BANGLADESH

EPI

COVERAGE EVALUATION SURVEY 2011

EXPANDED PROGRAMME ON IMMUNIZATION

Directorate General of Health Services

Mohakhali, Dhaka 1212, Bangladesh

EPI Coverage Evaluation Survey 2011

Survey Conducted by	:	Nielsen Bangladesh
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MESSAGE

Professor Dr. A. F. M. Ruhal Haque MP
Minister
Ministry of Health & Family Welfare
Govt. of the people's Republic of Bangladesh

I am pleased to learn that EPI Coverage Evaluation Survey (CES) report 2011 has been finalized. This survey report is an important document which would help the policy makers, national and local managers, and field level staff to compare and analyze different districts situation in order to plan and undertake necessary steps for improving the coverage of those districts.

EPI is the gateway to primary health care that started in Bangladesh in April 1979 with a view to immunize all under one year age children for prevention against six major vaccine preventable diseases. As a consequence, in 2009, with the introduction of Hib in the form of pentavalent vaccine, EPI covers protection against 8 diseases.

The success of EPI has attracted attention at home and abroad. Bangladesh acquired United Nations Millennium Development Goal Award 2010 for successful implementation of activities towards achieving MDG 4. Hon'ble Prime Minister Sheikh Hasina herself received this award in New York. EPI has a very significant role in attaining this success.

The vaccination coverage has been increased in recent years. The CES 2011 shows that the coverage of BCG is 99%, which reflects the universal accessibility of the vaccination service. The Fully Vaccination Coverage (FVC) within one year is 80.2%.

I must congratulate all the government and non-government staff, field workers, development partners, parents of children, volunteers and all sorts of people for their valuable contribution in achieving this tremendous success. Current government is committed to ensure health for all and we have to work more to reach the un-reached children for achieving the national target of 90% FVC by the year 2016. Let us work together for the betterment of our children and women for building a healthy nation.

Joy Bangla, Joy Bangabandhu.
Long live Bangladesh.

Prof. Dr. A. F. M. Ruhal Haque

MESSAGE

Prof. (Dr.) Syed Modasser Ali
Advisor to
The Hon'ble Prime Minister of the
People's Republic of Bangladesh
(Rank & Status of a Cabinet Minister)
Health & Family Welfare & Social Welfare Ministry

It is my great pleasure to see that "EPI Coverage Evaluation Survey (CES) report 2011" under Directorate General of Health Services is going to be published.

Vaccination is an effective, safe and economical intervention that has brought dramatic improvements in health of children and women. EPI can be used as a strong pillar for providing other health interventions as well.

The Coverage Evaluation Survey (CES) conducted in 2011 shows that the coverage of BCG is 99% which reflects the high accessibility of the community to vaccination service. The CES 2011 revealed that the percentage for Fully Vaccinated Children (FVC) by 12 months of age increases from 79% in 2010 to 80.2% in 2011. In fact all children should be vaccinated with all antigens in right interval before observing their first birth day. I believe as the accessibility rate to vaccination with first contact is 99%, we need to put all of our efforts to complete all required doses before one year of age to achieve 90% national target.

The immunization programme in Bangladesh has been recognized for its sustained high coverage level and its contribution to the reduction in childhood morbidity and mortality rates. The country needs to further intensify efforts for increasing access for safe immunization and strengthen surveillance against all vaccine preventable diseases. Future decisions for introducing new vaccines require special studies and surveillance activities to ensure that the vaccines are cost-effective in light of the country's burden of disease.

The Government of the People's Republic of Bangladesh is committed to ensure health for all. Therefore, our present government under the creative and competent leadership of Honorable Prime Minister Sheikh Hasina, the daughter of the Father of the Nation Bangabandhu Sheikh Mujibur Rahman is implementing the Community Clinics to render the health care services to the door-step of the community.

I extend my sincere gratitude to Expanded Programme on Immunization of conducting CES 2011. I hope the findings of this survey will be useful to all concerned.

Jai Bangla, Jai Bangabandhu.
Bangladesh live for ever

Professor (Dr.) Syed Modasser Ali

MESSAGE

Dr. Capt. (Rtd.) Mozibur Rahman Fakir MP
State Minister
Ministry of Health & Family Welfare
Govt. of the People's Republic of Bangladesh

I am pleased to see that after completion of Coverage Evaluation Survey 2011, the Expanded Programme on Immunization (EPI) under Directorate General of Health Services is going to publish its report. EPI in Bangladesh is recognized for its sustained high coverage level which is also contributing reduction in childhood morbidity and mortality rates. Ensuring health for all is a commitment of the present government, accordingly EPI service has been made available at the door-steps of the community through 130,000 fixed and outreach centers and community clinics.

Immunization is one of the cornerstones of health and well-being, it contributes to improve health and life expectancy through its social and economic impact at national and community level; it is a cost-saving intervention which prevents needless suffering. Therefore, immunization should be seen as a critical part of a wider health system strengthening effort and a scaling up of efforts to meet the Millennium Development Goals (MDGs).

The EPI will make every effort to achieve and sustain the MDGs and contribute in reduction of childhood morbidity and mortality by 'two thirds between 1990 and 2015'.

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

Joy Bangla, Joy Bangabandhu.
Long live Jananetri Sheikh Hasina

Dr. Capt. (Rtd.) Mozibur Rahman Fakir

MESSAGE

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

The Government of the People's Republic of Bangladesh is highly committed to provide basic health services to all with special emphasis on children and women. The Expanded Programme on Immunization (EPI) in Bangladesh is one of the major health interventions to reduce child morbidity and mortality. Its mission is to reach a level where vaccine preventable diseases will no longer a public health concern by providing high quality EPI services to all target population.

EPI's journey was initiated with 6 conventional vaccines against six diseases on 7th April, 1979. Later, with the support from Global Alliance for Vaccines and Immunization (GAVI), Hep-B and Haemophilus influenza type b vaccines were incorporated into EPI program as a part of new and under used vaccine introduction. All these EPI-vaccines have significantly reduced childhood morbidity and mortality.

The Coverage Evaluation Survey (CES) is an important tool for estimating the levels of immunization coverage at either national or district levels. It also allows comparison with administrative coverage estimates and other information, which is usually not available through routine monitoring systems. Further it indicates reasons for non immunization, proportion of administered doses that are valid and coverage by categories such as gender and socio-economic status. CES data and information also help us in future planning, developing strategies for improvement of quality service delivery.

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

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

Md. Humayun Kabir

PREFACE

The Government of the People's Republic of Bangladesh is committed to provide basic health services to all with special attention to children and women. Accordingly, in 1979 government took the initiatives for implementing vaccination program to combat six vaccine preventable diseases - Diphtheria, Whooping cough, Tetanus, Poliomyelitis, Tuberculosis and Measles. In 1985, the Government of Bangladesh had taken further initiative to increase immunization coverage levels, which was only 2% at that time. It was decided that a revitalized plan of action needed to develop to achieve Universal Childhood Immunization (UCI). So, comprehensive service delivery system was introduced in a phase wise manner from 1986 in view to cover all districts throughout the country. Hepatitis-B vaccine had been incorporated in EPI in a phased manner from 2003 and completed nationwide in 2005. Hib Vaccine in the form of pentavalent vaccine introduced in EPI in January 2009 and phase wise completed nationwide by July 2009.

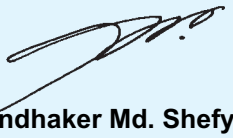
The program is saving thousands of children from premature death annually. The program also aims at women of childbearing age (CBA) and pregnant women to provide TT vaccine against maternal and neonatal tetanus. As a result Bangladesh has reached the threshold for Neonatal Tetanus (NT) elimination. Elimination of NT in Bangladesh is considered to be a public health success, as there was high incidence of NT prior to the introduction of immunization.

It is true that EPI in Bangladesh has brought visible and tangible changes over the years in terms of childhood mortality and morbidity. 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 at right time. The National Coverage Evaluation Survey (CES) 2011 revealed that the percentage for Fully Vaccinated Children (FVC) increased from a plateau, between 52% - 64% for some years to 80.2%.

In 2002, for the first time in Bangladesh, district wise CES was conducted. This 18th survey report also 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 staff to compare and analyze different districts situation in order to undertake necessary measures for improving the vaccination coverage and programme qualities of those districts.

I would like to express my sincere thanks to WHO and UNICEF for their generous support in conducting the EPI Coverage Evaluation Survey 2011.

Finally, I would like to thank Nielsen, Bangladesh for carrying out this study maintaining high standard of quality. Also, special thanks to the respondents who provided required information for the survey through spending their valuable time without which this study would not have been possible.



Prof. Dr. Khondhaker Md. Shefyetullah
Director General
Directorate General of Health Services
Mohakhali, Dhaka

FOREWORD

It is indeed a great pleasure for me to write forwarding note for EPI National Coverage Evaluation Survey (CES) 2011.

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 Program 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 receiving BCG, which has increased a mere 2% in 1985 to over 99% in 2011. However, the percentage of children under the age of one receiving all doses of vaccines at the right time and right interval has been achieved to 80% during the same period due to dropout rate and invalid doses.

EPI Coverage Evaluation Survey (CES) 2011 was carried out by Nielsen Bangladesh in collaboration with EPI, WHO and UNICEF. The purpose of conducting 2011 CES is to assess the routine childhood vaccination coverage, TT vaccination coverage among women with children 0-11 months, OPV, Vitamin A and Albendazole coverage during 19th NID, TT vaccination coverage among the women of 18-49 years age and immunization program quantity coverage (valid and crude). The survey was carried out between the periods of Nov-Dec 2011. The survey was conducted in all 64 districts, 6 City Corporations and 2 slums. This survey results will give us a better picture of districts and City Corporations situation and enable us to analyze the coverage of each district and City Corporations to identify the performances and also to take special activities to improve the situations.

I would like to thank all personnel in EPI HQ for their valuable contributions to the CES 2011. My sincere thanks to Nielsen Bangladesh who's hard work have made this survey successful. My special thanks to UNICEF for their financial support to carry out this important survey. I also than WHO for their contribution during data management.

I believe this CES report will serve as a useful monitoring tool for all managers working in government and non-government organizations to reach all children. We look forward to all concern persons in the country for using the CES 2011 document.

Dr. Syed Abu Jafar Md. Musa
Director PHC &
Line Director, MNC&AH
Directorate General of Health Services
Mohakhali, Dhaka

ACKNOWLEDGEMENT

As a part of program performance evaluation, Bangladesh has been conducting National Coverage Evaluation Survey (CES) since 1991. The survey would provide us national, divisional, district and city corporation level performance of EPI activities. In 2011 the survey was conducted in all 64 districts, 6 city corporations, 2 slums in Dhaka and Chittagong city corporations. The survey result provides us more detail picture of district's immunization performance individually. It would also help us to analyze and identify comparatively low performing districts i order to take appropriate measures to improve the situations.

It is evident that EPI coverage is increasing every year. In 2010, valid Fully Vaccination Coverage (FVC) was 79.4%, whereas in 2011, it goes up to 80.2%. At the same time, using eight vaccines, childhood mortality and morbidity from those eight vaccine preventable diseases is almost nil that contributes in decreasing infant mortality rate. Acquiring this success, Bangladesh achieved international awards in 2010, from United Nations received by Honorable Prime Minister Sheikh Hasina and in 2009, from GAVI Forum received by Prof. Dr. A. F. M. Ruhal Haque MP, Hon'ble Minister, Ministry of Health and Family Welfare.

I must congratulate our officers at EPI Head Quarter for giving support in planning, organizing and conducting such a huge assignment. I also express my gratitude to Dr. Jucy Merina Adhikari, Immunization Specialist, UNICEF for her sincere support and contributions in this survey. Special thanks to WHO and UNICEF for their valuable contributions that made this enormous work a success. My sincere thanks to Nielsen Bangladesh for supporting Expanded Programme on Immunization (EPI) through conducting the survey and preparing this report.

Hope this report would be useful for all concern persons.

Dr. Md. Tajul Islam A. Bari
Program Manager, EPI & Surveillance
Directorate General of Health Services
Mohakhali, Dhaka

TABLE OF CONTENTS

ACRONYMS

BBS	Bangladesh Bureau of Statistics
BCG	Bacillus Calmette Guerin
BCC	Barisal City Corporation
CC	City Corporation
CCC	Chittagong City Corporation
CES	Coverage Evaluation Survey
DCC	Dhaka City Corporation
DPT	Diphtheria, Pertussis and Tetanus
EA	Enumeration Area
EPI	Expanded Programme on Immunization
IU	International Unit
KCC	Khulna City Corporation
LAUNCH	Large Number of Unimmunized Children
MNT	Maternal & Neonatal Tetanus
NGO	Non-Government Organization
NID	National Immunization Days
NT	Neonatal Tetanus
NVAS	National Vitamin A Supplementation
OPV	Oral Polio Vaccine
PAB	Protected at Birth
PPS	Probability Proportional-to- Size
PNVAC	Post-natal Vitamin A Capsule
RCC	Rajshahi City Corporation
SCC	Sylhet City Corporation
SPSS	Statistical Package for Social Science
TT	Tetanus Toxoid
UNICEF	United Nations Children's Fund
VAC	Vitamin A Capsule
VAS	Vitamin A Supplementation
WHO	World Health Organization

GLOSSARY

Cluster	Cluster is defined an enumeration area which constitute of on average with 120 households
Crude	Vaccine received irrespective of vaccination schedule such as exact age and interval for each antigen
Fixed Sites	Received vaccine from EPI outreach centers and hospitals (in case of NIDs)
Fully Vaccinated	If a child receive doses of the “standard eight” antigens–BCG, Pentavalent (diphtheria, pertussis, tetanus, Hib, and HepB) 3 doses, polio (3 doses), and measles vaccines
Invalid	Vaccine received not following EPI vaccination schedule of exact age and dose interval for each antigen
Mahallah	Smallest identifiable area of municipalities, which is known to the inhabitants as mahallah
Mouza	A revenue village with a jurisdiction list number and defined area is called mouza.
PAB	Protection at birth, the newborn is protected if the mother has tetanus antibody status while born. The mother achieved this status by taking TT vaccine
Valid	Vaccine received following EPI recommended exact age and dose interval for each antigen
Upazila	Lowest administrative unit

EXECUTIVE SUMMARY

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

The acts of introducing pentavalent vaccine, organizing workshop in medical colleges and hospitals, introducing monitoring tools with software in some selected districts, providing training to statistician, and Medical Technologist (EPI) to monitor the vaccination status of the children, organizing NID

twice in a year, maintaining effective management of 8 sites strategies, periodically organize crush programs for hard-to- reach areas, making vaccine available, child register to follow up the immunization status, formulating micro plans for the health workers and strengthening monitoring system are major efforts to increase the immunization coverage.

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

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

Though Bangladesh has got a remarkable success in reaching universal coverage with BCG, still it is behind the target coverage of 90% with valid doses of all anitigens. BCG coverage was 99% in CES 2010 while it was only 2 percent in 1985. In 2006, full vaccination coverage was 71 percent and the increase to 75.2 percent in 2009 and 79.4 percent in 2010 across the country. The previous CESs shows that district-wise coverage varies from one year to another. This ups and downs in the coverage in the district level increase demand for identifying the causes and strengthening the monitoring activities.

To make strategic plan in order to achieve coverage objective, Coverage Evaluation Survey is an important means. Established in 1991 as a monitoring tool to assess performances, achievements, and progress of the Expanded Programme on Immunization (EPI), the government of Bangladesh, in collaboration with WHO and UNICEF, has been conducting the periodic EPI National Coverage Evaluation Survey, also known as CES, which were conducted every year, except in 1996 and 2004. Since then, a total of 17 CESs have been conducted so far. In 2011, the 18th CES was conducted with the financial support from UNICEF Bangladesh.

ROUTINE CHILDHOOD VACCINATION COVERAGE

More than three quarters (80 percent) of the total surveyed children were found to be fully vaccinated at the appropriate age and interval across the country by their first birth day. Compared to that in CES 2010, the valid vaccination coverage increased by 1 percentage point from 79 percent in CES 2010 to 80 percent in CES 2011. As regards the specific antigen, it should be mentioned here that BCG coverage was 99 percent, OPV1 and Penta1 99 percent, OPV2 98 percent and Penta2 97 percent, while OPV3 was 95 percent and Penta3 was 90 percent. The last antigen, measles was 86 percent. The analysis make above shows a gradual decline in the subsequent dose and/or antigen. A notable decline in coverage was observed between BCG and measles. The valid coverage declined down from 99 percent for BCG to 86 percent for measles. This remarkable gap between BCG, which is termed as the access to vaccination service, and the last antigen measles resulted from dropout and the act of administering invalid dose. However, no marked variation was observed between the two antigens e.g. Penta and OPV of same dose since these antigens were administered on the same day except OPV3. Penta1 coverage was found to be 99 Percent, Penta2 97 percent and Penta3 90 percent as against OPV1 99 percent, OPV2 98 Percent and OPV3 95 percent (see Figure A3).

By type of residence, compared to their urban counterparts valid coverage was found to be higher among the children who reside in rural areas. Eighty one percent of the children were found to be fully vaccinated with all the valid doses in rural areas as against 78 percent among the urban residents (see Figure A3). However, by gender, no difference was observed in the coverage between males and females (80 percent for both males and females) (see Figure A40).

Across the division, full valid vaccination coverage by the age of 12 months was the highest in Rajshahi (85.8 percent) and the lowest in Sylhet division (74.8 percent). It was 83 percent in Khulna, 81.2 percent in Rangpur, 79.6 percent in Dhaka, 77.9 percent in Chittagong, and 75.2 percent in Barisal divisions (see Figures A21, A27, A24, A18, A15, A12, and A9, respectively).

Among the city corporations the proportion of fully vaccinated children found to be the highest in Rajshahi City Corporation (89 percent) and the lowest in Sylhet City Corporation with 62 percent, which was being followed by Chittagong City Corporation (74 percent), Dhaka City Corporation (75 percent), Barisal City Corporation (78 percent), and Khulna City Corporations (79 percent) (see Figure A33).

On the contrary, while analyzing the trend in full valid vaccination coverage of the children less than 12 months, a sharp enhancement was observed over the last one decade. The valid coverage increased from 56 percent in 2002 to 80.2 percent in 2011. Between the years 2002 and 2006 the valid coverage increased by 15 percentage points - from 56 percent in 2002 to 71 percent in 2006. However, between 2007 and 2009 no marked improvement was observed (75 percent vs. 75.2 percent). It rose upto 79.4 percent in 2010 and 80.2 percent in 2011 (see Figure A6).

As regards the crude coverage, it should be mentioned here that 91.9 percent of the children were found to be fully vaccinated. Compared to that in CES 2010, it was 1 percentage point lower. By specific antigen, crude coverage was 99 percent for BCG, 97 percent for Penta3 and OPV3, and 92 percent for measles. By type of residence, it was 92 percent in rural and 91 percent in urban areas (see Figure A1).

Similarly, by gender, a slight difference in the coverage was observed between male and female children (93 percent of the males received all the antigens as against 91 percent of the females) (see Figure A34).

Among the administrative divisions, crude coverage was found to be the highest in Rajshahi (95 percent) and the lowest in Sylhet divisions (88 percent). Crude coverage was 94 percent in Khulna, 92 percent in Dhaka, 90 percent in Chittagong and Barisal divisions. However, it was 92.3 in Rangpur division (See Figures A19, A25, A16, A13, A10, and A7 respectively). As regards to access to vaccination service with BCG, it was found to be the highest (99.7 percent) in Rajshahi division and the lowest (97.9 percent) in Sylhet division. BCG coverage was 99.6 percent in Khulna, 99.5 percent in Barisal, 98.9 percent in Dhaka, and 98.4 percent in Chittagong divisions.

By city corporation, crude coverage was the highest in DCC and RCC (99 percent), and the lowest in SCC (81 percent). Crude coverage in KCC was 93 percent, which was being followed by BCC (93 percent) and CCC (86 percent) (see Figure A31).

The survey findings revealed marked variation between the valid and crude coverage rates. It was 12 percentage points between crude and valid coverages. The act of administering vaccine without following the EPI-recommended age and/or interval between the subsequent doses attributed to such differences between crude and valid coverages. Further, dropouts from vaccination service attributed to lower crude coverage. Therefore, valid vaccination coverage becomes lower. For

example, Penta1-measles dropout rate was the highest in Sylhet division (10 percent) and the lowest in Rajshahi division (5 percent), which attributed to the lower vaccination coverage rate in Sylhet division (74.8 percent) and the higher coverage rate in Rajshahi division (85.8 percent).

It is to be noted here that the data of CES 2011 were collected from two basic sources - card and mother's history. Estimation of vaccination coverage was based on both the sources. The coverage based on the vaccination cards was 53 percent and that based on history was 27 percent. Therefore, the overall coverage from cards and history revealed that 80.2 percent of the children aged between 12-23 months received all the recommended vaccines before their first birthday. Compared to the coverage of CES 2006, full valid vaccination coverage was 9 percentage points higher in 2011. Extensive intervention and involvement of the program needed contributed much to the increase in the vaccination coverage in 2011.

COVERAGE IN 15 LOW PERFORMING DISTRICTS

With an aim to contribute to the national coverage, EPI along with the financial and technical assistance from UNICEF has taken a special initiative for improving the coverage of 15 low performing districts at least up to the national level. After one year of intervention, EPI conducted CES 2007 which highlighted the 15 low performing districts. The findings show that there was 69 percent coverage in all 15 districts. This coverage was 19 percentage points higher compared to that in CES 2005 and 9 percentage points higher than that in CES 2006. Further, CES 2009 provides a special analysis of the 15 low performing districts, which shows that 74 percent of the children from 15 districts were fully vaccinated by the age of 12 months. Compared to that in CES 2007, full vaccination coverage by the age of 12 months increased by 5 percentage points (69 percent in 2007 and 74 percent in 2009).However, compared to that in CES 2009, full valid coverage by the age of 12 months increased by 2 percentage points in 2010 (74 percent in 2009, and 76.4 percent in 2010). CES 2011 observed further improvement in valid coverage. Valid coverage increased by 3 percentage points from 76.4 in 2010 to 79.4 percent in 2011 (see Table A7).

COVERAGE IN 23 LAUNCH DISTRICTS

Since Bangladesh is one of the countries with Large Number of Un-immunized Children (LAUNCH), EPI aimed to vaccinate the maximum number of unimmunized children towards achieving maximum coverage. For that reason, based on the findings of CES 2006, EPI ranked all the 70 survey units and selected 23 districts having higher numbers of DPT3 missed out case. Addressing the aforesaid issue, EPI has taken special initiative with the financial and technical assistance from WHO with a view to improve the coverage of those 23 DPT3 missed out districts at least up to the national level. As part of monitoring activities, an analysis of 23 districts was done separately with the data of these of 23 districts derived from previous CESs. The finding shows that full valid vaccination coverage by the age of 12 months has increased by 7 percentage points from 72 percent in 2006 to 79 percent in 2011. Full valid vaccination coverage was 75 percent in 2009 and 80 percent in 2010 (see Figure A8).

PROGRAM QUALITY

Incidence of invalid dose: A dose is considered as invalid while a vaccine is administered without following the exact age and interval as recommended by EPI. Nationally, 4 percent of the total Penta1 doses, 5.5 percent of the total Penta2 doses, 6.8 percent of the total Penta3 doses, and 3.8 percent of measles doses were found to be "invalid" (see Figure C5-C6). Incidences of invalid Penta1 dose were found to be almost similar both in urban (3.7 percent) and rural (4.1 percent) areas while for measles it was 3.7 percent in rural and 4.2 percent in urban areas (see Figure C5).

Dropout: A child is considered as a dropout when s/he misses any of the subsequent doses of the recommended antigens (three doses of Penta, 3 doses of OPV, and one dose of measles vaccine). Overall, Penta1-Penta3 dropout rate was found to be 2.5 percent and Penta1-measles 7.2 percent (see Figure C11). The analysis shows no variation in Penta1- Penta3 dropout rates between the rural and the urban areas. However, a slight variation was observed regarding Penta1-measles dropout rate between rural and urban areas. It was 7.1 percent in rural and 7.6 percent in urban areas.

Abscess following vaccination: Adverse Events Following Immunization (AEFI) in the form of abscess may occur in some cases at the site of parental vaccination. The survey findings show that nationally less than 1 percent of the children who received vaccines have had an abscess (see Figure C21). Occurrence of abscesses was less prevalent among the children residing both in urban and rural areas (1 percent).

Card retention rate: Across the country, 77 percent of the surveyed children were found to have retained the vaccination card. Urban-rural variation was 4 percentage points. Card retention rate was found 78 percent in rural areas as against 74 percent in urban areas. Compared to that in CES 2010 (73 percent), it was found 4 percentage points higher in CES 2011 (77 percent) (Figure C1).

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

While showing a reason for never vaccination (see Table D1), one-third (33 percent) of the mothers/caregivers reported about their scare of side- effects following the vaccination, while 14 percent of them mentioned that they don't believe in vaccination. Another 11 percent of the mothers/caregivers mentioned that they were busy with their household chores. However, 7 percent of them commented that they don't believe in the usefulness of vaccination. Further, another 7 percent of them reported that the vaccination center was too far. Lack of awareness about vaccination site was reported by 4 percent of the mothers/caregivers. The survey findings revealed that compared to those who reside in rural areas urban mothers were more aware of the childhood vaccination service. Eight percent of the mothers from rural areas mentioned that they were not aware of vaccination service. Similar to the national finding, scare of side-effects following the immunization was found to be the highest both in urban and rural areas.

Regarding partial vaccination, (see Table D4), it can be said that about one-fifth (18 percent) of the mothers reported that they were busy with their household chores. The state of not being aware about the measles vaccination schedule was reported by 18 percent of the mothers/caregivers. A little over one-tenth (12 percent) of them reported that their children were sick, so they couldn't vaccinate them. Scare of side-effects following vaccination was revealed as a reason of no immunization for 6 percent of the mothers/caregivers. However, 5 percent of them forgot to vaccinate their children; a similar percentage of the mothers were unaware of vaccination schedule of 2nd or 3rd dose. This was being followed by the following arguments: "mothers/caregivers were at father's home" (3 percent), and "the child was sick, so the vaccinator didn't give the vaccine" (3 percent). Likewise, pre-occupation of the mothers with their household chores, the state of being unaware of measles vaccination schedule, and sickness of the children were found to be the major causes for partial vaccination both in urban and rural areas.

Knowledge about the common side-effects of vaccination: Children experience minor side-effects following vaccination. CES 2011 assessed mothers'/caregivers' knowledge regarding the side-effects. The finding shows that ninety one percent of them reported fever as a common side-effect of vaccination. A small proportion of them (2 percent) mentioned about abscess (see Figure C24). Almost similar findings were revealed both in urban and rural areas.

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

VALID TT VACCINATION COVERAGE

Forty two percent of the surveyed mothers received 5 doses of TT vaccine nationally, with a slight variation between urban and rural areas. The coverage was 42 percent in rural and 44 percent in urban areas. As it was expected, TT vaccination coverage was found to be lower between the subsequent doses. Ninety six percent of the surveyed mothers received TT2, 84 percent TT3 and 64 percent TT4 nationally. For TT2, there was no variation in the coverage between urban and rural areas. However, for TT3 the difference was 2 percentage points (83 percent in rural and 85 percent in urban areas), and for TT4, it was 1 percentage point - 64 percent in rural and 65 percent in urban areas (see Figure F2).

By rural division, TT5 coverage was found to be the highest (46 percent) in Chittagong division and the lowest (33 percent) in Barisal division. It was 45 percent in Sylhet, 44 percent in Dhaka, 43 percent in Rangpur, 40 percent in Khulna, and 39 percent in Rajshahi divisions, respectively (see Figure F11). Among the city corporations, the highest (54 percent) coverage of TT5 was found in DCC and the lowest (34 percent) in SCC. In contrast, TT5 coverage was 41 percent in KCC, 37 percent in BCC, and 36 percent in CCC, respectively (see Figure F13).

CRUDE TT VACCINATION COVERAGE

More than half (58 percent) of the mothers received 5 doses of TT vaccine without following the proper vaccination schedule while 96 percent received TT2, 88 percent TT3, and 74 percent TT4. Similar to valid vaccination coverage, crude coverage rate was lower for each subsequent dose. TT3 vaccination coverage was 8 percentage points lower than that of TT2 and 14 percentage points higher than that of TT4 (see Figure F1).

By vicinity, TT5 coverage was similar (58 percent) both in urban and rural areas. Difference in the coverage of TT3 and TT4 was 1 percentage point between urban and rural areas. TT3 coverage was 88 percent in urban areas as against 87 percent in rural areas while TT4 coverage was 75 percent in urban and 74 percent in rural areas, respectively (see Figure F1).

Among the rural divisions, TT5 coverage was found to be the highest (62 percent) in Chittagong and the lowest (51 percent) in Barisal divisions. In contrast, the coverage in Sylhet division was 61 percent. It was 60 percent in Dhaka, 59 percent in Rangpur, 57 percent in Rajshahi and 54 percent in Khulna divisions (see Figure F10). By city corporation, TT5 coverage was found to be the highest in RCC and SCC (60 percent) and the lowest in KCC (50 percent). It ranged between 57 percent in BCC and 58 percent in DCC, and CCC (see Figure F12).

