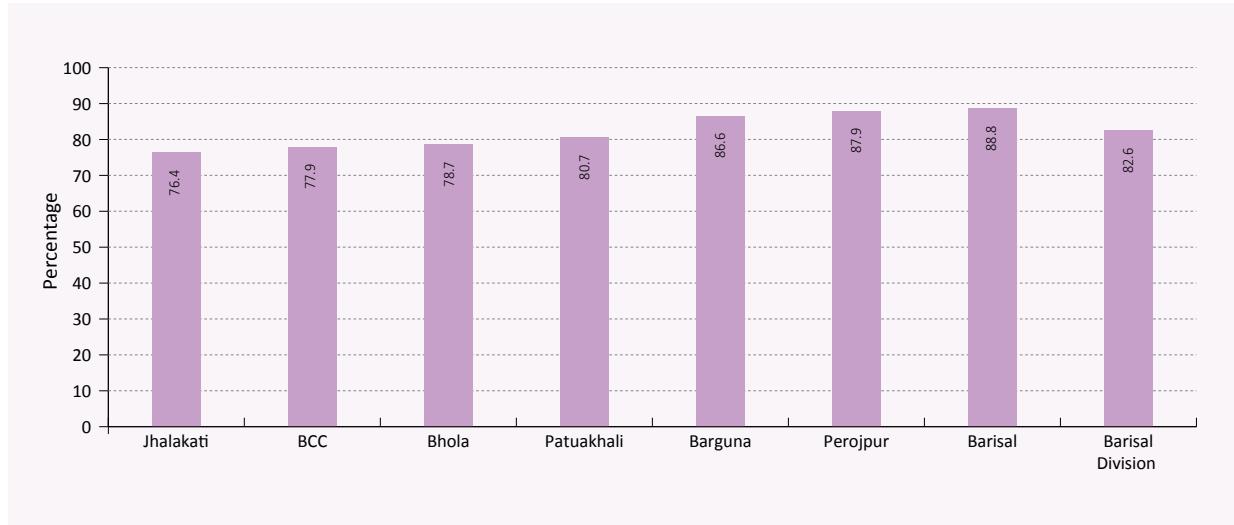


Figure 2. Valid Full Vaccination Coverage by 12 Months of Age among 12-23 Month-Old Children by Districts in Chittagong Division (Fully Immunized Arranged in Ascending Order by All Districts)

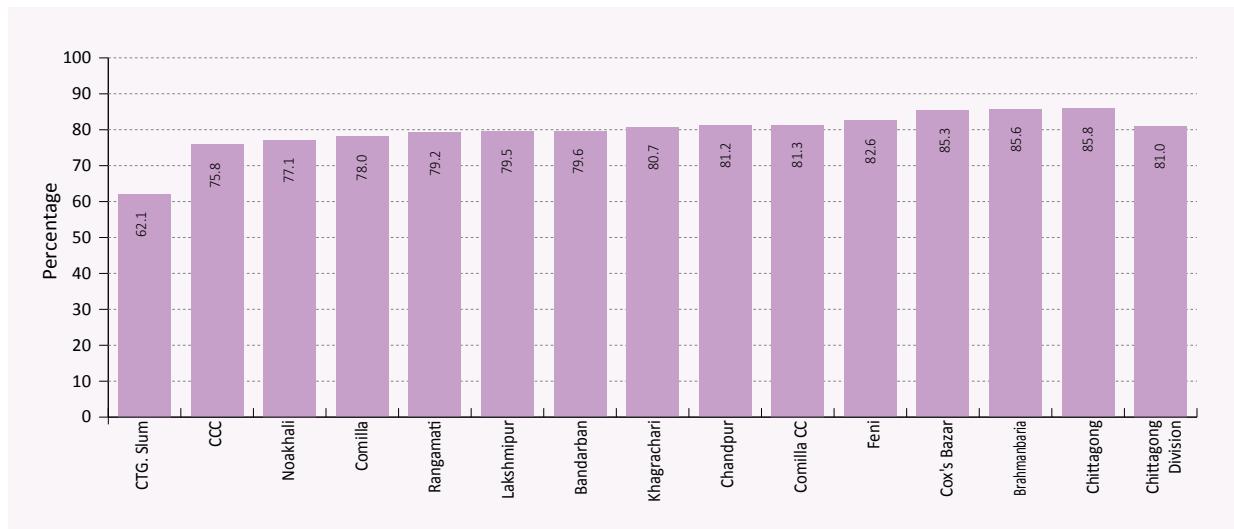


Figure 3. Valid Full Vaccination Coverage by 12 Months of Age among 12-23 Month-Old Children by Districts in Dhaka Division

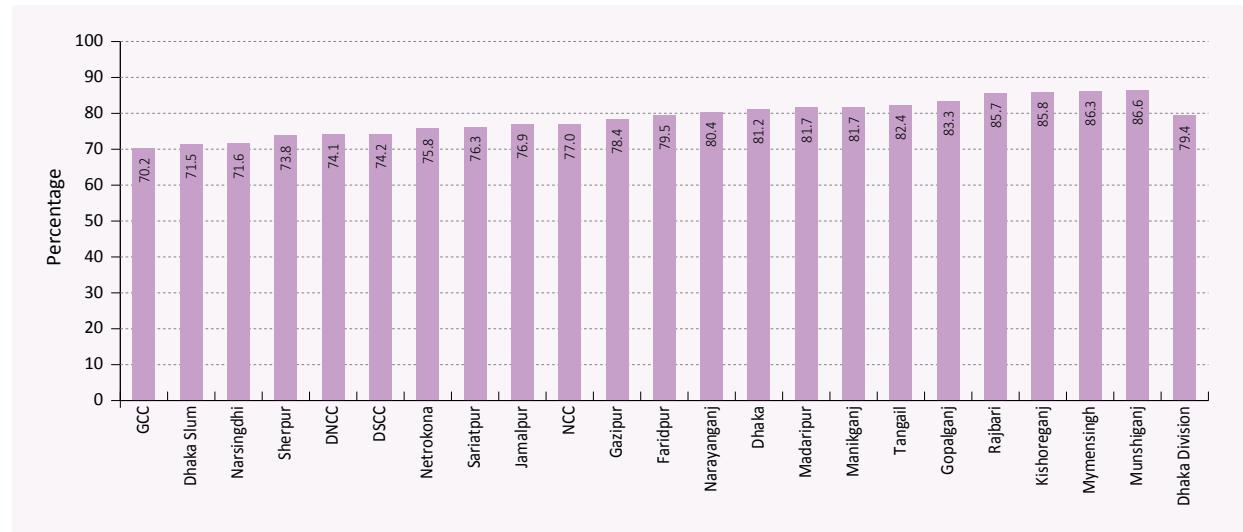


Figure 4. Valid Full Vaccination Coverage by 12 Months of Age among 12-23 Month-Old Children by Districts in Khulna Division (Fully Immunized Arranged in Ascending Order by All Districts)

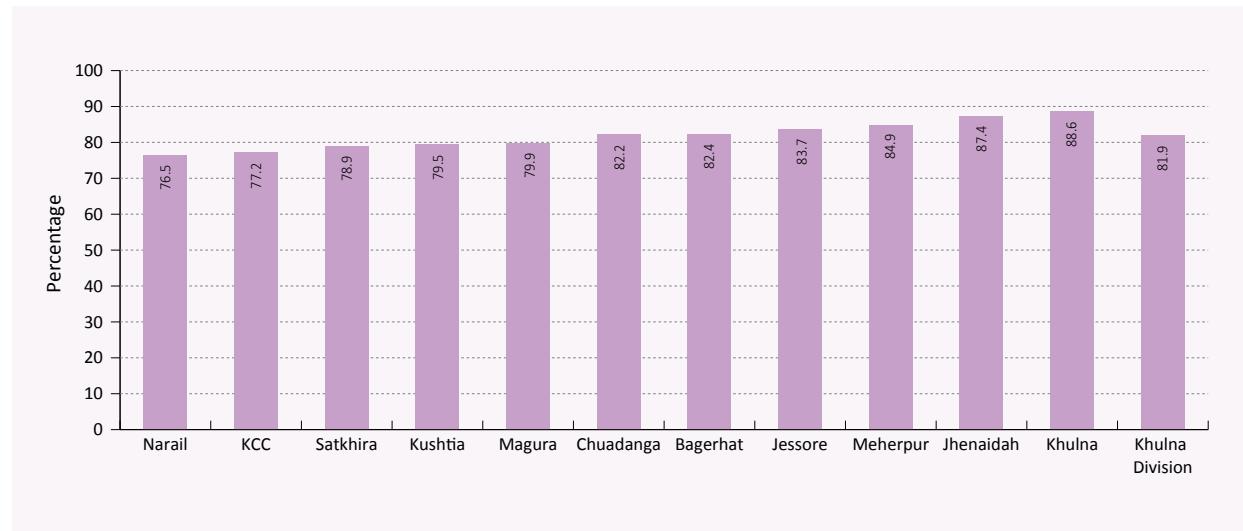


Figure 5. Valid Full Vaccination Coverage by 12 Months of Age among 12-23 Month-Old Children by Districts in Rajshahi Division (Fully Immunized Arranged in Ascending Order by All Districts)

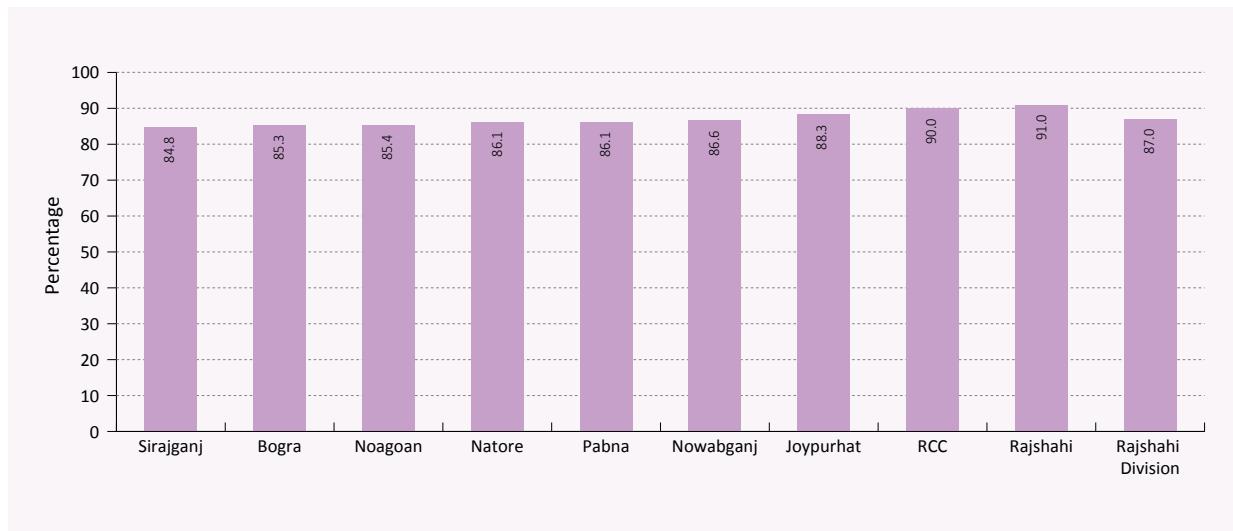


Figure 6. Valid Full Vaccination Coverage by 12 Months of Age among 12-23 Month-Old Children by Districts in Rangpur Division (Fully Immunized Arranged in Ascending Order by All Districts)

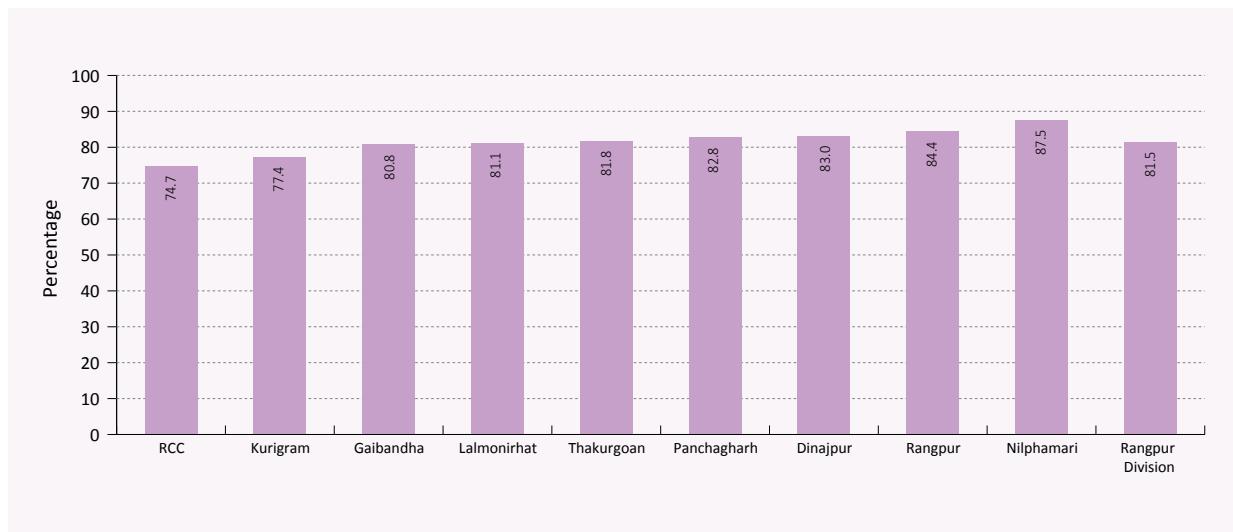
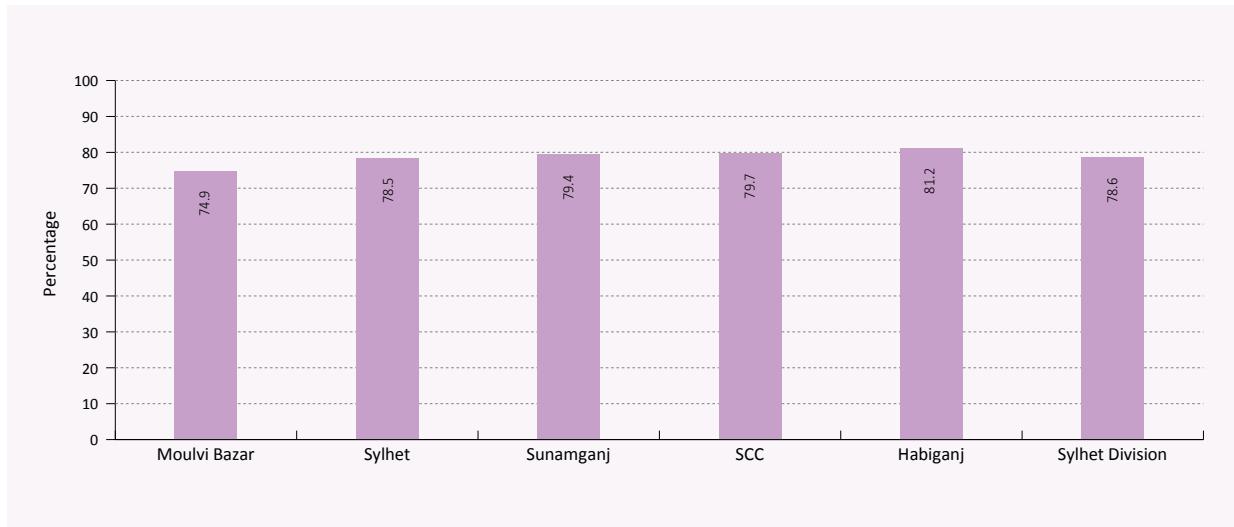


Figure 7. Valid Full Vaccination Coverage by 12 Months of Age among 12-23 Month-Old Children by Districts in Sylhet Division (Fully Immunized Arranged in Ascending Order by All Districts)



APPENDIX C: VACCINATION COVERAGE BY SURVEY UNITS (IN TABLES)

Table 1: Crude Vaccination Coverage by Age of 23 Months by District and City Corporation

District/City Corporation	BCG	OPV1	Penta1	OPV2	Penta2	OPV3	Penta3	MR	FVC
Barguna	100.0	99.5	99.5	98.6	98.6	98.6	98.6	95.7	95.7
Barisal	99.5	99.5	99.5	99.5	99.5	99.0	99.0	99.0	99.0
Barisal City Corporation	100.0	100.0	100.0	97.6	97.6	94.3	94.3	88.6	88.6
Bhola	100.0	99.5	99.5	98.6	98.6	96.7	96.7	91.9	91.9
Jhalakati	100.0	100.0	100.0	99.5	99.5	97.1	97.1	92.4	92.4
Patuakhali	99.0	99.0	99.0	97.6	97.6	97.1	97.1	93.8	93.8
Perojpur	100.0	100.0	100.0	99.0	99.0	97.6	97.6	96.2	96.2
Barisal Division	99.8	99.7	99.7	98.6	98.6	97.2	97.2	93.9	93.9
Bandarban	98.6	98.6	98.6	96.7	96.7	95.7	95.7	90.0	90.0
Brahmanbaria	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.6	98.6
Chandpur	99.5	99.5	99.5	99.5	99.5	98.1	98.1	90.5	90.5
Chittagong	99.5	99.5	99.5	98.6	98.6	97.1	97.1	94.8	94.8
Chittagong City Corporation	100.0	100.0	100.0	98.1	98.1	97.6	97.6	94.8	94.8
Comilla	99.0	99.0	99.0	98.1	98.1	97.1	97.1	91.0	91.0
Comilla City Corporation	99.0	99.0	99.0	99.0	99.0	98.1	98.1	96.2	96.2
Cox's Bazar	99.0	99.0	99.0	97.1	97.1	97.1	97.1	94.8	94.8
Feni	99.5	99.5	99.5	99.5	99.5	99.5	99.5	96.2	96.2
Khagrachari	99.0	99.0	99.0	99.0	99.0	98.1	98.1	94.3	94.3
Lakshmipur	98.6	98.6	98.6	98.1	98.1	96.7	97.1	92.9	92.4
Noakhali	96.7	96.7	96.7	96.7	96.7	93.8	93.8	85.7	85.7
Rangamati	95.2	95.2	95.2	94.3	94.3	92.4	92.4	88.1	88.1
Chittagong Division	98.8	98.8	98.8	98.1	98.1	97.0	97.1	92.9	92.9
Dhaka	98.6	98.1	98.1	98.1	98.1	97.6	97.6	97.6	97.6
Dhaka North City Corporation	99.5	99.5	99.5	99.5	99.5	99.5	99.5	97.6	97.6
Dhaka South City Corporation	100.0	100.0	100.0	100.0	100.0	99.0	99.0	87.1	87.1
Faridpur	99.0	99.0	99.0	97.6	97.6	97.6	97.6	91.9	91.9
Gazipur	99.5	98.6	98.6	96.7	96.7	93.8	93.8	89.0	89.0
Gazipur City Corporation	100.0	99.5	99.5	98.1	98.1	96.7	96.7	90.0	90.0
Gopalganj	100.0	100.0	100.0	99.0	99.0	97.6	97.6	96.7	96.7
Jamalpur	99.5	99.5	99.5	99.0	99.0	98.1	98.1	92.9	92.9
Kishoreganj	99.0	99.0	99.0	99.0	99.0	97.6	97.6	95.7	95.7
Madaripur	99.5	99.5	99.5	99.0	99.0	98.1	98.1	94.8	94.8
Manikganj	99.5	99.5	99.5	99.5	99.5	99.0	99.0	95.2	95.2
Munshiganj	100.0	100.0	100.0	99.0	99.0	98.6	98.6	97.6	97.6
Mymensingh	100.0	100.0	100.0	99.5	99.5	98.1	98.1	94.3	94.3
Narayanganj	99.5	99.5	99.5	99.0	99.0	96.7	96.7	93.3	92.9
Narayanganj City Corporation	99.0	99.0	99.0	97.6	97.6	95.2	95.2	91.4	91.4
Narsingdi	97.6	97.6	97.6	96.7	96.7	93.3	93.3	81.0	81.0
Netrokona	98.6	97.1	97.1	96.7	96.7	93.3	93.3	87.1	87.1
Rajbari	100.0	100.0	100.0	99.5	99.5	99.5	99.5	95.2	95.2
Sariatpur	99.5	98.1	98.1	96.7	96.7	95.2	95.2	89.0	89.0
Sherpur	99.0	98.6	98.6	96.2	96.2	93.8	93.8	88.6	88.6
Tangail	97.6	97.1	97.1	96.7	96.7	95.2	95.2	91.4	91.4
Dhaka Division	99.3	99.0	99.0	98.3	98.3	96.8	96.8	92.3	92.2