Retention of TT vaccination cards: TT vaccination card retention rate among the surveyed women was found to be 40 percent. Card retention rate was 7 percentage points higher in rural areas (41 percent) compared to that in urban areas (34 percent) (Figure G1). By rural division, card retention rate was the highest (51 percent) in Rangpur and the lowest (34 percent) in Dhaka divisions. However, by city corporation, it was the highest (50 percent) in RCC and the lowest (9 percent) in DCC (see Figures G2-G3).

Incidence of "invalid" doses: Invalid dose refers to the vaccination that is administered without following the proper vaccination schedule. Incidence of invalid doses was the highest for TT4. Nationally, 14 percent of TT4 doses was found invalid, which was being followed by TT3 (13 percent) and TT5 (13 percent). By vicinity, no difference in the incidence of invalid doses of TT3 between

urban and rural areas was observed (13 percent both in urban and rural areas). However, regarding valid TT4 doses the difference was 1 percentage point (14 percent in rural and 13 percent in urban areas), and for TT5 incidence of invalid doses was 11 percent in urban and 13 percent in rural areas (see Figure G4).

Across the divisions, incidence of invalid TT3 was found to be the highest (17 percent) in Chittagong and the lowest (10 percent) in Khulna, while that of TT4 was the highest (19 percent) in Sylhet and the lowest (12 percent) in Khulna, Dhaka and Rangpur divisions. On the contrary, for TT5 the highest (17 percent) incidence of invalid dose was revealed in Barisal division and the lowest (10 percent) in Khulna division (see Figure G5).

Likewise, among the city corporations' incidence of invalid doses of TT3 was found to be the highest in SCC (30 percent) and the lowest in RCC (3 percent). Similar to TT3, incidence of invalid TT4 was the highest (24 percent) in SCC and the lowest (7 percent) in RCC (see Figure G6).

CHILDREN PROTECTED AT BIRTH (PAB) AGAINST NEONATAL TETANUS

The calculation of children protected at birth (PAB) against tetanus was based on the TT vaccination status of the mothers while giving birth to a child. Nationally, 93 percent of the children born between 1 July, 2010 and 30 June, 2011, were found to be protected at birth (PAB) against tetanus. The proportion of the children protected at birth against tetanus was marginally higher in urban areas (94 percent), compared to that in rural areas (92 percent) (see Figure G10).

In rural areas by division, PAB against tetanus was the highest (94 percent) in Rangpur division and the lowest (90 percent) in Sylhet division, which was being followed by Rajshahi and Barisal (93 percent), Dhaka, Chittagong, and Khulna divisions (92 percent) (see Figure G12).

However, among the city corporations, PAB against tetanus was the highest (98 percent) in RCC and the lowest (91 percent) in SCC. It was 95 percent in DCC, 94 percent in CCC and BCC, and 93 percent in KCC, respectively (see Figure G13).

TT VACCINATION COVERAGE AMONG WOMEN AGED BETWEEN 18-49 YEARS

Nationally, 32 percent of the women aged between 18-49 years received all the valid five doses of TT vaccines. The rural-urban analysis shows that TT5 coverage was slightly higher in urban areas (34 percent), compared to that in rural areas (32 percent). A trend of gradual decrease in the subsequent doses was observed in the coverage. Ninety two percent of the surveyed women received TT1, 90 percent TT2, 76 percent TT3, and 53 percent TT4. The declining trend was almost similar in both rural and urban areas (see Figure J2).

Likewise, the nationwide crude TT5 coverage was 50 percent. The urban-rural analysis shows a slight difference between rural (49 percent) and urban (54 percent) areas (see Figure J1).

By rural division, the highest (44 percent) valid TT5 coverage was in Sylhet division, which was being followed by Dhaka (35 percent), Chittagong (34 percent), Khulna (32 percent), Rajshahi (28 percent), Rangpur (25 percent) and Barisal divisions (23 percent) (see Figure J4).

Among the city corporations, the valid TT5 coverage rate was the highest (46 percent) in RCC, which was being followed by DCC (34 percent), KCC (32 percent), BCC and SCC (31 percent), and CCC (25 percent) (see Figure J6).

OPV COVERAGE DURING THE 19TH NID

Ninety six percent of the children received OPV during the 1st round and 95 percent received it in the second round of 19th NID. Overall, 93 percent of the children received OPV in both the rounds, with a slight variation between rural and urban areas. Ninety three percent of the surveyed children in rural areas received OPV in both the rounds as against 94 percent residing in urban areas (see Figure N1).

By rural division, OPV coverage in both the rounds was found to be the highest (98 percent) in Khulna and the lowest (88 percent) in Barisal division. OPV coverage was 96 percent in Sylhet, 94 percent in Dhaka, 93 percent in Rajshahi, 92 percent in Rangpur, and 91 percent in Chittagong divisions (see Figure N4). However, in the city corporation areas, the highest (99 percent) OPV coverage in both the rounds was revealed in Khulna City Corporation, which was being followed by RCC (98 percent), DCC (95 percent), BCC (92 percent), CCC and SCC (91 percent) (see Figure N5).

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

Infants: Vitamin A Supplementation (VAS) among the infants aged between 9-11 months under routine EPI was 85 percent nationally. There was a slight variation in VAS coverage among the infants by residence. Eighty six percent of the infants received Vitamin A in rural areas as against 83 percent who reside in urban areas (see Figure P1). It is important to mention here that VAS is given while the child received measles vaccine.

In rural areas by division, coverage of Vitamin A supplementation among the infants was found to be the highest (90 percent) in Rajshahi and Khulna divisions and the lowest (81 percent) in Sylhet division. VAS coverage in other divisions ranged from 86 percent in Rangpur to 82 percent in Barisal division. It was 84 percent in Dhaka and Chittagong divisions (see Figure P2). However, in the city corporations, the coverage ranged from the lowest (69 percent) in SCC to the highest (93 percent) in RCC (see Figure P3).

Children aged between 12-59 months: Nationally, 92 percent of the children received Vitamin A Supplementation during Vitamin A Plus campaign held on 29th May 2011. The coverage in urban areas (93 percent) was 1 percentage point higher than those residing in rural areas (92 percent) (see Figure P1).

Among the rural divisions, the coverage was the highest (96 percent) in Khulna division and the lowest (89 percent) in Chittagong and Barisal divisions (see Figure P2). In urban areas by city

corporation, DCC had the highest (97 percent) coverage, which was being followed by RCC (96 percent), BCC and KCC (91 percent), SCC (90 percent), and CCC (89 percent) (see Figure P3).

Postpartum women: Vitamin A Supplementation coverage among the postpartum women within 6 weeks of delivery through routine EPI sessions was 37 percent across the country – 44 percent in urban and 36 percent in rural areas (see Figure P1).

By rural division, VAS coverage among the postpartum women ranged from 26 percent in Khulna division to 47 percent in Rangpur division. VAS coverage was 43 percent in Barisal, 41 percent in Sylhet, 35 percent in Chittagong, 33 percent in Rajshahi and Dhaka divisions (see Figure P2). However, among the city corporations, VAS coverage was the highest (63 percent) in Khulna City Corporation and the lowest (32 percent) in Sylhet City Corporation. The coverage in other city corporations ranged from 35 percent in Chittagong City Corporation to 58 percent in Rajshahi City Corporation. It was 53 percent in BCC and 50 percent in DCC (see Figure P3).

VITAMIN A COVERAGE AMONG 6-11 MONTHS OLD CHILDREN

In 2011, as part of a new trial, infants aged between six and eleven months was given VAS in 5 districts and 2 CCs during the Vitamin A Plus campaign held on 29th May, 2011. A separate analysis is done for this new target group and presented in this report. By district, the coverage was found to be the highest in Gopalganj (99 percent) and the lowest in Barisal districts (70 percent). RCC and Maulvibazar district achieved the second highest position with 93 percent coverage, which was being followed by Satkhira (88 percent), Comilla (84 percent), and BCC (83 percent) (see Figure P6).

CHAPTER 1
INTRODUCTION

1.1 BACKGROUND

In Bangladesh, Expanded Programme on Immunization (EPI) aims to achieve (a) coverage objectives: to increase vaccination coverage at least 90 percent in national level and 85 percent at district level, and (b) disease reduction objectives: maintain polio free status; maintain maternal and neonatal elimination status; achieve 95 percent measles coverage and reaching measles elimination status by 2016. EPI in Bangladesh has been recognized for its sustained high vaccination coverage and great contribution to the reduction in childhood morbidity and mortality. The Government of Bangladesh, in collaboration with WHO, UNICEF and Partner Agencies, is making every effort to reach the un-reached children by using the RED strategy. Since its initiation, EPI has continued diversify its efforts in terms of area coverage, prevention against diseases, quality service, and

awareness-building as well as technical skill of the health personnel. Maintaining polio free and maternal & neonatal tetanus elimination status and reduction of child mortality and morbidity are a challenge for Bangladesh to achieve Millennium Development Goal. To overcome this challenge, EPI, in collaboration with UNICEF and WHO, is working seriously to identify the areas which should be addressed properly.

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

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

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

Though Bangladesh has got a remarkable success in reaching universal coverage with BCG, still it is behind the target coverage of 90 percent with valid doses of all antigens. BCG coverage was 99 percent in CES 2010 while it was only 2 percent in 1985. In 2006, full vaccination coverage was 71 percent and the increase to 75.2 percent in 2009 and 79.4 percent in 2010 across the country. The previous CESs shows that district-wise coverage varies from one year to another.This ups and downs in the coverage in the district level increase demand for identifying the causes and strengthening the monitoring activities.

To make strategic plan in order to achieve coverage objective, Coverage Evaluation Survey is an important means. Established in 1991 as a monitoring tool to assess performances, achievements, and progress of the Expanded Programme on Immunization (EPI), the government of Bangladesh, in collaboration with WHO and UNICEF, has been conducting the periodic EPI National Coverage Evaluation Survey, also known as CES, which were conducted every year, except in 1996 and 2004. Since then, a total of 17 CESs have been conducted so far. In 2011, the 18th CES was conducted with the financial support from UNICEF Bangladesh.

1.2 OBJECTIVES OF EPI COVERAGE EVALUATION SURVEY

The objectives of CES 2011 include making assessment of the following: a) Childhood vaccination coverage (eight antigens: BCG, DPT, OPV, Hib, Hep-B, and Measles) through routine EPI; b) TT Vaccination Coverage among the women to find out the status of protection at birth against tetanus of their children; C) TT5 coverage among 18-49 years old women to understand the progress of TT5 programme; D) OPV coverage in 19th NIDs held in January 2011, and Vitamin A & Anthelmintic (Albendazole) coverage during Vitamin A Plus Campaign.

SPECIFIC OBJECTIVES OF CES 2011

- To assess the routine EPI coverage among 12-23 months old children (date of birth: from 01-07-2009 to 30-06-2010)
- To assess the TT vaccination coverage among women who delivered children between 01-07-2010 and 30-06-2011
- To measure the postpartum Vitamin A coverage among the mothers having children less than one year
- To assess the TT vaccination coverage among 18-49 years old women
- To evaluate the Immunization program in terms of quantity (coverage: valid and crude, dropout rates) and quality (invalid doses, vaccination card retention, post-vaccination abscesses, other AEFI, reasons for left out and dropout cases, etc.)
- To determine trends in the vaccination coverage and dropout rates at the national and divisional levels
- To measure OPV coverage among the 0-59 months old children in the 19th NID held on 8 January and 12 February, 2011
- To measure Vitamin A coverage among the children who were 12-59 months old during Vitamin A Plus campaign held on 29th May, 2011
- To measure Anthelmintic coverage among the children who were 24-59 months old during Vitamin A Plus campaign held on 29th May, 2011
- To provide information as a basis for making concrete recommendations, and planning for improving routine immunization activities

CES 2011 was commissioned for the government (EPI-DGHS) with financial support from UNICEF Bangladesh and technical collaboration with WHO and EPI. The survey was carried out by Nielsen Bangladesh. The specific survey tasks included selecting sample clusters; development, pre-testing, and finalizing the questionnaires with the approval of the EPI-DGHS, UNICEF, and WHO; recruiting and providing training to the survey staff; and planning and implementing the fieldwork. Nielsen Bangladesh was also given the responsibilities of processing EPI survey data, analyzing the data, and writing all the reports of the survey.

1.3 SURVEY DESIGN

CES 2011 was conducted following WHO 30 clusters sampling design which was aimed to generate estimations for the national level by rural and urban areas as well as in rural areas by division and urban areas by city corporation. CES 2011 was also intended to provide separate estimates for each of the 72 survey units covering the whole population. The 72 survey units worked in sixty-four (64) districts and six (6) city corporations - Dhaka City Corporation (DCC), Rajshahi City Corporation (RCC), Chittagong City Corporation (CCC), Khulna City Corporation (KCC), Barisal City Corporation (BCC), and Sylhet City Corporation (SCC); 2 slums - 1 each in Dhaka and Chittagong City Corporations.

1.4 INDIVIDUAL SURVEYS

To acquire the result as per the study objectives, CES 2011 introduced five types of individual survey by study subjects. The surveys were:

- Childhood Vaccination Coverage Survey
- Tetanus Toxoid Vaccination Coverage Survey (TT survey) among mothers with children 0-11 months old
- Tetanus Toxoid Vaccination Coverage Survey among the women who were 18-49 years old (TT5 Survey)
- OPV Coverage Survey to estimate coverage in the 19th NIDs
- Vitamin A and Anthelmintic coverage survey to estimate coverage during Vitamin A Plus Campaign

1.5 SURVEY SUBJECTS

As has been mentioned earlier, CES 2011 consisted of five types of survey. However, the survey included 7 types of subjects:

Childhood Vaccination Coverage Survey: Children aged between 12-23 months and were born between 01 July, 2009 and 30 June, 2010.

TT Survey: Mothers having 0-11 months old children (who delivered child between 01 July, 2010 and 30 June, 2011).

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

OPV Coverage: Children aged between 0-59 months and were born between 18 February, 2006 and 12 January, 2011.

Vitamin A Coverage: Children aged between 12-59 months and were born between 31 May, 2006 and 30 May, 2010.

Vitamin A Coverage: Children aged between 6-59 months and were born between 31 May, 2006 and 30 November, 2010.

Anthelmintic Coverage: Children who were aged between 24-59 months and were born between 31 May, 2006 and 30 May, 2009.

1.6 SAMPLE SIZE

The sample size of CES was determined by the survey units independently by using WHO 30-cluster coverage survey sampling technique. From each survey unit, 30 clusters were selected following the systematic random sampling techniques from the list of mouzas and mahallahs available with Bangladesh Bureau of Statistics (BBS). Seven survey subjects were selected from each cluster for each type of survey separately. Before the selection of samples, a sampling frame with eligible subjects was made for each category of the respondents separately. Thus, a total of 210

samples were drawn from each district, and nationally 15,120 samples were covered for each survey except vitamin A. Overall, 92,190 subjects were selected for five types of survey, which comprised CES 2011 samples. The total sample is presented in Table 1 below.

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

Divisions/ City Corporations	Number of Survey Units	Number of Clusters	Number of Mothers with Children of 0-11 Months (The TT and PNVAC Sample)	Number of 12-23 Months Old Children (The Child Sample)	Number of 18-49 Years Old Women (The TT5 Sample)	Number of 0- 59 Months Old Children (OPV Coverage in 19th NIDs)	Number of 12 – 59, and 6-11 Months Old Children (Vitamin A Coverage)	Number of 24 - 59 Months Old Children (Anthelmintic Coverage)
Dhaka	17	510	3570	3570	3570	3570	3780	3570
Rajshahi	16	480	3360	3360	3360	3360	3360	3360
Chittagong	11	330	2310	2310	2310	2310	2520	2310
Khulna	10	300	2100	2100	2100	2100	2310	2100
Barisal	6	180	1260	1260	1260	1260	1470	1260
Sylhet	4	120	840	840	840	840	1050	840
City Corporations	6	180	1260	1260	1260	1260	1680	1260
Slums	**2**	60	420	420	420	420	420	420
Total	**72**	**2160**	**15120**	**15120**	**15120**	**15120**	**16590**	**15120**

1.6.1 SELECTION OF SAMPLES

The samples for CES 2011 were selected by using the following procedure.

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

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

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

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

1.6.2 SELECTION OF SAMPLE CLUSTERS

Sample clusters of CES 2011 were selected at two stages by following the systematic random sampling technique while using PPS method. A list of all mouzas/mahallahs with households of a district was made, and 30 mouzas/mahallahs were selected from each survey unit. In this way, a total of 2160 clusters were selected from the 72 survey units. Each cluster consists of 120 households. The mouza/mahallah having more than 120 households was segmented into two or

required number. Each segment consisted of 120 households. One segment was selected randomly. This selected segment within the mouza/mahallah was considered as a sample cluster in CES 2011.

1.6.3 SELECTION OF SAMPLE HOUSEHOLDS

Sample households of CES 2011 were selected randomly from the sampling frame prepared through household listing exercise. All households of selected sample cluster (i.e. enumeration areas - EA) were visited (on an average an EA had 120 households), and detailed information about the target samples was obtained. By using the information gathered, children aged between 12-23 months, mothers having children aged between 0-11 months, women aged between 18-49 years irrespective of marital status, and children aged between 0-59 months, 6-59 months, 12-59 months, and 24-59 months were identified. A separate sampling frame with eligible respondents was prepared for each target population. 7 target samples for each survey were randomly selected from each sampling frame.

1.7 QUESTIONNAIRES

CES 2011 used five types of questionnaire to collect information separately from seven survey subjects. Draft questionnaires were developed and were discussed with EPI, UNICEF, and WHO. Pre-testing was done in the field. Pre-test findings were incorporated and finalized in consultation with EPI, UNICEF, and WHO. In addition to the questionnaire, the survey used household listing form to identify the target respondents and sampling frame form with a view to provide uniform opportunity to each survey subject. The following five questionnaires and forms were used:

- Child Form was administered for obtaining data for child vaccination coverage
- TT Form was administered for obtaining data from the mothers to ascertain protection of their children against tetanus at birth
- TT-5 Form was administered for the women aged between 18-49 years
- NID Form was administered for the 0-59 months old children to ascertain OPV,
- Vitamin A Form was used to obtain information regarding Vitamin A, and Anthelmintic coverage
- Household listing format
- Sampling frame

All questionnaires used in CES 2011 are included in the Appendix of this report.

1.8 IMPLEMENTATION OF THE SURVEY

1.8.1 RECRUITMENT

The field staff for CES 2011 was recruited in September, 2011. It included Assistant Survey Coordinators, Quality Control Officers, Field Supervisors, and Interviewers. The recruitment criteria included educational attainment, maturity, group cohesiveness/team spirit, experiences from other surveys, and one's ability to work away from home for one month. All the field personnel were initially recruited as trainees each of whom was appointed to a particular post finally in the light of her/his performance during the period of training. Trainees with best performances were appointed as Quality Control Officers, Supervisors, and Interviewers. For possible later-replacement of unsuitable recruits, more staff members were recruited as trainees.

1.8.2 TRAINING

A total of six-day comprehensive training program on interviewing was held for the field personnel from 14th September, 2011, to 20 September, 2011. Nielsen Bangladesh trained the interviewers in six batches each of which comprised 35 trainees. The training methods included classroom lectures by using Overhead Projectors (OHP), Multimedia, demonstration interviews, role-playing, field practices, and problem reviewing. Medical Officers, EPI, Deputy Program Manager, EPI, and Program Managers, CH&LCC-DGHS, Assistant Director of DGHS, Joint Secretary MOH&FW, and key members of the Survey Team imparted the training. Immunization Specialist of UNICEF, Technical Officer, National Consultant-RED, and Data Manager from WHO also took part as resource persons in the training program.

1.8.3 FIELDWORK

The fieldwork was carried out from 25 September, 2011, to 15 November, 2011 with a total of 55 interviewing teams. Nielsen Bangladesh deployed these 55 interviewing teams for data collection. Each of the teams consisted of two Field Interviewers and one Supervisor. Besides, 35 interviewers worked as the reserve resource. Thus, in total 200 field personnel were involved in CES 2011. Moreover, there were 5 quality control teams, each of which comprised two people to check the quality of the fieldwork. Besides, researchers, high management and consultant monitored and checked the quality of the fieldwork. In addition, representatives from the partner agencies - EPI-DGHS, UNICEF and WHO - visited the field to monitor the fieldwork.

1.8.4 DATA MANAGEMENT AND STATISTICAL ANALYSIS

For data analysis, a powerful statistical package called SPSS and Quantum version 5.8 was used. This package is capable of producing any kind of cross-tabs and statistical analysis in conjunction with SPSS.

Data processing and analysis included code construction, coders' training, coding, data punching, data verification and quality control, and data processing and, finally, the analysis to facilitate the required output. Data of CES 2011 has been entered by using data base software FOXPRO version 2.6 and cleaned by using software clipper version 5.3. Tables were generated by using the Quantum version 5.8.

1.9 WEIGHTING

Since the sample of this study has been selected by using PPS method, the data of this survey is self-weighted.

1.10 REPORTS

As required by the scope of the CES 2011, a national report, Pre- identified 15 low performing districts' report, and 72 separate survey unit reports were prepared. The national report consists of the following seven chapters.

Chapter 1 describes the background, objectives, design, and implementation of CES 2011.

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

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

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

Chapter 5 presents OPV coverage.

Chapter 6 presents Vitamin A, and Anthelmintic coverage.

Chapter 7 presents discussions and programmatic implications.

CHAPTER 2
CHILDHOOD VACCINATION COVERAGE SURVEY

This chapter presents vaccination coverage derived from the data CES 2011 conducted among the children aged between 12-23 months. Vaccination card retention rate, program quality in terms of administering vaccine following vaccination schedule, knowledge on the visits required to complete all the doses, adverse event following immunization, reasons for drop-out and no immunization are also discussed in this chapter. Along with the findings, the survey objectives, importance and childhood vaccination schedule, and calculation of vaccination coverage are presented in this chapter.

2.1 OBJECTIVES OF THE CHILDHOOD VACCINATION COVERAGE SURVEY

Childhood vaccination coverage survey was conducted with the objective to estimate the coverage level at the national as well as divisional level, by type of area. Moreover, CES 2011 provided a separate comparative analysis of the previously identified 15 low performing districts supported by UNICEF. The specific objectives of the childhood vaccination survey were as follows:

OBJECTIVES OF THE CHILD SURVEY WERE TO ASCERTAIN

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

2.1.1 PROFILE OF THE CHILDREN AND THEIR PARENTS

The level of education of the parents (mothers and fathers) has got an important influence upon the routine immunization and other health- seeking behavior.

Table A1 shows that 19 percent mothers of the surveyed children were illiterate, while 29 percent of them completed their primary education, and 39 percent had at least 6 to 9 years of education. However, 7 percent of the mothers completed 10 years of education and 3 percent of them had 12 years of education.

As has been expected, a higher number of urban mothers (88 percent) than their rural counterparts (79 percent) was literate. The analysis of the fathers' level of education shows that they were rather less educated than the mothers. For instance, 27 percent of the children had illiterate, fathers compared to 19 percent having illiterate mothers.

The proportion of children with illiterate fathers is high in rural areas (29 percent), compared to that in urban areas (15 percent). The analysis further shows that the percentage of the fathers who completed more than 10 years of education was higher in urban areas (24 percent) than that in rural areas (7 percent).

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

Profile	Rural	Urban	Total
Child's Profile			
Child's age (in months)			
12-18	19.0	17.5	18.8
19-24	81.0	82.5	81.2
Mean age (in months)	22.02	22.36	22.07
Gender			
Male	51.6	53	51.8
Female	48.4	47	48.2
Profile Of Parents			
Mother's Education			
Illiterate	20.7	12.3	19.3
Literate	79.4	87.7	80.7
Primary	30.3	24.9	29.4
Secondary	39.6	36.7	39.1
SSC/Dakhil/'O' Level	5.9	12.1	6.9
HSC/Alim/'A' Level	2.5	7.9	3.4
Degree/Fazil	0.7	3.1	1.1
Masters/Kamil	0.4	3	0.8
Father's Education			
Illiterate	28.8	14.7	26.5
Literate	71.2	85.3	73.5
Primary	31.5	24.4	30.3
Secondary	24.9	25.8	25
SSC/Dakhil/'O' Level	7.4	10.8	8
HSC/Alim/'A' Level	3.8	9.5	4.8
Degree/Fazil	2.4	8.4	3.4
Masters/Kamil	1.2	6.4	2

2.2 CHILDHOOD VACCINATION

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

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

and bacteria into the body. They don't cause disease but the body still produces antibodies to fight it. These antibodies remain in the body to identify and fight the virus or bacteria in the future. Vaccine often provides people with lifetime protection to once-common diseases.

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

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

As per the EPI-recommended vaccination schedule, children must get vaccines against the eight diseases before observing their first birthday. A fully vaccinated child, therefore, receives all the doses of eight antigens under the EPI- recommended schedule. The full course of child vaccination in Bangladesh under EPI programme includes:

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

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

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

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

Table A2: The Childhood Vaccination Schedule

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

* 4th dose of OPV is given with measles dose

2.3 CHILDHOOD VACCINATION COVERAGE

Childhood vaccination coverage was derived from the data obtained from EPI CES 2011.Two sources of information - a) Vaccination Card, and b) Mother's/Caregiver's history - were considered for calculating the coverage. Card was used as the main basis of information. The date of vaccination for every dose of each antigen recorded in the card was mentioned in the questionnaire. In case of the non-availability of card, vaccination status was recorded through discussion with the mothers/caregivers. Their report is considered as history.

In CES 2011, two types of childhood vaccination coverage have been assessed - crude coverage and valid coverage (valid by the age of 23 months and valid by the age of 12 months, respectively). Crude coverage was assessed by considering the data of both valid and invalid doses a child received. An invalid dose occurs when the dose is administered before the recommended age or interval (for multi- doses antigens), i.e. less than four weeks from the prior dose. The valid coverage, on the other hand, was assessed in terms of dose (s) of any antigen administered following the EPI-recommended age and interval. Both valid coverage and crude coverages of vaccination were assessed for each specific antigen and all together. Crude coverage, against valid coverage, indicates how much more valid coverage could have been gained if all antigens were given to the target children at the appropriate time within the first year of their life. In other words, comparison between crude coverage and valid coverage shows how much coverage was lost due to the failure to provide antigens to children at the appropriate age and interval. Full valid vaccination coverage by 12 months is defined as the vaccination done with all the doses of every childhood antigens at the recommended age and the interval following EPI guideline by the age of one year of the child.

2.4 COVERAGE RATES FROM CARD AND HISTORY

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

2. 4.1 LEVELS OF CRUDE VACCINATION COVERAGE

Crude vaccination coverage is defined as the coverage estimated without considering the exact age and interval recommended in the childhood vaccination schedule. Table A3 presents the crude vaccination coverage rate computed from both the sources - card and history. It shows that 92 percent of the children received all the antigens without maintaining the EPI-recommended age and the interval suggested in the childhood vaccination schedule. Access to vaccination service with BCG was 99 percent across the country. Coverage for the subsequent antigen and/or doses was found lower due to the dropout from receiving vaccination service. Coverage of the 1st dose of Penta/OPV was 99 percent, OPV2/Penta2 97.9/98 percent, Penta3/OPV3 96.6 percent and measles coverage 92 percent. This finding shows a wider gap between the subsequent doses and/ or antigen which was more pronounced for measles and Penta1. Crude coverage of measles was 92 percent as against 99 percent coverage of Penta1. Thus, the national rate of crude coverage was found to be 92 percent among 12-23 months old children.

Table A3: Crude Vaccination Coverage by Age 23 Months by Card and History

(Figure in %)

Sources	BCG	OPV1	Penta 1	OPV2	Penta 2	OPV3	Penta 3	Measles	FVC
Card	70.3	70.2	70.2	69.7	69.7	68.7	68.7	65.6	65.7
History	28.8	28.8	28.8	28.2	28.2	27.9	27.9	26.3	26.1
Both(C+H)	99.1	99.0	99.0	97.9	98.0	96.6	96.6	91.9	91.9

Area-specifically, a slight variation in crude coverage rate was observed between rural and urban areas (92 percent in rural and 91 percent in urban areas). Likewise, by antigen no such differentiation was found among the antigens between rural and urban areas (see Figure A1).

2.4.2 LEVELS OF VALID VACCINATION COVERAGE BY 23 MONTHS

As per EPI-recommended vaccination schedule, a child should receive all the recommended doses of vaccines before observing his/her first birthday. The survey result shows that in some cases children were vaccinated beyond the first birthday and until the attainment of 23 months of age. Table A4 presents the national valid vaccination coverage with all the recommended antigens at the age of 23 months. The said coverage was calculated from card+history.

Table A4: Valid Vaccination Coverage by Age 23 Months by Card and History

(Figure in %)

Sources	BCG	OPV1	Penta 1	OPV2	Penta 2	OPV3	Penta 3	Measles	FVC
Card	70.3	70.2	70.2	69.6	69.4	67.6	64.0	63.1	59.4
History	28.8	28.8	28.8	28.2	28.1	27.5	26.0	25.4	23.6
Both(C+H)	99.1	99.0	99.0	97.7	97.6	95.1	90.0	88.5	82.9

Across the country, 83 percent of the children received all the vaccines by the age of 23 months following exact age and interval. The percentage of children who received BCG was much higher than that of Penta3 and measles. Ninety nine percent of the children received BCG, while the proportion of the children who received Penta3 was 90 percent and measles 89 percent. No marked variation was observed between BCG and Penta1 since most of the children received BCG along with the first dose of Penta/OPV (BCG was 99.1 percent and Penta1 99 percent).

However, a trend of slow decrease in the vaccination coverage was observed in the subsequent doses. The difference in the coverage between Penta1 and Penta2 was found to be 1 percentage point. It decreased by 8 percentage points - 98 percent from Penta2 to 90 percent in Penta3. It is to be mentioned here that dropout and the act of administering the vaccine without following the EPI-recommended vaccination schedule contributed towards making such differences between the doses as well as specific antigen.

Similarly, the urban-rural analysis shows the same difference between the children residing in rural and urban areas (83 percent in rural and 82 percent in urban areas). The urban-rural differentiation among the antigens was found almost similar to the national data (see Figure A2).

2.4.3 LEVELS OF VALID VACCINATION COVERAGE BY 12 MONTHS AMONG THE 12-23 MONTHS OLD CHILDREN

For ensuring effective vaccination, EPI-recommended vaccination schedule for specific antigen should be followed. Under the EPI in Bangladesh, every child is targeted to be vaccinated with all the available antigens within his/her first year of life, i.e. by 12 months of age. Table A5 shows valid vaccination coverage of specific antigen by the age of 12 months among the children aged between 12-23 months, which were derived from vaccination cards and history taken from mothers/caregivers.

Table A5: Valid Vaccination Coverage by Age 12 Months by Card and History

(Figure in %)

Sources	BCG	OPV1	Penta 1	OPV2	Penta 2	OPV3	Penta 3	Measles	FVC
Card	70.2	70.1	70.1	69.5	69.3	67.2	63.8	61.0	57.4
History	28.8	28.7	28.8	28.1	28.1	27.3	25.9	24.5	22.8
Both(C+H)	99.0	98.9	98.9	97.6	97.4	94.5	89.6	85.5	80.2

The table above shows that 80 percent of the surveyed children received all the doses of each antigen by the age of 12 months while following the EPI-recommended age and interval. By specific antigen, 99 percent of the children received BCG as against the similar percentage of children who received Penta1 (99 percent). However, 97 percent received Penta2, and 90 percent Penta3. The difference is much higher between Penta1 and measles (13 percentage points) and much lower between BCG and Penta2 (less than 1 percentage point). Likewise, the difference was a little between Penta1 and Penta2 and higher between Penta2 and Penta3. The gap between Penta1 and Penta2 was 2 percentage points while it was 7 percentage points between Penta2 and Penta3 (Penta1 97 percent and Penta3 90 percent).

2.4.4 DIFFERENTIAL IN VALID VACCINATION COVERAGE BY THE AGE OF 12 MONTHS BY BACKGROUND CHARACTERISTICS

Table A6 presents full valid vaccination coverage by the age of 12 months among the 12-23 months old children. It shows no significant difference in the coverage between urban and rural areas. A similar difference was observed between the males and the females. By division, the highest (85.8 percent) coverage was found in Rajshahi division and the lowest in Sylhet division (74.8), which were being followed by Dhaka (79.6 percent), Rangpur (81.2 percent) and Khulna (83 percent) divisions.

As regards the educational attainment of the mothers of the children, the survey found variation in vaccination coverage among the vaccinated children.The more the educational attainment of the mother was, the higher the valid vaccination coverage of her child by the age of 12 months was. Valid coverage of the children whose mothers attained 10 years of education (86 percent) was found to be 12 percentage points higher than that of the children whose mothers had no education (74 percent). The highest difference (16 percentage points) was revealed among the children whose mothers were graduate (the coverage was 90 percent) and whose mother had no education (the coverage was 74 percent).

Similarly, family income appears to be an influential factor in the vaccination coverage. Table A6 shows that compared to those who were from lower income group children who were from higher income groups had more vaccination coverage. Seventy nine percent of the children who were from lower income group (upto Tk. 3,000) received all the valid doses of vaccines before observing their first birthday as against 83 percent who belonged to higher income groups (10,000 and above) (see Table A6).

By wealth quintile, it is seen that the coverage was the highest (84 percent) in upper quintile and the lowest (75 percent) in the poorest class. Table A6 shows that the coverage stepped toward higher level from lower to the upper quintiles. It is mentioned here that wealth quintile was constructed using principal component analysis. Asset information was collected using child form and covered information on household ownership of number of consumer items, ranging from a almirah to a rickshaw/van, as well as dwelling characteristics, e.g source of drinking water, sanitation facilities, and type of material used for flooring.

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

The urban-rural analysis shows that rural mothers are more careful about immunizing their children timely. Although it is not a common scenario in the society of Bangladesh that most of the rural mothers will accompany their children for vaccination, EPI appears to be an exception in this regard. It is a successful program in Bangladesh. Here the rural mothers/caregivers are found in a parallel position with the urban mothers. More than three-fourth (81 percent) of the children in rural areas were vaccinated before observing their first birthday as against 78 percent of them residing in urban areas.

Table A6: Percent Distribution of Children who received all the Valid Vaccine by the Age of 12 Months by Background Characteristic

Background Characteristic	BCG	Pentavalent			OPV			Measles	FVC
		1	2	3	1	2	3		
Sex									
Male	99.0	99.0	97.4	89.5	98.9	97.8	94.3	85.9	80.4
Female	99.0	98.9	97.3	89.8	98.8	97.4	94.6	85.1	79.9
Residence									
Rural	99.0	99.0	97.4	89.7	98.9	97.6	94.6	85.9	80.6
Urban	98.9	98.8	97.3	89.2	98.7	97.5	94.0	83.5	78.0
Division									
Rajshahi	99.7	99.7	98.5	91.9	99.7	98.6	96.1	90.3	85.8
Khulna	99.5	99.5	98.4	90.6	99.4	98.7	95.9	89.2	83.2
Rangpur	99.6	99.6	98.3	91.7	99.6	98.5	96.1	86.2	81.2
Dhaka	98.7	98.7	96.9	89.7	98.6	97.2	93.5	84	79.6
Chittagong	98.3	98.2	96.5	87.5	98	96.8	93.2	84	77.9
Barisal	99.5	99.2	97.7	87.8	98.9	97.8	94.4	82.6	75.2
Sylhet	97.6	97.6	94.9	87.4	97.6	94.9	91.9	79.5	74.8
Mothers Education									
Illiterate	97.3	97.1	94.4	86.0	97.0	94.6	90.9	79.8	74.3
Primary	98.8	98.7	96.9	88.0	98.6	97.0	93.5	83.6	77.5
Secondary	99.8	99.8	98.7	91.8	99.7	99.0	96.2	87.8	83.0
SSC	99.9	99.7	99.0	91.7	99.7	99.3	96.5	90.6	85.5
HSC	99.8	99.8	99.4	94.9	99.8	99.4	98.5	92.5	88.6
Graduate	99.4	99.4	98.8	94.4	99.4	98.8	95.5	92.6	90.4
Post graduate	100.0	100.0	98.5	90.1	100.0	98.5	97.7	96.2	88.6
Monthly Family Income									
Up to 3000	98.4	98.4	97.6	90.5	98.4	97.6	94.3	84.0	79.1
3001-5000	98.5	98.4	96.2	87.2	98.2	96.4	92.9	83.6	77.6
5001-7000	99.0	98.9	97.2	89.6	98.9	97.4	94.2	85.3	80.2
7001-10000	99.1	99.1	97.7	89.6	99.0	97.9	94.8	85.6	79.7
10000+	99.4	99.3	98.2	91.7	99.3	98.4	95.8	87.4	83.0
Wealth Quintile									
Poorest	97.9	97.8	95.1	86.2	97.7	95.3	91.9	81.0	74.6
Second	99.1	99.1	97.5	88.7	99.1	97.6	94.0	85.4	79.5
Middle	99.3	99.1	98.0	90.2	99.0	98.3	94.9	86.4	81.2
Fourth	99.4	99.3	97.9	91.0	99.2	98.1	95.5	86.2	81.4
Richest	99.4	99.4	98.5	92.3	99.4	98.7	96.2	88.7	84.3
Bangladesh	99.0	98.9	97.4	89.6	98.9	97.6	94.5	85.5	80.2

2.4.5 TRENDS IN THE VACCINATION COVERAGE

Trends in vaccination coverage can be examined by observing a time series of estimates produced from EPI CESs which have started since 1991. Trends in the vaccination coverage have been shown in Figures A4, A5, and A6. These indicate a significant improvement in the vaccination coverage (crude coverage and valid coverage by the age of 23 months, and valid coverage by the age of 12 months). It is to be noted here that the trend in the valid vaccination coverage by the age of 23 months has been shown from the year 2005. Figure A4 shows the trend in crude coverage, Figure A5 valid vaccination coverage by the age of 23 months, and Figure A6 valid vaccination coverage by the age of 12 months.

Crude coverage: Figure A4 presents the trend in crude vaccination coverage over the past 20 years. During this period, crude vaccination coverage increased by 30 percentage points - 62 percent in 1991 to 92 percent in 2011. In the last decade (1991-2000), crude vaccination coverage rate increased with a fluctuation upto 7 percentage points. However, the crude coverage rate was almost plateau from 2001 to 2003. Rapid increase in the crude coverage was noticed between 2003 and 2010. It increased from 74 percent in 2003 to 93 percent in 2010. However, a slight decrease in coverage was revealed in CES 2011.Compared to that in CES 2010, crude coverage rate decreased by 1 percentage point in CES 2011 (93 percent in 2010 and 91.9 percent in 2011).

By antigen, BCG coverage was almost stationary since 1999. It was 95 percent in 1999. However, it increased with fluctuations upto 96 percent in 2005. Again, it increased upto 98 percent in 2006 and became static till 2007. However, it rose upto 99 percent in 2010 and became stagnant in 2011. A similar upward trend with fluctuation was observed in the coverage of OPV3 and measles (see Figure A4).

Valid Vaccination coverage by the age of 23 months: CES 2011 assessed the trend of valid full vaccination coverage by the age of 23 months by using the data derived from the last 5 CESs and the present one. Data is available since 2005. An analysis of the previous CESs data suggests similar trends in the valid vaccination coverage by the age of 23 months. Valid vaccination coverage was 69 percent in 2005 and 79 percent in 2007. It gradually increased upto 83 percent in 2011. During the last five years, valid vaccination coverage has increased by 4 percentage points (see Figure A5). This gradual upward trend might be done the influences of the rising trend of measles and OPV3 coverage. Measles coverage rate increased from 78 percent in 2005 to 89 percent in 2011. Similarly, OPV3 coverage rose from 84 percent in 2005 to 95 percent in 2011 (see Figure A5).

Valid Vaccination coverage by the age of 12 months: Fluctuating trends in the coverage were observed over the period between 1991 and 2000. However, a continuous increasing trend was noticed in this decade (2001-2010). Since the beginning of the last decade (1991-2000), the trend was almost plateau between 1991 and 1993. A sudden uprising trend was observed in 1994. The coverage increased from 50 percent in 1993 to 62 percent in 1994. Since 1994, the trend fluctuated, but remained almost plateau till 2000. A continuous improvement in the coverage started in 2001. In the last one decade, it increased by 28 percentage points. The coverage was 52 percent in 2001 which increased upto 80 percent in 2011 (see Figure A6).

This improvement in the vaccination coverage might be the influence of the act of administering vaccines by following the recommended vaccination schedule as well as by minimizing the dropout rates for the subsequent doses or antigen. The dropout rate of Penta1- Penta31 significantly decreased from 21 percent in 2003 to 3 percent in 2011, and Penta1- measles rate decreased from 15 percent in 2005 to 7 percent in 2011 (see Figure C12). It is to be noted here that the coverage of OPV3 increased by 23 percentage points during the years between 2003-2011 (72 percent in 2003 and 95 percent in 2011) (See Figure 3/Annex) and, similarly, measles coverage increased from 69 percent in 2003 to 86 percent in 2011 (see Figure A6).

2.4.6 DIVISIONAL TRENDS IN VACCINATION COVERAGE

As has been expected, national trends in the vaccination coverage is a reflection of the divisional coverage. Similar to the trend in the national coverage, there has also been improvement in the vaccination coverage in all divisions over the last few years. The division-wise trends in crude vaccination coverage – valid vaccination coverage by the age of 23 and 12 months – are shown in Figures A7-A27. Individual analysis of the trends in the vaccination coverage of each division is presented below.

BARISAL DIVISION

Crude coverage rate in Barisal division fluctuated during the whole period of 9 years, i.e. from 1994 to 2003. It was 72 percent in 1994 which increased upto 86 percent in 1995. A substantial decline in the coverage was observed in 1997. It declined from 86 percent in 1995 to 61 percent in 1997. It again increased upto 84 percent in 1999, and then declined down to 64 percent in 2000. However, it was plateau during the periods between 1998-1999 and 2001-2002. Furthermore, a rapid upward trend in crude coverage was observed since 2003 except in 2011. It increased from 60 percent in 2003 to 90 percent in 2011 (see Figure A7).

Likewise, with the exception in 2011 trend in the valid vaccination coverage by the age of 23 months increased since 2005. In 2005, it was 69 percent which increased upto 85 percent in 2010, and further declined down to 78 percent in 2011 (see Figure A8).

Figure A9 shows that since 2003 much elevated trend was there in the coverage by the child's age of 12 months. Before that year, valid coverage rate was found to be fluctuating with the exception in 1994-1995. A sharp decline in the coverage was observed in 1997. Valid coverage rate declined from 70 percent in 1995 to 39 percent in 1997. Since then, the scenario of valid vaccination coverage has changed and was found to be increasing with fluctuation. It increased upto 71 percent in 2006, 78 percent in 2009, and 81 percent in 2010 from 59 percent in 1998.However, compared to that in CES 2010, the coverage rate decreased by 6 percentage points in 2011 (81 percent in 2010 to 75 percent in 2011).

CHITTAGONG DIVISION

Trends in crude vaccination coverage in Chittagong division is presented in Figure A10. According to the Figure A10 there was a sharp increasing trend during the period 1992-1995. Crude coverage rate increased from 53 percent in 1992 to 80 percent in 1995. However, it declined down to 59 percent in 1997, which again increased upto 76 percent in 1999. Except in 2003 a continuous upward trend with fluctuations in crude vaccination coverage started in 2000. Over this period, crude coverage rate increased by 24 percentage points between 1999 and 2011. Compared to that in

CES 2010, a slight decrease in coverage was observed (91 percent in 2010 and 90 percent in 2011) in 2011 (see Figure A10).

Similarly, the trend in full valid vaccination coverage by the age of 23 months also increased from 65 percent in 2005 to 81 percent in 2011. Improvement of the vaccination coverage between 2010 and 2011 was 1 percentage point (80 percent in 2010 and 81 percent in 2011) (see Figure A11**).**

Likewise, the trend in full valid vaccination coverage by the age of 12 months initially increased in 1993-1995, which declined from 58 percent in 1995 to 44 percent in 1997. The valid coverage rate was almost plateau from 1997 to 2001. With the exception of 2005 and 2009, a continuous improving trend in the valid coverage by the age 12 months started since 2001. The valid coverage rate increased from 47 percent in 2001 to 78 percent in 2011. Compared to that in CES 2010, valid coverage rate increased by 2 percentage points (76 percent in 2010 to 78 percent in 2011) (see Figure A12).

DHAKA DIVISION

The trends in crude vaccination coverage in Dhaka division stepped slowly towards improvement with some fluctuations over the last decade. Crude vaccination coverage increased from 52 percent in 1992 to 84 percent in 1994 which has declined sharply down to 63 percent in 2000. A further rapid boosting up of the coverage was observed in 2001. The record says that the crude vaccination coverage increased from 63 percent in 2000 to 80 percent in 2001; again that declined to 71 percent in 2003. However a continuous rapid upward trend was observed since 2003 except 2009. Between the years 2003 and 2010, crude vaccination coverage rate increased by 21 percentage point. The latest CES shows no such change in the coverage in 2011(see Figure A13).

Similarly, full valid vaccination coverage by the age of 23 months also increased by 19 percentage points - from 63 percent in 2005 to 82 percent in 2010 (see Figure A8). Further, a slight improvement in the coverage was observed in 2011 (82 percent in 2010 and 83 percent in 2011) (see Figure A14).

A fluctuating but upward trend started in the valid coverage by the age of 12 months since 1993. A sharp decline in the coverage was observed in 1995. The valid coverage rate declined from 65 percent in 1993 to 39 percent in 1995.The uprising trend of valid vaccination coverage by the age of 12 months in Dhaka division was quite noticeable. The coverage rate increased from 58 percent in 2005 to 78 percent in 2010. However,compared to that in CES 2009, vaccination coverage increased by 5 percentage points - from 73 percent in 2009 to 78 percent in 2010. Further, compared to that in CES 2010, valid coverage increased by 2 percentage points in 2011- from 78 percent in 2010 to 80 percent in 2011 (see Figure A15).

KHULNA DIVISION

Figure A16 shows that since 2000 there has been a slow escalating trend with fluctuations in the crude vaccination coverage in Khulna division. The crude coverage rate was 75 percent in 2000; it increased upto 88 percent in 2003 and 95 percent in 2010. In contrast, a slight decrease (1 percentage point) was observed in 2011 (94 percent) (see Figure A16).

However, in terms of valid vaccination coverage by the age of 23 months an upward trend with fluctuations was revealed during the period 2005-2010. In 2010, the coverage rate was found to 85

percent while it was 75 percent in 2005. Compared to that in CES 2009, the coverage increased by 4 percentage points (81 percent in 2009 to 85 percent in 2010). However, no variation was observed between the CES 2010 and CES 2011 (85 percent in both the CESs) (see Figure A17).

Likewise, trend in valid vaccination coverage by the age of 12 months in Khulna division was appeared to fluctuating but improving. A much elevated increase in the coverage occurred between 2002 and 2003. It increased from 67 percent in 2002 to 77 percent in 2003.The fluctuation trend again began with the commencement of 2003 with a variation of 5 percentage points between 2005 and 2006. The rate decreased from 77 percent in 2003 to 72 percent in 2005, which again increased upto 78 percent in 2009 and 81 percent in 2010. Further improvement in coverage was noticed in CES 2011 (from 81 percent in 2010 to 83 percent in 2011) (see Figure A18).

RAJSHAHI DIVISION

The trend in crude vaccination coverage in Rajshahi division is shown in Figure A19. Here crude coverage rate was plateau from 1997 to 2003. However, a remarkable upward trend was observed since 2003. The coverage increased by 21 percentage points - from 75 percent in 2003 to 96 percent in 2010. However, the coverage declined down to 95 percent in 2011 (see Figure A19).

Similarly, the trend in valid vaccination coverage by the age of 23 months in Rajshahi division was found to be increasing since 2005. Over the period 2005-2010, the vaccination coverage increased by 14 percentage points (72 percent in 2005 and 86 percent in 2010). Compared to that in CES 2010, the coverage increased by 2 percentage points in 2011 (86 percent in 2010 and 88 percent in 2011) (see Figure A20).

Furthermore, valid vaccination coverage by the age of 12 months was almost static during 1994-1997 and 1998-2002. It declined from 62 percent in 1997 to 55 percent in 1998 and remained plateau till 2002. However, a sharp continuous improvement in valid vaccination coverage rate was observed since 2002. It increased by 24 percentage points during the period 2002-2009. The coverage rate was 54 percent in 2002 which increased upto 78 percent in 2009 and 83 percent in 2010. Compared to that in CES 2010, the coverage rate increased by 3 percentage points in 2011 (83 percent in 2010 and 86 percent in 2011) (see Figure A21).

RANGPUR DIVISION

Rangpur emerged as a new division in 2010. Before that, it had been under Rajshahi division. Data of Rangpur division derived from CES and in now presented in this report (see Figure A22-A23). Crude coverage decreased by 2.6 percentage points - from 94.9 percent in 2010 to 92.3 percent in 2011 (see Figure A22).

The trend in valid vaccination coverage by the age of 12 months in Rangpur division was found to be increasing since 2010. Compared to that in CES 2010, valid coverage increased by 3.5 percentage points in 2011 (77.8 percent in 2010 and 81.3 percent in 2011) (see Figure A24).

SYLHET DIVISION

In Sylhet division, an increasing trend in crude vaccination coverage was observed since 2001. It was 42 percent in 2001; and it increased upto 83 percent in 2006 and 88 percent in 2010. More than two-folds increase in the crude coverage was observed in this division from 2001 to 2010. The latest CES shows no increase in the coverage in 2011 (see Figure A25).

Similarly, trend in valid vaccination coverage by the age of 23 months was observed to be improving since 2005. Compared to that in 2005 (59 percent in CES 2005 and 80 percent in 2010), the coverage rate improved by 21 percentage points in 2010. However, in 2011 the valid coverage decreased by 1 percentage point (80 percent in 2010 and 79 percent in 2011) (see Figure A26).

Likewise, time series data on the valid vaccination coverage by the age of 12 months indicates a higher uninterrupted improvement in the coverage since 2001. Vaccination coverage improved by 51 percentage points during the period 2001-2010. The highest improvement occurred in 2002 which was 17 percentage points higher than the coverage rate in 2001. Valid vaccination coverage was 23 percent in 2001. It increased upto 64 percent in 2006 and 75 percent in 2011. Compared to that in CES 2010, the valid coverage increased by one percentage point in 2011. This sort of improvement might be the effect of higher OPV3 and measles coverage as well as the act of administering vaccines at the exact age and interval (see Figure A27).

2.4.7 LEVELS OF THE RURAL COVERAGE BY DIVISION

Levels of rural vaccination coverage are presented in Figures A28-A30. All three types of vaccination coverages - Crude vaccination coverage, valid vaccination coverage by the age of 23 months, and valid vaccination coverage by the age of 12 months - are discussed separately below.

Crude vaccination coverage: Overall, 92 percent of the children in rural areas of Bangladesh were found to be vaccinated with all antigens, irrespective of vaccination schedule. The crude coverage rate was found to be the highest (95 percent) in Khulna and the lowest (89 percent) in Barisal divisions. In other divisions, it ranged between 90 percent in Sylhet division and 94 percent in Rajshahi division. Crude coverage in Dhaka and Rangpur divisions was 92 percent, while it was 91 percent in Chittagong division (see Figure A28).

Valid vaccination coverage by the age of 23 months: As it was expected, compared to crude coverage, valid vaccination coverage by the age of 23 months was found to be lower - 83 percent- in rural Bangladesh. Figure A29 shows that the coverage in Rajshahi division was much higher (87 percent) than those in other divisions. However, a much lower percentage of the children from Barisal division (78 percent) received all the vaccines following the exact age and interval by the age of 23 months. The coverage in other divisions was 81 percent in Chittagong, 82 percent in Sylhet, 83 percent in Dhaka, 84 percent in Rangpur, and 86 percent in Khulna divisions.

Valid vaccination coverage by age of 12 months: Valid vaccination coverage, i.e. coverage following the exact age and interval of EPI childhood vaccination schedule, was 81 percent in rural Bangladesh. It was found to be the highest (85 percent) in Rajshahi and the lowest (75 percent) in Barisal divisions. Coverage in other divisions was intermediary that ranged between 78 percent in Chittagong division and 84 percent in Khulna division. In Chittagong and Sylhet divisions it was 78 percent, in Dhaka division 80 percent, and in Rangpur division 81 percent (see Figure A30).

Antigen-wise vaccination coverage by the age of 12 months was almost similar for BCG in all divisions except in Sylhet. On an average, the coverage was 99 percent. Differential to other antigens are also less pronounced for Penta3. However, differential of measles antigen is more pronounced in Sylhet and Barisal divisions (82 percent), compared to those in Rajshahi and Khulna (90 percent), Rangpur (87 percent), Dhaka (85 percent), and Chittagong divisions (84 percent) respectively (see Figure A30).

2.4.8 LEVELS OF THE URBAN COVERAGE BY CITY CORPORATION

Vaccination coverage in urban areas by city corporation is presented separately in this section. Estimates of different city corporations are derived from the urban clusters excluding municipalities, which are surveyed under the divisional units. It includes the findings of 30 clusters from each of the city corporations as an independent unit of survey.

Crude vaccination coverage: Figure A31 presents the analysis of crude vaccination coverage by city corporation. The analysis shows that crude vaccination coverage was the highest (99 percent) in RCC and DCC and the lowest -81 percent- in SCC. Crude coverage was 93 percent in KCC and BCC, and 86 percent in CCC respectively.

Valid vaccination coverage by the age of 23 months: A similar scenario was observed for the valid vaccination coverage by the age of 23 months among all the six city corporations. The performance was again found to be the highest- 93 percent- in RCC and the lowest - 68 percent - in SCC. The coverage rate in KCC was 84 percent, which was being followed by BCC (81 percent), DCC (78 percent), and CCC (77 percent) (see Figure A32).

Valid vaccination coverage by the age of 12 months: As regards the valid vaccination coverage by the age of 12 months, it is to be mentioned here that the coverage was found to be the highest (89 percent) in Rajshahi City Corporation and the lowest (62 percent) in Sylhet City Corporation. Valid vaccination coverage in other city corporations was intermediary that ranged from 74 percent in Chittagong City Corporation to 79 percent in Khulna City Corporation. Valid coverage was 75 percent in Dhaka and 78 percent in Barisal City Corporations (see Figure A33)**.** RCC achieved the highest coverage due to the higher accessibility to the vaccination service as well as lower dropout and invalid measles doses. As opposed to Rajshahi City Corporation, a higher dropout rate was attributed to the lower valid vaccination coverage in Sylhet City Corporation (see Figure A33).

2.4.9 COVERAGE IN 15 LOW PERFORMING DISTRICTS

With an aim to contribute to the national coverage, EPI along with the financial and technical assistance from UNICEF took special initiatives in this regard. Its focus was to improve the coverage of 15 low performing districts at least up to the national level. After one year of intervention, EPI conducted CES 2007 which covered the said 15 low performing districts. The findings revealed 69 percent vaccination coverage in all these 15 districts. It was 19 percentage points higher, compared to that in CES 2005 and 9 percentage points higher from that in CES 2006. Further, CES 2009 provides a separate analysis of 15 low performing districts. It shows that 74 percent of the children in 15 districts were fully vaccinated with all the recommended valid doses by the age of 12 months. Compared to that in CES 2007, the full vaccination coverage by the age of 12 months increased by 5 percentage points (69 percent in 2007 and 74 percent in 2009). In CES 2010, the proportion of full vaccination coverage by the age of 12 months was found to be 76 percent, which was 2 percentage points higher than that in CES 2009. Further improvement in coverage was observed in CES 2011. Seventy nine percent of the surveyed children were found to be fully vaccinated by the age of 12 months with all valid doses which was 3 percentage points higher than CES 2010. Besides, full vaccination coverage increased in 12 districts and decreased in 3 districts (Netrokona, Brahmanbaria, and Mymensingh) in 2011 (see Table A7).

Table A7: Percent Distribution of Children who received all the Vaccine by the Age of 12 Months by 15 Low Performing Districts

Districts	2006	2007	2009	2010	2011
Lalmonirhat	56.3	74.4	75.2	82.6	84.5
Gaibandha	59.7	67.4	74.7	78.1	82.9
Sirajganj	70.4	73.6	79.6	83.5	86.9
Mymensingh	74.2	71.5	80.6	79.3	75.3
Jamalpur	68.3	69.2	71.8	77.2	85.8
Netrokona	60.6	62.0	66	76.2	72.2
Sherpur	67.1	78.6	79.1	85.6	88.9
Bandarban	60.3	48.3	74.6	65.3	73.1
B. Baria	48.5	69.7	67.0	84.7	72.6
Cox's Bazar	60.6	72.4	65.7	72.6	77.8
Khagrachhari	64.5	73.6	77.6	73.2	73.4
Noakhali	48.3	76	75.2	63.9	75.3
Rangamati	60.5	69	76.2	74.6	80.8
Maulvibazar	57.1	66.2	66.8	73.7	80.3
Sunamganj	44.6	64.4	79.9	73.6	77.3
Total	60	69	74	76.4	79.4

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

2.4.10 COVERAGE IN 23 LAUNCH (LARGE NUMBER OF UNIMMUNIZED CHILDREN) DISTRICTS

With an aim to contribute to the national coverage EPI has taken special initiative, with the financial and technical assistance from WHO, to improve the coverage of 23 DPT3 missed out districts at least up to the national level. As Bangladesh is one of the countries with Large Number of Unimmunized Children (LAUNCH), it is WHO's objective to vaccinate the maximum number of children. For that reason, WHO ranked all the 70 survey units based on the findings of CES 2006. It reveals that 76% of total missed children with DPT3 (475,664 out of 622,958) are from 37 top ranked units. Out of these 37 units, 3 are city corporations and 34 are districts. It is not feasible to address all the CCs and districts with a limited resource. For that reasons, it is sensible to address the top 37 ranked areas. Under these circumstances, based on the RED strategy EPI, with the technical and financial assistance from WHO, reviewed the micro-plan, hard-to-reach and high-risk areas of those top ranked 23 districts and 3 city corporations with a large number of DPT3 missed children to find out the reasons for children not receiving DPT3 and to provide additional financial support to vaccinate all these children. In this regard, WHO has been providing additional financial support and technical assistance in these districts since 2007.