Table 1: continued

District/City Corporation	BCG	OPV1	Penta1	OPV2	Penta2	OPV3	Penta3	MR	FVC
Bagerhat	100.0	100.0	100.0	99.5	99.5	98.1	98.1	96.2	96.2
Chuadanga	100.0	99.5	99.5	99.0	99.0	98.1	98.1	96.2	96.2
Jessore	100.0	99.5	99.5	99.5	99.5	99.0	99.0	94.8	94.8
Jhenaidah	100.0	100.0	100.0	100.0	100.0	99.5	99.5	95.7	95.7
Khulna	98.6	98.6	98.6	98.1	98.1	98.1	98.1	95.2	95.2
Khulna City Corporation	100.0	100.0	100.0	97.6	97.6	93.3	93.3	85.2	85.2
Kushtia	100.0	100.0	100.0	99.5	99.5	99.5	99.5	96.7	96.7
Magura	99.5	98.6	98.6	97.6	97.6	96.2	96.2	92.4	92.4
Meherpur	99.5	99.5	99.5	98.6	98.6	98.1	98.1	95.2	95.2
Narail	100.0	100.0	100.0	98.6	98.6	96.7	96.7	88.1	88.1
Satkhira	98.6	98.6	98.6	98.1	98.1	96.2	96.2	91.9	91.9
Khulna Division	99.7	99.5	99.5	98.7	98.7	97.5	97.5	93.4	93.4
Bogra	99.0	99.0	99.0	98.6	98.6	98.1	98.1	96.2	96.2
Joypurhat	100.0	100.0	100.0	100.0	100.0	99.5	99.5	98.6	98.6
Natore	100.0	100.0	100.0	100.0	100.0	99.5	99.5	98.1	98.1
Noagoan	100.0	100.0	100.0	99.5	99.5	99.0	99.0	97.1	97.1
Nowabganj	100.0	98.6	98.6	97.6	97.6	95.2	95.2	92.4	92.4
Pabna	99.0	99.0	99.0	99.0	99.0	98.1	98.1	95.7	95.7
Rajshahi	100.0	100.0	100.0	100.0	100.0	99.5	99.5	99.0	99.0
Rajshahi City Corporation	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	99.0
Sirajganj	99.0	99.0	99.0	98.6	98.6	97.6	97.6	94.8	94.8
Rajshahi Division	99.7	99.5	99.5	99.3	99.3	98.5	98.5	96.8	96.8
Dinajpur	100.0	100.0	100.0	100.0	100.0	99.0	99.0	93.8	93.8
Gaibandha	100.0	100.0	100.0	98.1	98.1	95.2	95.2	87.1	87.1
Kurigram	100.0	99.5	99.5	99.5	99.5	99.0	99.0	95.7	95.7
Lalmonirhat	100.0	100.0	100.0	99.0	99.0	98.6	98.6	95.2	95.2
Nilphamari	100.0	100.0	100.0	99.0	99.0	99.0	99.0	95.7	95.7
Panchagarh	100.0	100.0	100.0	100.0	100.0	99.5	99.5	96.7	96.7
Rangpur	99.5	99.5	99.5	99.0	99.0	97.1	97.1	93.3	93.3
Rangpur City Corporation	100.0	100.0	100.0	99.5	99.5	98.6	98.6	92.4	92.4
Thakurgaon	100.0	100.0	100.0	99.5	99.5	98.6	98.6	94.8	94.8
Rangpur Division	99.9	99.9	99.9	99.3	99.3	98.3	98.3	93.9	93.9
Habiganj	98.1	98.1	98.1	98.1	98.1	95.7	95.7	91.9	91.9
Moulvi Bazar	98.6	98.6	98.6	98.1	98.1	94.8	94.8	90.0	90.0
Sunamganj	96.7	95.7	95.7	92.9	92.9	92.4	92.4	87.6	87.6
Sylhet	97.6	95.2	95.2	92.4	92.4	88.1	88.1	84.3	84.3
Sylhet City Corporation	96.7	96.7	96.7	95.7	95.7	92.4	92.4	89.0	89.0
Sylhet Division	97.5	96.9	96.9	95.4	95.4	92.7	92.7	88.6	88.6
National	99.2	99.0	99.0	98.4	98.4	97.1	97.1	93.2	93.2
Urban	99.5	99.4	99.4	98.7	98.7	97.6	97.6	92.9	92.9
Rural	99.2	99.0	99.0	98.3	98.3	97.1	97.1	93.4	93.3
Dhaka City Corporation Slum	99.0	98.1	98.1	94.8	94.8	90.5	90.5	82.9	82.9
Chittagong City Corporation Slum	97.6	97.1	97.1	93.3	93.3	89.0	89.0	76.2	76.2

Table 2: Valid Vaccination Coverage by Age of 23 Months by District and City Corporation

District/City Corporation	BCG	OPV1	Penta1	OPV2	Penta2	OPV3	Penta3	MR	FVC
Barguna	100.0	96.4	93.9	95.4	93.5	95.4	94.1	94.4	88.6
Barisal	99.5	99.5	96.1	99.5	98.1	98.6	98.1	97.1	91.7
Barisal City Corporation	100.0	94.8	92.2	93.6	91.6	87.6	90.3	85.0	82.1
Bhola	100.0	98.4	95.1	97.5	95.3	93.4	94.5	87.5	83.1
Jhalakati	100.0	96.7	89.4	94.9	93.6	89.9	92.5	86.2	79.9
Patuakhali	99.0	91.8	87.9	90.4	86.0	92.5	92.5	92.6	83.7
Perojpur	100.0	98.9	96.7	99.0	97.4	97.1	96.0	94.6	89.6
Barisal Division	99.8	96.8	93.2	95.9	93.8	93.7	94.1	91.1	85.6
Bandarban	98.6	91.4	90.3	90.6	89.5	90.7	91.2	86.5	84.8
Brahmanbaria	100.0	98.9	96.8	98.9	94.7	97.9	98.4	95.3	88.9
Chandpur	99.5	95.5	92.1	95.0	93.3	95.2	95.2	87.6	82.4
Chittagong	99.5	97.5	94.9	97.0	96.0	94.6	93.5	92.1	87.4
Chittagong City Corporation	100.0	99.4	95.7	96.9	92.5	93.3	93.9	92.9	84.7
Comilla	99.0	94.4	90.9	92.8	91.7	91.8	91.3	89.7	84.2
Comilla City Corporation	99.0	95.5	92.0	96.2	92.6	95.9	95.2	94.0	85.8
Cox's Bazar	99.0	91.0	91.0	89.7	87.9	89.7	89.7	90.7	88.7
Feni	99.5	98.9	92.8	98.9	97.7	95.3	97.7	91.3	86.3
Khagrachari	99.0	93.7	89.9	94.7	92.0	93.2	93.2	91.5	84.7
Lakshmipur	98.6	90.1	85.3	89.6	89.0	87.4	89.1	88.8	83.6
Noakhali	96.7	92.5	88.9	91.9	91.3	90.8	90.8	83.9	79.5
Rangamati	95.2	94.7	93.0	93.7	93.2	91.8	90.1	86.4	82.6
Chittagong Division	98.8	94.9	91.9	94.3	92.5	92.9	93.1	90.1	84.9
Dhaka	98.6	92.9	89.2	93.6	88.4	90.9	91.7	90.6	82.0
Dhaka North City Corporation	99.5	96.9	82.8	95.5	92.8	93.5	96.8	91.4	77.5
Dhaka South City Corporation	100.0	97.5	90.8	97.5	93.3	94.1	95.7	83.9	75.0
Faridpur	99.0	96.0	94.7	93.9	93.9	92.6	91.4	86.1	83.4
Gazipur	99.5	92.7	92.1	91.4	89.4	88.5	89.2	84.8	82.7
Gazipur City Corporation	100.0	96.7	91.8	94.6	91.0	94.5	92.4	87.1	76.1
Gopalganj	100.0	90.7	88.0	91.0	88.3	89.4	88.7	92.9	85.5
Jamalpur	99.5	98.9	94.8	98.5	96.1	95.7	94.5	88.7	81.0
Kishoreganj	99.0	92.1	89.8	92.7	92.1	90.0	90.0	93.9	90.7
Madaripur	99.5	97.7	92.2	96.6	93.5	95.0	96.2	93.5	86.0
Manikganj	99.5	96.9	94.3	98.2	96.9	97.1	97.1	88.5	85.1
Munshiganj	100.0	97.5	97.5	96.5	94.7	96.1	94.2	95.1	91.2
Mymensingh	100.0	97.4	95.8	97.4	95.9	95.5	95.5	92.7	89.5
Narayanganj	99.5	94.5	94.5	94.6	91.5	92.2	91.0	89.4	84.4
Narayanganj City Corporation	99.0	97.8	95.9	96.3	93.8	93.3	92.6	87.5	82.2
Narsingdi	97.6	95.9	93.0	95.5	94.4	88.8	89.9	77.5	74.5
Netrokona	98.6	96.0	90.0	96.1	95.5	89.7	91.5	84.2	79.4
Rajbari	100.0	97.7	97.7	97.8	94.9	98.9	98.4	91.7	88.1
Sariatpur	99.5	94.7	91.8	93.2	91.5	91.8	90.6	86.2	80.4
Sherpur	99.0	94.9	92.4	93.1	92.4	90.0	89.4	82.2	78.3
Tangail	97.6	94.0	92.7	94.8	92.9	93.3	91.4	88.9	83.7
Dhaka Division	99.3	95.7	92.6	95.2	93.1	93.0	92.8	88.5	82.9

Table 2: continued

District/City Corporation	BCG	OPV1	Penta1	OPV2	Penta2	OPV3	Penta3	MR	FVC
Bagerhat	100.0	97.4	95.9	96.9	96.4	95.0	91.4	93.5	87.7
Chuadanga	100.0	98.3	94.1	97.9	95.5	95.1	95.7	90.1	84.0
Jessore	100.0	96.3	94.2	96.8	93.6	96.4	95.8	93.7	87.6
Jhenaidah	100.0	98.0	94.4	98.0	97.4	96.0	95.5	94.7	90.0
Khulna	98.6	95.1	94.6	95.2	94.1	95.2	94.1	92.8	89.8
Khulna City Corporation	100.0	94.0	92.0	92.9	91.6	87.2	88.5	83.8	80.8
Kushtia	100.0	97.8	88.2	96.8	95.2	92.6	95.2	93.4	84.5
Magura	99.5	97.5	92.7	95.5	95.5	94.1	91.9	89.2	83.7
Meherpur	99.5	95.8	93.3	95.5	93.0	93.8	93.8	90.7	85.5
Narail	100.0	94.6	91.4	93.7	93.7	92.2	91.7	85.2	81.1
Satkhira	98.6	94.3	90.0	93.8	93.2	90.8	91.8	87.4	83.4
Khulna Division	99.7	96.3	92.8	95.7	94.5	93.5	93.2	90.4	85.3
Bogra	99.0	98.5	95.8	97.5	95.3	95.9	95.9	91.8	86.9
Joypurhat	100.0	99.0	95.9	98.5	97.0	97.0	96.5	94.5	89.3
Natore	100.0	97.2	96.1	97.8	95.5	97.3	97.3	93.0	89.5
Noagoan	100.0	97.8	91.8	97.3	95.7	94.7	96.3	94.3	88.2
Nowabganj	100.0	97.4	96.3	96.5	94.8	94.1	93.5	91.2	87.8
Pabna	99.0	95.6	92.7	96.2	93.3	96.9	96.9	94.5	88.5
Rajshahi	100.0	96.7	96.1	96.7	93.3	96.7	95.6	97.9	92.7
Rajshahi City Corporation	100.0	99.4	95.5	99.4	98.3	97.2	98.3	96.2	91.7
Sirajganj	99.0	94.6	93.5	94.1	91.9	92.6	91.4	90.1	84.8
Rajshahi Division	99.7	97.4	94.9	97.1	95.0	95.8	95.7	93.7	88.8
Dinajpur	100.0	98.9	95.7	98.9	97.9	96.9	96.9	90.0	85.7
Gaibandha	100.0	90.7	90.7	89.7	88.1	86.8	87.3	86.0	84.8
Kurigram	100.0	98.0	91.3	98.5	95.4	96.5	94.4	92.6	80.5
Lalmonirhat	100.0	97.1	94.1	95.6	93.7	95.1	94.1	92.7	86.6
Nilphamari	100.0	98.5	94.9	98.0	97.5	96.0	97.5	92.7	90.1
Panchaghagh	100.0	95.9	94.2	95.9	93.0	94.3	95.4	91.2	87.6
Rangpur	99.5	97.0	94.4	97.0	94.9	94.6	95.1	91.8	87.5
Rangpur City Corporation	100.0	98.3	93.8	97.8	96.1	96.3	96.9	87.7	81.8
Thakurgoan	100.0	95.7	92.0	95.2	92.6	94.3	94.3	90.8	84.0
Rangpur Division	99.9	96.7	93.4	96.3	94.4	94.5	94.7	90.6	85.4
Habiganj	98.1	93.5	90.1	95.2	94.6	92.8	91.0	89.0	83.0
Moulvi Bazar	98.6	92.9	89.8	93.4	92.4	89.6	89.6	85.1	80.3
Sunamganj	96.7	89.9	86.5	85.4	85.4	83.8	83.8	85.2	82.6
Sylhet	97.6	92.4	91.3	89.6	88.4	85.8	85.8	83.1	80.8
Sylhet City Corporation	96.7	89.5	88.8	89.1	87.1	87.0	87.7	86.9	84.7
Sylhet Division	97.5	91.7	89.3	90.6	89.7	87.8	87.6	85.8	82.1
National	99.2	95.8	92.6	95.2	93.4	93.3	93.2	90.1	84.7
Urban	99.5	96.5	92.2	95.6	93.3	93.4	93.8	89.2	82.7
Rural	99.2	95.6	92.7	95.2	93.4	93.3	93.1	90.4	85.3
Dhaka City Corporation Slum	99.0	95.1	89.2	89.5	89.5	85.9	86.6	79.7	73.9
Chittagong City Corporation Slum	97.6	93.9	87.5	86.8	84.7	81.3	83.5	72.8	65.6

Table 3: Crude Vaccination Coverage by Age of 12 Months by District and City Corporation