However, to assess the impact of special support provided by WHO to the LAUNCH districts, CES 2011 made a separate analysis derived from data of previous CESs including CES 2011. The analysis shows that overall trend in the vaccination coverage of 23 LAUNCH districts was increasing

from 2006 to 2010 except Bagerhat. During the period 2006-2010, continuous increasing trend was observed in Dhaka (76 percent in 2006, 76 percent in 2009, and 79 percent in 2010), Faridpur (68 percent in 2006 and 2009, and 75 percent in 2010), Jessore (75 percent in 2006, 76 percent in 2009, and 86 percent in 2010), Barisal (71 percent in 2006, 77 percent in 2009, and 78 percent in 2010), Bhola (66 percent in 2006, 71 percent in 2009, and 84 percent in 2010), Chittagong (72 percent in 2006, 76 percent in 2009, and 79 percent in 2010), Comilla (66 percent in 2006, 75 percent in 2009, and 80 percent in 2010), Lakshmipur (69 percent in 2006, 73 percent in 2009, and 79 percent in 2010), and Narsingdi (71 percent in 2006, 73 percent in 2009, and 80 percent in 2010). However, a fluctuating but upward trend was observed in Gazipur (70 percent in 2006, 64 percent in 2009, and 77 percent in 2010), Kishoreganj (79 percent in 2006, 77 percent in 2009, and 83 percent in 2010), Tangail (81 percent in 2006, 76 percent in 2009, and 79 percent in 2010), Bogra (81 percent in 2006, 77 percent in 2009, and 88 percent in 2010), Kurigram (71 percent in 2006, 65 percent in 2009, and 81 percent in 2010), Nilphamari (64 percent in 2006, 79 percent in 2009, and 73 percent in 2010), Natore (65 percent in 2006, 81 percent in 2009, and 86 percent in 2010), Narayanganj (74 percent in 2006, 69 percent in 2009, and 86 percent in 2010), Pabna (78 percent in 2006, 87 percent in 2009, and 84 percent in 2010), Rangpur (75 percent in 2006, 71 percent in 2009, and 78 percent in 2010), Habiganj (67 percent in 2006, 61 percent in 2009, and 79 percent in 2010) and Chandpur (77 percent in 2006, 76 percent in 2009, and 80 percent in 2010) districts. Compared to CES 2010, out of 23 districts coverage was found increasing in Narsingdi, Tangail, Bagerhat, Pabna, Chandpur and Lakshmipur districts in 2011 (see Table A8).

Table A8: Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in 23 LAUNCH Districts from 2005 to 2011

Survey Units	2005	2006	2009	2010	2011
Dhaka	70.5	75.6	76.2	78.9	75.0
Faridpur	68.2	67.7	67.7	74.7	74.7
Gazipur	62.3	69.8	63.8	77.1	75.9
Kishoreganj	67.1	78.5	76.8	82.9	82.5
Narayanganj	60.1	74.2	69.1	85.6	77.2
Narsingdi	58.3	70.5	73.2	79.7	82.9
Tangail	60.8	81.2	76.2	79.2	86.2
Bagerhat	71.8	72.2	71.0	69.4	78.3
Jessore	74.4	75.2	76.1	85.6	83.0
Bogra	73.7	80.8	76.7	87.6	85.5
Kurigram	58.9	70.5	65.1	81.3	79.5
Natore	70.4	64.8	80.6	86.0	83.6
Nilphamari	58.7	63.7	78.5	73.4	71.4
Pabna	62.9	78.4	87.4	83.5	84.8
Rangpur	63.8	75.4	70.8	78.0	78.5
Habiganj	55.1	67.3	60.6	78.5	75.9
Sylhet	54.4	74.7	74.1	75.9	74.9
Barisal	64.4	71.4	76.6	78.1	73.4
Bhola	67.9	65.5	71.2	84.3	74.7
Chandpur	78.0	77.0	76.0	79.9	84.8
Chittagong	69.6	71.7	75.6	78.9	78.6
Comilla	57.8	65.9	75.0	79.6	76.9
Lakshmipur	61.5	69.4	72.6	79.3	82.6
Total	64.8	72.2	73.5	79.9	79.3

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

2.4.11 SEX DIFFERENTIALS IN THE VACCINATION COVERAGE

In Bangladesh, culturally boys are more privileged than girls regarding fulfilling their basic needs. CES 2011 analyzes the data by sex with an aim to understand whether there is sex differential in the vaccination coverage. Among all the eligible subjects, the survey covered 52 percent males as against 48 percent females.

Crude Vaccination Coverage: Figure A34 shows that a higher number of males than females received all the vaccines. Nationally, 91 percent females and 93 percent of males received all the vaccines. In terms of place of their residences, crude vaccination coverage rate was 2 percentage points higher for males (93 percent) than that for females (91 percent) in rural areas. However, no differentiation in the coverage was observed between the males and the females in urban areas (see Figure A35-A36).

By antigen, there was no difference in the coverage between males and females except OPV3 and measles. The difference was 2 percentage points for measles and 1 percentage point for OPV3 between males and females (see Figure A34).

Valid vaccination coverage by the age of 23 months: In terms of administering vaccines by maintaining the exact age and/ or interval by the age of 23 months, the survey findings show a slight difference between males (83 percent) and females (82 percent). The rural-urban analysis shows a little difference in the coverage in urban areas. In urban areas, 80 percent females received valid doses of all vaccines as against 83 percent males. However, no difference in the coverage was found between the males and females who reside in rural areas (83 percent for both males and females). However, by antigen, a slight difference was noticed in the vaccination coverage of measles. The measles coverage was 1 percentage point higher for males, compared to that among females for these antigens (see Figures A37-A39).

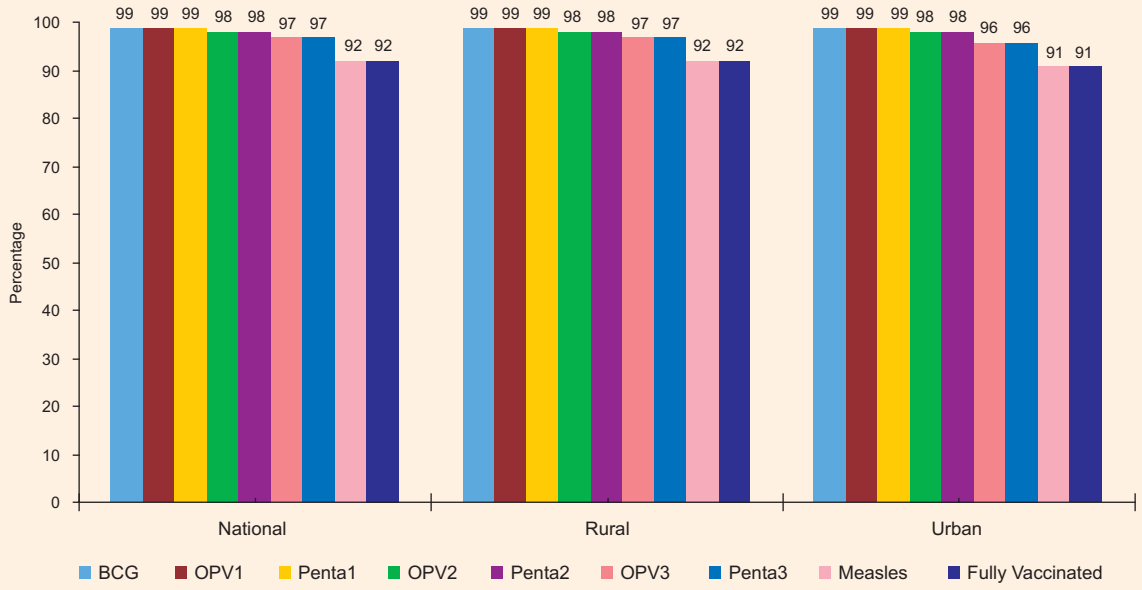
Valid vaccination coverage by the age of 12 months: Sex differential in the vaccination coverage by the age of 12 months is presented in Figure A40. It shows that there was no difference in the vaccination coverage between males and females. The valid vaccination coverage was found to be 80 percent for both males and females. However, by place of residence, a slightly higher percentage of males (80 percent) in urban areas received all the valid doses as against 76 percent of females (see Figure A41). However, no difference between males and females was observed in rural areas. Eighty one percent of both males and females received all the valid doses (see Figure A42).

By antigen, between males and females no difference in coverage was observed in the BCG and OPV1. However, a slight difference was found in Penta3 and measles vaccine. The difference in the coverage for Penta3 and measles between males and females was 1 percentage point (see Figure A40).

2.4.12 LEVELS OF THE COVERAGE BY SURVEY UNIT

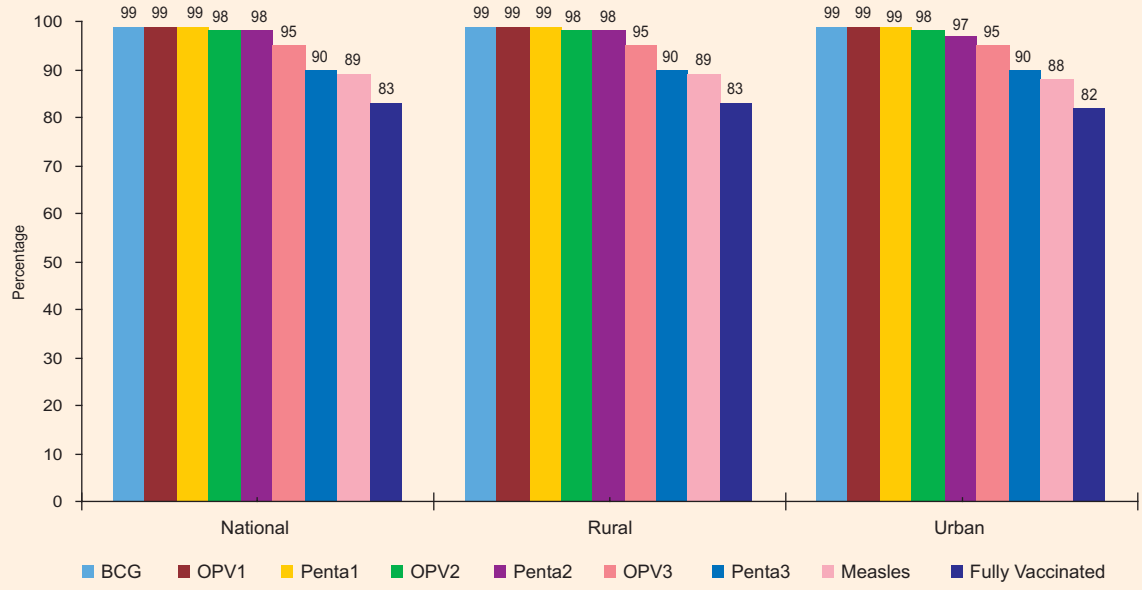
As a ready reference, rates of valid vaccination coverage by the age of 12 months among the 12-23 months' old children, by division/city corporation, are given in Table 1 of the Appendix. Full vaccination coverage by the age of 12 months by division /city corporation is presented graphically in the Figures in the Appendix.

Figure A1. Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2011 (Card + History)



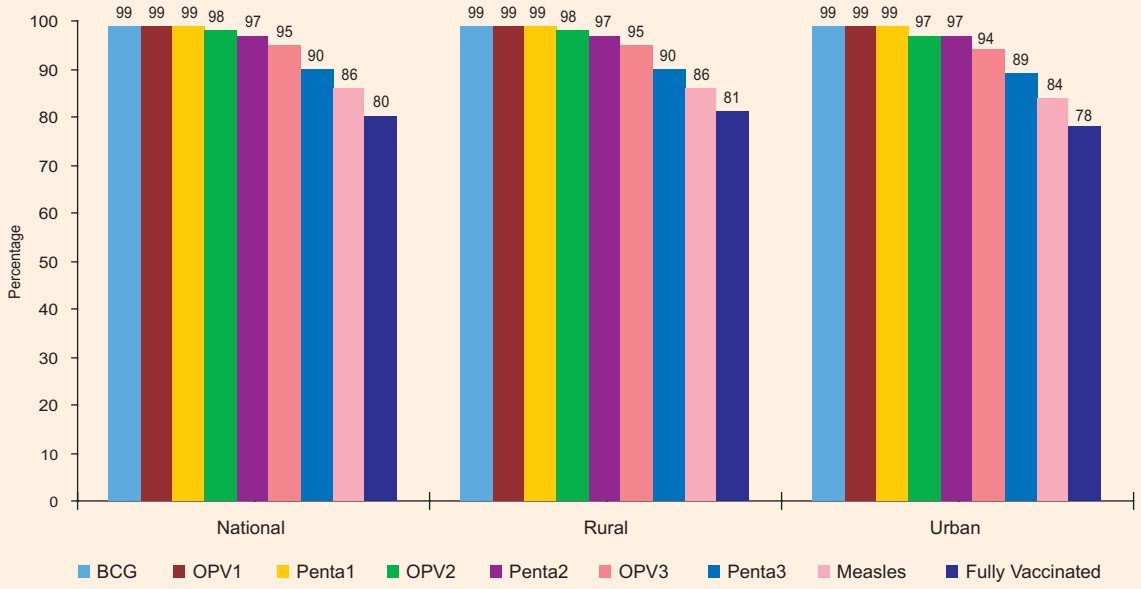
Source: CES 2011

Figure A2. Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2011 (Card + History)



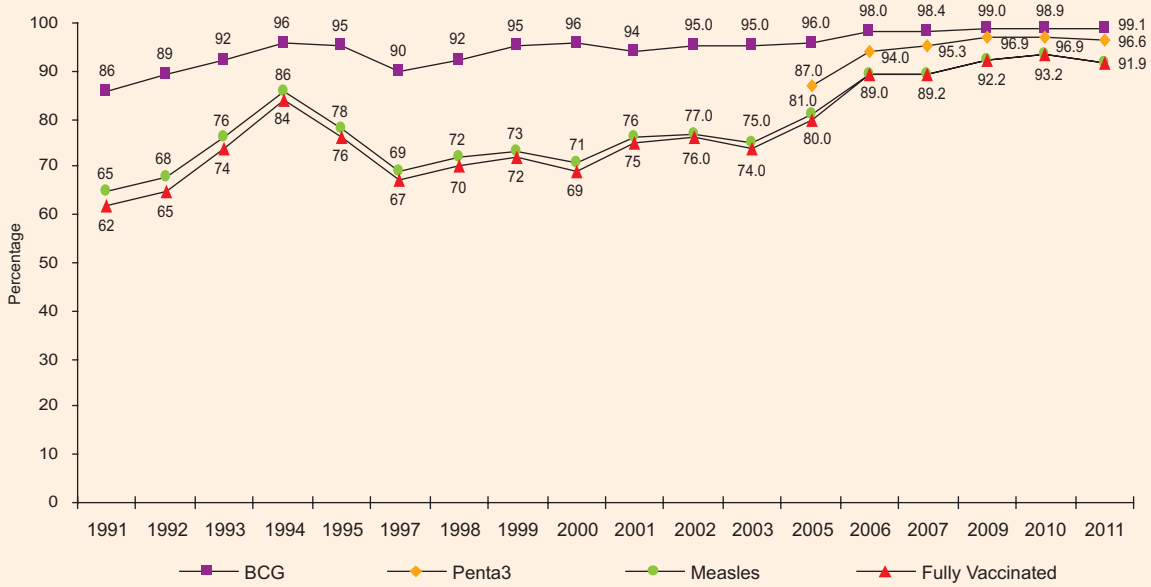
Source: CES 2011

Figure A3. Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2011 (Card + History)



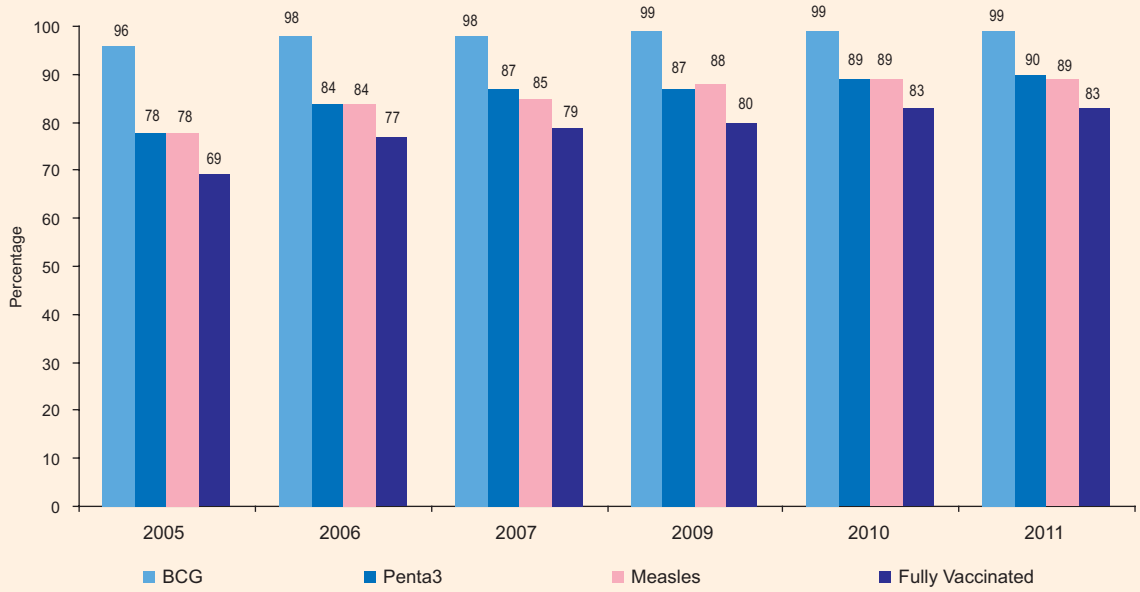
Source: CES 2011

Figure A4. Annual Trend in National Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children from 1991 to 2011 (Card + History)



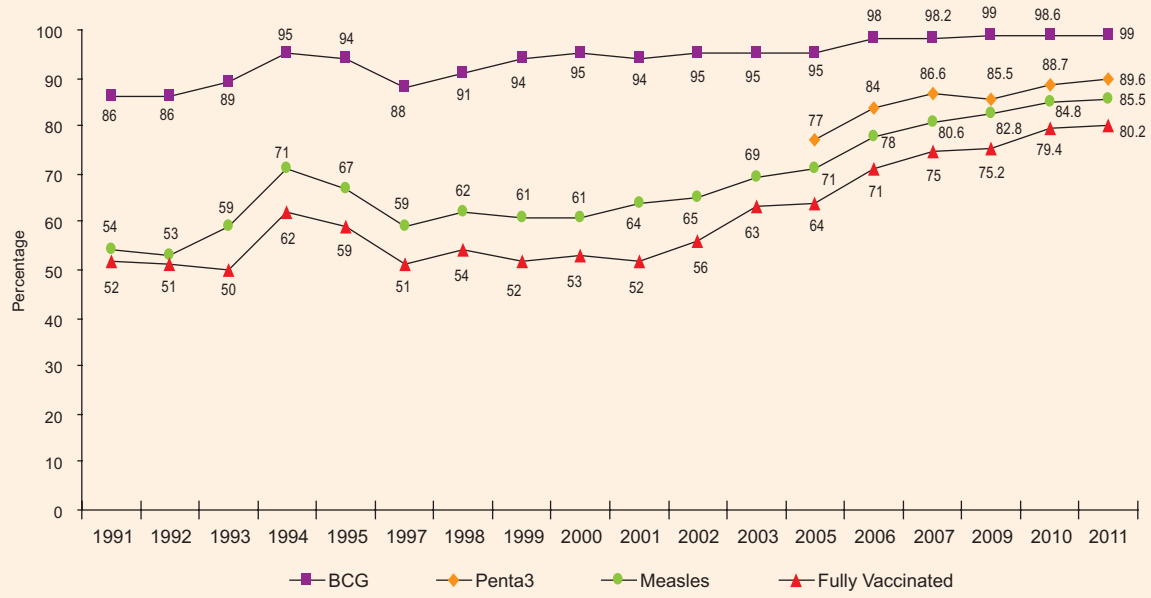
Source: Coverage Evaluation Survey 1991-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, and 2011

Figure A5 **Annual Trend in National Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children from 2005 to 2011 (Card + History)**



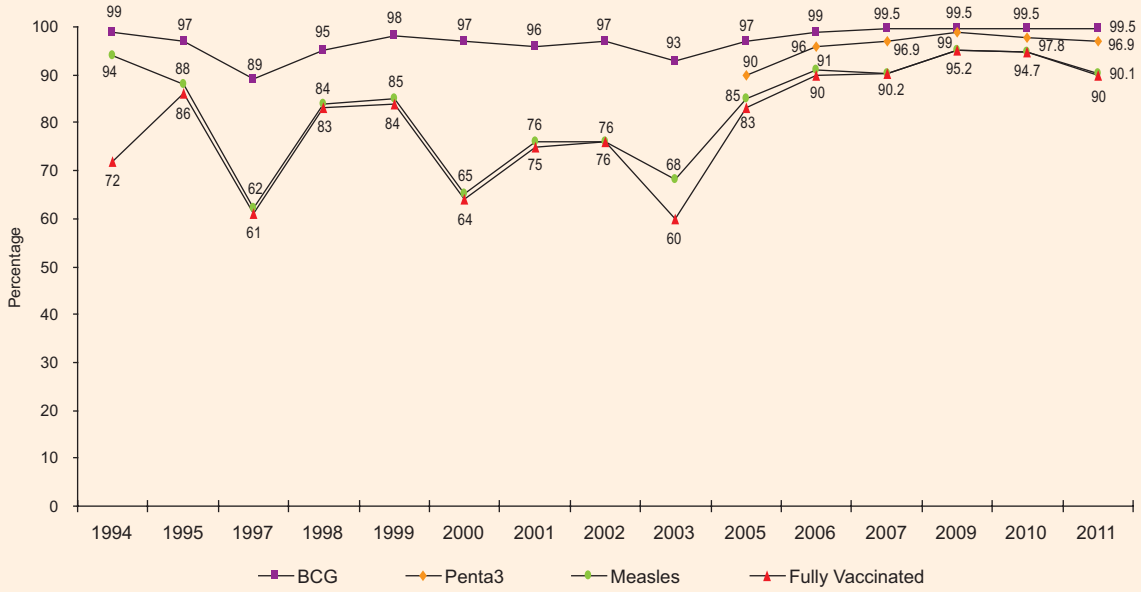
Source: Coverage Evaluation Survey 2005, 2006, 2007, 2009, 2010 and 2011

Figure A6. **Annual Trend in National Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children from 1991 to 2011 (Card + History)**



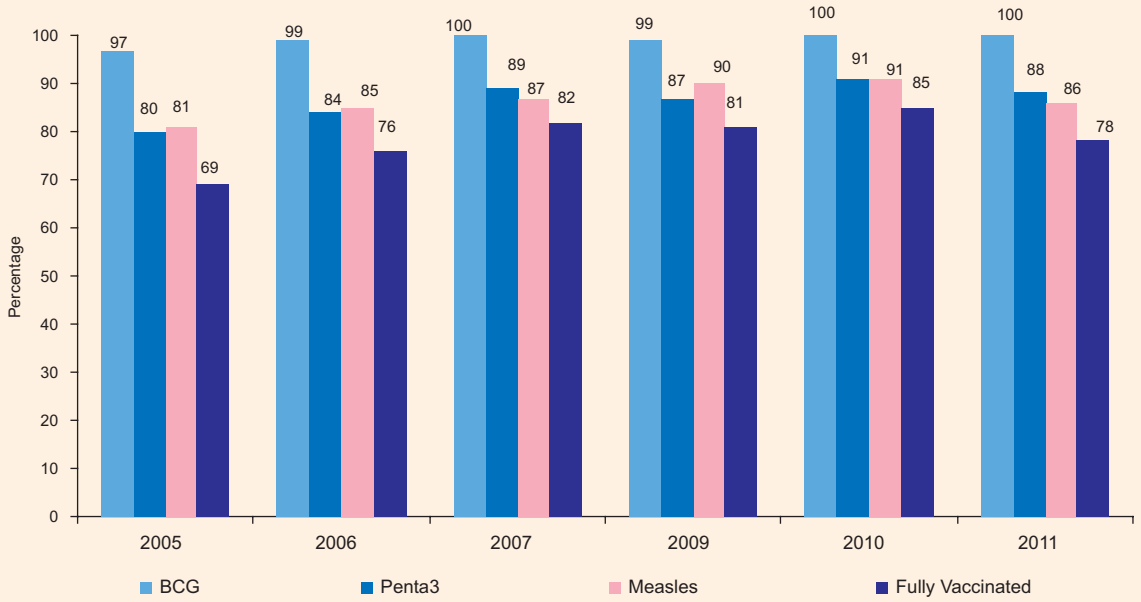
Source: Coverage Evaluation Survey 1991-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, and 2011

Figure A7. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Barisal Division from 1994 to 2011 (Card + History)



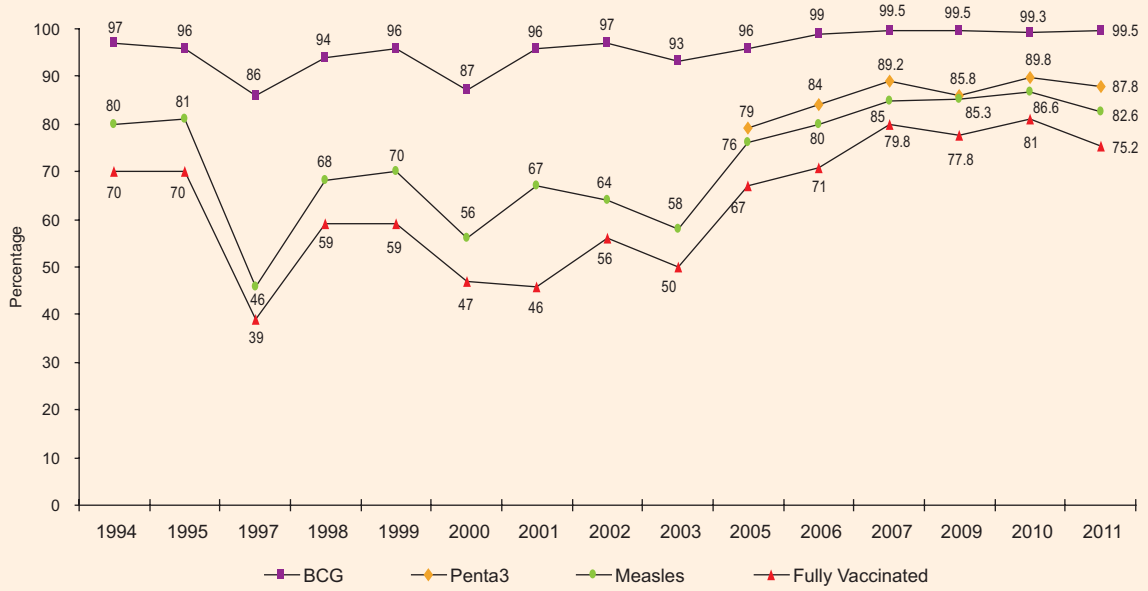
Source: Coverage Evaluation Survey 1994-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010 and 2011

Figure A8. Annual Trend in Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children in Barisal Division from 2005 to 2011 (Card + History)



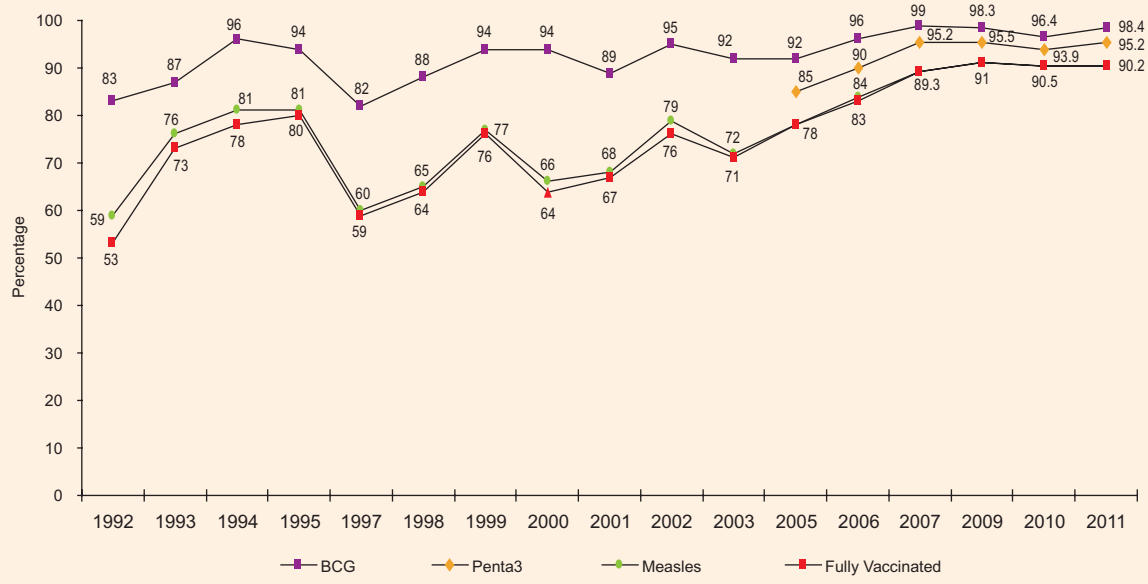
Source: Coverage Evaluation Survey 2005, 2006, 2007, 2009, 2010 and 2011

Figure A9. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Barisal Division from 1994 to 2011 (Card + History)



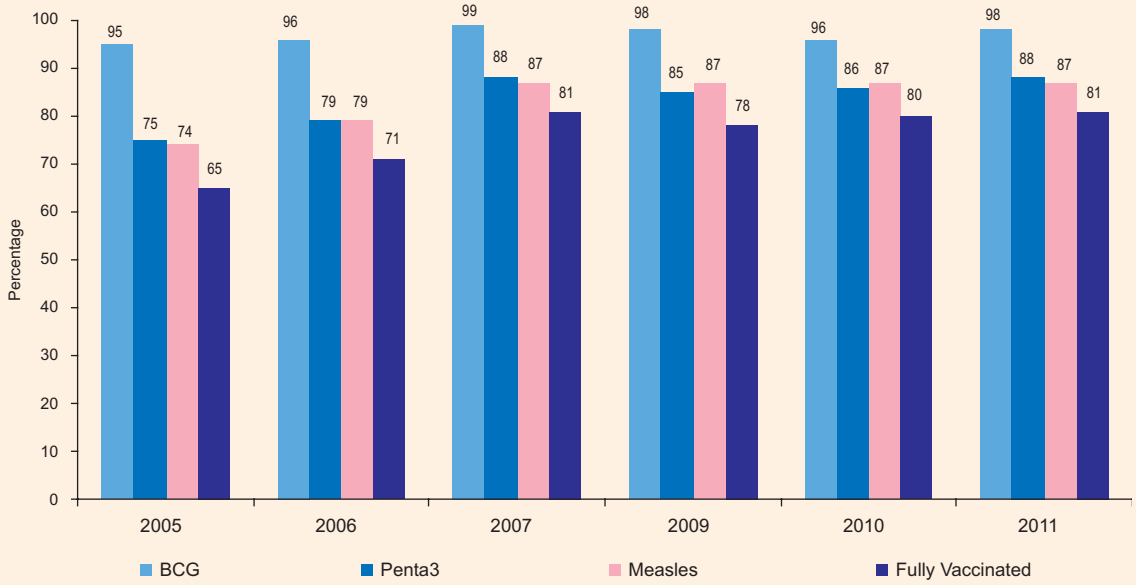
Source: Coverage Evaluation Surveys (CESs) 1994-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, and 2011

Figure A10. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Chittagong Division from 1992 to 2011 (Card + History)



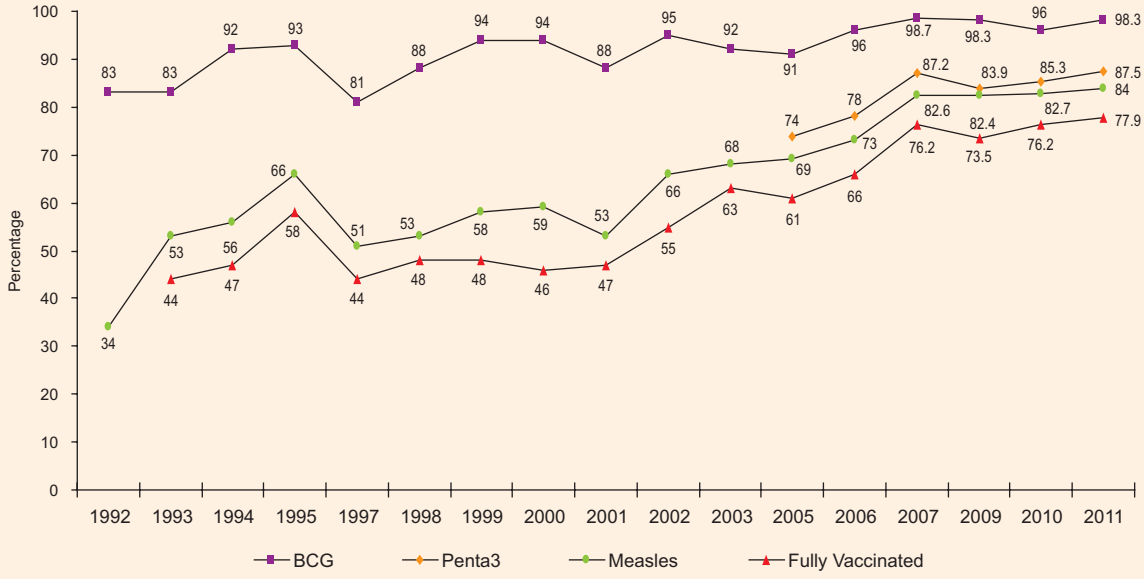
Source: Coverage Evaluation Surveys (CESs) 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010, and 2011

Figure A11. Annual Trend in Valid Vaccination Coverage by age 23 months among 12-23 Months Old Children in Chittagong Division from 2005 to 2011 (Card + History)



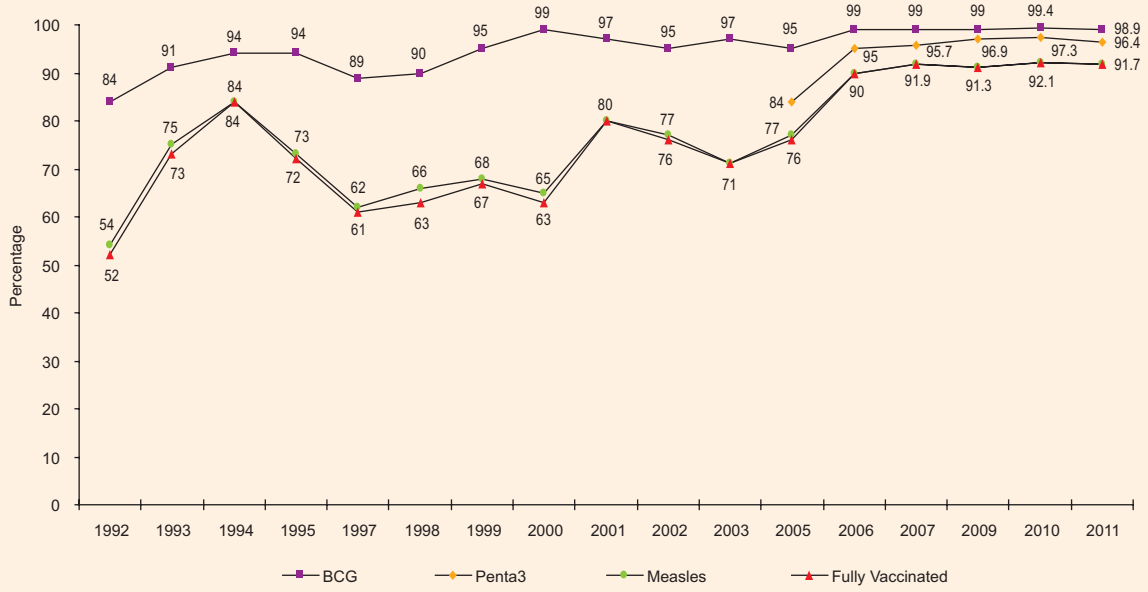
Source: Coverage Evaluation Survey 2005, 2006, 2007, 2009, 2010 and 2011

Figure A12. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Chittagong Division from 1992 to 2011 (Card + History)



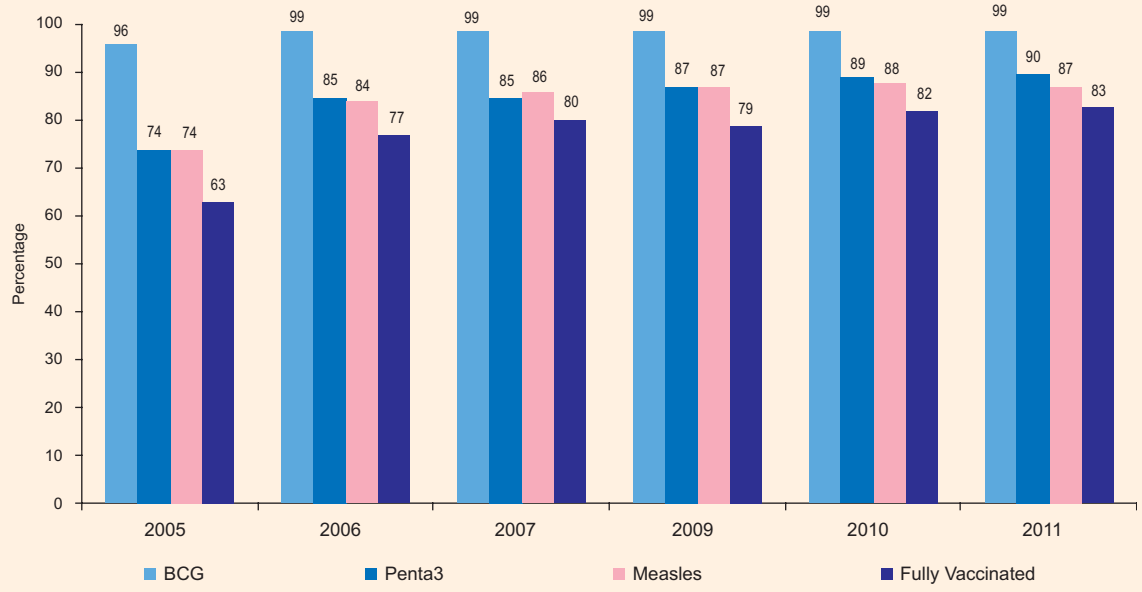
Source: Coverage Evaluation Surveys (CESs) 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010 and 2011

Figure A13. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Dhaka Division from 1992 to 2011 (Card + History)



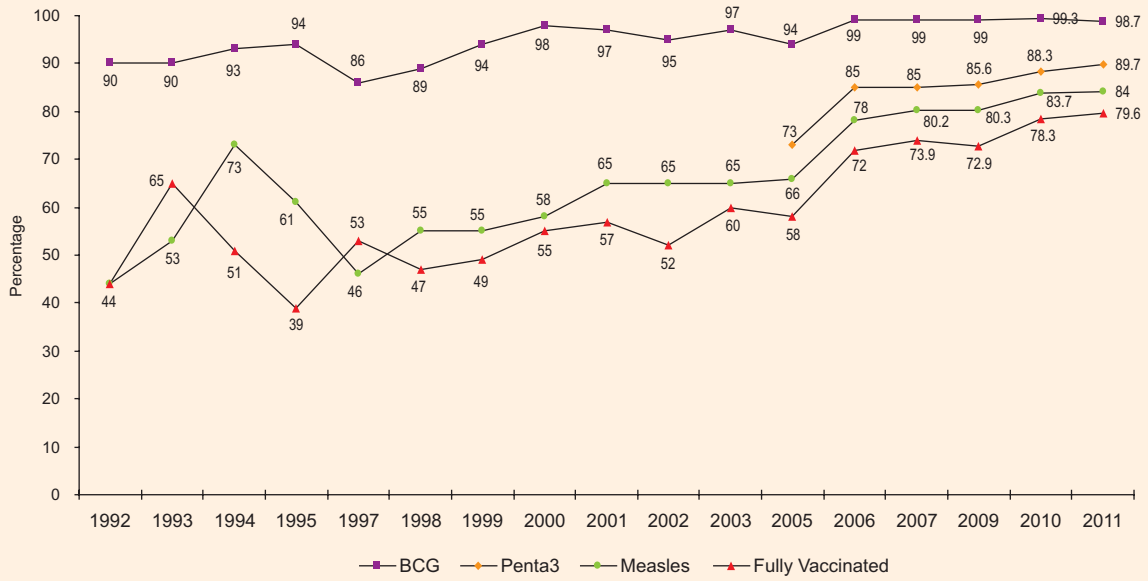
Source: Coverage Evaluation Surveys (CESs) 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010 and 2011

Figure A14. Annual Trend in Valid Vaccination Coverage by age 23 months among 12-23 Months Old Children in Dhaka Division from 2005 to 2011 (Card + History)



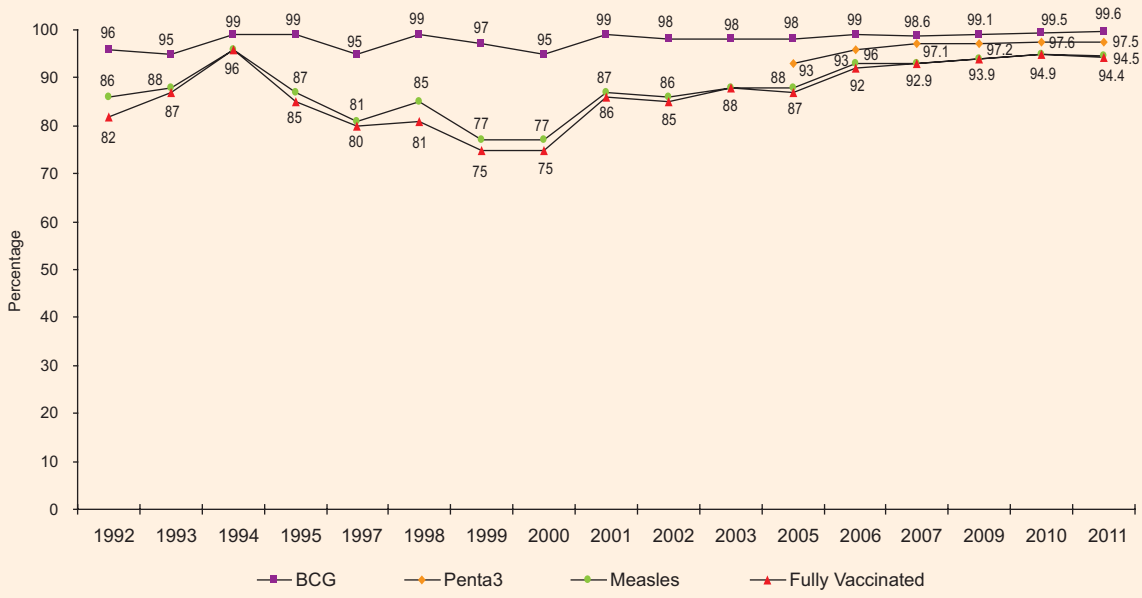
Source: Coverage Evaluation Survey 2005, 2006, 2007, 2009, 2010 and 2011

Figure A15. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Dhaka Division from 1992 to 2011 (Card + History)



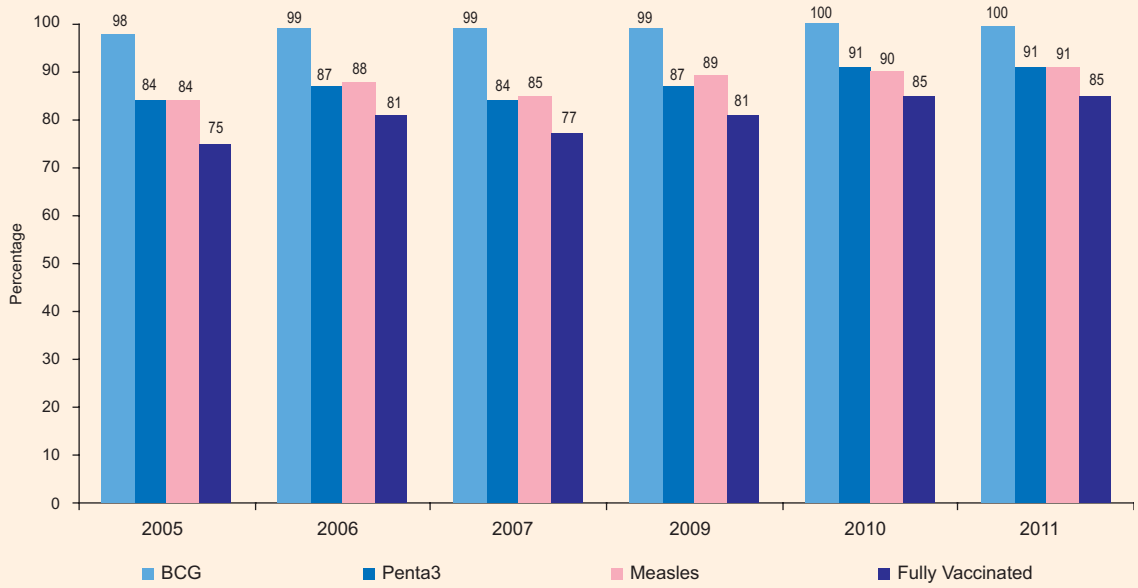
Source: Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010 and 2011

Figure A16. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Khulna Division from 1992 to 2011 (Card + History)



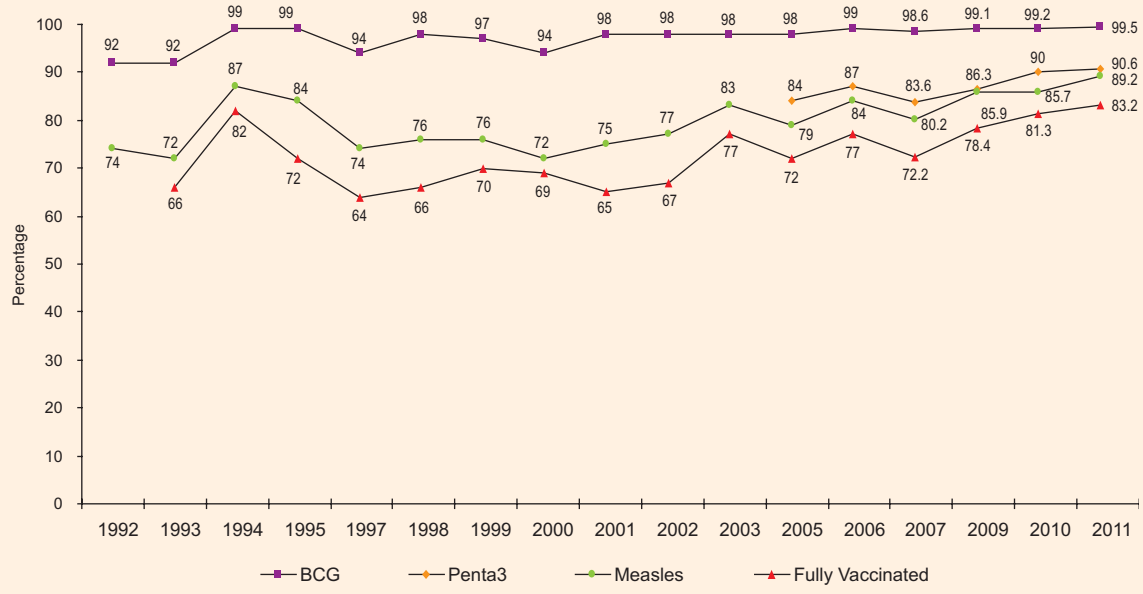
Source: Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010 and 2011

Figure A17. Annual Trend in Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children in Khulna Division from 2005 to 2011 (Card + History)



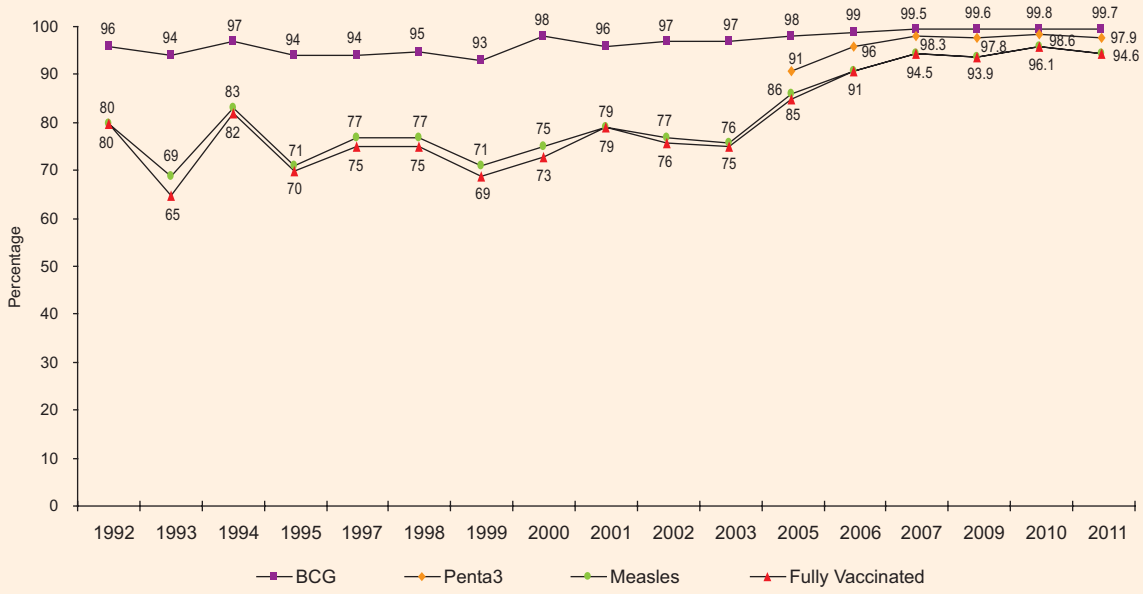
Source: Coverage Evaluation Survey 2005, 2006, 2007, 2009, 2010 and 2011

Figure A18. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Khulna Division from 1992 to 2011 (Card + History)



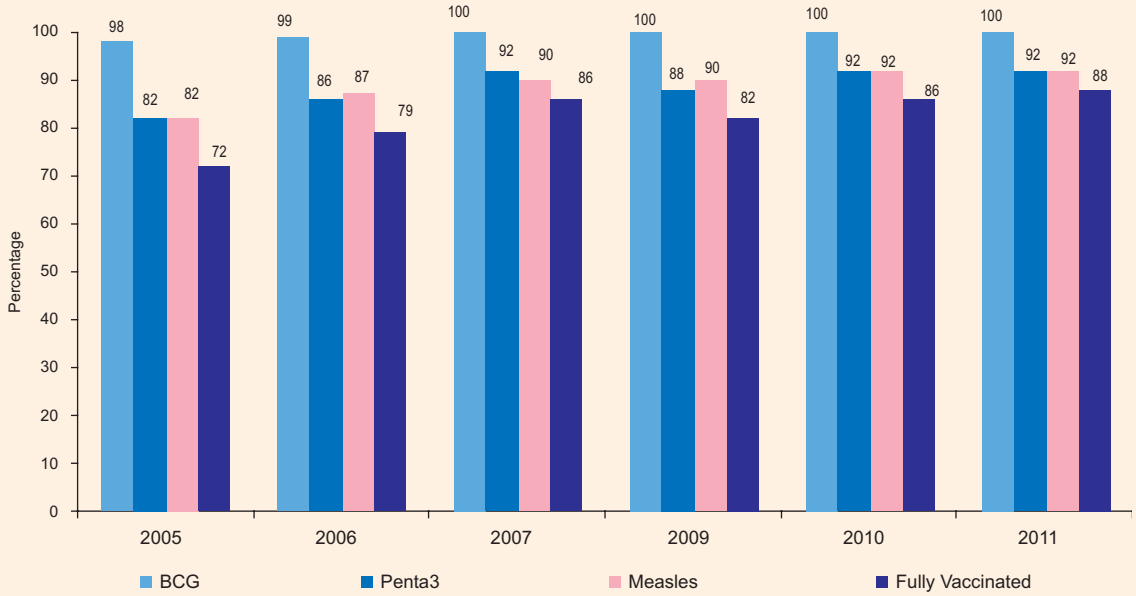
Source: Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010 and 2011

Figure A19. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rajshahi Division* from 1992 to 2011 (Card + History)



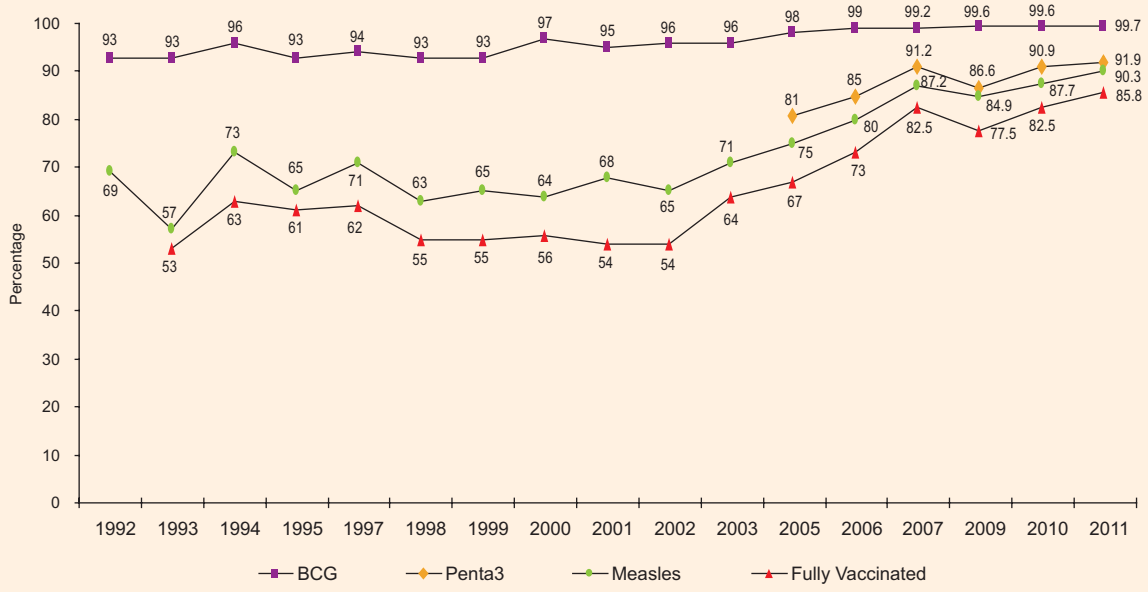
Source: Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010 and 2011
* Before 2010 Rangpur division was included in Rajshahi division

Figure A20. Annual Trend in Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children in Rajshahi Division* from 2005 to 2011 (Card + History)



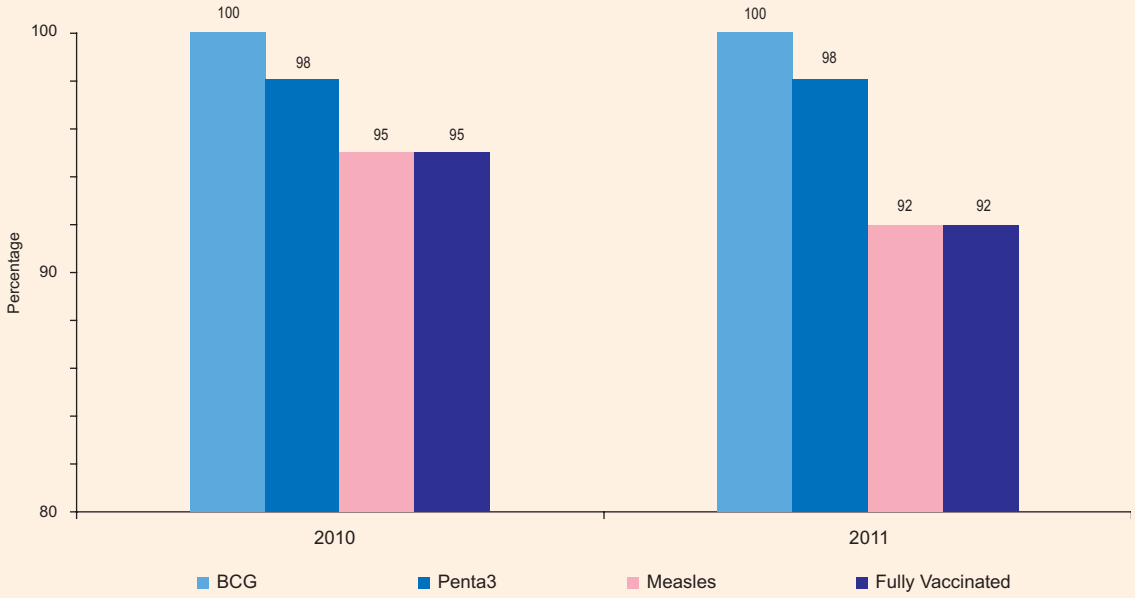
Source: Coverage Evaluation Survey 2005, 2006, 2007, 2009, 2010 and 2011
* Before 2010 Rangpur division was included in Rajshahi division

Figure A21. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Rajshahi Division* from 1992 to 2011 (Card + History)



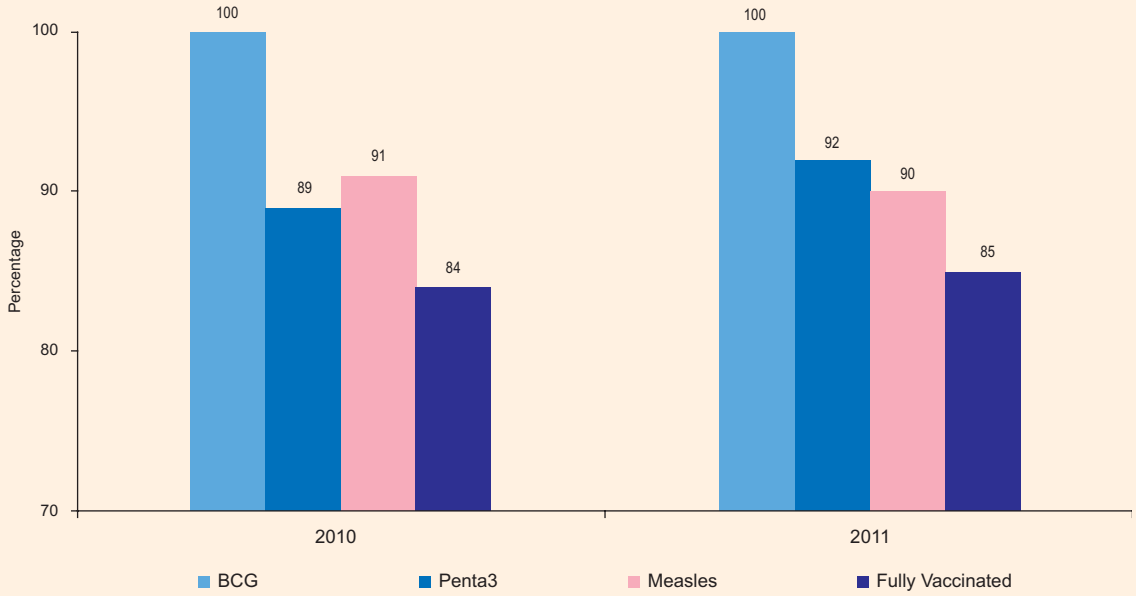
Source: Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010 and 2011
* Before 2010 Rangpur division was included in Rajshahi division