District/City Corporation	BCG	OPV1	Penta1	OPV2	Penta2	OPV3	Penta3	MR	FVC
Barguna	100.0	99.5	99.5	98.6	98.6	98.6	98.6	93.1	93.1
Barisal	99.5	99.5	99.5	99.5	99.5	99.0	99.0	96.1	96.1
Barisal City Corporation	100.0	100.0	100.0	97.6	97.6	94.3	94.3	84.3	84.3
Bhola	100.0	99.5	99.5	98.6	98.6	96.7	96.7	87.5	87.5
Jhalakati	100.0	100.0	100.0	99.5	99.5	96.5	96.5	87.6	87.5
Patuakhali	99.0	99.0	99.0	97.6	97.6	97.1	97.1	90.8	90.8
Perojpur	99.5	99.5	99.5	98.5	98.5	97.6	97.6	94.6	94.5
Barisal Division	99.7	99.7	99.7	98.6	98.6	97.1	97.1	90.6	90.6
Bandarban	98.6	98.6	98.6	96.7	96.7	95.2	95.2	84.8	84.8
Brahmanbaria	100.0	100.0	100.0	100.0	100.0	100.0	100.0	95.3	95.3
Chandpur	99.5	99.5	99.5	99.5	99.5	98.1	98.1	89.3	89.3
Chittagong	99.5	99.5	99.5	98.6	98.6	97.1	97.1	92.7	92.7
Chittagong City Corporation	100.0	100.0	100.0	98.1	98.1	97.6	97.6	86.0	85.9
Comilla	99.0	99.0	99.0	98.1	98.1	97.1	97.1	84.2	84.2
Comilla City Corporation	99.0	99.0	99.0	99.0	99.0	97.4	97.4	91.8	91.7
Cox's Bazar	99.0	99.0	99.0	97.1	97.1	97.1	97.1	91.4	91.4
Feni	99.5	99.5	99.5	99.5	99.5	99.5	99.5	92.5	92.5
Khagrachari	99.0	98.5	98.5	99.0	99.0	97.5	97.5	89.8	89.8
Lakshmipur	98.6	98.6	98.6	98.1	98.1	96.0	96.5	88.1	87.6
Noakhali	96.7	96.7	96.7	96.7	96.7	93.2	93.2	83.2	83.2
Rangamati	95.2	95.2	95.2	94.3	94.3	92.4	92.4	84.2	84.2
Chittagong Division	98.8	98.7	98.7	98.1	98.1	96.8	96.8	88.8	88.7
Dhaka	98.6	98.1	98.1	98.1	98.1	97.6	97.6	96.1	96.1
Dhaka North City Corporation	98.9	98.9	98.9	98.9	98.9	98.2	98.2	91.4	91.4
Dhaka South City Corporation	100.0	100.0	100.0	100.0	100.0	99.0	99.0	84.7	84.7
Faridpur	99.0	99.0	99.0	97.6	97.6	97.0	97.0	88.0	88.0
Gazipur	99.5	98.6	98.6	96.7	96.7	93.8	93.8	84.1	84.1
Gazipur City Corporation	100.0	99.5	99.5	98.1	98.1	96.7	96.7	82.7	82.7
Gopalganj	100.0	100.0	100.0	99.0	99.0	97.6	97.6	92.2	92.2
Jamalpur	99.5	99.5	99.5	99.0	99.0	97.5	97.5	88.7	88.7
Kishoreganj	99.0	99.0	99.0	99.0	99.0	97.6	97.6	90.2	90.7
Madaripur	99.5	99.5	99.5	99.0	99.0	98.1	98.1	89.8	89.8
Manikganj	99.5	99.5	99.5	99.5	99.5	99.0	99.0	91.9	91.9
Munshiganj	100.0	100.0	100.0	99.0	99.0	98.6	98.6	93.1	93.1
Mymensingh	100.0	100.0	100.0	99.0	99.0	97.6	97.6	90.5	90.5
Narayanganj	99.5	99.5	99.5	98.4	98.4	94.8	94.8	89.4	88.9
Narayanganj City Corporation	99.0	99.0	99.0	97.6	97.6	93.9	93.9	86.2	86.2
Narsingdi	97.6	97.6	97.6	96.7	96.7	93.3	93.3	78.0	78.0
Netrokona	98.6	97.1	97.1	96.7	96.7	92.7	92.7	83.6	83.0
Rajbari	100.0	100.0	100.0	99.5	99.5	99.5	99.5	92.9	92.9
Sariatpur	99.5	98.1	98.1	96.7	96.7	95.2	95.2	83.8	83.8
Sherpur	99.0	98.6	98.6	95.6	95.6	93.8	93.8	84.1	84.1
Tangail	97.6	97.1	97.1	96.7	96.7	95.2	95.2	90.1	90.1
Dhaka Division	99.3	99.0	99.0	98.1	98.1	96.5	96.5	88.2	88.1

Table 3: Continued

District/City Corporation	BCG	OPV1	Penta1	OPV2	Penta2	OPV3	Penta3	MR	FVC
Bagerhat	100.0	100.0	100.0	99.5	99.5	98.1	98.1	90.9	90.9
Chuadanga	100.0	99.5	99.5	99.0	99.0	98.1	98.1	94.4	94.4
Jessore	100.0	99.5	99.5	99.5	99.5	98.5	98.5	90.4	90.4
Jhenaidah	100.0	100.0	100.0	100.0	100.0	99.5	99.5	93.1	93.1
Khulna	98.6	98.6	98.6	98.1	98.1	98.1	98.1	94.0	94.0
Khulna City Corporation	100.0	100.0	100.0	97.6	97.6	93.3	93.3	81.6	81.6
Kushtia	100.0	100.0	100.0	99.5	99.5	99.5	99.5	91.7	91.7
Magura	99.5	98.6	98.6	97.1	97.1	95.1	95.1	88.1	88.6
Meherpur	99.5	99.5	99.5	98.6	98.6	98.1	98.1	94.6	94.6
Narail	100.0	100.0	100.0	98.0	98.0	96.1	96.1	82.9	82.9
Satkhira	98.0	98.0	98.0	97.6	97.6	95.6	95.6	87.4	87.4
Khulna Division	99.6	99.4	99.4	98.6	98.6	97.3	97.3	89.9	89.9
Bogra	99.0	99.0	99.0	98.6	98.6	97.6	97.6	94.6	94.6
Joypurhat	100.0	100.0	100.0	100.0	100.0	99.5	99.5	97.5	97.5
Natore	100.0	100.0	100.0	99.4	99.4	99.0	99.0	94.7	94.7
Noagoan	100.0	100.0	100.0	99.5	99.5	99.0	99.0	93.8	93.8
Nowabganj	100.0	98.6	98.6	97.1	97.1	95.2	95.2	90.6	90.6
Pabna	99.0	99.0	99.0	99.0	99.0	97.5	97.5	93.3	93.3
Rajshahi	100.0	100.0	100.0	100.0	100.0	99.5	99.5	96.8	96.7
Rajshahi City Corporation	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.4	97.4
Sirajganj	99.0	99.0	99.0	98.6	98.6	97.6	97.6	94.8	94.8
Rajshahi Division	99.7	99.5	99.5	99.1	99.1	98.3	98.3	94.8	94.8
Dinajpur	100.0	100.0	100.0	99.5	99.5	98.0	98.0	91.1	91.1
Gaibandha	100.0	100.0	100.0	98.1	98.1	95.2	95.2	83.1	83.1
Kurigram	100.0	99.5	99.5	99.5	99.5	99.0	99.0	92.1	92.1
Lalmonirhat	100.0	100.0	100.0	99.0	99.0	98.6	98.6	89.2	89.7
Nilphamari	100.0	100.0	100.0	99.0	99.0	99.0	99.0	93.2	93.2
Panchagharch	100.0	100.0	100.0	100.0	100.0	99.5	99.5	91.8	91.8
Rangpur	99.5	99.5	99.5	99.0	99.0	96.6	96.6	89.7	89.6
Rangpur City Corporation	100.0	100.0	100.0	99.5	99.5	98.0	98.0	84.7	84.7
Thakurgoan	100.0	100.0	100.0	99.5	99.5	98.6	98.6	91.4	91.4
Rangpur Division	99.9	99.9	99.9	99.3	99.3	98.1	98.1	89.6	89.7
Habiganj	98.1	98.1	98.1	98.1	98.1	94.5	94.5	88.4	89.5
Moulvi Bazar	98.1	98.1	98.1	97.6	98.1	93.7	94.8	85.1	84.1
Sunamganj	96.7	95.7	95.1	92.3	92.3	91.2	91.2	84.6	85.1
Sylhet	97.6	95.2	95.2	92.4	92.4	88.1	88.1	82.0	82.0
Sylhet City Corporation	96.7	96.7	96.7	95.7	95.7	91.0	91.0	84.0	84.0
Sylhet Division	97.4	96.7	96.6	95.2	95.3	91.7	92.0	84.8	84.9
National	99.2	99.0	99.0	98.3	98.3	96.8	96.8	89.7	89.7
Urban	99.3	99.3	99.3	98.6	98.6	97.2	97.2	88.3	88.3
Rural	99.2	99.0	98.9	98.2	98.2	96.8	96.8	90.1	90.1
Dhaka City Corporation Slum	99.0	98.1	98.1	94.8	94.8	89.7	89.7	79.7	79.6
Chittagong City Corporation Slum	97.6	97.1	97.1	93.3	93.3	87.9	87.9	71.7	71.5

Table 4: Valid Vaccination Coverage by Age of 12 Months by District and City Corporation

District/City Corporation	BCG	OPV1	Penta1	OPV2	Penta2	OPV3	Penta3	MR	FVC
Barguna	100.0	96.4	93.9	95.4	93.5	94.8	94.1	91.8	86.6
Barisal	99.5	99.5	96.1	99.5	98.1	98.6	98.1	94.1	88.8
Barisal City Corporation	100.0	94.8	92.2	93.6	91.6	87.6	90.3	80.8	77.9
Bhola	100.0	98.4	95.1	97.5	95.3	93.4	94.5	83.1	78.7
Jhalakati	100.0	96.7	89.4	94.3	93.6	88.6	91.9	81.4	76.4
Patuakhali	99.0	91.8	87.9	90.4	86.0	92.5	92.5	89.6	80.7
Perojpur	99.5	98.4	96.2	98.5	96.8	97.1	96.0	92.9	87.9
Barisal Division	99.7	96.7	93.1	95.7	93.7	93.5	94.0	87.8	82.6
Bandarban	98.6	91.4	90.3	90.6	89.5	90.1	90.7	81.3	79.6
Brahmanbaria	100.0	98.9	96.8	98.9	94.7	97.9	98.4	92.1	85.6
Chandpur	99.5	95.5	92.1	95.0	93.3	95.2	95.2	86.4	81.2
Chittagong	99.5	97.5	94.9	97.0	96.0	94.0	93.5	90.0	85.8
Chittagong City Corporation	100.0	99.4	95.7	96.9	92.5	93.3	93.9	84.1	75.8
Comilla	99.0	94.4	90.9	92.8	91.7	91.3	91.3	83.0	78.0
Comilla City Corporation	99.0	95.5	92.0	96.2	92.6	95.2	94.5	89.5	81.3
Cox's Bazar	99.0	91.0	91.0	89.7	87.9	89.7	89.7	87.3	85.3
Feni	99.5	98.9	92.8	98.9	97.7	95.3	97.7	87.6	82.6
Khagrachari	99.0	93.7	89.9	94.7	92.0	92.1	92.6	86.9	80.7
Lakshmipur	98.6	90.1	85.3	89.6	89.0	86.1	88.5	84.0	79.5
Noakhali	96.7	92.5	88.9	91.9	91.3	90.2	90.2	81.4	77.1
Rangamati	95.2	94.7	93.0	93.7	93.2	91.3	90.1	82.6	79.2
Chittagong Division	98.8	94.9	91.9	94.3	92.5	92.5	92.8	85.9	81.0
Dhaka	98.6	92.9	89.2	93.6	88.4	90.2	91.7	89.0	81.2
Dhaka North City Corporation	98.9	96.9	82.8	95.5	92.8	89.4	95.5	85.2	74.1
Dhaka South City Corporation	100.0	97.5	90.8	97.5	93.3	92.4	95.7	81.5	74.2
Faridpur	99.0	96.0	94.7	93.9	93.9	92.0	90.8	82.2	79.5
Gazipur	99.5	92.7	92.1	91.4	89.4	87.9	89.2	79.9	78.4
Gazipur City Corporation	100.0	96.7	91.8	94.6	91.0	93.1	92.4	79.8	70.2
Gopalganj	100.0	90.7	88.0	91.0	88.3	88.0	88.7	88.5	83.3
Jamalpur	99.5	98.9	94.8	98.5	96.1	95.1	94.0	84.6	76.9
Kishoreganj	99.0	92.1	89.8	92.7	92.1	90.0	90.0	88.3	85.8
Madaripur	99.5	97.7	92.2	96.6	93.5	94.4	96.2	88.5	81.7
Manikganj	99.5	96.9	94.3	98.2	96.9	97.1	97.1	85.2	81.7
Munshiganj	100.0	97.5	97.5	96.5	94.7	96.1	94.2	90.6	86.6
Mymensingh	100.0	97.4	95.8	96.9	95.3	94.4	95.0	88.9	86.3
Narayanganj	99.5	94.5	94.5	94.0	90.8	91.0	89.7	85.4	80.4
Narayanganj City Corporation	99.0	97.8	95.9	96.3	93.8	92.0	91.4	82.2	77.0
Narsingdi	97.6	95.9	93.0	95.5	94.4	88.8	89.9	74.5	71.6
Netrokona	98.6	96.0	90.0	96.1	95.5	88.5	90.9	80.6	75.8
Rajbari	100.0	97.7	97.7	97.8	94.9	98.9	98.4	89.3	85.7
Sariatpur	99.5	94.7	91.8	93.2	91.5	90.6	90.6	81.0	76.3
Sherpur	99.0	94.9	92.4	93.1	92.4	90.0	89.4	77.7	73.8
Tangail	97.6	94.0	92.7	94.8	92.9	93.3	91.4	87.6	82.4
Dhaka Division	99.3	95.7	92.6	95.2	93.1	92.1	92.5	84.4	79.4

Table 4: Continued

District/City Corporation	BCG	OPV1	Penta1	OPV2	Penta2	OPV3	Penta3	MR	FVC
Bagerhat	100.0	97.4	95.9	96.9	96.4	95.0	91.4	88.3	82.4
Chuadanga	100.0	98.3	94.1	97.9	95.5	95.1	95.7	88.3	82.2
Jessore	100.0	96.3	94.2	96.3	93.6	95.8	95.3	89.3	83.7
Jhenaidah	100.0	98.0	94.4	98.0	97.4	96.0	95.5	92.1	87.4
Khulna	98.6	95.1	94.6	95.2	94.1	95.2	94.1	91.6	88.6
Khulna City Corporation	100.0	94.0	92.0	92.9	91.6	87.2	88.5	80.1	77.2
Kushtia	100.0	97.8	88.2	96.8	95.2	92.6	95.2	88.4	79.5
Magura	99.5	97.5	92.7	95.0	95.0	93.0	90.9	84.9	79.9
Meherpur	99.5	95.8	93.3	95.5	93.0	93.8	93.8	90.1	84.9
Narail	100.0	94.6	91.4	93.1	93.1	91.1	91.1	80.0	76.5
Satkhira	98.0	93.7	89.4	93.2	92.7	90.2	91.3	82.9	78.9
Khulna Division	99.6	96.3	92.7	95.5	94.4	93.2	93.0	86.9	81.9
Bogra	99.0	98.5	95.8	97.5	95.3	95.4	95.4	90.2	85.3
Joypurhat	100.0	99.0	95.9	98.5	97.0	97.0	96.5	93.4	88.3
Natore	100.0	97.2	96.1	97.2	94.9	96.7	96.7	89.5	86.1
Noagoan	100.0	97.8	91.8	97.3	95.7	94.1	96.3	91.0	85.4
Nowabganj	100.0	97.4	96.3	95.9	94.2	93.5	93.5	89.5	86.6
Pabna	99.0	95.6	92.7	96.2	93.3	96.3	96.3	92.1	86.1
Rajshahi	100.0	96.7	96.1	96.7	93.3	96.2	95.6	95.6	91.0
Rajshahi City Corporation	100.0	99.4	95.5	99.4	98.3	97.2	98.3	94.5	90.0
Sirajganj	99.0	94.6	93.5	94.1	91.9	92.6	91.4	90.1	84.8
Rajshahi Division	99.7	97.4	94.9	97.0	94.9	95.4	95.6	91.8	87.0
Dinajpur	100.0	98.9	95.7	98.4	97.3	95.8	95.8	87.3	83.0
Gaibandha	100.0	90.7	90.7	89.7	88.1	86.8	87.3	81.9	80.8
Kurigram	100.0	98.0	91.3	98.5	95.4	96.0	94.4	88.9	77.4
Lalmonirhat	100.0	97.1	94.1	95.6	93.7	95.1	94.1	86.7	81.1
Nilphamari	100.0	98.5	94.9	98.0	97.5	96.0	97.5	90.1	87.5
Panchagharch	100.0	95.9	94.2	95.9	93.0	94.3	95.4	86.4	82.8
Rangpur	99.5	97.0	94.4	97.0	94.9	94.1	95.1	88.1	84.4
Rangpur City Corporation	100.0	98.3	93.8	97.8	96.1	95.1	96.3	80.0	74.7
Thakurgoan	100.0	95.7	92.0	95.2	92.6	93.2	94.3	87.4	81.8
Rangpur Division	99.9	96.7	93.4	96.3	94.3	94.1	94.5	86.4	81.5
Habiganj	98.1	93.5	90.1	95.2	94.6	91.6	90.5	85.4	81.2
Moulvi Bazar	98.1	92.4	89.3	92.9	92.4	88.5	89.6	80.3	74.9
Sunamganj	96.7	89.3	86.0	84.8	84.8	82.6	82.6	82.1	79.4
Sylhet	97.6	92.4	91.3	89.6	88.4	85.8	85.8	80.8	78.5
Sylhet City Corporation	96.7	89.5	88.8	89.1	87.1	86.3	87.0	81.9	79.7
Sylhet Division	97.4	91.5	89.1	90.4	89.6	87.0	87.1	82.1	78.6
National	99.2	95.8	92.6	95.1	93.3	92.7	93.0	86.6	81.6
Urban	99.3	96.4	92.1	95.5	93.3	92.3	93.5	84.7	78.8
Rural	99.2	95.6	92.7	95.1	93.3	92.9	92.9	87.1	82.3
Dhaka City Corporation Slum	99.0	95.1	89.2	89.5	89.5	84.3	85.9	76.5	71.5
Chittagong City Corporation Slum	97.6	93.9	87.5	86.8	84.7	79.0	82.4	68.3	62.1

Table 4a: Valid Vaccination Coverage by Age of 12 Months by Districts and City Corporations

(Fully Vaccinated Arranged in Ascending Order by All Districts)