Figure A22. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rangpur Division* from 2010 to 2011 (Card + History)



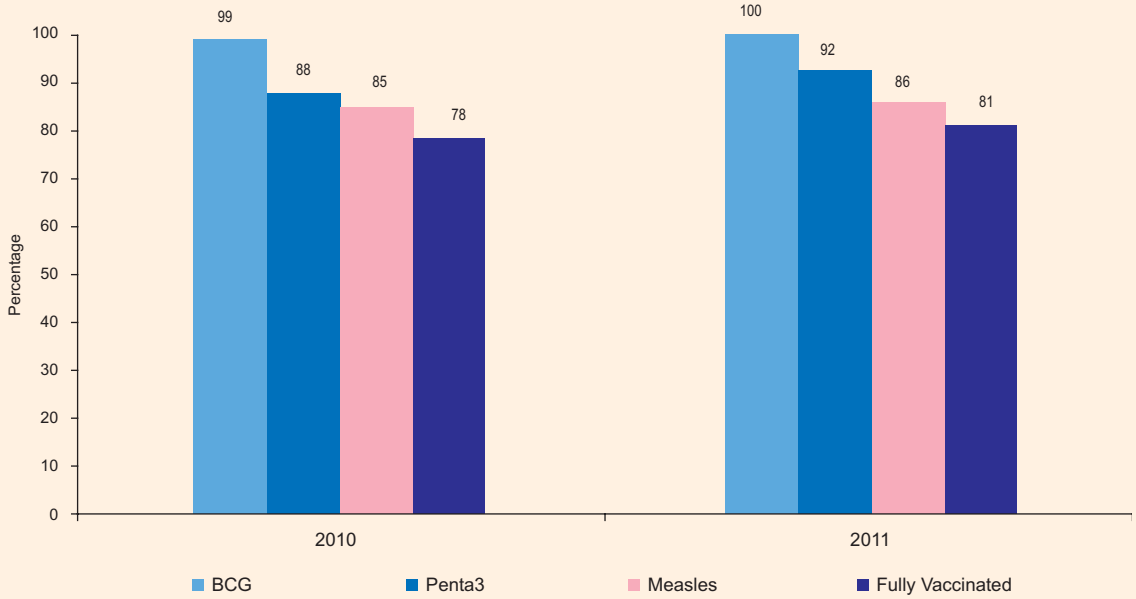
Source: Coverage Evaluation Survey 2010 and 2011
* Before 2010 Rangpur division was included in Rajshahi division

Figure A23. Annual Trend in Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rangpur Division* from 2010 to 2011 (Card + History)



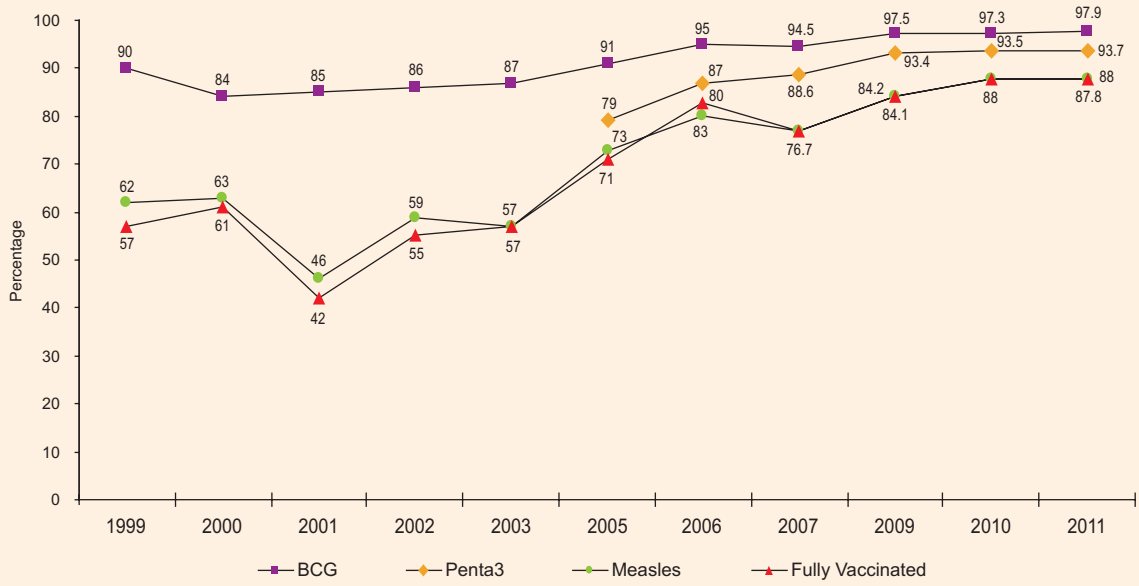
Source: Coverage Evaluation Survey 2010 and 2011
* Before 2010 Rangpur division was included in Rajshahi division

Figure A24. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Rangpur Division* from 2010 to 2011 (Card + History)



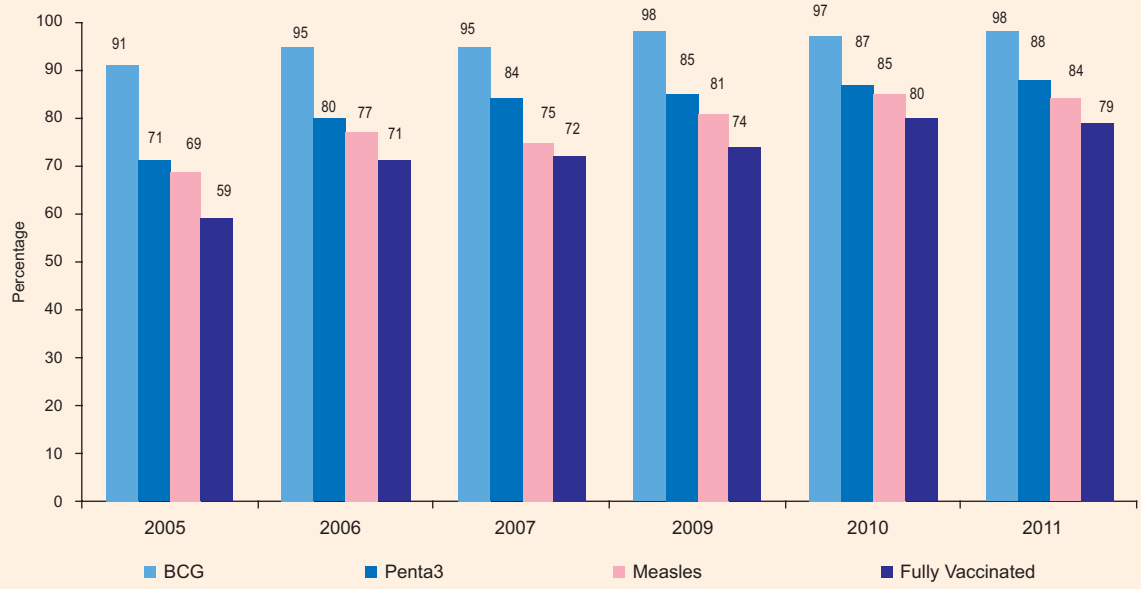
Source: Coverage Evaluation Survey 2010 and 2011
* Before 2010, Rangpur division was a part of Rajshahi division

Figure A25. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Sylhet Division* from 1999 to 2011 (Card + History)



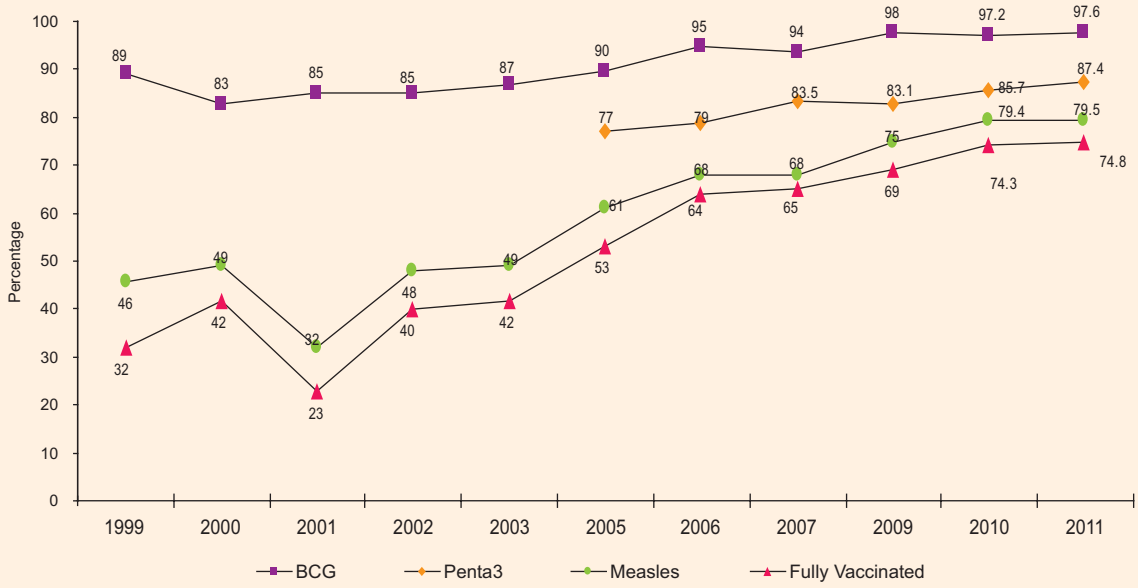
Source: Coverage Evaluation Survey 1999-2002, 2003, 2005, 2006, 2007, 2009, 2010 and 2011

Figure A26. Annual Trend in Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children in Sylhet Division from 2005 to 2011 (Card + History)



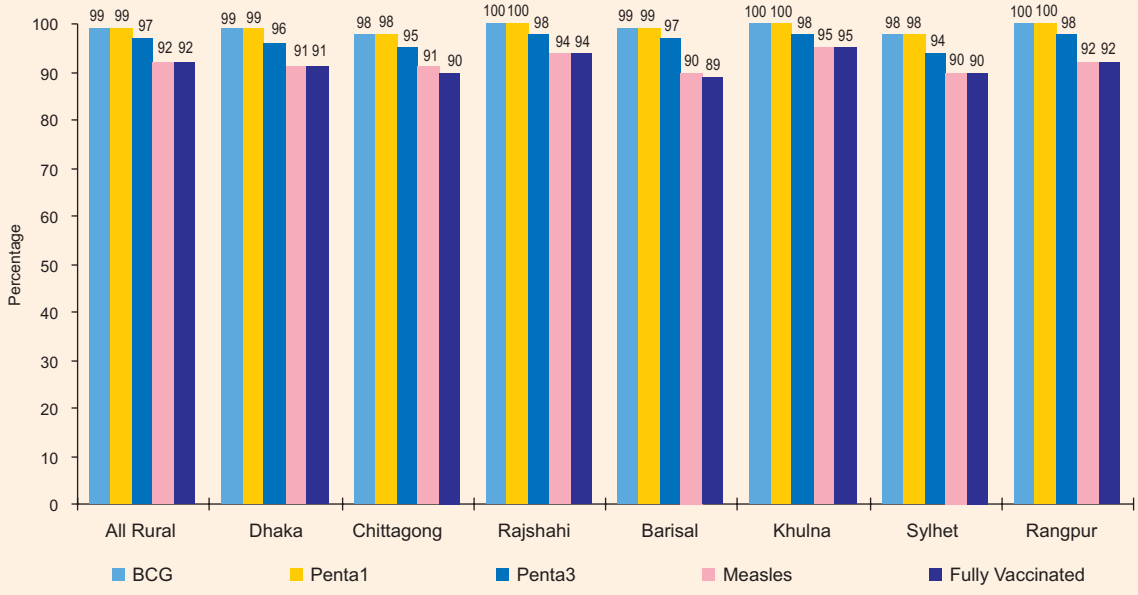
Source: Coverage Evaluation Survey 2005, 2006, 2009, 2010 and 2011
* Before 1999, Sylhet division was a part of Chittagong division

Figure A27. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Sylhet Division from 1999 to 2011 (Card + History)



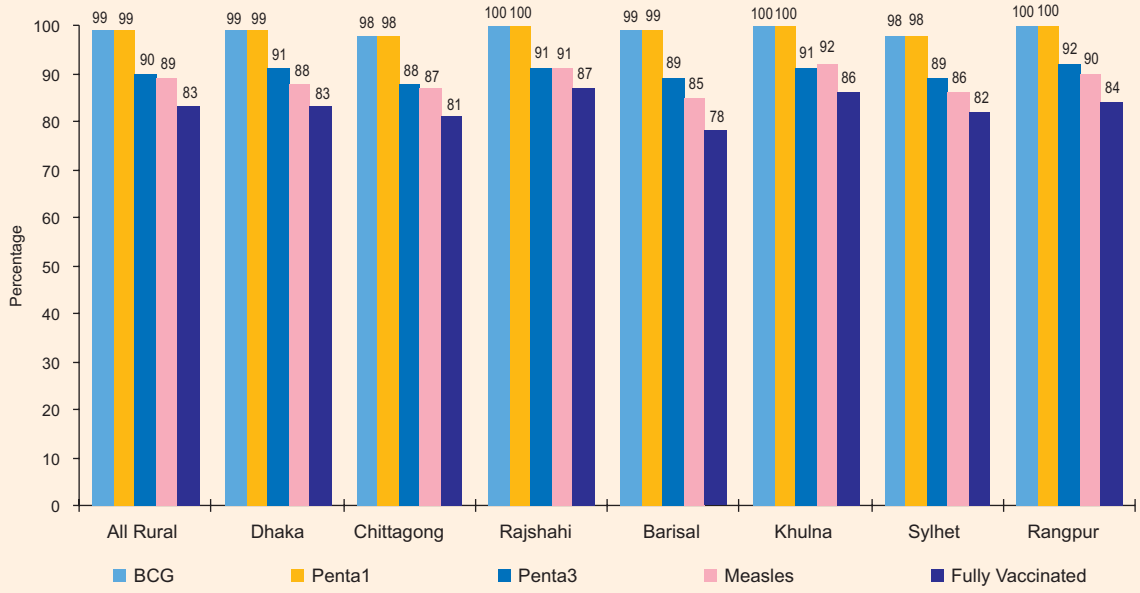
Source: Coverage Evaluation Survey 1999-2002, 2003, 2005, 2006, 2007, 2009, 2010 and 2011

Figure A28. Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rural Areas by Division in 2011 (Card + History)



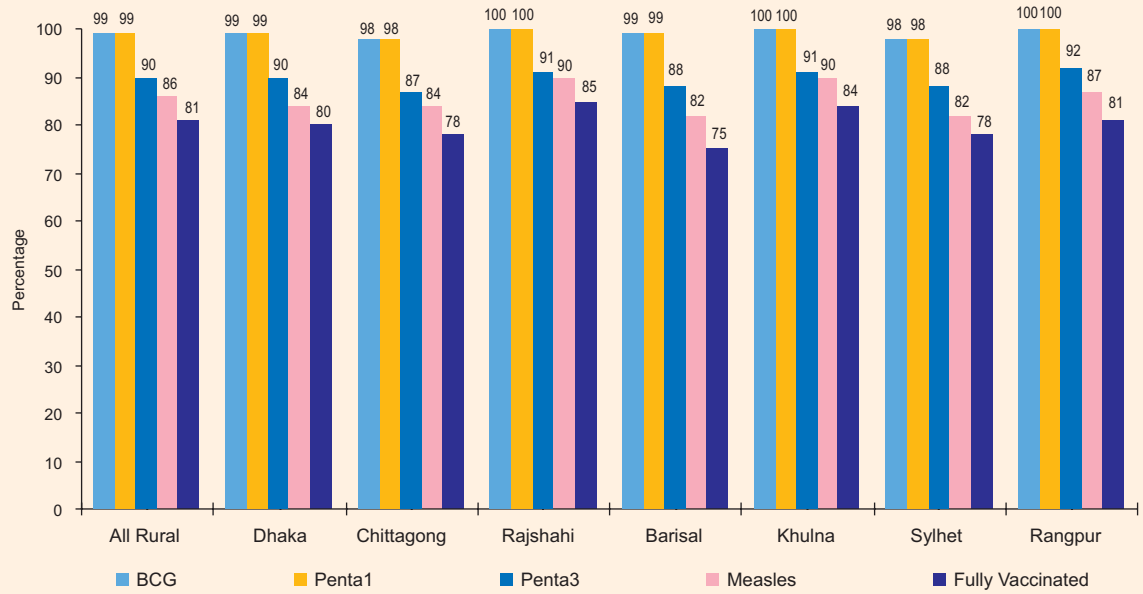
Source: CES 2011
* Before 1999, Sylhet division was a part of Chittagong division

Figure A29. Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rural Areas by Division in 2011 (Card + History)



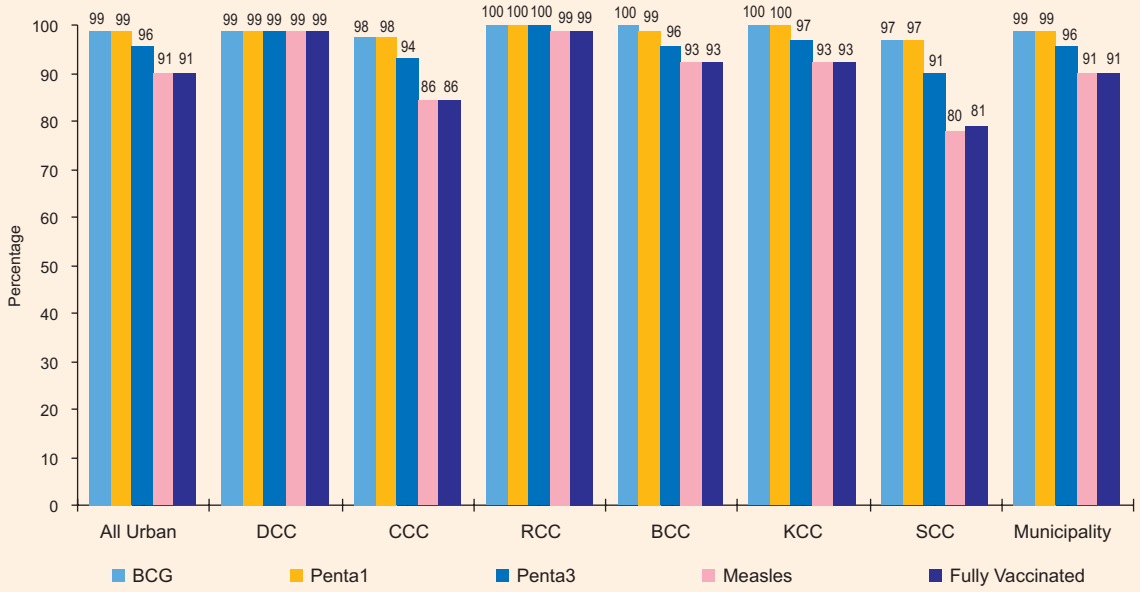
Source: CES 2011

Figure A30. Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Rural Areas by Division in 2011 (Card + History)



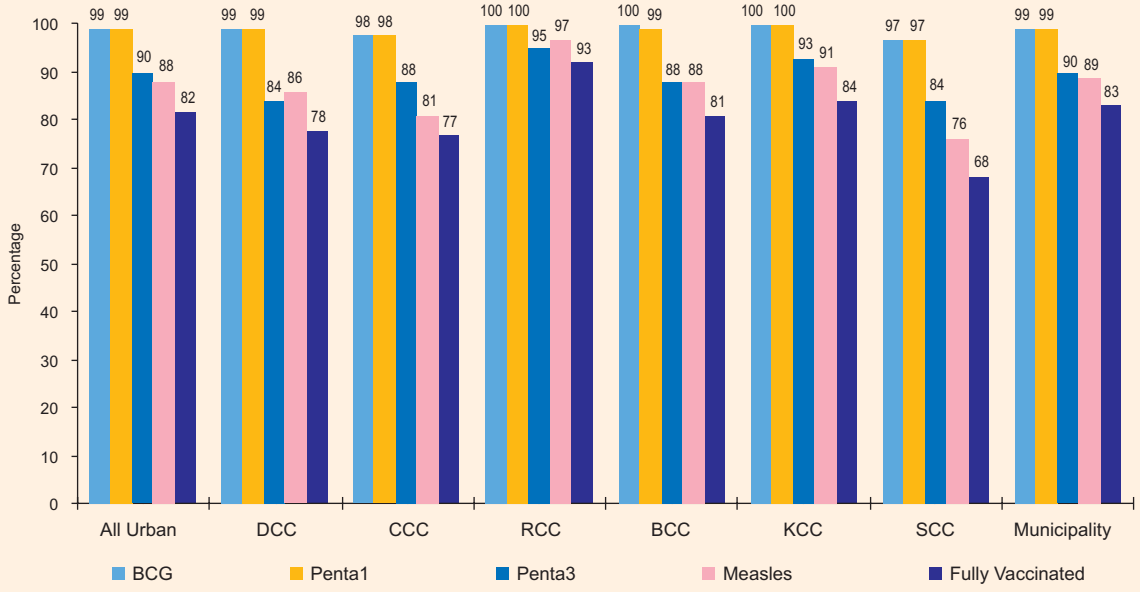
Source: CES 2011

Figure A31. Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2011 (Card + History)



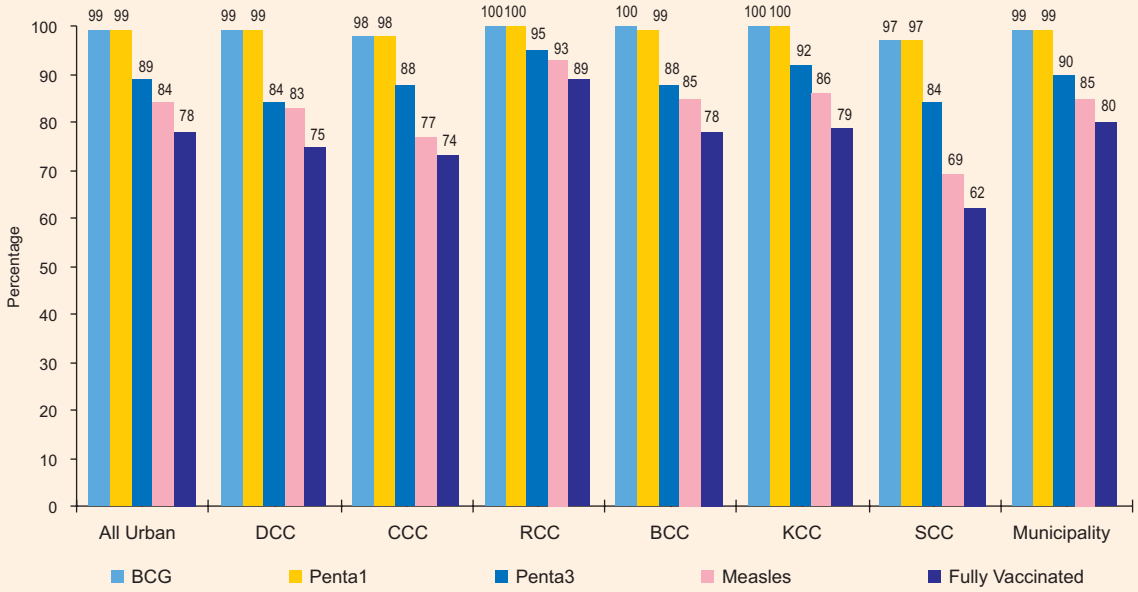
Source: CES 2011

Figure A32 Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Urban Areas by City Corporation / Municipality in 2011 (Card + History)



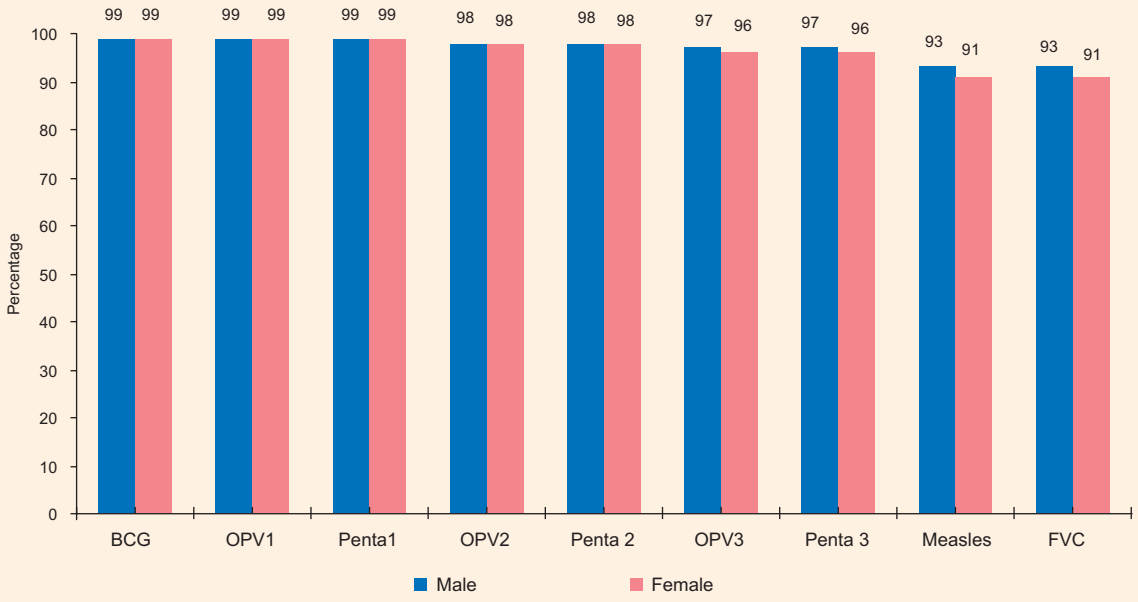
Source: CES 2011

Figure A33. Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Urban Areas by City Corporation/Municipality in 2011 (Card + History)



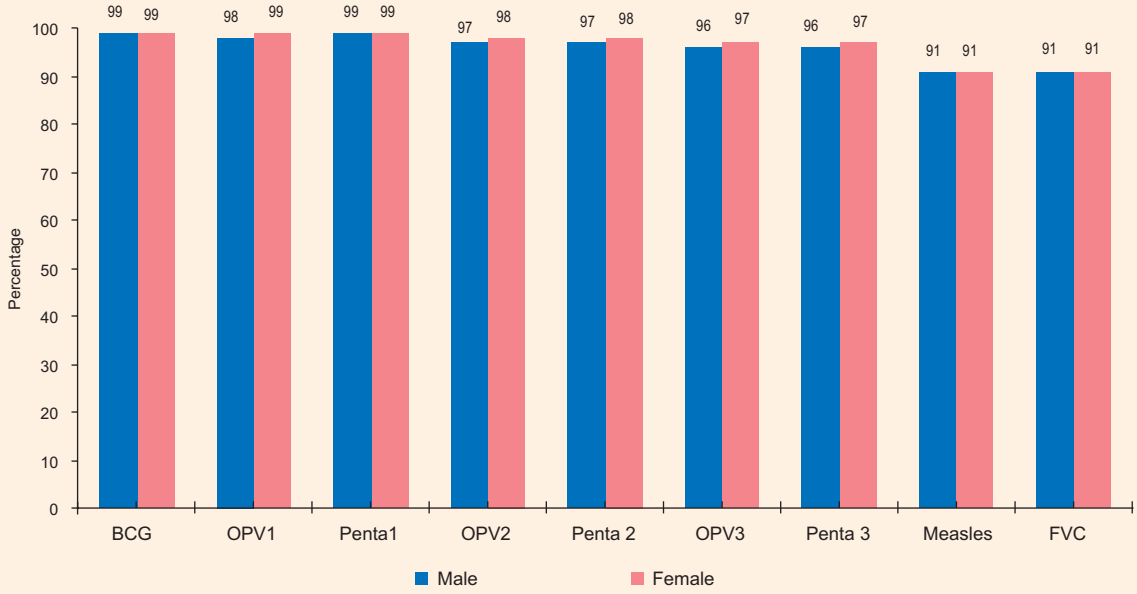
Source: CES 2011

Figure A34. National Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in 2011 (Card + History)



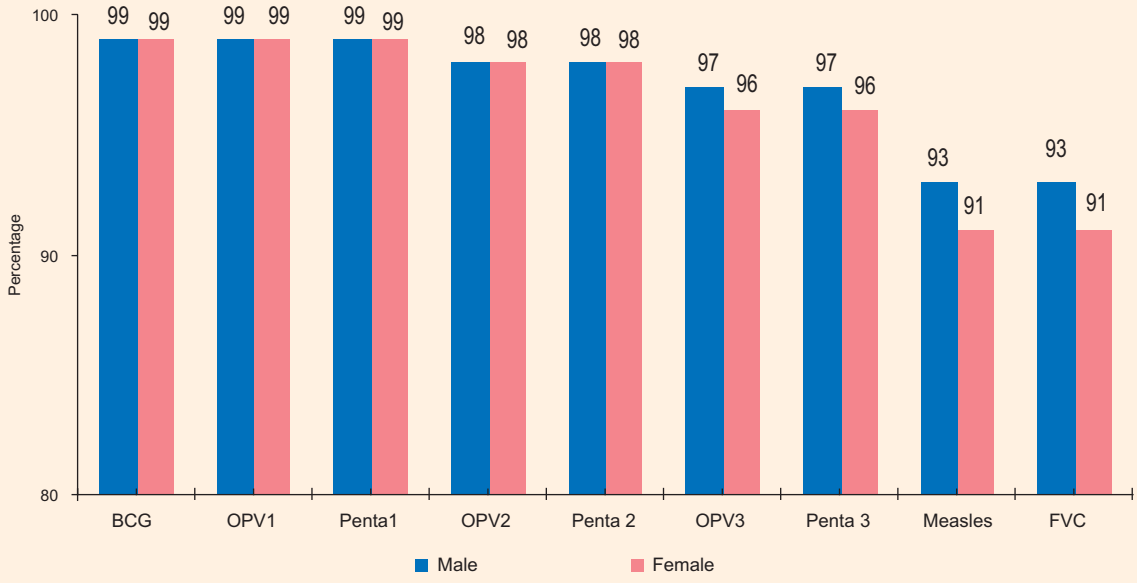
Source: CES 2011

Figure A35. National Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in Urban Areas in 2011 (Card + History)



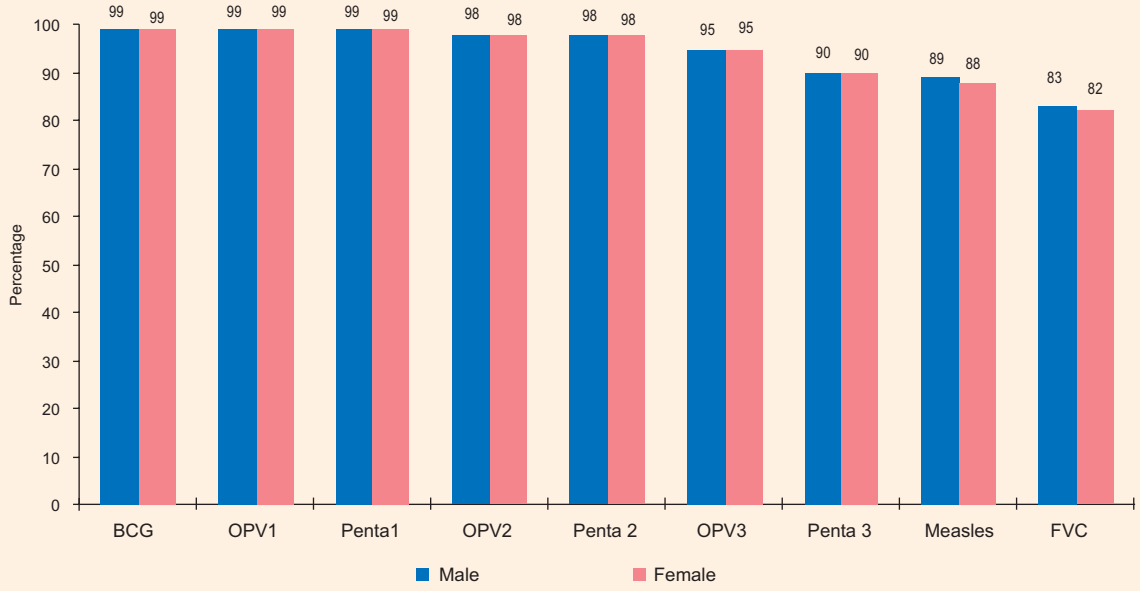
Source: CES 2011

Figure A36. National Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in Rural Areas in 2011 (Card + History)



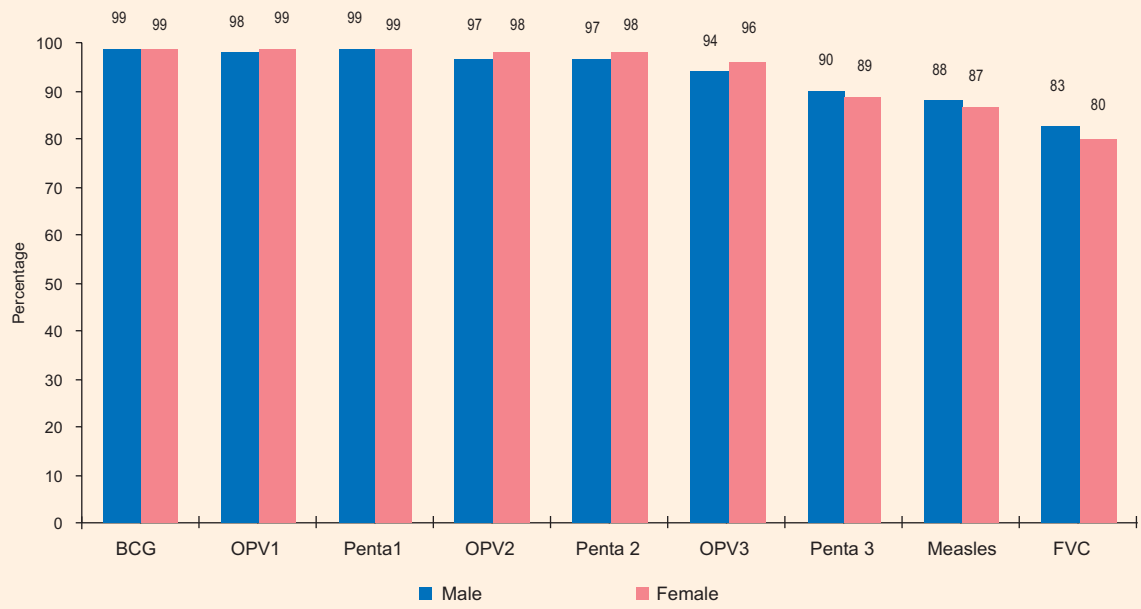
Source: CES 2011

Figure A37. National Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in 2011 (Card + History)



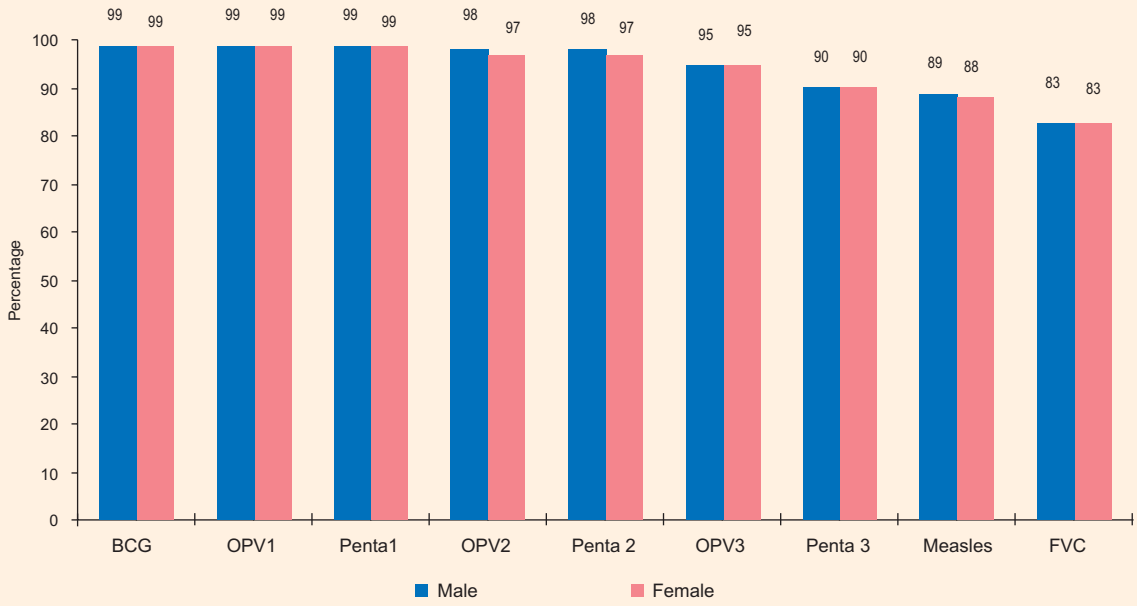
Source: CES 2011

Figure A38. National Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in Urban Areas in 2011 (Card + History)



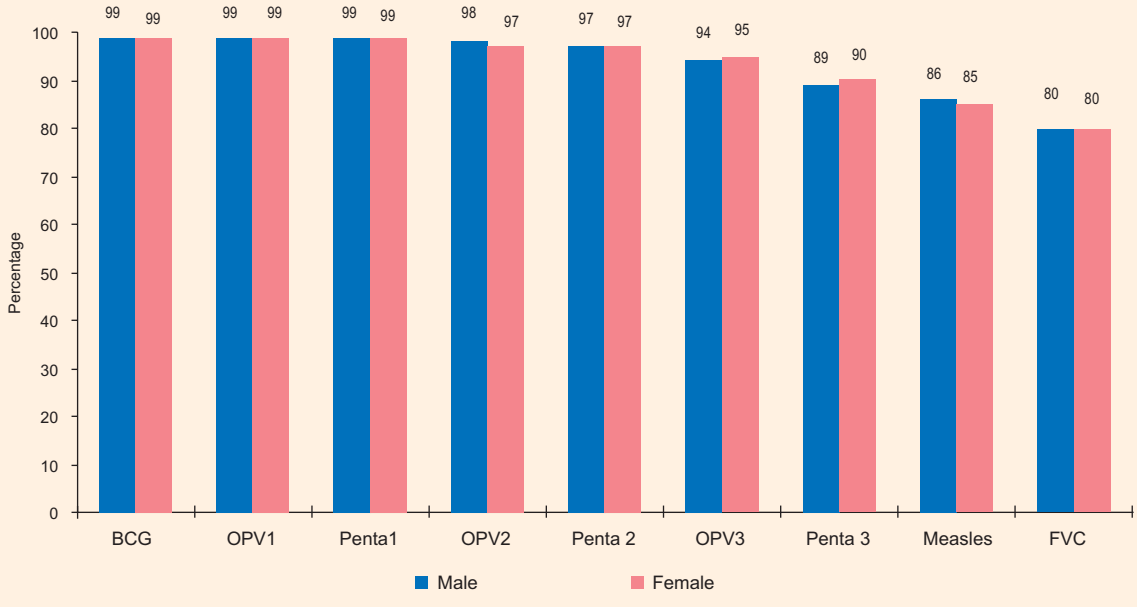
Source: CES 2011

Figure A39. National Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in Rural Areas in 2011 (Card + History)



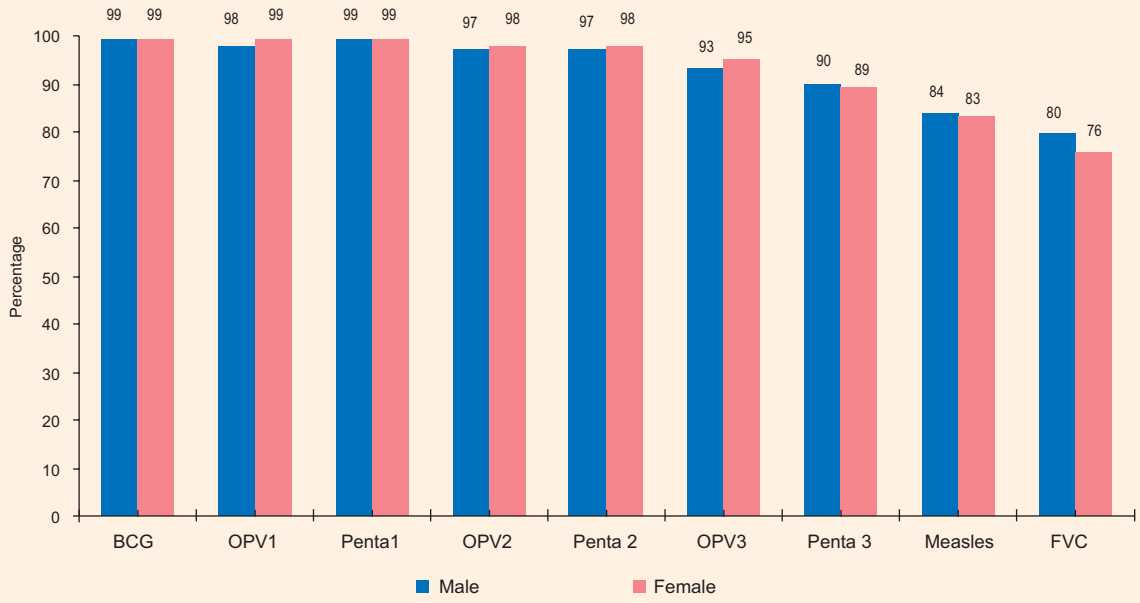
Source: CES 2011

Figure A40. National Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children by Sex in 2011 (Card + History)



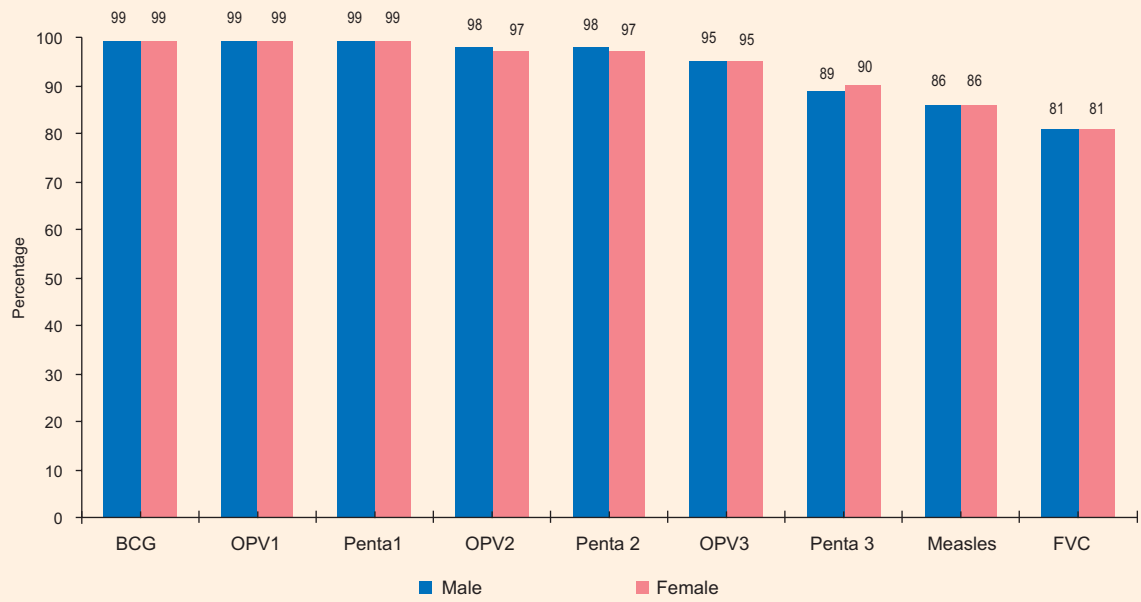
Source: CES 2011

Figure A41. National Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children by Sex in Urban Areas in 2011 (Card + History)



Source: CES 2011

Figure A42. National Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children by Sex in Rural Areas in 2011 (Card + History)



Source: CES 2011

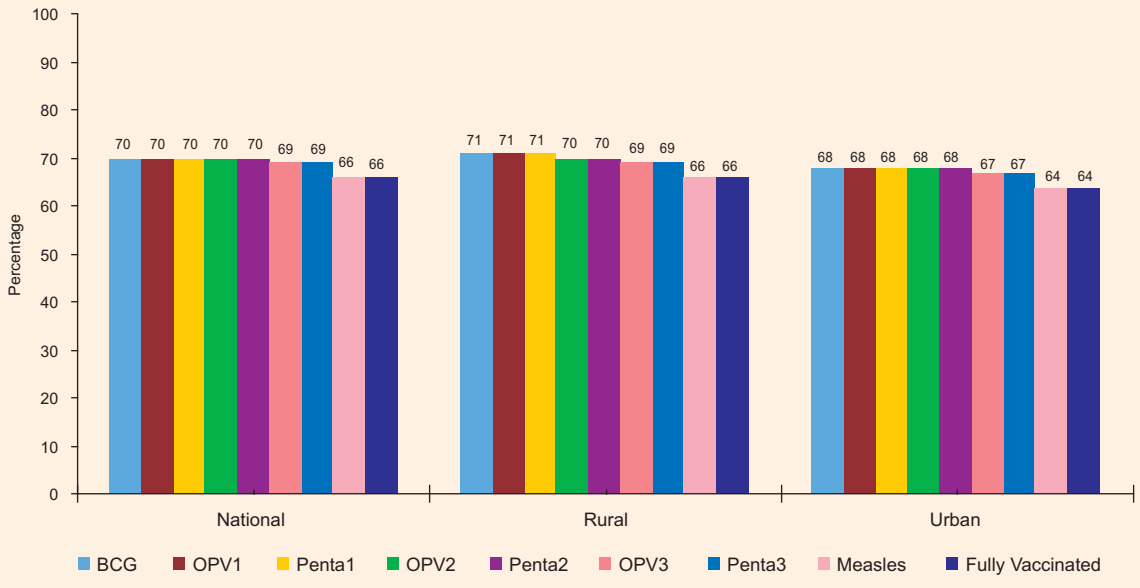
2.5 VACCINATION COVERAGE FROM CARD ONLY

This section presents an analysis of the vaccination coverage among the children aged between 12-23 months, which is based on the information taken from the vaccination cards provided by the mothers/caregivers.

2.5.1 LEVELS OF THE VACCINATION COVERAGE

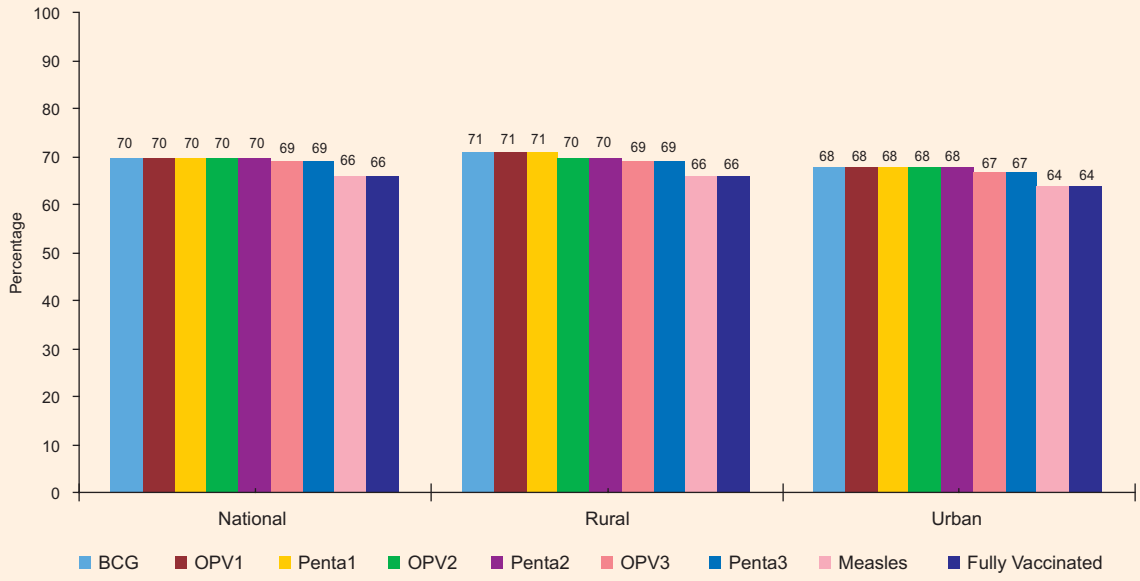
The national vaccination coverage by the age of 12 months computed from card-only is displayed in Figure B1-B9. The expected vaccination coverage computed from card-only was found to be consistently lower than that found from card+history for all vaccination coverages: crude, valid coverage by the age of 23 months, and that by age of 12 months. No decline in the coverage in card+ history data was observed both in rural areas by division and urban areas by city corporation.

Figure B1. Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2011 (Card-Only)



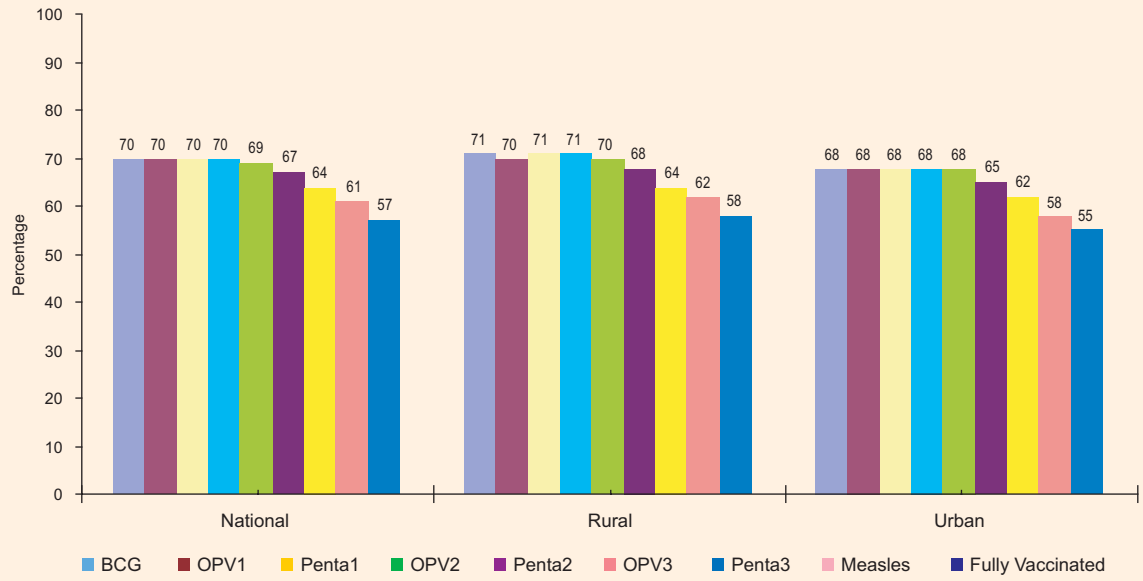
Source: CES 2011

Figure B2. Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2011 (Card-Only)



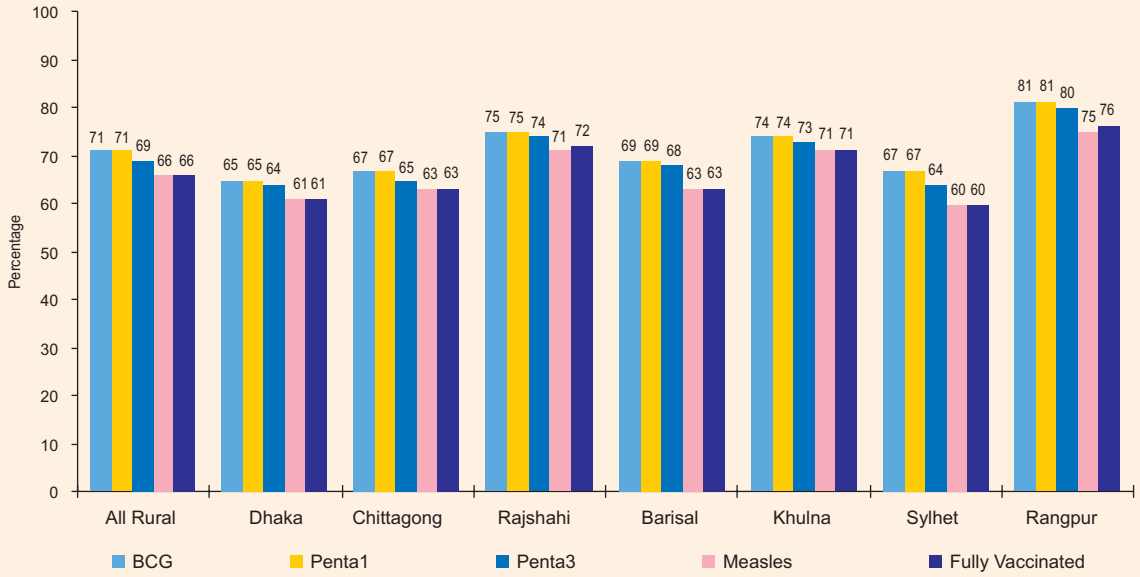
Source: CES 2011

Figure B3. Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2011 (Card-Only)



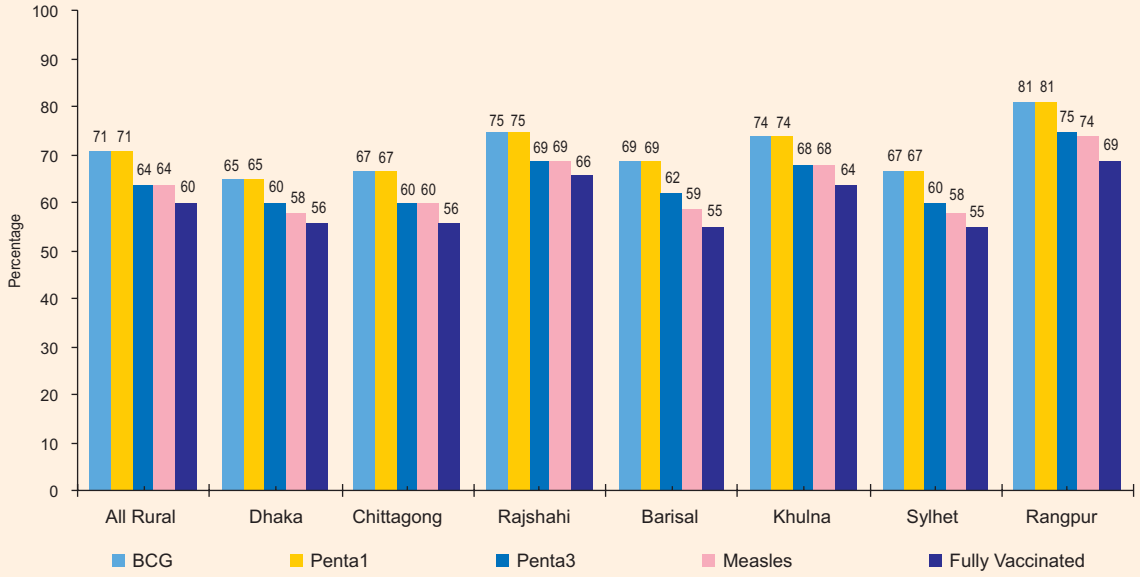
Source: CES 2011

Figure B4. Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rural Areas by Division in 2011 (Card-Only)



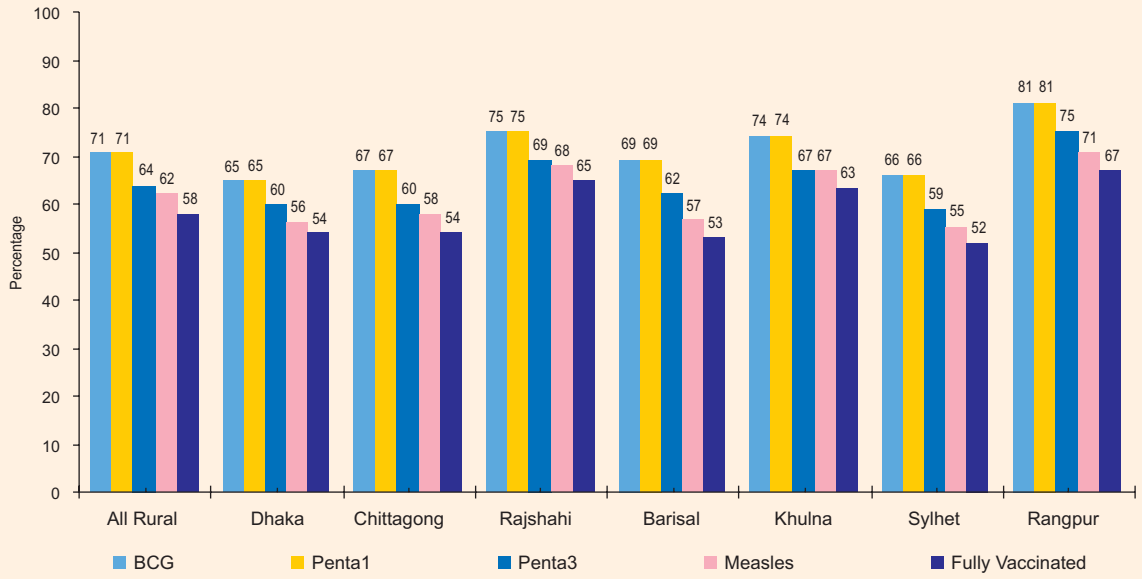
Source: CES 2011

Figure B5. Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rural Areas by Division in 2011 (Card-Only)