District/City Corporation	BCG	OPV1	Penta1	OPV2	Penta2	OPV3	Penta3	MR	FVC
Chittagong City Corporation Slum	97.6	93.9	87.5	86.8	84.7	79	82.4	68.3	62.1
Gazipur City Corporation	100	96.7	91.8	94.6	91	93.1	92.4	79.8	70.2
Dhaka City Corporation Slum	99	95.1	89.2	89.5	89.5	84.3	85.9	76.5	71.5
Narsingdzi	97.6	95.9	93	95.5	94.4	88.8	89.9	74.5	71.6
Sherpur	99	94.9	92.4	93.1	92.4	90	89.4	77.7	73.8
Dhaka North City Corporation	98.9	96.9	82.8	95.5	92.8	89.4	95.5	85.2	74.1
Dhaka South City Corporation	100	97.5	90.8	97.5	93.3	92.4	95.7	81.5	74.2
Rangpur City Corporation	100	98.3	93.8	97.8	96.1	95.1	96.3	80	74.7
Moulvi Bazar	98.1	92.4	89.3	92.9	92.4	88.5	89.6	80.3	74.9
Chittagong City Corporation	100	99.4	95.7	96.9	92.5	93.3	93.9	84.1	75.8
Netrokona	98.6	96	90	96.1	95.5	88.5	90.9	80.6	75.8
Sariatpur	99.5	94.7	91.8	93.2	91.5	90.6	90.6	81	76.3
Jhalakati	100	96.7	89.4	94.3	93.6	88.6	91.9	81.4	76.4
Narail	100	94.6	91.4	93.1	93.1	91.1	91.1	80	76.5
Jamalpur	99.5	98.9	94.8	98.5	96.1	95.1	94	84.6	76.9
Narayanganj City Corporation	99	97.8	95.9	96.3	93.8	92	91.4	82.2	77
Noakhali	96.7	92.5	88.9	91.9	91.3	90.2	90.2	81.4	77.1
Khulna City Corporation	100	94	92	92.9	91.6	87.2	88.5	80.1	77.2
Kurigram	100	98	91.3	98.5	95.4	96	94.4	88.9	77.4
Barisal City Corporation	100	94.8	92.2	93.6	91.6	87.6	90.3	80.8	77.9
Comilla	99	94.4	90.9	92.8	91.7	91.3	91.3	83	78
Gazipur	99.5	92.7	92.1	91.4	89.4	87.9	89.2	79.9	78.4
Sylhet	97.6	92.4	91.3	89.6	88.4	85.8	85.8	80.8	78.5
Bhola	100	98.4	95.1	97.5	95.3	93.4	94.5	83.1	78.7
Satkhira	98	93.7	89.4	93.2	92.7	90.2	91.3	82.9	78.9
Rangamati	95.2	94.7	93	93.7	93.2	91.3	90.1	82.6	79.2
Sunamganj	96.7	89.3	86	84.8	84.8	82.6	82.6	82.1	79.4
Lakshmipur	98.6	90.1	85.3	89.6	89	86.1	88.5	84	79.5
Faridpur	99	96	94.7	93.9	93.9	92	90.8	82.2	79.5
Kushtia	100	97.8	88.2	96.8	95.2	92.6	95.2	88.4	79.5
Bandarban	98.6	91.4	90.3	90.6	89.5	90.1	90.7	81.3	79.6
Sylhet City Corporation	96.7	89.5	88.8	89.1	87.1	86.3	87	81.9	79.7
Magura	99.5	97.5	92.7	95	95	93	90.9	84.9	79.9
Narayanganj	99.5	94.5	94.5	94	90.8	91	89.7	85.4	80.4
Patuakhali	99	91.8	87.9	90.4	86	92.5	92.5	89.6	80.7
Khagrachari	99	93.7	89.9	94.7	92	92.1	92.6	86.9	80.7
Gaibandha	100	90.7	90.7	89.7	88.1	86.8	87.3	81.9	80.8
Lalmonirhat	100	97.1	94.1	95.6	93.7	95.1	94.1	86.7	81.1
Chandpur	99.5	95.5	92.1	95	93.3	95.2	95.2	86.4	81.2

Table 4a: Continued

District/City Corporation	BCG	OPV1	Penta1	OPV2	Penta2	OPV3	Penta3	MR	FVC
Dhaka	98.6	92.9	89.2	93.6	88.4	90.2	91.7	89	81.2
Habiganj	98.1	93.5	90.1	95.2	94.6	91.6	90.5	85.4	81.2
Comilla City Corporation	99	95.5	92	96.2	92.6	95.2	94.5	89.5	81.3
Madaripur	99.5	97.7	92.2	96.6	93.5	94.4	96.2	88.5	81.7
Manikganj	99.5	96.9	94.3	98.2	96.9	97.1	97.1	85.2	81.7
Thakurgaon	100	95.7	92	95.2	92.6	93.2	94.3	87.4	81.8
Chuadanga	100	98.3	94.1	97.9	95.5	95.1	95.7	88.3	82.2
Tangail	97.6	94	92.7	94.8	92.9	93.3	91.4	87.6	82.4
Bagerhat	100	97.4	95.9	96.9	96.4	95	91.4	88.3	82.4
Feni	99.5	98.9	92.8	98.9	97.7	95.3	97.7	87.6	82.6
Panchagharch	100	95.9	94.2	95.9	93	94.3	95.4	86.4	82.8
Dinajpur	100	98.9	95.7	98.4	97.3	95.8	95.8	87.3	83
Gopalganj	100	90.7	88	91	88.3	88	88.7	88.5	83.3
Jessore	100	96.3	94.2	96.3	93.6	95.8	95.3	89.3	83.7
Rangpur	99.5	97	94.4	97	94.9	94.1	95.1	88.1	84.4
Sirajganj	99	94.6	93.5	94.1	91.9	92.6	91.4	90.1	84.8
Meherpur	99.5	95.8	93.3	95.5	93	93.8	93.8	90.1	84.9
Cox's Bazar	99	91	91	89.7	87.9	89.7	89.7	87.3	85.3
Bogra	99	98.5	95.8	97.5	95.3	95.4	95.4	90.2	85.3
Noagoan	100	97.8	91.8	97.3	95.7	94.1	96.3	91	85.4
Brahmanbaria	100	98.9	96.8	98.9	94.7	97.9	98.4	92.1	85.6
Rajbari	100	97.7	97.7	97.8	94.9	98.9	98.4	89.3	85.7
Chittagong	99.5	97.5	94.9	97	96	94	93.5	90	85.8
Kishoreganj	99	92.1	89.8	92.7	92.1	90	90	88.3	85.8
Natore	100	97.2	96.1	97.2	94.9	96.7	96.7	89.5	86.1
Pabna	99	95.6	92.7	96.2	93.3	96.3	96.3	92.1	86.1
Mymensingh	100	97.4	95.8	96.9	95.3	94.4	95	88.9	86.3
Barguna	100	96.4	93.9	95.4	93.5	94.8	94.1	91.8	86.6
Munshiganj	100	97.5	97.5	96.5	94.7	96.1	94.2	90.6	86.6
Nowabganj	100	97.4	96.3	95.9	94.2	93.5	93.5	89.5	86.6
Jhenaidah	100	98	94.4	98	97.4	96	95.5	92.1	87.4
Nilphamari	100	98.5	94.9	98	97.5	96	97.5	90.1	87.5
Perojpur	99.5	98.4	96.2	98.5	96.8	97.1	96	92.9	87.9
Joypurhat	100	99	95.9	98.5	97	97	96.5	93.4	88.3
Khulna	98.6	95.1	94.6	95.2	94.1	95.2	94.1	91.6	88.6
Barisal	99.5	99.5	96.1	99.5	98.1	98.6	98.1	94.1	88.8
Rajshahi City Corporation	100	99.4	95.5	99.4	98.3	97.2	98.3	94.5	90
Rajshahi	100	96.7	96.1	96.7	93.3	96.2	95.6	95.6	91
National	99.2	95.8	92.6	95.1	93.3	92.7	93	86.6	81.6
Urban	99.3	96.4	92.1	95.5	93.3	92.3	93.5	84.7	78.8
Rural	99.2	95.6	92.7	95.1	93.3	92.9	92.9	87.1	82.3

Table 4b: Valid Vaccination Coverage by Age of 12 Months by District and City Corporation

(Fully Vaccinated Arranged in Ascending Order by District and City Corporation and by Division)

District/City Corporation	BCG	OPV1	Penta1	OPV2	Penta2	OPV3	Penta3	MR	FVC
Jhalakati	100	96.7	89.4	94.3	93.6	88.6	91.9	81.4	76.4
Barisal City Corporation	100	94.8	92.2	93.6	91.6	87.6	90.3	80.8	77.9
Bhola	100	98.4	95.1	97.5	95.3	93.4	94.5	83.1	78.7
Patuakhali	99	91.8	87.9	90.4	86	92.5	92.5	89.6	80.7
Barguna	100	96.4	93.9	95.4	93.5	94.8	94.1	91.8	86.6
Perojpur	99.5	98.4	96.2	98.5	96.8	97.1	96	92.9	87.9
Barisal	99.5	99.5	96.1	99.5	98.1	98.6	98.1	94.1	88.8
Barisal Division	99.7	96.7	93.1	95.7	93.7	93.5	94	87.8	82.6
Chittagong City Corporation Slum	97.6	93.9	87.5	86.8	84.7	79	82.4	68.3	62.1
Chittagong City Corporation	100	99.4	95.7	96.9	92.5	93.3	93.9	84.1	75.8
Noakhali	96.7	92.5	88.9	91.9	91.3	90.2	90.2	81.4	77.1
Comilla	99	94.4	90.9	92.8	91.7	91.3	91.3	83	78
Rangamati	95.2	94.7	93	93.7	93.2	91.3	90.1	82.6	79.2
Lakshmipur	98.6	90.1	85.3	89.6	89	86.1	88.5	84	79.5
Bandarban	98.6	91.4	90.3	90.6	89.5	90.1	90.7	81.3	79.6
Khagrachari	99	93.7	89.9	94.7	92	92.1	92.6	86.9	80.7
Chandpur	99.5	95.5	92.1	95	93.3	95.2	95.2	86.4	81.2
Comilla City Corporation	99	95.5	92	96.2	92.6	95.2	94.5	89.5	81.3
Feni	99.5	98.9	92.8	98.9	97.7	95.3	97.7	87.6	82.6
Cox's Bazar	99	91	91	89.7	87.9	89.7	89.7	87.3	85.3
Brahmanbaria	100	98.9	96.8	98.9	94.7	97.9	98.4	92.1	85.6
Chittagong	99.5	97.5	94.9	97	96	94	93.5	90	85.8
Chittagong Division	98.8	94.9	91.9	94.3	92.5	92.5	92.8	85.9	81
Gazipur City Corporation	100	96.7	91.8	94.6	91	93.1	92.4	79.8	70.2
Dhaka City Corporation Slum	99	95.1	89.2	89.5	89.5	84.3	85.9	76.5	71.5
Narsingdi	97.6	95.9	93	95.5	94.4	88.8	89.9	74.5	71.6
Sherpur	99	94.9	92.4	93.1	92.4	90	89.4	77.7	73.8
Dhaka North City Corporation	98.9	96.9	82.8	95.5	92.8	89.4	95.5	85.2	74.1
Dhaka South City Corporation	100	97.5	90.8	97.5	93.3	92.4	95.7	81.5	74.2
Netrokona	98.6	96	90	96.1	95.5	88.5	90.9	80.6	75.8
Sariatpur	99.5	94.7	91.8	93.2	91.5	90.6	90.6	81	76.3
Jamalpur	99.5	98.9	94.8	98.5	96.1	95.1	94	84.6	76.9
Narayanganj City Corporation	99	97.8	95.9	96.3	93.8	92	91.4	82.2	77
Gazipur	99.5	92.7	92.1	91.4	89.4	87.9	89.2	79.9	78.4
Faridpur	99	96	94.7	93.9	93.9	92	90.8	82.2	79.5
Narayanganj	99.5	94.5	94.5	94	90.8	91	89.7	85.4	80.4
Dhaka	98.6	92.9	89.2	93.6	88.4	90.2	91.7	89	81.2
Madaripur	99.5	97.7	92.2	96.6	93.5	94.4	96.2	88.5	81.7
Manikganj	99.5	96.9	94.3	98.2	96.9	97.1	97.1	85.2	81.7
Tangail	97.6	94	92.7	94.8	92.9	93.3	91.4	87.6	82.4
Gopalganj	100	90.7	88	91	88.3	88	88.7	88.5	83.3
Rajbari	100	97.7	97.7	97.8	94.9	98.9	98.4	89.3	85.7
Kishoreganj	99	92.1	89.8	92.7	92.1	90	90	88.3	85.8
Mymensingh	100	97.4	95.8	96.9	95.3	94.4	95	88.9	86.3
Munshiganj	100	97.5	97.5	96.5	94.7	96.1	94.2	90.6	86.6
Dhaka Division	99.3	95.7	92.6	95.2	93.1	92.1	92.5	84.4	79.4

Table 4b: Continued

District/City Corporation	BCG	OPV1	Penta1	OPV2	Penta2	OPV3	Penta3	MR	FVC
Narail	100	94.6	91.4	93.1	93.1	91.1	91.1	80	76.5
Khulna City Corporation	100	94	92	92.9	91.6	87.2	88.5	80.1	77.2
Satkhira	98	93.7	89.4	93.2	92.7	90.2	91.3	82.9	78.9
Kushtia	100	97.8	88.2	96.8	95.2	92.6	95.2	88.4	79.5
Magura	99.5	97.5	92.7	95	95	93	90.9	84.9	79.9
Chuadanga	100	98.3	94.1	97.9	95.5	95.1	95.7	88.3	82.2
Bagerhat	100	97.4	95.9	96.9	96.4	95	91.4	88.3	82.4
Jessore	100	96.3	94.2	96.3	93.6	95.8	95.3	89.3	83.7
Meherpur	99.5	95.8	93.3	95.5	93	93.8	93.8	90.1	84.9
Jhenaidah	100	98	94.4	98	97.4	96	95.5	92.1	87.4
Khulna	98.6	95.1	94.6	95.2	94.1	95.2	94.1	91.6	88.6
Khulna Division	99.6	96.3	92.7	95.5	94.4	93.2	93	86.9	81.9
Sirajganj	99	94.6	93.5	94.1	91.9	92.6	91.4	90.1	84.8
Bogra	99	98.5	95.8	97.5	95.3	95.4	95.4	90.2	85.3
Noagoan	100	97.8	91.8	97.3	95.7	94.1	96.3	91	85.4
Natore	100	97.2	96.1	97.2	94.9	96.7	96.7	89.5	86.1
Pabna	99	95.6	92.7	96.2	93.3	96.3	96.3	92.1	86.1
Nowabganj	100	97.4	96.3	95.9	94.2	93.5	93.5	89.5	86.6
Joypurhat	100	99	95.9	98.5	97	97	96.5	93.4	88.3
Rajshahi City Corporation	100	99.4	95.5	99.4	98.3	97.2	98.3	94.5	90
Rajshahi	100	96.7	96.1	96.7	93.3	96.2	95.6	95.6	91
Rajshahi Division	99.7	97.4	94.9	97	94.9	95.4	95.6	91.8	87
Rangpur City Corporation	100	98.3	93.8	97.8	96.1	95.1	96.3	80	74.7
Kurigram	100	98	91.3	98.5	95.4	96	94.4	88.9	77.4
Gaibandha	100	90.7	90.7	89.7	88.1	86.8	87.3	81.9	80.8
Lalmonirhat	100	97.1	94.1	95.6	93.7	95.1	94.1	86.7	81.1
Thakurgoan	100	95.7	92	95.2	92.6	93.2	94.3	87.4	81.8
Panchagharch	100	95.9	94.2	95.9	93	94.3	95.4	86.4	82.8
Dinajpur	100	98.9	95.7	98.4	97.3	95.8	95.8	87.3	83
Rangpur	99.5	97	94.4	97	94.9	94.1	95.1	88.1	84.4
Nilphamari	100	98.5	94.9	98	97.5	96	97.5	90.1	87.5
Rangpur Division	99.9	96.7	93.4	96.3	94.3	94.1	94.5	86.4	81.5
Moulvi Bazar	98.1	92.4	89.3	92.9	92.4	88.5	89.6	80.3	74.9
Sylhet	97.6	92.4	91.3	89.6	88.4	85.8	85.8	80.8	78.5
Sunamganj	96.7	89.3	86	84.8	84.8	82.6	82.6	82.1	79.4
Sylhet City Corporation	96.7	89.5	88.8	89.1	87.1	86.3	87	81.9	79.7
Habiganj	98.1	93.5	90.1	95.2	94.6	91.6	90.5	85.4	81.2
Sylhet Division	97.4	91.5	89.1	90.4	89.6	87	87.1	82.1	78.6
National	99.2	95.8	92.6	95.1	93.3	92.7	93	86.6	81.6
Urban	99.3	96.4	92.1	95.5	93.3	92.3	93.5	84.7	78.8
Rural	99.2	95.6	92.7	95.1	93.3	92.9	92.9	87.1	82.3

Table 5: Vaccination Drop-out Rate for Penta1-Penta3 and Penta1-MR by Age of 23 Months by District and City Corporation

District/City Corporation	Drop-out Rate of Penta1-Penta3	Drop-out Rate of Penta1-MR
Barguna	1	3.8
Barisal	0.5	0.5
Barisal City Corporation	5.7	11.4
Bhola	2.9	7.7
Jhalakati	2.9	7.6
Patuakhali	1.9	5.3
Perojpur	2.4	3.8
Barisal Division	2.5	5.7
Bandarban	2.9	8.7
Brahmanbaria	0	1.4
Chandpur	1.4	9.1
Chittagong	2.4	4.8
Chittagong City Corporation	2.4	5.2
Comilla	1.9	8.2
Comilla City Corporation	1	2.9
Cox's Bazar	1.9	4.3
Feni	0	3.3
Khagrachari	1	4.8
Lakshmipur	1.4	5.8
Noakhali	3	11.3
Rangamati	3	7.5
Chittagong Division	1.7	5.9
Dhaka	0.5	0.5
Dhaka North City Corporation	0	1.9
Dhaka South City Corporation	1	12.9
Faridpur	1.4	7.2
Gazipur	4.8	9.7
Gazipur City Corporation	2.9	9.6
Gopalganj	2.4	3.3
Jamalpur	1.4	6.7
Kishoreganj	1.4	3.4
Madaripur	1.4	4.8
Manikganj	0.5	4.3
Munshiganj	1.4	2.4
Mymensingh	1.9	5.7
Narayanganj	2.9	6.2
Narayanganj City Corporation	3.8	7.7
Narsingdzi	4.4	17.1
Netrokona	3.9	10.3
Rajbari	0.5	4.8
Sariatpur	2.9	9.2
Sherpur	4.8	10.1
Tangail	2	5.9
Dhaka Division	2.2	6.8

Table 5: Continued

District/City Corporation	Drop-out Rate of Penta1-Penta3	Drop-out Rate of Penta1-MR
Bagerhat	1.9	3.8
Chuadanga	1.4	3.3
Jessore	0.5	4.8
Jhenaidah	0.5	4.3
Khulna	0.5	3.4
Khulna City Corporation	6.7	14.8
Kushtia	0.5	3.3
Magura	2.4	6.3
Meherpur	1.4	4.3
Narail	3.3	11.9
Satkhira	2.4	6.8
Khulna Division	2.0	6.1
Bogra	1	2.9
Joypurhat	0.5	1.4
Natore	0.5	1.9
Noagoan	1	2.9
Nowabganj	3.4	6.3
Pabna	1	3.4
Rajshahi	0.5	1
Rajshahi City Corporation	0	1
Sirajganj	1.4	4.3
Rajshahi Division	1.0	2.8
Dinajpur	1	6.2
Gaibandha	4.8	12.9
Kurigram	0.5	3.8
Salmonirhat	1.4	4.8
Nilphamari	1	4.3
Panchagarh	0.5	3.3
Rangpur	2.4	6.2
Rangpur City Corporation	1.4	7.6
Thakurgoan	1.4	5.2
Rangpur Division	1.6	6.0
Habiganj	2.4	6.3
Moulvi Bazar	3.9	8.7
Sunamganj	3.5	8.5
Sylhet	7.5	11.5
Sylhet City Corporation	4.4	7.9
Sylhet Division	4.3	8.6
National	1.9	5.9
Urban	1.8	6.5
Rural	1.9	5.7
Dhaka City Corporation Slum	7.8	15.5
Chittagong City Corporation Slum	8.3	21.6

Table 6: Incidence of Invalid Penta 1, Penta 2, Penta 3, MR Doses by Age of 12 Months by District and City Corporation

District/City Corporation	Invalid Penta1	Invalid Penta2	Invalid Penta3	Invalid MR
Barguna	2.5	4.5	6.5	1.4
Barisal	3.4	4.9	5.9	2
Barisal City Corporation	2.6	5.4	6.4	4.2
Bhola	3.3	5.6	7.4	5
Jhalakati	7.2	9.3	9.6	7.1
Patuakhali	6.2	10.8	11.2	1.3
Perojpur	2.2	3.9	5.1	1.7
Barisal Division	3.9	6.3	7.4	3.1
Bandarban	1.7	3.4	3.5	4.1
Brahmanbaria	2.1	6.4	7.5	3.4
Chandpur	3.4	5.7	5.9	3.2
Chittagong	2.6	3.7	5.9	2.8
Chittagong City Corporation	4.3	8.9	10.2	2.2
Comilla	4.1	6	6.1	1.4
Comilla City Corporation	3.6	7.9	8.1	2.4
Cox's Bazar	0.6	2.5	3.2	4.4
Feni	6.1	7.3	7.9	5.3
Khagrachari	3.8	6.6	7.9	3.1
Lakshmipur	5.5	5.6	7.1	4.6
Noakhali	3.7	5.6	5.8	2.2
Rangamati	1.8	2.4	4.2	2
Chittagong Division	3.3	5.5	6.4	3.2
Dhaka	3.8	9.9	11.5	7.3
Dhaka North City Corporation	14.9	17.6	18.5	6.8
Dhaka South City Corporation	6.7	10.9	11.8	3.8
Faridpur	1.2	1.9	5.1	6.6
Gazipur	0.7	3.4	3.5	5
Gazipur City Corporation	5.7	9.4	11.2	3.5
Gopalganj	3.3	6.1	8.5	4
Jamalpur	4.2	6.5	9.7	4.7
Kishoreganj	2.3	2.9	4.8	2.1
Madaripur	5.6	8.7	8.8	1.4
Manikganj	3.3	4	5.4	7.3
Munshiganj	0	1.9	3.8	2.8
Mymensingh	1.6	3.2	3.2	1.8
Narayanganj	0.6	3.8	6	4.4
Narayanganj City Corporation	1.9	4.6	6.9	4.6
Narsinghdi	3	4.2	6.8	4.5
Netrokona	6.1	6.8	8.4	3.6
Rajbari	0.6	3.5	3.5	3.8
Sariatpur	2.9	4.7	7.9	3.4
Sherpur	3.1	3.3	6.1	7.6
Tangail	1.3	3.3	6	2.9
Dhaka Division	3.4	5.6	7.3	4.3

Table 6: Continued

District/City Corporation	Invalid Penta1	Invalid Penta2	Invalid Penta3	Invalid MR
Bagerhat	1.6	2.1	6.8	2.9
Chuadanga	4.2	6.6	8.6	6.5
Jessore	2.2	6	6	1.2
Jhenaidah	3.6	4.1	5.6	1.1
Khulna	0.6	1.8	2.9	2.5
Khulna City Corporation	2.7	3.4	3.7	1.8
Kushtia	9.7	11.4	13	3.6
Magura	4.3	4.4	6.2	3.7
Meherpur	2.5	5	5.7	4.8
Narail	3.2	3.3	4.6	3.5
Satkhira	4.4	5	6.8	5.1
Khulna Division	3.6	4.8	6.4	3.3
Bogra	2.7	5.5	6.7	4.6
Joypurhat	3	5.1	6.1	4.2
Natore	1.1	3.4	3.4	5.4
Noagoan	6	7.7	8.8	3
Nowabganj	1.1	2.9	3.6	1.3
Pabna	3.5	6.4	6.1	1.3
Rajshahi	0.6	3.9	5.1	1.2
Rajshahi City Corporation	3.9	5	6.1	2.9
Sirajganj	1.1	4	5.8	5
Rajshahi Division	2.6	4.9	5.8	3.2
Dinajpur	3.2	4.3	5.5	4.1
Gaibandha	0.5	2.7	2.8	1.4
Kurigram	6.7	9.8	13.5	3.4
Salmonirhat	3.9	5.9	8	2.8
Nilphamari	3.5	4.6	5.1	3.3
Panchagarh	2.3	5.3	5.3	5.9
Rangpur	2.6	4.7	4.8	1.8
Rangpur City Corporation	5.1	6.3	7	5.6
Thakurgaon	4.3	7	7.7	4.3
Rangpur Division	3.6	5.6	6.7	3.6
Habiganj	3.5	4.7	6.8	3.3
Moulvi Bazar	3.7	5.3	8.2	5.7
Sunamganj	3	3.8	4.5	2.9
Sylhet	1.8	3	3.2	1.4
Sylhet City Corporation	0.7	2.8	3	2.6
Sylhet Division	2.6	4.0	5.3	3.3
National	3.4	5.5	6.8	3.4
Urban	4.6	7.0	8.3	4.2
Rural	3.1	5.2	6.4	3.3
Dhaka City Corporation Slum	6.1	7.1	6.9	4.0
Chittagong City Corporation Slum	7.7	10.7	10.4	4.7

Table 7: Measles Second Dose (MSD) Vaccination Coverage 18-29 Month-Old Children by District and City Corporation

District/City Corporation	Crude MSD	Valid MSD
Barguna	81.9	74.8
Barisal	91.9	83.3
Barisal City Corporation	81.9	69.5
Bhola	84.8	72.0
Jhalakati	84.8	69.9
Patuakhali	77.6	73.2
Perojpur	88.6	77.8
Barisal Division	84.5	74.7
Bandarban	79.0	73.0
Brahmanbaria	84.8	76.6
Chandpur	74.8	69.2
Chittagong	80.0	72.9
Chittagong City Corporation	78.6	70.7
Comilla	80.0	70.6
Comilla City Corporation	82.4	68.0
Cox's Bazar	68.6	65.0
Feni	84.8	79.1
Khagrachari	83.3	69.6
Lakshmipur	73.8	64.3
Noakhali	71.9	65.6
Rangamati	71.4	62.5
Chittagong Division	77.9	70.0
Dhaka	82.4	73.1
Dhaka North City Corporation	88.1	59.1
Dhaka South City Corporation	89.5	59.4
Faridpur	83.8	72.7
Gazipur	79.0	66.9
Gazipur City Corporation	76.7	59.1
Gopalganj	88.6	73.0
Jamalpur	82.4	70.3
Kishoreganj	69.0	67.0
Madaripur	84.3	74.2
Manikganj	82.4	75.5
Munshiganj	86.2	74.7
Mymensingh	77.6	65.9
Narayanganj	76.7	67.6
Narayanganj City Corporation	76.2	71.7
Narsingdzi	69.5	58.7
Netrokona	74.3	67.1
Rajbari	83.8	76.3
Sariatpur	71.9	66.0
Sherpur	75.7	66.9
Tangail	85.2	76.6
Dhaka Division	80.2	69.1

Table 7: Continued

District/City Corporation	Crude MSD	Valid MSD
Bagerhat	84.3	73.3
Chuadanga	85.7	78.0
Jessore	83.3	73.5
Jhenaidah	83.8	73.0
Khulna	91.0	86.1
Khulna City Corporation	74.8	66.3
Kushtia	85.2	71.6
Magura	75.7	69.5
Meherpur	86.7	78.6
Narail	70.5	55.6
Satkhira	79.5	73.5
Khulna Division	81.9	72.6
Bogra	82.4	73.9
Joypurhat	93.3	83.2
Natore	86.2	70.5
Noagoan	89.0	75.0
Nowabganj	82.9	70.8
Pabna	88.1	79.5
Rajshahi	94.3	81.7
Rajshahi City Corporation	94.8	89.2
Sirajganj	82.9	76.0
Rajshahi Division	88.2	77.9
Dinajpur	84.8	70.4
Gaibandha	75.7	65.4
Kurigram	78.6	63.0
Salmonirhat	79.0	66.5
Nilphamari	80.5	72.9
Panchagarh	81.9	73.2
Rangpur	78.1	72.4
Rangpur City Corporation	74.3	66.5
Thakurgoan	84.8	63.6
Rangpur Division	79.7	68.1
Habiganj	77.1	60.5
Moulvi Bazar	67.1	63.1
Sunamganj	69.0	57.9
Sylhet	70.5	65.1
Sylhet City Corporation	71.9	62.0
Sylhet Division	71.1	62.0
National	80.5	70.4
Urban	82.0	67.6
Rural	80.2	71.0
Dhaka City Corporation Slum	72.9	65.4
Chittagong City Corporation Slum	72.4	53.8

Table 8: Crude TT Vaccination Coverage among Mothers with 0-11 Months Old Children by District and City Corporation

District/City Corporation	Crude TT1	Crude TT2	Crude TT3	Crude TT4	Crude TT5
Barguna	98.1	97.6	79.0	66.2	58.1
Barisal	99.5	99.5	91.0	78.1	63.3
Barisal City Corporation	98.6	98.6	82.9	67.1	50.0
Bhola	96.7	96.7	85.2	67.6	55.7
Jhalakati	96.7	96.7	87.1	66.2	48.1
Patuakhali	99.0	98.6	86.2	71.9	60.5
Perojpur	97.1	96.2	87.1	72.4	56.7
Barisal Division	98.0	97.7	85.5	69.9	56.1
Bandarban	85.7	85.7	77.6	66.7	51.9
Brahmanbaria	99.0	99.0	92.9	85.7	73.3
Chandpur	99.5	99.5	92.9	82.4	63.3
Chittagong	98.6	98.6	92.4	82.9	70.5
Chittagong City Corporation	97.6	97.6	78.1	63.8	51.9
Comilla	100.0	100.0	90.0	78.6	60.0
Comilla City Corporation	100.0	100.0	91.9	78.6	62.9
Cox's Bazar	98.6	98.6	94.3	86.7	73.3
Feni	98.1	98.1	93.3	80.0	64.3
Khagrachari	95.7	95.7	90.5	74.3	62.4
Lakshmpur	98.6	98.6	91.9	81.4	66.2
Noakhali	96.7	96.7	89.0	72.4	59.5
Rangamati	91.4	91.4	79.5	63.8	45.7
Chittagong Division	96.9	96.9	88.8	76.7	61.9
Dhaka	97.6	97.6	88.6	78.6	62.9
Dhaka North City Corporation	100.0	100.0	91.4	83.8	74.3
Dhaka South City Corporation	99.0	99.0	92.9	81.9	75.2
Faridpur	98.6	98.6	87.1	77.6	61.9
Gazipur	93.8	93.8	74.3	61.9	48.1
Gazipur City Corporation	90.0	90.0	70.5	56.2	39.0
Gopalganj	93.3	93.3	84.8	72.9	57.1
Jamalpur	98.6	98.6	87.6	73.3	58.1
Kishoreganj	96.2	96.2	91.0	77.6	67.6
Madaripur	96.2	96.2	87.1	77.6	67.6
Manikganj	97.1	97.1	83.8	71.9	50.5
Munshiganj	98.1	98.1	87.6	74.3	59.0
Mymensingh	98.6	98.6	87.1	71.9	53.3
Narayanganj	97.6	97.6	85.7	73.8	58.1
Narayanganj City Corporation	99.0	99.0	87.6	70.5	57.6
Narsingdhi	98.6	98.6	90.0	75.7	62.9
Netrokona	96.7	96.7	83.8	69.5	48.6
Rajbari	100.0	100.0	88.1	74.8	57.6
Sariatpur	98.1	98.1	90.0	79.0	65.2
Sherpur	98.1	98.1	94.3	81.4	61.0
Tangail	97.6	97.6	85.2	71.9	54.3
Dhaka Division	97.3	97.3	86.6	74.1	59.0

Table 8: Continued

District/City Corporation	Crude TT1	Crude TT2	Crude TT3	Crude TT4	Crude TT5
Bagerhat	96.7	96.2	85.2	72.9	60.0
Chuadanga	98.1	98.1	93.3	79.5	62.9
Jessore	99.0	98.1	96.2	79.0	61.9
Jhenaidah	99.5	98.6	87.6	72.4	55.7
Khulna	98.6	98.6	87.6	78.1	61.0
Khulna City Corporation	95.7	95.7	87.1	73.3	57.6
Kushtia	98.6	98.1	86.7	76.7	61.0
Magura	97.6	97.6	93.3	82.4	63.3
Meherpur	99.5	99.5	82.9	64.8	49.0
Narail	98.1	97.6	90.5	75.7	54.8
Satkhira	98.6	98.6	87.6	74.3	54.3
Khulna Division	98.2	97.9	88.9	75.4	58.3
Bogra	100.0	100.0	92.9	80.0	66.7
Joypurhat	100.0	100.0	93.3	79.0	61.9
Natore	98.6	98.6	90.0	76.7	59.0
Noagoan	99.5	99.5	95.2	89.0	72.9
Nowabganj	98.6	98.6	93.3	77.1	57.1
Pabna	98.6	98.6	92.4	80.5	67.1
Rajshahi	99.0	99.0	90.5	75.7	56.7
Rajshahi City Corporation	99.5	99.5	95.7	85.7	69.0
Sirajganj	97.6	97.6	88.1	74.3	60.0
Rajshahi Division	99.0	99.0	92.4	79.8	63.4
Dinajpur	99.5	99.5	91.4	76.7	67.1
Gaibandha	98.6	98.6	92.9	79.5	62.4
Kurigram	99.5	99.5	92.4	75.7	54.8
Salmonirhat	100.0	100.0	92.9	82.4	60.0
Nilphamari	97.1	97.1	89.0	65.2	50.0
Panchagharch	95.7	95.7	90.0	79.0	64.8
Rangpur	98.6	98.6	87.1	70.0	56.2
Rangpur City Corporation	97.6	97.6	89.5	77.1	60.0
Thakurgoan	97.6	97.6	89.0	79.0	65.2
Rangpur Division	98.3	98.3	90.5	76.1	60.1
Habiganj	95.2	95.2	85.2	74.3	59.0
Moulvi Bazar	90.0	90.0	79.5	72.4	57.1
Sunamganj	85.2	85.2	70.5	57.1	43.8
Sylhet	92.9	92.9	80.5	71.0	60.5
Sylhet City Corporation	91.9	91.9	77.1	62.9	50.5
Sylhet Division	91.0	91.0	78.6	67.5	54.2
National	97.6	97.6	88.3	75.6	60.5
Urban	97.5	97.5	87.0	74.9	61.5
Rural	97.6	97.6	88.7	75.9	60.3
Dhaka City Corporation Slum	95.2	95.2	81.4	65.2	49.0
Chittagong City Corporation Slum	98.6	98.6	86.7	71.9	57.6

Table 9: Valid TT Vaccination Coverage among Mothers with 0-11 Month-Old Children by District and City Corporation

District/City Corporation	Valid TT1	Valid TT2	Valid TT3	Valid TT4	Valid TT5
Barguna	98.1	97.6	76.7	53.3	41.9
Barisal	99.5	99.5	90.0	76.7	58.6
Barisal City Corporation	98.6	98.6	73.3	54.3	31.4
Bhola	96.7	96.7	76.7	58.1	38.6
Jhalakati	96.7	96.7	81.9	61.0	42.4
Patuakhali	99.0	98.6	81.0	62.4	45.2
Perojpur	97.1	96.2	86.2	70.0	54.8
Barisal Division	98.0	97.7	80.8	62.2	44.7
Bandarban	85.7	85.7	76.2	61.9	42.9
Brahmanbaria	99.0	99.0	90.0	78.6	61.9
Chandpur	99.5	99.5	88.6	70.5	48.6
Chittagong	98.6	98.6	91.0	78.1	61.9
Chittagong City Corporation	97.6	97.6	71.9	51.0	35.2
Comilla	100.0	100.0	87.1	75.2	49.5
Comilla City Corporation	100.0	100.0	88.6	68.6	49.0
Cox's Bazar	98.6	98.6	91.4	73.8	54.8
Feni	98.1	98.1	91.4	75.7	56.2
Khagrachari	95.7	95.7	87.6	70.0	58.6
Lakshmipur	98.6	98.6	87.1	66.7	46.2
Noakhali	96.7	96.7	81.4	61.9	43.3
Rangamati	91.4	91.4	75.7	55.7	36.7
Chittagong Division	96.9	96.9	85.2	68.3	49.6
Dhaka	97.6	97.6	84.8	72.4	52.4
Dhaka North City Corporation	100.0	100.0	89.0	79.0	67.6
Dhaka South City Corporation	99.0	99.0	91.9	79.0	71.9
Faridpur	98.6	98.6	86.7	72.4	50.0
Gazipur	93.8	93.8	71.4	59.0	41.9
Gazipur City Corporation	90.0	90.0	70.0	54.3	38.1
Gopalganj	93.3	93.3	82.4	67.6	47.6
Jamalpur	98.6	98.6	82.4	64.3	35.7
Kishoreganj	96.2	96.2	89.0	73.3	60.5
Madaripur	96.2	96.2	81.4	72.4	61.0
Manikganj	97.1	97.1	83.8	69.0	43.8
Munshiganj	98.1	98.1	85.2	72.4	55.7
Mymensingh	98.6	98.6	82.4	61.4	37.6
Narayanganj	97.6	97.6	83.3	67.1	43.3
Narayanganj City Corporation	99.0	99.0	82.9	61.9	41.0
Narsingdzi	98.6	98.6	82.4	60.5	40.5
Netrokona	96.7	96.7	80.0	56.7	31.9
Rajbari	100.0	100.0	84.8	63.8	41.4
Sariatpur	98.1	98.1	85.2	71.0	53.3
Sherpur	98.1	98.1	88.6	69.0	43.3
Tangail	97.6	97.6	82.4	64.3	44.8
Dhaka Division	97.3	97.3	83.3	67.2	47.8

Table 9: Continued

District/City Corporation	Valid TT1	Valid TT2	Valid TT3	Valid TT4	Valid TT5
Bagerhat	96.7	96.2	84.3	72.4	56.7
Chuadanga	98.1	98.1	88.1	71.9	50.0
Jessore	99.0	98.1	93.8	71.4	49.0
Jhenaidah	100.0	99.0	83.3	63.8	41.0
Khulna	98.6	98.6	85.7	77.6	57.1
Khulna City Corporation	95.7	95.7	84.8	67.1	48.6
Kushtia	98.6	98.1	84.3	71.0	52.4
Magura	97.6	97.6	90.5	76.7	51.9
Meherpur	99.5	99.5	76.7	59.0	40.5
Narail	98.1	97.6	88.1	61.4	41.4
Satkhira	98.6	98.6	85.7	67.6	48.6
Khulna Division	98.2	97.9	85.9	69.1	48.8
Bogra	100.0	100.0	90.0	75.2	58.6
Joypurhat	100.0	100.0	90.5	73.3	54.8
Natore	98.6	98.6	86.7	71.4	48.6
Noagoan	99.5	99.5	93.8	83.8	63.3
Nowabganj	98.6	98.6	92.9	75.7	54.8
Pabna	98.6	98.6	89.0	73.8	57.1
Rajshahi	99.0	99.0	88.1	71.4	51.4
Rajshahi City Corporation	99.5	99.5	94.3	84.3	65.2
Sirajganj	97.6	97.6	82.4	63.3	39.0
Rajshahi Division	99.0	99.0	89.7	74.7	54.8
Dinajpur	99.5	99.5	83.8	71.4	61.0
Gaibandha	98.6	98.6	90.5	73.8	53.8
Kurigram	99.5	99.5	92.4	70.5	49.0
Salmonirhat	100.0	100.0	91.9	69.5	41.9
Nilphamari	97.1	97.1	85.2	61.9	40.5
Panchagharch	95.7	95.7	85.7	71.0	54.8
Rangpur	98.6	98.6	83.8	64.3	48.6
Rangpur City Corporation	97.6	97.6	88.6	75.7	58.1
Thakurgoan	97.6	97.6	86.7	75.2	56.2
Rangpur Division	98.3	98.3	87.6	70.4	51.5
Habiganj	95.2	95.2	83.3	70.0	52.9
Moulvi Bazar	90.0	90.0	75.7	60.5	44.3
Sunamganj	85.2	85.2	67.6	52.9	36.2
Sylhet	92.9	92.9	79.0	66.7	50.5
Sylhet City Corporation	91.9	91.9	75.2	58.6	46.7
Sylhet Division	91.0	91.0	76.2	61.7	46.1
National	97.6	97.6	85.0	68.9	49.8
Urban	97.5	97.5	83.7	69.4	52.6
Rural	97.7	97.6	85.5	68.9	49.3
Dhaka City Corporation Slum	95.2	95.2	73.3	52.4	37.1
Chittagong City Corporation Slum	98.6	98.6	76.2	45.7	24.3

Table 10: Protected at Birth against Tetanus among Mothers with 0-11 Month-Old Children by District and City Corporation

District/City Corporation	Protected at Birth
Barguna	90.8
Barisal	99.5
Barisal City Corporation	98.1
Bhola	88.6
Jhalakati	99.5
Patuakhali	94.2
Perojpur	94.6
Barisal Division	95.0
Bandarban	93.9
Brahmanbaria	95.2
Chandpur	92.3
Chittagong	98.6
Chittagong City Corporation	93.7
Comilla	98.1
Comilla City Corporation	96.2
Cox's Bazar	92.3
Feni	92.7
Khagrachari	98.5
Lakshmipur	93.2
Noakhali	90.6
Rangamati	93.8
Chittagong Division	94.5
Dhaka	87.3
Dhaka North City Corporation	80.0
Dhaka South City Corporation	86.1
Faridpur	92.3
Gazipur	91.4
Gazipur City Corporation	87.9
Gopalganj	83.2
Jamalpur	97.1
Kishoreganj	92.1
Madaripur	94.1
Manikganj	97.5
Munshiganj	94.7
Mymensingh	94.7
Narayanganj	90.7
Narayanganj City Corporation	95.2
Narsingdzi	90.3
Netrokona	96.6
Rajbari	92.9
Sariatpur	89.3
Sherpur	96.1
Tangail	94.1
Dhaka Division	91.6

Table 10: Continued

District/City Corporation	Protected at Birth
Bagerhat	93.6
Chuadanga	98.5
Jessore	93.8
Jhenaidah	87.6
Khulna	93.7
Khulna City Corporation	96.0
Kushtia	96.6
Magura	96.6
Meherpur	95.7
Narail	92.7
Satkhira	94.7
Khulna Division	94.4
Bogra	92.9
Joypurhat	95.7
Natore	94.2
Noagoan	93.8
Nowabganj	90.8
Pabna	96.6
Rajshahi	98.6
Rajshahi City Corporation	98.6
Sirajganj	94.1
Rajshahi Division	95.0
Dinajpur	95.7
Gaibandha	95.7
Kurigram	74.6
Salmonirhat	96.7
Nilphamari	89.2
Panchagarh	95.0
Rangpur	92.3
Rangpur City Corporation	97.1
Thakurgoan	94.1
Rangpur Division	92.2
Habiganj	87.5
Moulvi Bazar	88.9
Sunamganj	90.4
Sylhet	90.8
Sylhet City Corporation	85.0
Sylhet Division	88.4
National	92.8
Urban	91.3
Rural	93.1
Dhaka City Corporation Slum	94.0
Chittagong City Corporation Slum	91.3

Table 11: Crude TT Vaccination Coverage among Women Aged 18-49 Years by District and City Corporation

District/City Corporation	Crude TT1	Crude TT2	Crude TT3	Crude TT4	Crude TT5
Barguna	92.9	91.4	79.0	61.9	45.7
Barisal	100.0	99.5	93.8	81.4	61.4
Barisal City Corporation	94.3	91.4	80.0	62.9	48.1
Bhola	95.7	95.2	90.0	84.8	75.2
Jhalakati	84.3	83.3	74.8	56.7	38.1
Patuakhali	93.3	90.5	73.8	58.6	41.9
Perojpur	95.2	92.9	86.2	71.4	51.0
Barisal Division	93.7	92.0	82.5	68.2	51.6
Bandarban	92.9	90.0	77.6	65.7	49.5
Brahmanbaria	95.7	93.8	89.5	77.6	61.0
Chandpur	98.6	97.1	87.6	65.7	51.0
Chittagong	96.7	94.8	89.5	74.3	60.0
Chittagong City Corporation	89.5	86.2	76.7	62.9	45.7
Comilla	98.6	98.1	90.0	77.6	59.5
Comilla City Corporation	93.3	91.0	83.8	73.3	60.5
Cox's Bazar	95.7	93.8	88.6	75.7	64.3
Feni	97.6	97.6	93.8	86.2	67.6
Khagrachari	96.2	94.8	90.5	85.2	69.5
Lakshmpur	94.8	91.4	83.8	70.5	58.1
Noakhali	89.5	88.6	76.7	62.4	47.6
Rangamati	89.0	88.6	78.1	67.6	50.5
Chittagong Division	94.5	92.7	85.1	72.7	57.3
Dhaka	94.8	93.3	86.2	72.4	51.4
Dhaka North City Corporation	98.6	96.2	88.1	69.0	57.6
Dhaka South City Corporation	99.5	98.1	94.3	79.5	69.5
Faridpur	95.7	93.3	90.5	88.1	80.0
Gazipur	97.6	95.7	87.6	70.5	54.3
Gazipur City Corporation	88.6	85.2	71.9	55.7	42.9
Gopalganj	95.7	91.9	86.2	74.8	58.1
Jamalpur	96.7	93.8	88.6	74.8	58.1
Kishoreganj	81.0	79.0	74.3	62.4	52.4
Madaripur	91.9	90.5	85.2	68.6	48.6
Manikganj	96.7	94.8	87.1	68.1	42.9
Munshiganj	95.2	94.8	90.0	77.6	59.5
Mymensingh	97.6	94.3	81.9	72.4	56.7
Narayanganj	97.6	95.7	86.7	71.4	50.5
Narayanganj City Corporation	95.7	94.8	86.2	74.8	61.4
Narsingdhi	92.9	90.0	78.6	61.4	45.7
Netrokona	91.9	85.7	76.7	61.0	41.0
Rajbari	97.1	95.2	90.5	82.9	75.2
Sariatpur	89.0	87.1	81.0	70.0	58.1
Sherpur	96.7	94.3	87.1	73.8	56.2
Tangail	97.1	95.2	86.7	74.3	57.1
Dhaka Division	94.6	92.3	85.0	71.6	56.1

Table 11: Continued

District/City Corporation	Crude TT1	Crude TT2	Crude TT3	Crude TT4	Crude TT5
Bagerhat	95.2	93.8	87.6	75.7	60.5
Chuadanga	99.0	99.0	93.3	87.1	78.1
Jessore	97.6	97.1	92.9	79.0	64.3
Jhenaidah	98.6	96.2	90.0	75.7	62.4
Khulna	98.6	97.1	93.3	83.8	74.8
Khulna City Corporation	98.1	93.8	84.3	70.5	54.3
Kushtia	98.1	97.1	94.3	78.1	59.0
Magura	94.3	91.9	84.3	73.8	56.2
Meherpur	92.9	90.0	74.3	58.6	38.6
Narail	94.3	91.4	82.4	69.5	53.3
Satkhira	98.6	96.2	88.1	72.9	51.0
Khulna Division	96.8	94.9	87.7	75.0	59.3
Bogra	98.1	94.8	91.9	79.5	67.1
Joypurhat	96.2	94.3	87.6	73.3	63.3
Natore	97.1	96.2	89.5	79.0	64.3
Noagoan	98.1	97.1	91.9	79.0	60.5
Nowabganj	96.2	95.2	89.5	79.0	65.2
Pabna	97.6	96.2	87.1	74.3	58.6
Rajshahi	95.2	93.8	83.8	67.1	50.5
Rajshahi City Corporation	95.2	94.3	91.9	86.7	72.4
Sirajganj	91.4	88.1	80.5	67.1	49.0
Rajshahi Division	96.1	94.4	88.2	76.1	61.2
Dinajpur	95.2	94.8	88.6	76.2	58.1
Gaibandha	95.7	94.8	88.1	74.3	58.6
Kurigram	100.0	99.5	91.9	79.5	63.3
Salmonirhat	99.5	98.6	92.9	81.4	61.4
Nilphamari	91.4	91.0	86.7	70.5	55.7
Panchagharch	97.1	95.7	87.6	74.8	60.5
Rangpur	97.1	96.2	91.4	79.0	60.5
Rangpur City Corporation	96.2	94.8	87.6	71.9	58.6
Thakurgaon	94.3	91.9	88.1	76.2	51.0
Rangpur Division	96.3	95.2	89.2	76.0	58.6
Habiganj	92.4	91.0	83.8	73.8	58.6
Moulvi Bazar	85.7	83.3	75.2	63.3	46.2
Sunamganj	92.4	90.5	80.0	70.5	51.0
Sylhet	87.1	85.2	78.6	69.0	57.6
Sylhet City Corporation	89.0	84.8	75.7	64.8	52.4
Sylhet Division	89.3	87.0	78.7	68.3	53.1
National	95.1	93.2	85.9	72.9	57.1
Urban	94.9	92.9	85.6	71.8	57.7
Rural	95.2	93.4	86.1	73.3	57.0
Dhaka City Corporation Slum	91.4	87.6	74.3	59.0	46.2
Chittagong City Corporation Slum	81.0	78.6	67.6	57.1	45.2

Table 12: Valid TT Vaccination Coverage among Women Aged 18-49 Years by Districts and City Corporations

District/City Corporation	Valid TT1	Valid TT2	Valid TT3	Valid TT4	Valid TT5
Barguna	92.9	91.4	79.0	60.0	41.9
Barisal	100.0	99.5	93.8	80.5	59.5
Barisal City Corporation	94.3	91.4	79.5	61.0	44.3
Bhola	95.7	95.2	89.0	80.0	72.9
Jhalakati	84.3	83.3	72.4	51.4	34.8
Patuakhali	93.3	90.5	71.4	54.3	37.6
Perojpur	95.2	92.9	86.2	71.0	48.6
Barisal Division	93.7	92.0	81.6	65.4	48.5
Bandarban	92.9	90.0	76.7	63.3	46.2
Brahmanbaria	95.7	93.8	89.5	73.8	56.2
Chandpur	98.6	97.1	87.1	63.8	49.0
Chittagong	96.7	94.8	89.5	73.3	58.6
Chittagong City Corporation	89.5	86.2	75.2	58.6	40.0
Comilla	98.6	98.1	90.0	75.7	57.1
Comilla City Corporation	93.3	91.0	83.8	72.4	56.2
Cox's Bazar	95.7	93.8	87.6	74.3	58.1
Feni	97.6	97.6	92.9	83.8	63.8
Khagrachari	96.2	94.8	90.5	82.9	66.7
Lakshmipur	94.8	91.4	83.3	68.6	55.7
Noakhali	89.5	88.6	75.2	59.0	40.5
Rangamati	89.0	88.6	78.1	66.2	48.6
Chittagong Division	94.5	92.7	84.6	70.4	53.6
Dhaka	94.8	93.3	85.7	70.0	46.7
Dhaka North City Corporation	98.6	96.2	87.6	68.6	57.6
Dhaka South City Corporation	99.5	98.1	93.8	78.6	68.6
Faridpur	95.7	93.3	90.5	86.7	79.0
Gazipur	97.6	95.7	86.7	67.6	51.0
Gazipur City Corporation	88.6	85.2	71.9	55.7	42.9
Gopalganj	95.7	91.9	85.7	71.9	53.3
Jamalpur	96.7	93.8	87.6	71.4	50.0
Kishoreganj	81.0	79.0	73.3	57.1	49.0
Madaripur	91.9	90.5	85.2	68.1	46.7
Manikganj	96.7	94.8	86.2	63.3	38.1
Munshiganj	95.2	94.8	89.5	76.7	56.2
Mymensingh	97.6	94.3	81.9	69.0	50.0
Narayanganj	97.6	95.7	86.2	70.0	48.1
Narayanganj City Corporation	95.7	94.8	85.2	73.8	58.6
Narsinghdi	92.9	90.0	78.1	55.7	39.5
Netrokona	91.9	85.7	76.2	57.1	34.8
Rajbari	97.1	95.2	90.5	81.0	71.4
Sariatpur	89.0	87.1	80.5	69.0	55.2
Sherpur	96.7	94.3	86.7	71.4	52.4
Tangail	97.1	95.2	86.2	73.8	53.8
Dhaka Division	94.6	92.3	84.5	69.4	52.5

Table 12: Continued

District/City Corporation	Valid TT1	Valid TT2	Valid TT3	Valid TT4	Valid TT5
Bagerhat	95.2	93.8	86.7	73.8	56.7
Chuadanga	99.0	99.0	93.3	86.7	74.8
Jessore	97.6	97.1	92.9	78.6	59.0
Jhenaidah	98.6	96.2	89.5	72.9	56.2
Khulna	98.6	97.1	93.3	83.3	72.4
Khulna City Corporation	98.1	93.8	83.8	70.0	52.9
Kushtia	98.1	97.1	94.3	78.1	56.7
Magura	94.3	91.9	83.3	72.4	50.0
Meherpur	92.9	90.0	73.8	56.7	36.2
Narail	94.3	91.4	82.4	67.6	46.7
Satkhira	98.6	96.2	87.6	69.0	45.7
Khulna Division	96.8	94.9	87.4	73.5	55.2
Bogra	98.1	94.8	91.4	78.6	61.9
Joypurhat	96.2	94.3	86.7	71.0	60.0
Natore	97.1	96.2	89.5	78.6	61.0
Noagoan	98.1	97.1	91.0	77.1	59.0
Nowabganj	96.2	95.2	89.5	76.2	60.0
Pabna	97.6	96.2	86.2	73.3	53.8
Rajshahi	95.2	93.8	83.3	66.2	48.1
Rajshahi City Corporation	95.2	94.3	91.0	85.7	70.0
Sirajganj	91.4	88.1	79.0	63.8	42.4
Rajshahi Division	96.1	94.4	87.5	74.5	57.4
Dinajpur	95.2	94.8	88.6	75.7	58.1
Gaibandha	95.7	94.8	87.6	71.0	53.8
Kurigram	100.0	99.5	91.0	76.7	55.2
Lalmonirhat	99.5	98.6	91.9	78.6	56.7
Nilphamari	91.4	91.0	84.8	66.7	52.4
Panchagharch	97.1	95.7	87.1	72.9	55.2
Rangpur	97.1	96.2	91.0	76.7	57.1
Rangpur City Corporation	96.2	94.8	86.7	71.9	56.2
Thakurgoan	94.3	91.9	87.6	75.2	49.5
Rangpur Division	96.3	95.2	88.5	73.9	54.9
Habiganj	92.4	91.0	81.9	70.0	51.9
Moulvi Bazar	85.7	83.3	74.8	61.4	40.5
Sunamganj	92.4	90.5	80.0	70.0	46.2
Sylhet	87.1	85.2	77.6	66.7	52.4
Sylhet City Corporation	89.0	84.8	75.7	64.3	51.0
Sylhet Division	89.3	87.0	78.0	66.5	48.4
National	95.1	93.2	85.4	70.8	53.2
Urban	94.9	92.9	85.1	70.4	55.0
Rural	95.2	93.4	85.6	71.0	52.9
Dhaka City Corporation Slum	91.4	87.6	73.8	58.1	41.4
Chittagong City Corporation Slum	81.0	78.6	67.6	56.2	41.0

Table 13: MR Vaccination Coverage among Adolescent girls by District and City Corporation

District/City Corporation	MR coverage
Barguna	18.1
Barisal	41.9
Barisal City Corporation	11.4
Bhola	18.6
Jhalakati	58.6
Patuakhali	33.3
Perojpur	31.4
Barisal Division	30.5
Bandarban	43.3
Brahmanbaria	33.8
Chandpur	18.6
Chittagong	14.3
Chittagong City Corporation	35.7
Comilla	26.7
Comilla City Corporation	20.5
Cox's Bazar	16.7
Feni	40.0
Khagrachari	57.6
Lakshmipur	19.5
Noakhali	39.0
Rangamati	17.1
Chittagong Division	28.7
Dhaka	33.8
Dhaka North City Corporation	30.0
Dhaka South City Corporation	17.6
Faridpur	21.4
Gazipur	18.6
Gazipur City Corporation	13.3
Gopalganj	36.7
Jamalpur	32.9
Kishoreganj	52.4
Madaripur	21.0
Manikganj	54.8
Munshiganj	26.2
Mymensingh	25.2
Narayanganj	31.0
Narayanganj City Corporation	23.8
Narsingdzi	20.0
Netrokona	29.0
Rajbari	33.3
Sariatpur	20.5
Sherpur	15.7
Tangail	29.5
Dhaka Division	28.4

Table 13: Continued

District/City Corporation	MR coverage
Bagerhat	44.3
Chuadanga	44.8
Jessore	27.6
Jhenaidah	31.4
Khulna	33.8
Khulna City Corporation	25.7
Kushtia	31.4
Magura	33.3
Meherpur	31.9
Narail	14.8
Satkhira	48.6
Khulna Division	33.4
Bogra	24.8
Joypurhat	25.2
Natore	23.8
Noagoan	41.0
Nowabganj	52.9
Pabna	39.5
Rajshahi	32.9
Rajshahi City Corporation	26.7
Sirajganj	29.5
Rajshahi Division	32.9
Dinajpur	37.6
Gaibandha	48.6
Kurigram	49.5
Salmonirhat	23.3
Nilphamari	21.9
Panchagarh	23.3
Rangpur	22.4
Rangpur City Corporation	32.4
Thakurgoan	18.1
Rangpur Division	30.8
Habiganj	26.2
Moulvi Bazar	50.0
Sunamganj	40.5
Sylhet	32.4
Sylhet City Corporation	22.4
Sylhet Division	34.3
National	30.6
Urban	27.5
Rural	31.5
Dhaka City Corporation Slum	31.9
Chittagong City Corporation Slum	12.4

Table 14: OPV Vaccination Coverage among 0-59 Month-Old Children during 21st NID and MR Campaign by District and City Corporation

District/City Corporation	OPV 21st NID	OPV During MR Campaign	Both
Barguna	99.5	100.0	99.5
Barisal	96.2	97.6	95.2
Barisal City Corporation	97.1	89.5	89.0
Bhola	94.3	95.7	91.9
Jhalakati	98.1	96.7	96.2
Patuakhali	98.6	99.5	98.1
Perojpur	99.0	99.5	98.6
Barisal Division	97.6	96.9	95.5
Bandarban	95.7	95.2	93.8
Brahmanbaria	100.0	99.5	99.5
Chandpur	90.0	90.0	87.6
Chittagong	94.8	95.7	93.8
Chittagong City Corporation	94.8	90.0	90.0
Comilla	96.2	100.0	96.2
Comilla City Corporation	98.6	99.0	98.1
Cox's Bazar	92.4	91.0	89.0
Feni	90.5	81.0	75.7
Khagrachari	99.0	98.6	98.6
Lakshmipur	87.1	87.1	84.3
Noakhali	87.6	86.2	81.4
Rangamati	92.9	92.4	91.9
Chittagong Division	93.8	92.7	90.8
Dhaka	97.6	97.1	96.7
Dhaka North City Corporation	100.0	100.0	100.0
Dhaka South City Corporation	97.6	97.6	97.6
Faridpur	98.1	98.6	97.6
Gazipur	82.4	81.4	74.8
Gazipur City Corporation	85.2	84.8	78.6
Gopalganj	97.1	97.1	95.7
Jamalpur	95.7	94.8	92.4
Kishoreganj	94.8	94.8	94.8
Madaripur	92.4	91.0	90.5
Manikganj	98.6	98.6	97.1
Munshiganj	94.3	94.3	92.4
Mymensingh	93.3	92.9	92.9
Narayanganj	93.3	94.3	92.9
Narayanganj City Corporation	98.1	98.1	98.1
Narsingdzi	87.6	86.2	82.4
Netrokona	90.5	93.3	90.0
Rajbari	98.1	97.1	96.7
Sariatpur	93.8	89.5	88.6
Sherpur	96.7	94.8	93.3
Tangail	99.0	99.0	98.6
Dhaka Division	94.5	94.1	92.4

Table 14: Continued

District/City Corporation	OPV 21st NID	OPV During MR Campaign	Both
Bagerhat	97.6	96.7	95.7
Chuadanga	99.5	97.6	97.6
Jessore	97.1	96.7	96.2
Jhenaidah	96.7	97.1	95.7
Khulna	99.0	98.1	98.1
Khulna City Corporation	96.7	96.2	95.7
Kushtia	95.7	95.7	95.2
Magura	98.6	98.6	98.6
Meherpur	100.0	100.0	100.0
Narail	94.8	95.2	93.8
Satkhira	96.2	98.1	96.2
Khulna Division	97.4	97.3	96.6
Bogra	98.1	97.1	96.7
Joypurhat	98.1	95.7	94.3
Natore	96.7	94.8	93.8
Noagoan	99.5	100.0	99.5
Nowabganj	96.2	95.7	95.2
Pabna	98.1	96.7	96.7
Rajshahi	98.6	98.6	98.6
Rajshahi City Corporation	98.6	99.5	98.6
Sirajganj	98.6	99.0	98.6
Rajshahi Division	98.0	97.5	96.9
Dinajpur	96.2	95.7	94.8
Gaibandha	94.8	93.8	93.3
Kurigram	100.0	100.0	100.0
Salmonirhat	100.0	100.0	100.0
Nilphamari	97.1	98.1	96.7
Panchaghagh	97.1	94.8	94.3
Rangpur	98.6	95.2	94.8
Rangpur City Corporation	100.0	100.0	100.0
Thakurgoan	96.2	96.7	96.2
Rangpur Division	97.8	97.1	96.7
Habiganj	97.6	98.1	97.6
Moulvi Bazar	95.2	99.0	95.2
Sunamganj	92.9	94.8	92.4
Sylhet	95.2	98.6	94.3
Sylhet City Corporation	99.5	100.0	99.5
Sylhet Division	96.1	98.1	95.8
National	95.8	95.6	94.2
Urban	95.7	94.8	93.5
Rural	95.8	95.8	94.4
Dhaka City Corporation Slum	100.0	100.0	100.0
Chittagong City Corporation Slum	96.2	94.3	93.8

Table 15: Vitamin A Supplementation Coverage among Infants Aged 6-11 Months and Children Aged 12-59 Months during National Vitamin A Campaign, by Districts and City Corporations

District/City Corporation	Vitamin A 6 to 11 months	Vitamin A 12 to 59 Months
Barguna	80.0	97.1
Barisal	94.8	96.2
Barisal City Corporation	79.0	91.0
Bhola	75.2	77.1
Jhalakati	93.8	99.0
Patuakhali	98.1	98.1
Perojpur	96.2	99.5
Barisal Division	89.1	93.1
Bandarban	75.2	82.9
Brahmanbaria	90.0	99.5
Chandpur	73.3	88.1
Chittagong	77.6	94.8
Chittagong City Corporation	89.5	91.9
Comilla	87.6	97.1
Comilla City Corporation	94.8	96.7
Cox's Bazar	66.7	85.7
Feni	91.9	91.0
Khagrachari	99.5	98.6
Lakshmipur	62.9	83.3
Noakhali	77.1	86.2
Rangamati	68.1	85.2
Chittagong Division	80.5	92.0
Dhaka	86.7	91.9
Dhaka North City Corporation	99.0	99.5
Dhaka South City Corporation	98.1	98.6
Faridpur	64.3	97.6
Gazipur	67.6	82.4
Gazipur City Corporation	61.4	71.4
Gopalganj	89.5	94.3
Jamalpur	56.2	91.9
Kishoreganj	86.7	98.6
Madaripur	61.9	84.3
Manikganj	98.1	97.6
Munshiganj	89.5	92.9
Mymensingh	86.7	93.8
Narayanganj	81.0	93.3
Narayanganj City Corporation	92.4	94.3
Narsingdzi	77.1	84.8
Netrokona	70.5	87.1
Rajbari	59.0	97.1
Sariatpur	31.9	78.6
Sherpur	77.1	91.0
Tangail	85.7	95.7
Dhaka Division	80.3	92.1

Table 15: Continued

District/City Corporation	Vitamin A 6 to 11 months	Vitamin A 12 to 59 Months
Bagerhat	96.2	94.8
Chuadanga	96.7	96.2
Jessore	87.1	93.3
Jhenaidah	84.3	96.7
Khulna	94.8	96.2
Khulna City Corporation	61.9	93.8
Kushtia	91.9	96.2
Magura	81.0	96.2
Meherpur	100.0	98.6
Narail	61.0	97.1
Satkhira	94.8	91.4
Khulna Division	88.6	95.0
Bogra	91.4	95.2
Joypurhat	94.3	98.1
Natore	89.5	97.1
Noagoan	97.1	100.0
Nowabganj	86.2	91.9
Pabna	91.9	96.7
Rajshahi	96.7	98.1
Rajshahi City Corporation	95.7	97.6
Sirajganj	96.2	96.7
Rajshahi Division	93.3	96.8
Dinajpur	98.6	98.6
Gaibandha	80.0	90.0
Kurigram	99.0	100.0
Salmonirhat	99.5	99.5
Nilphamari	93.8	99.0
Panchagarh	58.6	96.7
Rangpur	88.1	98.1
Rangpur City Corporation	100.0	99.0
Thakurgoan	92.9	98.1
Rangpur Division	90.8	97.4
Habiganj	92.9	96.7
Moulvi Bazar	90.5	88.6
Sunamganj	91.4	91.4
Sylhet	90.0	92.9
Sylhet City Corporation	96.7	99.5
Sylhet Division	91.4	92.8
National	85.4	93.7
Urban	86.2	92.7
Rural	85.2	94.0
Dhaka City Corporation Slum	91.9	99.0
Chittagong City Corporation Slum	86.7	93.3

APPENDIX D: QUESTIONNAIRES

**People's Republic of Bangladesh
Expanded Program on Immunization (EPI)
Coverage Evaluation Survey, 2014**

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: Mouza/Mohallah:				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
NAME OF FS		1			2			3		
NAME OF FC		1			2			3		
NAME OF OTHER OFFICIAL		1			2			3		

¹Time required to go to the cluster from Upazila headquarters

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

I hereby verify that all the information provided in this interview is true and correct. I followed the survey methodology and did not take any unfair means while collecting data of this questionnaire.

Signature of
Interviewer

Introduction

Salam/Adab. My name is ----. I am from Center for Social and Market Research (CSMR) 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 the EPI programme.

CHILD FORM

Applicable to those children born between **01-07-2012** and **30-06-2013**
(Applicable to those children born between 17 Ashar 1419 and 16 Ashar 1420)

1.	Cluster No	
2.	Date	
3.	Survey Area	

		Skip to	1	2	3	4	5	6	7
4.	SI no. of sample (to be filled in by office)								
5.	SI no. of children in this cluster								
6.	Household number/ G R number and Name of Head of Household								
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 centre : 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-01, Government employee-02, Non-government employee-03, Household worker/day labourer-04, Small business-05, Large business-06, Teacher-07, Professional -08, Others								
15.	Occupation of the father: Agriculture-01, Government employee-02, Non-government employee-03, Day labourer/ rickshaw/van puller-04, Small business-05, Large business-06, Teacher-07, Professional -08, Driver (truck/bus/car)-09, Others								
16.	Number of family members								
17.	Has the baby ever received a vaccine?	Yes: 1 17.1 No: 2 18							
17.1.	Does the child have a card for vaccination?	Yes: 1 17.4 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 17.4							
17.3.	If the answer for the question 17.2 is yes, then ask Why didn't you preserve the card? (please mention)								
17.4.	17.1 Does the child have a birth registration card?	Yes: 1 No: 2							
18.	Would you please tell me, how many times should the child be taken to the vaccination centre 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 received)	GOB Outreach 1 NGO 2 All GOB Hospital 3 Private 4							

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.	MR	(Date/+/0)										
28.	How many times did the worker come to you to remind you about completing the vaccination?											
29.	What are the side effects that may occur if the child is vaccinated? [Multiple response possible]	Fever : 01										
		Abscess : 02										
		Don't know : 99										
		Others (specify):										
30.	After giving a 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 was 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 discouraged to give your child the rest of the vaccines due to an 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 gave money, did you abstain from giving the rest of the vaccines 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, Hospital

Reasons for Vaccination Failure

34.	For children who were never/partially vaccinated, ask the mothers or guardians "Why was the child not vaccinated or why was the child not fully vaccinated?" (Accept most important answer and circle the appropriate code)								
		<i>Sl. no. of the baby in this cluster</i>	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 for 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. Feared 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 centre		40	40	40	40	40	40	40	
xiii. There was no vaccinator in the centre		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. There was an abscess at the place of the 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 centre		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	
xxiv. The session time was inconvenient		52	52	52	52	52	52	52	
4. Others (please specify)									

	<i>Sl. no. of the baby in this cluster</i>	Skip to	1	2	3	4	5	6	7
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								
36	Type of latrine? Sanitary latrine/ septic tank - 1, Water seal/ slab latrine- 2, Pit latrine - 3, Open latrine - 4, Hanging latrine - 5, No latrine/ open place – 6								
37	Household durables?								
37.1	Almirah/Wardrobe	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							
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	Observe materials of the floor: Concrete-1, Soil-2, Bamboo-3, Wood-4								
38.1	Observe materials of the wall: Concrete-1, Soil-2, Bamboo-3, Wood-4, Plywood-5, Tin-6, Brick-7								
38.2	Observe materials of the roof: Concrete-1, Tin-2, Bamboo/wood-3, Straw-4, Tally-5, No roof-6								
39	Does it take more than half an hour to reach to the nearest vaccination centre from your home on foot? Yes-1, No-2								

Thank you

MSD FORM

Applicable to children born between 01-01-2012 and 31-12-2012
(Applicable to children born between 18 Poush 1418 and 17 Poush 1419)

1.	Cluster No	Skip to	1	2	3	4	5	6	7
2.	Date								
3.	Survey Area								

4.	Sl no. of sample (to be filled in by office)	Skip to	1	2	3	4	5	6	7
5.	Sl no. of children in this cluster								
6.	Household number/ G R number and Name of Head of Household								
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 centre : 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-01, Government employee-02, Non-government employee-03, Household worker/day labourer-04, Small business-05, Large business-06, Teacher-07, Professional -08, Others								
15.	Occupation of the father: Agriculture-01, Government employee-02, Non-government employee-03, Day labourer/rickshaw/van puller-04, Small business-05, Large business-06, Teacher-07, Professional -08, Driver (truck/bus/car)-09, Others								
16.	Number of family members								
17.	Has the baby ever received a vaccine?	Yes: 1 17.1							
		No: 2 18							
17.1.	Does the child have a 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, how many times should the child be taken to the vaccination centre 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 received)	GOB Outreach 1							
		NGO 2							
		All GOB Hospital 3							
		Private 4							
20.1.	20.1 Measles-Rubella	(Date/+/0)							
20.2.	20.2 Measles 2nd Dose	(Date/+/0)							

Reasons for Vaccination Failure

21.	For children who were never/partially vaccinated, ask the mothers or guardians "Why was the child not vaccinated or why was the child not fully vaccinated?" (Accept most important answer and circle the appropriate code)							
		<i>Sl. no. of the baby in this cluster</i>	1	2	3	4	5	6
	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 for 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. Feared 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 centre	40	40	40	40	40	40	40
	xiii. There was no vaccinator in the centre	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. There was an abscess at the place of the 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 centre	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
	xxiv. The session time was inconvenient	52	52	52	52	52	52	52
	4. Others (please specify)							

	<i>Sl. no. of the baby in this cluster</i>	Skip to	1	2	3	4	5	6	7
22	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								
23	Type of latrine? Sanitary latrine/ septic tank - 1, Water seal/ slub latrine- 2, Pit latrine - 3, Open latrine - 4, Hanging latrine - 5, No latrine/ open place – 6								
24	Household durables?								
24.1	Almirah/Wardrobe	Yes-1 No-2							
24.2	Table	Yes-1 No-2							
24.3	Chair/bench	Yes-1 No-2							
24.4	Clock	Yes-1 No-2							
24.5	Khat/Bed	Yes-1 No-2							
24.6	Radio	Yes-1 No-2							
24.7	Television	Yes-1 No-2							
24.8	Bicycle	Yes-1 No-2							
24.9	Motor Cycle	Yes-1 No-2							
24.10	Sewing Machine	Yes-1 No-2							
24.11	Telephone	Yes-1 No-2							
24.12	Mobile phone	Yes-1 No-2							
24.13	Refrigerator	Yes-1 No-2							
24.14	Car/Truck	Yes-1 No-2							
24.15	Boat	Yes-1 No-2							
24.16	Rickshaw/Van	Yes-1 No-2							
24.17	Electricity	Yes-1 No-2							
25	Observe materials of the floor: Concrete-1, Soil-2, Bamboo-3, Wood-4								
25.1	Observe materials of the wall: Concrete-1, Soil-2, Bamboo-3, Wood-4, Plywood-5, Tin-6, Brick-7								
25.2	Observe materials of the roof: Concrete-1, Tin-2, Bamboo/wood-3, Straw-4, Tally-5, No roof-6								
26	Does it take more than half an hour to reach to the nearest vaccination centre from your home on foot? Yes-1, No-2								
27	What is your monthly family income?								

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, Hospital	

Thank You

Maternal and Neonatal Health Form
Applicable to women who gave birth to live or dead child
between 01-07-2013 and 30-06-2014
(Applicable to mothers who gave birth children between 17 Ashar 1420 and 16 Ashar 1421)

1.	Cluster no
2.	Date
3.	Survey area

		Skip to	1	2	3	4	5	6	7
4.	Sl no. of sample (to be filled in by office)								
5.	Sl no. of children in this cluster								
6.	Household number/ G R number and Name of Head of Household								
7.	Name of the respondent								
8.	Name of the husband								
9.	Date of the birth of the latest child born (still or live)								
10.	Age of the respondent								
11.	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								
12.	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								
13.	Occupation of the mother: Housewife-01, Government employee-02, Non-government employee-03, Household worker/day labourer-04, Small business-05, Large business-06, Teacher-07, Professional -08, Others								
14.	Occupation of the father: Agriculture-01, Government employee-02, Non-government employee-03, Day labourer/rickshaw/van puller-04, Small business-05, Large business-06, Teacher-07, Professional -08, Driver (truck/bus/car)-09, Others								
15.	Number of family members								
16.	How many times have you given birth to a child (live and dead)?	Live							
		Dead							
		Total							
16.1.	Was the last child born alive or dead?	Alive : 1	17						
		Dead : 2	16.2						
		Total : 3	17						
16.2.	(If the child was dead) Within how many days after birth did the child die?								

Antenatal Care (ANC), Delivery and Postnatal Care**Antenatal Care (ANC)**

				Skip to	1	2	3	4	5	6	7
				Yes : 1							
					No : 2	22					
17.	Did you see any health worker for an Antenatal Check-up when you were pregnant with (NAME) (during pregnancy)? Interviewer: make sure that you make the respondent understand that you mean all levels of health worker including doctors.										
18.	To whom did you visit for Antenatal Check-up? Do not read out the answers. Circle & Write down all the answer ASK: Anything else?	MBBS doctor.....01 Nurse/midwife.....02 Paramedic.....03 FWV.....04 Medical assistant/SACMO05 MNCS Promoter06 HA.....07 FWA.....08 CHW09 TTBA10 TBA(Dai).....11 Homeopath12 Ayurved/Kabiraj.....13 Village doctors.....14 Spiritual person15 Other health worker.....16 Don't know/ can't say.....99 Others.....(Specify)									
19.	How many times did you have an Antenatal Check-up?										
20.	From where did you receive Antenatal Check-up during last pregnancy?	Satellite clinic.....01 Community Clinic02 FWC03 UHC04 Doctor's chamber05 Clinic06 Hospital07 Pharmacy.....08 Union Sub-Centre09 Don't know / can't remembers ..99 Others.....(Specify)									
21.	As part of your antenatal care during your last pregnancy, were any of the following done at least once? Ask about each item.	Were you weighed? Was your blood pressure measured? Did you give a urine sample? Did you give a blood sample? Did you have an ultra sonogram? Did you have an abdominal examination?	Yes: 1 No : 2								
22.	Did you take an iron tablet during last pregnancy?		Yes: 1 No : 2								
23.	How long did you take the iron tablets during your last pregnancy?	Months <input type="text"/> <input type="text"/> Don't know/can't remember.....99									

24.	here did you get these iron tablets?	Satellite clinic.....01 Community clinic.....02 FWC03 UHC04 Doctor's chamber05 Clinic06 Hospital07 Pharmacy.....08 Union Sub-Centre.....09 Don't know / can't remember.....99 Others (Specify)								
25.	Did you take Calcium supplement during last pregnancy?	Yes : 1 No : 2								
26.	How long did you take Calcium supplement during your last pregnancy?	Days <input type="checkbox"/> <input checked="" type="checkbox"/> Don't know /can't remember.....99								
27.	Where did you get Calcium supplement?	Satellite clinic.....01 Community clinic.....02 FWC03 UHC04 Doctor's chamber05 Clinic06 Hospital07 Pharmacy.....08 Rural dispensary /Union Sub-Center.....09 Don't know / can't remembers ...99 Others (Specify)								

Delivery

			Skip	1	2	3	4	5	6	7
28.	Where did the birth of (NAME)/delivery take place?	Own home.....01 In-laws' home02 My natal home (Parents' home)...03 UHC (Upazilla Health Complex)04 Medical College Hospital05 Private hospital/clinic06 NGO clinic.....07 Others (Specify)								
29.	Who assisted your delivery?	MBBS doctor.....01 Nurse/midwife.....02 Paramedic.....03 FWV04 Medical assistant/SACMO05 MNCS promoter06 HA.....07 FWA08 CHW09 TTBA10 TBA(Dai/Dhorni/Chauri)11 Homeopath12 Ayurved/Kabiraj.....13 Village doctors14 Spiritual person15 Neighbour or friend.....16 Others (specify)								

Postnatal Care

			Skip	1	2	3	4	5	6	7
30.	After the birth of your last child (NAME) did you visit any health worker for Postnatal Care?	Yes : 1								
		No : 2	33							
31.	Why did you make the visit?	For me.....1 For my baby..... 2 For me and my baby .. 3								
32.	To whom did you visit for Postnatal care?	MBBS doctor..... 01 Nurse/midwife..... 02 Paramedic..... 03 FWV 04 Medical assistant/SACMO 05 MNCS promoter 06 HA..... 07 FWA..... 08 CHW 09 TTBA 10 TBA(Dai/Dhorni/Chauni) 11 Homeopath 12 Ayurved/Kabiraj..... 13 Village doctors 14 Spiritual person 15 Neighbour or friend..... 16 Others (specify)								
33.	How many days after last delivery did you visit a health worker for the first Postnatal Care for yourself?	Days after <input type="checkbox"/> <input type="checkbox"/> ____ Didn't go for self- 98 Can't remember 99								
34.	How many days after last delivery did you visit a health worker for the first Postnatal Care for your baby?	Days after <input type="checkbox"/> <input type="checkbox"/> ____ Don't go for own self- 98 Can't remember 99								

Tetanus Toxoid Vaccination

		Skip	1	2	3	4	5	6	7
35.	Have you ever received a TT vaccination?	Yes : 1 36							
		No : 2 53							
36.	Do you have card for TT vaccination?	Yes : 1 38							
		No : 2 37							
37.	(If the respondent does not have a card, then ask) Were you ever given a card for TT vaccination?	Yes : 1 37.1							
		No : 2 38							
37.1.	If the answer for 37 is yes, then ask - Why didn't you preserve the card?								

Instruction: Record the answers for Q 38-48 from a card or history									
---	--	--	--	--	--	--	--	--	--

			Skip	1	2	3	4	5	6	7
38.	TT1	(Date/+/0)								
38.1.	What is the source of TT1 vaccination?	GOB Outreach-1								
		NGO-2								
		All GOB Hospital-3								
		Private-4								
39.	TT2	(Date/+/0)								
39.1.	From where did you receive TT2 vaccine?	GOB Outreach-1								
		NGO-2								
		All GOB Hospital-3								
		Private-4								
39.2.	Interval between TT-1 and TT-2	(write in weeks)	 Weeks						
40.	TT3	(Date/+/0)								
40.1.	Interval between TT-2 and TT-3	(write in months)	 Months						
41.	TT4	(Date/+/0)								
41.1.	Interval between TT-3 and TT-4	(write in months)	 Months						
42.	TT5	(Date/+/0)								
42.1.	Interval between TT-4 and TT-5	(write in months)	 Months						
43.	TT6	(Date/+/0)								
43.1.	Interval between TT-5 and TT-6	(write in months)	 Months						
44.	TT7	(Date/+/0)								
44.1.	Interval between TT-6 and TT-7	(write in months)	 Months						
45.	TT8	(Date/+/0)								
45.1.	Interval between TT 7 and TT8	(write in months)	 Months						
46.	TT9	(Date/+/0)								
46.1.	Interval between TT8 and TT9	(write in months)	 Months						
47.	TT10	(Date/+/0)								
47.1.	Interval between TT9 and TT10	(write in months)	 Months						
48.	Last TT vaccination	(Date/+/0)								
48.1.	Interval between TT 10 and last TT injection	(write in months)	 Months						
49.	Interval between latest TT injection and date of birth of the last child	(write in weeks)	 Weeks						
50.	Question number of TT vaccination received in the last pregnancy									
50a.	Was the child protected at birth?	Yes-1, No-2								

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, Hospital		

Adverse Effect Following Immunization

			Skip to	1	2	3	4	5	6	7
51.	Have you ever had an abscess after receiving a TT vaccine?	Yes : : 1 No : : 2 Don't know/Can't remember : : 9	51.1							
51.1.	Were you discouraged from taking the next TT vaccine due to an abscess or any other problem?	Yes : : 1 No : : 2	52							
52.	Did the health worker ask you about TT vaccine when you took your child for vaccination?	Yes : : 1 No : : 2 Not applicable: : 3 Don't know : : 9								
53.	(Check Q35: For those who did not receive TT injection, ask them) Why didn't you receive TT vaccine? [single response]									
54.	How many times should a woman receive TT vaccinations to be protected for the rest of her reproductive life? (write number or 'don't know')									
55.	Did you take a vitamin A capsule within six weeks/42 days of your last delivery?	Yes : : 1 No : : 2	55.1							
55.1.	If yes, then tell us from where you took the Vitamin A?	At home: : 1 Vaccination centre : : 2 Hospital : : 3	56							

Water, Sanitation and Household Items,

			Skip to	1	2	3	4	5	6	7
56	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									
57	Type of latrine? Sanitary latrine-1, Water seal/ slub latrine-2, Pit latrine-3, Open latrine-4, Hanging latrine-5, No latrine-6									
58	Household durables?									
58.1	Almirah	Yes-1 No-2								
58.2	Table	Yes-1 No-2								
58.3	Chair/bench	Yes-1 No-2								
58.4	Clock	Yes-1 No-2								
58.5	Khat/Bed	Yes-1 No-2								
58.6	Radio	Yes-1 No-2								
58.7	Television	Yes-1 No-2								
58.8	Bicycle	Yes-1 No-2								
58.9	Motor Cycle	Yes-1 No-2								
58.10	Sewing Machine	Yes-1 No-2								
58.11	Telephone	Yes-1 No-2								
58.12	Mobile phone	Yes-1 No-2								
58.13	Refrigerator	Yes-1 No-2								
58.14	Car/Truck	Yes-1 No-2								
58.15	Boat	Yes-1 No-2								
58.16	Rickshaw/Van	Yes-1 No-2								
58.17	Electricity	Yes-1 No-2								
59	Materials of the floor Concrete-1, Soil-2, Bamboo-3, Wood-4									
59.1	Materials of the wall Concrete-1, Soil-2, Bamboo-3, Wood-4, Plywood-5, Tin-6, Brick-7									
59.2	Materials of the roof Concrete-1, Tin-2, Bamboo/wood-3, Straw-4, Tally-5, No roof-6									
60	Does it take more than half an hour to reach to the nearest vaccination centre from your home on foot? Yes-1, No-2									
61	What is your monthly family income?									

Thank You

TT 5 Form
Applicable to 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.	SI number of sample (to be filled in by office)							
8.	SI number of woman in this cluster		Skip to	1	2	3	4	5
9.	Age of the respondent? (in years)			6	7			
10.	Marital status of respondent	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 a TT vaccine?		Yes : 1	15				
			No : 2	28				
15.	Do you have card for TT vaccinations?		Yes : 1	16				
			No : 2	15.1				
15.1.	(If the respondent does not have a card) were you ever given a card for TT vaccination?		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									
		Skip to	1	2	3	4	5	6	7
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						
18.	TT 3	(Date/+/0)							
18.1	Interval between TT2 and TT3 (Write in months)	 months						
19.	TT4	(Date/+/0)							
19.1	Interval between TT3 and TT4 (Write in months)	 months						
20.	TT5	(Date/+/0)							
20.1	Interval between TT 4 and TT5 (Write in months)	 months						
21.	TT6	(Date/+/0)							
21.1	Interval between TT5 and TT6 (Write in months)	 months						
22.	TT 7	(Date/+/0)							
22.1	Interval between TT 6 and TT7 (Write in months)	 months						
23.	TT8	(Date/+/0)							
23.	Interval between TT 7 and TT8 (Write in months)	 months						
24.	TT9	(Date/+/0)							
24.1	Interval between TT8 and TT9 (write in months)	 months						
25.	TT10	(Date/+/0)							
25.1	Interval between TT9 and TT10 (write in months)	 months						
26.	Last TT vaccine	(Date/+/0)							
26.1	Interval between TT 10 and last TT injection (write in months)	 months						
27.	Have you ever had an abscess after receiving a Tetanus vaccine?	Yes : 1	27.1						
		No : 2	28						
27.1	Are you discouraged to take the rest of the TT injections due to an abscess or any other problem?	Yes : 1							
		No : 2							
28.	How many times should a woman receive TT vaccines to be protected for the rest of her reproductive life? (write number or 'don't know')								
29.	Why did you not take any TT vaccine? (ask those who have never had a TT injection)								

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, Hospital	

Thank you

Vitamin A

(Applicable to 6 to 59 month-old children)

- 1. Applicable to children aged 6-11 months born between 12/4/2013 and 7/10/2013 (Applicable to children born between 29 Choitra 1419 and 22 Ashin 1420)**
- 2. Applicable to children aged 12-59 months born between 2/5/2009 and 4/11/2013 (Applicable to children born between 19 Boishak 1416 and 28 Choitra 1419)**

1.	Cluster number
2.	Date
3.	Survey area

			6-11 months							12-59 Months						
4.	Sl. no. of the child in this cluster	Skip to	1	2	3	4	5	6	7	8	10	11	13	14		
5.	Name of the child															
6.	Name of the child's father															
7.	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															
10.	Ask mother/guardian: Did your child (6-59 months) receive vitamin A during the Vitamin A Plus Campaign held April 5, 2014 (22 choitra ,1421)	Yes: 1	11													
		No: 2	10.1													
			6-11 months							12-59 Months						
			1	2	3	4	5	6	7	8	10	11	13	14		
10.1.	<p>If the child (6-59 months) was not given Vitamin A during the Vitamin A Plus Campaign held April 5, 2014 then ask:</p> <p>Why was the child not given Vitamin A during the Vitamin A Plus Campaign held April 5, 2014)</p> <p>(If there are multiple answers, ask which one is more important and code accordingly)</p>	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													
		The centre was too far	: 10													
		The session time was inconvenient	: 11													
		Was afraid of side effects	: 12													
		Was waiting to come back home with vitamin A	: 13													
		Religious/Social obstacles	: 14													
	Was not at home	: 15														
	Other (specify)															

				1	2	3	4	5	6	7	8	10	11	13	14	13	14
11.	How did you learn about the Vitamin A Plus Campaign held April 5, 2014 (Multiple answer)	GOB/ City corporations FW visit	: 01														
		City Corporation's Health Worker:	: 02														
		NGO worker visit	: 03														
		Teacher visit	: 04														
		Other volunteer visit	: 05														
		Family/ neighbour/ 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														
		Mobile SMS	: 15														
		Other (specify)															

Thank you

OPV Form
(Applicable to 0-59 month-old children)

Applicable to those who were born between January 21 2009 and 26 December 2013
(8 Magh 1415 and 12 Poush 1420)

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)															
10. Ask mother/guardian: "Did your child receive polio drops during the first round of the 21 st NID held on 21 st December, 2013 (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												
		Mobile centre	3	10.2											
10.2. If the child (0-59 months) was not vaccinated at the fixed site during 21 st NID held 21 st December, 2013, then ask: "Why was your child not vaccinated at the fixed site?" If the response is more than one, then ask: "Which one of those is the most important reason?" and code accordingly?		Didn't know	:99												
		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 s/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)															

			Skip to	1	2		3	4	5	6	7
11.	Ask mother/guardian: Did your child receive polio drops during measles-rubella campaign held on January 25 to 13 th February, 2014 (or 4 days afterwards?)		Yes : 1	11.1							
			No : 2								
11.1.	If yes, ask, where was the child vaccinated?	At fixed site	1	12							
		Child-to-Child Search	2	11.2							
		Mobile centre	3	11.2							
11.2.	If the child (0-59 months) was not vaccinated at the fixed site held on January 25 to 13 th February, 2014 (or 4 days afterwards) ask "Why was not your child vaccinated/vaccinated at the fixed site"? If the response is more than one then ask "which one of those is the most important reason and code accordingly?"	Was very busy :01									
		Was traveling :02									
		Doesn't believe in vaccine :03									
		The child had received vaccination in previous time :04									
		The child was sick, so s/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 21 st December, 2013 (Bangla 7 th poush 1420) and January 25 to 13 th February, 2014 (bangla 12 th magh-1 st falgun 1420) (or 4 days afterwards) during measles-rubella campaign (Please code)?" (Multiple answer)	City Corporation's Health Worker :02									
		NGO worker visit :03									
		Teacher visit :04									
		Other volunteer visit :05									
		Family/neighbour/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									
		Through mobile SMS :15									
		Other (specify)									

Thank You

MR Form
Applicable to 16-17-year-old adolescent girls

1.	Cluster No.								
2.	Household Number/G R number and name of head of household								
3.	Date								
4.	Survey Area								
5.	Name of adolescent								
6.	Father's Name/Husband's Name								
7.	SI number of sample (to be filled in by office)								
8.	SI number of adolescent in this cluster		Skip to	1	2	3	4	5	6
9.	Age of the adolescent? (in years)								
10.	Marital Status		Married/ divorced/ separated - 1						
			Unmarried - 2						
11.	Educational Qualification of the adolescent: 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 adolescent: Housewife-1, Government employee-2, Non-government employee-3, Household worker-4, Small business-5, Large business-6, Student-7 Teacher-8, Professional -9, Others								
13.	Total family member								
14.	Have you ever received a TT vaccine?		Yes : 1	15					
			No : 2	16					
15.	Do you have card for a TT vaccine?		Yes : 1	17					
			No : 2	15.1					
15.1	(If the respondent does not have any card) Were you ever given a card for TT vaccine?		Yes : 1	15.2					
			No : 2	17					
15.2	(If yes) Why did you not preserve the TT vaccination card card?								
16.	Why did you not take any TT vaccine? (ask those who did not receive any TT vaccine)								
17.	Have you received measles-rubella vaccine while received TT vaccination?		Yes : 1	17.1					
			No : 2	17.3					
17.1	With which TT vaccination have you received measles-rubella vaccine?								
17.2	From where have you received measles-rubella vaccine?		GOB Outreach :1						
			NGO :2						
			All GOB Hospital :3						
			Private B:4						
17.3	Why did you not receive measles-rubella vaccine?								

Thank you



EXPANDED PROGRAMME ON IMMUNIZATION

Directorate General of Health Services
Mohakhali, Dhaka-1212, Bangladesh