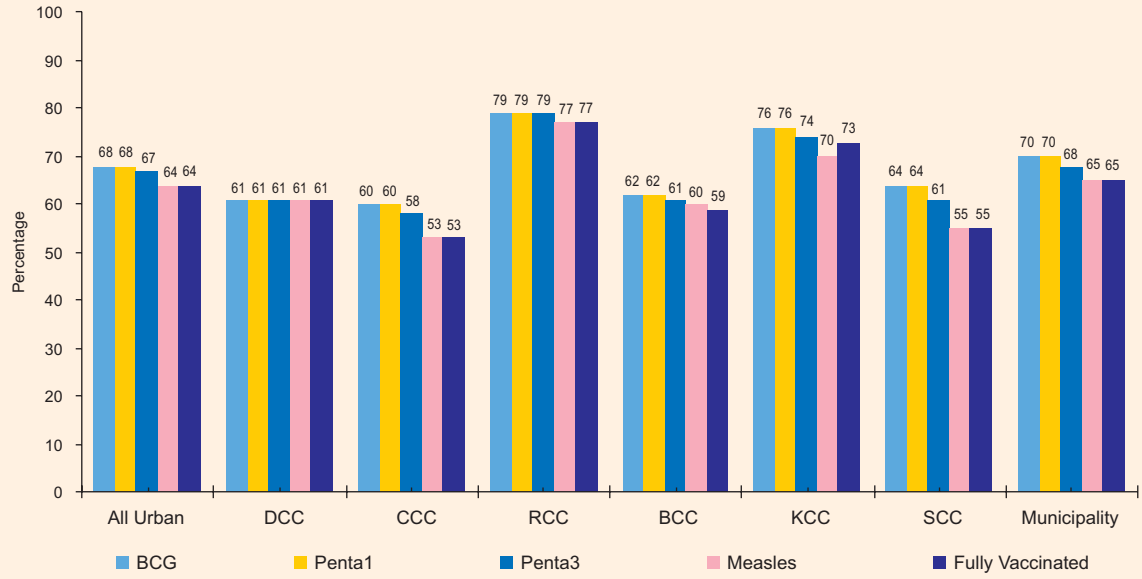
Source: CES 2011

Figure B6. Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Rural Areas by Division in 2011 (Card-Only)



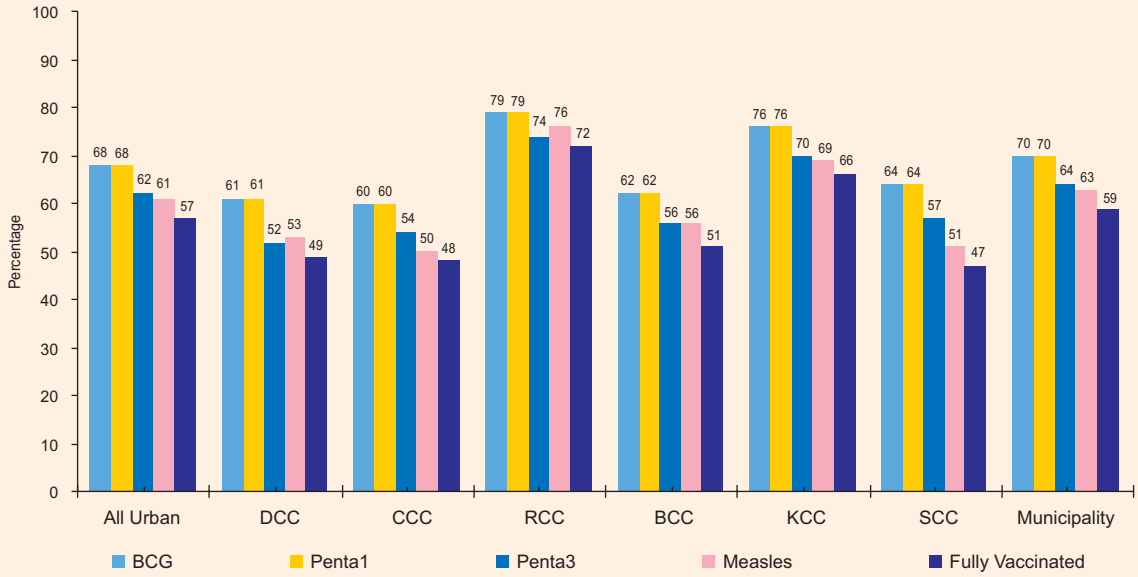
Source: CES 2011

Figure B7. Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2011 (Card-Only)



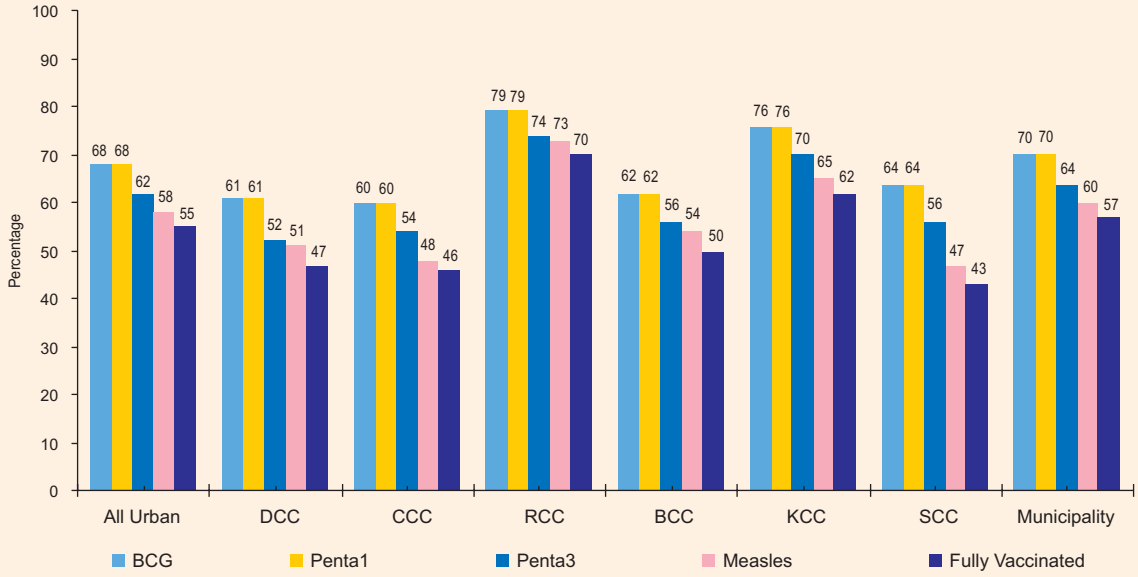
Source: CES 2011

Figure B8. Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2011 (Card-Only)



Source: CES 2011

Figure B9. Valid Vaccination Coverage by Age 12 months among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2011 (Card-Only)



Source: CES 2011

2.6 PROGRAM QUALITY

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

2.6.1 RETENTION OF VACCINATION CARDS

Vaccination card is an important tool to estimate the vaccination coverage. It is issued when a child is taken to the vaccination center for providing vaccines. The card contains the record of the dates of administering the dose(s) of vaccine. Mothers/caregivers are generally motivated by the health workers to preserve the card carefully. CES 2011 assessed the card retention rate among the surveyed children and presented the findings in Figure C1. It shows that 77 percent of the mothers/caregivers retained the vaccination card across the country. Card retention rate was much higher in rural areas (78 percent), than that in urban areas (74 percent) (see Figure C1). Compared to that in CES 2010, it was found to be 4 percentage points higher in CES 2011 (73 percent in 2010 and 77 percent in 2011).

In rural areas by division, relatively higher card retention rate was revealed in Rangpur (87 percent). However, it was found to be much lower in Dhaka division (72 percent). Card retention rate in other divisions ranged between 74 percent in Sylhet and Barisal divisions and 83 percent in Rajshahi divisions. Card retention rate was 75 percent in Chittagong division while it was 81 percent in Khulna division (see Figure C3).

Figure C4 shows the card retention rate by city corporation. Across the city corporations, it was found to be the highest (81 percent) in KCC and RCC and the lowest (64 percent) in CCC. Card retention rate in SCC was 71 percent, which was being followed by DCC and BCC (66 percent).

2.6.2 INCIDENCE OF INVALID DOSES

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

Nationally, 4 percent of the total Penta1 doses and 3.8 percent of the total measles doses administered among the surveyed children were found to be invalid (see Figure C5). Urban-rural variation regarding the act of administering invalid Penta1 and measles doses did not exist. Four percent of the children in rural areas received invalid Penta1 and another 4 percent invalid measles as against similar proportion of the children who received invalid Penta1 and measles in the urban areas (see Figure C5).

Figure C8 shows the incidence of invalid Penta1, Penta2, and Penta3 in rural areas by division. It shows that a higher percentage of children received invalid Penta1 dose in Barisal division (5.8 percent), which was being followed by Chittagong (4.3 percent), Rajshahi and Dhaka (4 percent), Rangpur (3.7 percent), Khulna (3.6 percent), and Sylhet divisions (3.5 percent).

The rate of invalid Penta2 doses was the highest (7 percent) in Barisal division, which was being followed by Chittagong (6 percent), Rajshahi (5.4 percent), Dhaka and Khulna (5.3 percent), Rangpur (5.2 percent), and Sylhet divisions (4.6 percent).

As regards the incidence of invalid Penta3 doses, it was found to be the highest (8.5 percent) in Barisal division and and the lowest (5.7 percent) in Sylhet division, which was being followed by Dhaka (5.9 percent), Rangpur (6 percent), Rajshahi (6.3 percent), Khulna (7.2 percent),and Chittagong (7.9 percent) divisions (see Figure C8).

Across the city corporations, 11.8 percent of the Penta1 doses administered were found to be invalid in DCC, which was being followed by 5.9 percent in BCC, 2.9 percent in KCC, 2.4 percent in RCC, 2.3 percent in CCC, and the lowest 1.4 percent in SCC. Similarly, incidence of invalid Penta2 was the highest in DCC (13.2 percent) and the lowest in RCC (3.6 percent). Incidence rate was intermediary that ranged between 4.1 percent in KCC and 7.4 percent in BCC. It was 4.7 percent in CCC, which was being followed by SCC (4.3 percent). As it was assumed, invalid Penta3 doses were found to be the highest (14.1 percent) in DCC and the lowest (4.3 percent) in KCC (see Figure C10).

Figure C7 shows the percentage of invalid measles vaccination in rural areas by division. The division-wise analysis shows that a slightly higher percentage of children from Barisal (5.4 percent), Sylhet (4.5 percent), and Dhaka (4.3 percent) divisions received invalid doses of measles, i.e. measles vaccines administered before one's 270 days of birth. The percentage was slightly lower in Rangpur (2.6 percent), Rajshahi (2.7 percent), Chittagong and Khulna divisions (3.6 percent).

Likewise, among the city corporations, invalid dose of measles vaccination was the highest (13.5 percent) in DCC, which was being followed by SCC (6.4 percent), BCC (5.8 percent), CCC (5.6 percent), and KCC (2.1 percent). The lowest rate (1.9 percent) of invalid dose of measles was revealed in RCC (see Figure C9).

2.6.3 VACCINATION DROPOUT RATES

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

Across the country, the dropout rate was found to be 2.5 percent for Penta1- Penta3 and 7.2 percent for Penta1-measles (see Figure C11). The urban-rural variation was absent for Penta1- Penta3. Penta1- Penta3 dropout rate was found to be 2.5 percent in both rural and urban areas. However, Penta1-measles dropout rate was 7.1 percent in rural and 7.6 percent in urban areas.

Over the years, national dropout rates have declined substantially, particularly since 2003. The dropout rate for Penta1- Penta3 declined from 21 percent in 2003 to 2.5 percent in 2011, and for Penta1 -measles from 13 percent in 2003 to 7.2 percent in 2011 (see Figure C12).

The analysis by rural division shows that Penta1- Penta3 dropout rate was found to be the highest (4 percent) in Sylhet and the lowest (1.6 percent) in Khulna. In contrast, Penta 1-measles dropout rate was the highest in Barisal (10 percent) and the lowest in Khulna (4.4 percent). The dropout rate for Penta1-measles in other divisions ranged between 5.8 percent in Rajshahi and 8.3 percent in Sylhet divisions (see Figure C13).

Among the city corporations, the dropout rate for Penta1-Penta3 was found to be the highest (5.9 percent) in SCC, which was being followed by CCC (3.9 percent), KCC (2.9 percent), and BCC (2.4 percent). It is worth mentioning here that no dropout for Penta 1-Penta 3 was observed in DCC and RCC. In contrast, Penta1-measles dropout rate was the highest in SCC (17.2 percent) and the lowest in DCC (0.5 percent). The measles dropout rates in other city corporations were: 1.4 percent in RCC, 5.8 percent in BCC, 6.7 percent in KCC and 12.6 percent in CCC (see Figure C14).

TREND IN THE DROPOUT RATES

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

A considerable decline in the dropout rate was noticed in almost every division since 2002. In Dhaka division, the dropout rate for Penta1- Penta3 went down from 10 percent in 2002 to 2.5 percent in 2011; in Chittagong division from 10 percent to 3.1 percent; in Sylhet division from 22 percent in 2002 to 4.3 percent in 2011; in Rajshahi division from 12 percent in 2002 to 1.9 percent in 2011; in Khulna division from 5 percent in 2002 to 2.1 percent in 2011; and, in Barisal division from 9 percent in 2002 to 2.7 percent in 2011. Although the trend was found to be decreasing during 2002-2010, CES 2011 shows a slight increase in the dropout rate compared to that in CES 2010 in every division. The dropout rate increased by more than 1.7 percentage points in Barisal, 1.3 percentage point in Sylhet, 0.9 percentage point in Rajshahi, 0.5 percentage point in Dhaka, and 0.1 percentage point in Chittagong and Khulna divisions (see Figures C15 -C20).

Similarly, for Penta1-measles, Dhaka division experienced a decrease in the dropout rate from 19 percent in 2002 to 7.2 percent in 2011; Chittagong division from 17 percent in 2002 to 8.2 percent in 2011; Rajshahi division from 20 percent in 2002 to 5.2 percent; Sylhet division from 30 percent in 2002 to 10.1 percent; Khulna division from 12 percent in 2002 to 5.1 percent; and, Barisal division from 21 percent in 2002 to 9.3 percent in 2011 (see Figures C15 -C20). It is to be noted here that similar to dropout rate of Penta1-Penta3, the dropout rate of Penta1-measles was found to be increasing in CES 2011 compared to that in CES 2010. Penta1-measles dropout rate increased by 4.3 percentage points in Barisal, 2.2 percentage points in Rajshahi, 2.2 percentage points in Chittagong, 1.1 percentage points in Khulna and Sylhet, and 0.5 percentage point in Dhaka divisions.

Although there was a declining trend in the dropout rates of both Penta1- Penta3 and Penta1-measles in all divisions, a noticeable improvement was also observed in the dropout rates of Penta1-Penta3 and Penta1-measles in Chittagong division.In Chittagong, a gradual decreasing trend without any fluctuation was observed since 2002. Penta1- Penta3 dropout rate decreased from 10 percent in 2002 to 3.1 percent in 2011 (see Figure C16).The declining trend in the dropout rate may be the result of better monitoring and supervision by the EPI staff at all levels of their work.

2.6.4 INCIDENCE OF POST-VACCINATION ABSCESSES

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

Overall, 0.9 percent of the children who received Penta/measles vaccines were reported to have had an abscess after receiving a Penta or the measles vaccine (see Figure C21). Occurrence of abscesses following Penta, or measles vaccination, was almost similar in both rural and urban areas (0.9 percent in rural and 0.8 percent in urban areas).

In the rural areas by division, it was found that Barisal division had the highest (1.3 percent) incidence of abscesses, which was being followed by Rajshahi and Rangpur (1.1 percent), Dhaka (0.9 percent), Chittagong (0.8 percent), Khulna (0.7 percent), and Sylhet divisions (0.1 percent) (see Figure C22).

Among the city corporations, incidence of abscesses was higher (1.9 percent) in BCC, which was being followed by KCC (1.5 percent), CCC and DCC (0.5 percent). It is important to mention here that RCC, and SCC had no case of abscess (see Figure C23).

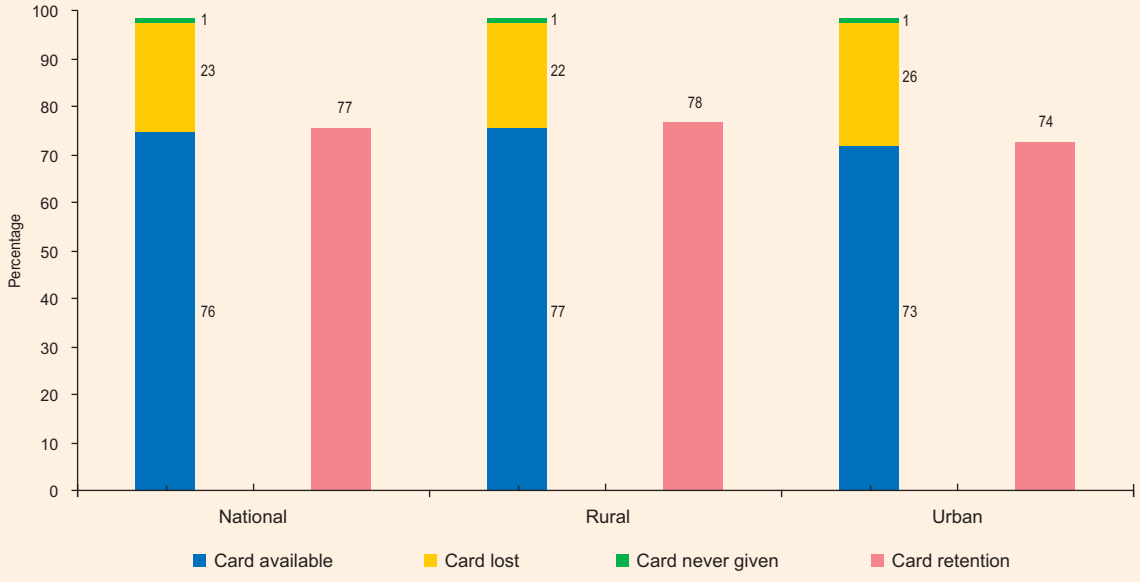
2.6.5 KNOWLEDGE ABOUT THE COMMON SIDE-EFFECTS OF VACCINATION

Children experience minor side-effects after the vaccination. It lasts for a short time and the child recovers soon without any problem. CES 2011 made an assessment of the mothers' knowledge about the common side-effects that occur following the vaccination. A little over 90 percent of them reported fever as the common side-effect of vaccination. A very small proportion (2 percent) of them mentioned about scar/abscess (see Figure C24).

In rural areas by division, fever was revealed to be the highest reported common side-effect in all divisions. The percentage ranged between 88 percent in Barisal division and 94 percent in Chittagong division. In other divisions, it was found to be in the intermediary level (see Figure C25).

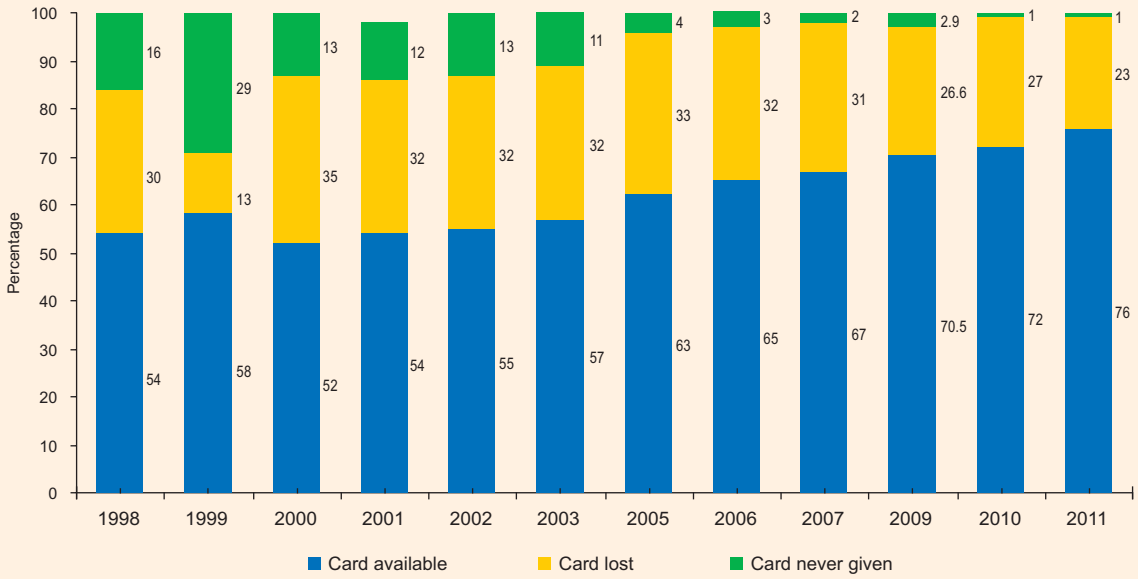
Similarly, among the city corporations, fever was revealed to be the highest reported common side-effect. All the mothers/caregivers in SCC, 99 percent of them in CCC, 96 percent in RCC and KCC, 85 percent in BCC, and 73 percent in DCC reported fever as the common side-effect following vaccination (see Figure-26).

Figure C1. Vaccination Card Status among 12-23 Months Old Children by National, Rural and Urban Areas in 2011



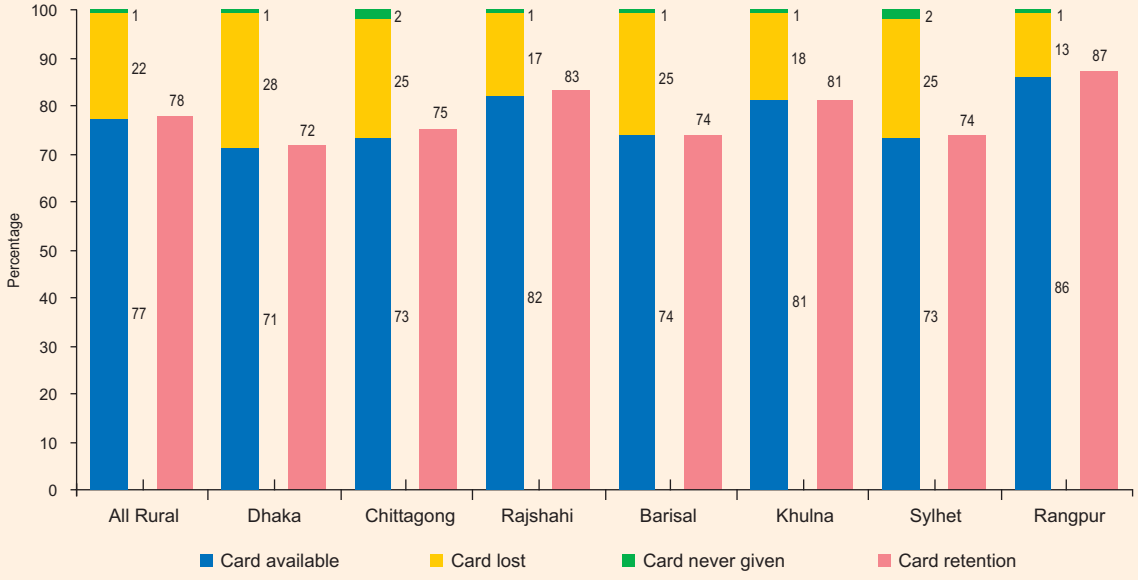
Source: CES 2011

Figure C2. Vaccination Card Status among 12-23 Months Old Children Nationally from 1998 to 2011



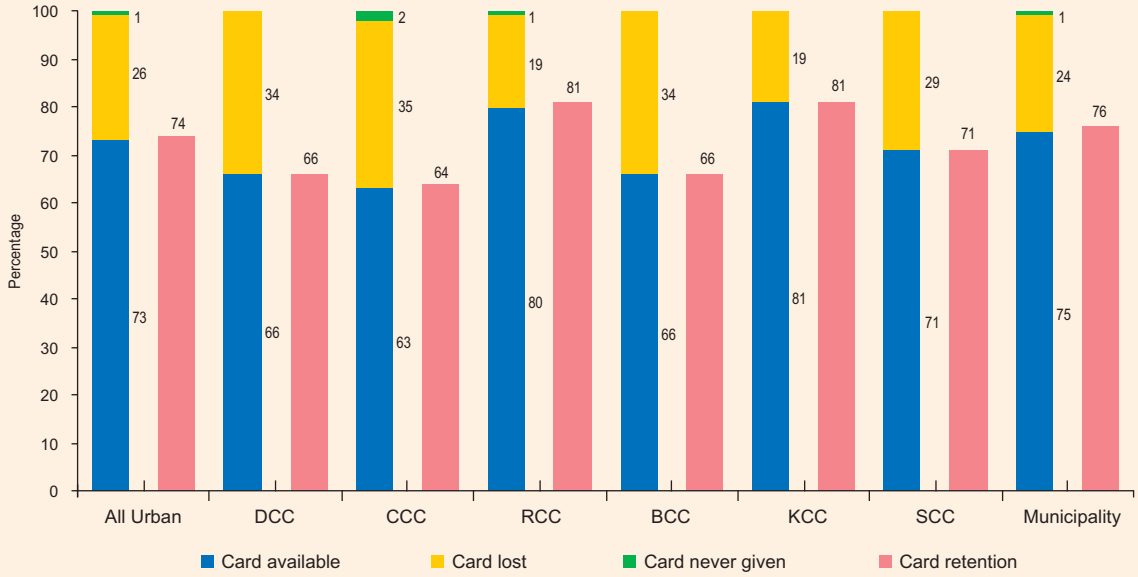
Source: Coverage Evaluation Surveys (CESs) for 1998-2000, 2001, 2002, 2003, 2005, 2006, 2007, 2009, 2010 and 2011

Figure C3. Vaccination Card Status among 12-23 Months Old Children In Rural Areas by Division in 2011



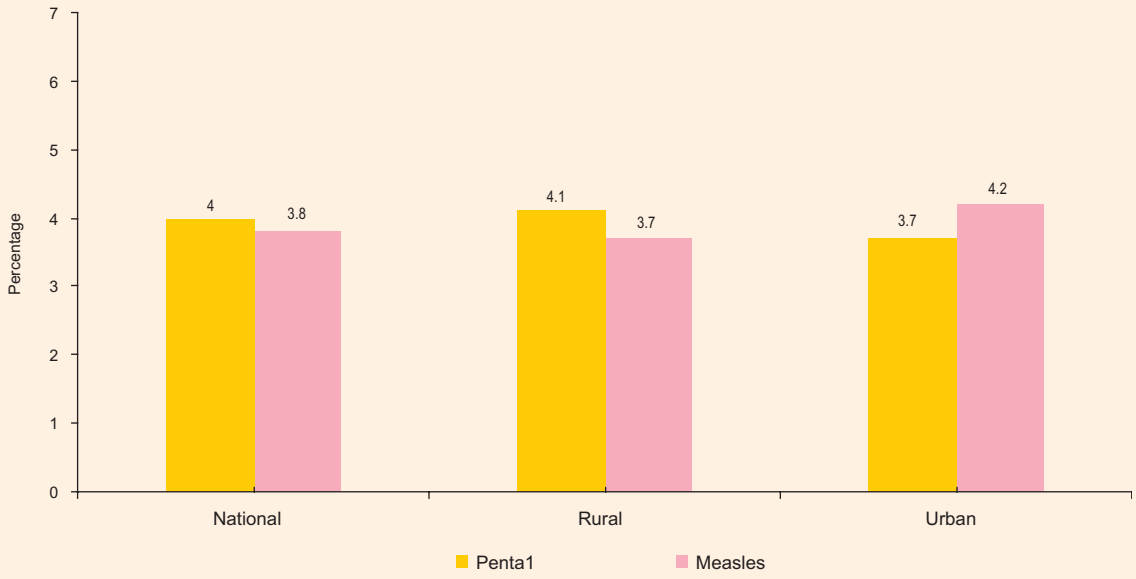
Source: CES 2011

Figure C4. Vaccination Card Status among 12-23 Months Old Children In Urban Areas by City Corporation/ Municipality in 2011



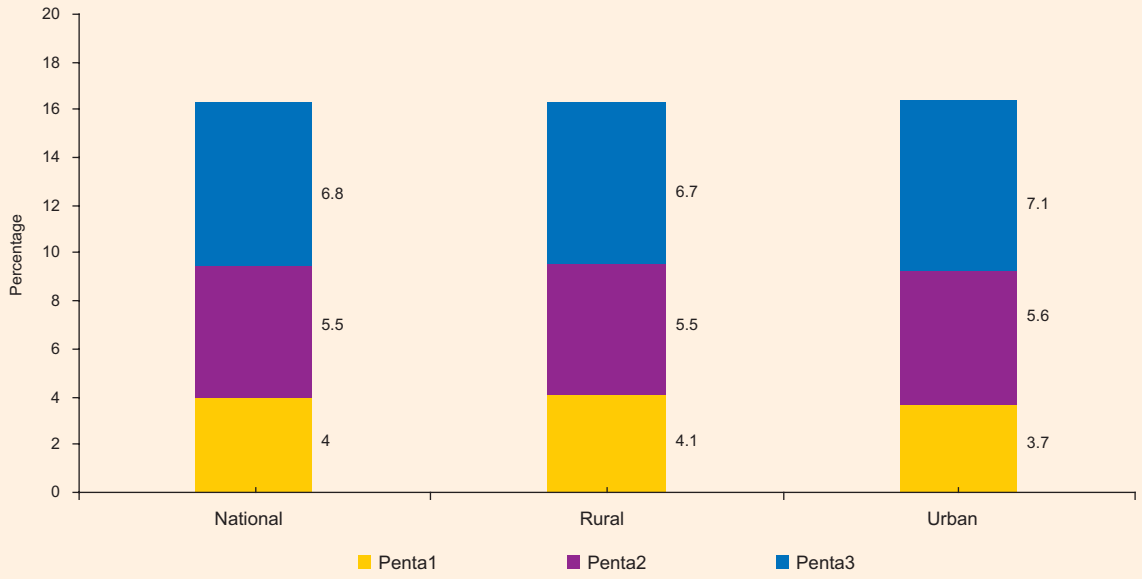
Source: CES 2011

Figure C5. Incidence of Invalid Penta1 and Measles Doses by Age 12 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2011 (Card-Only)



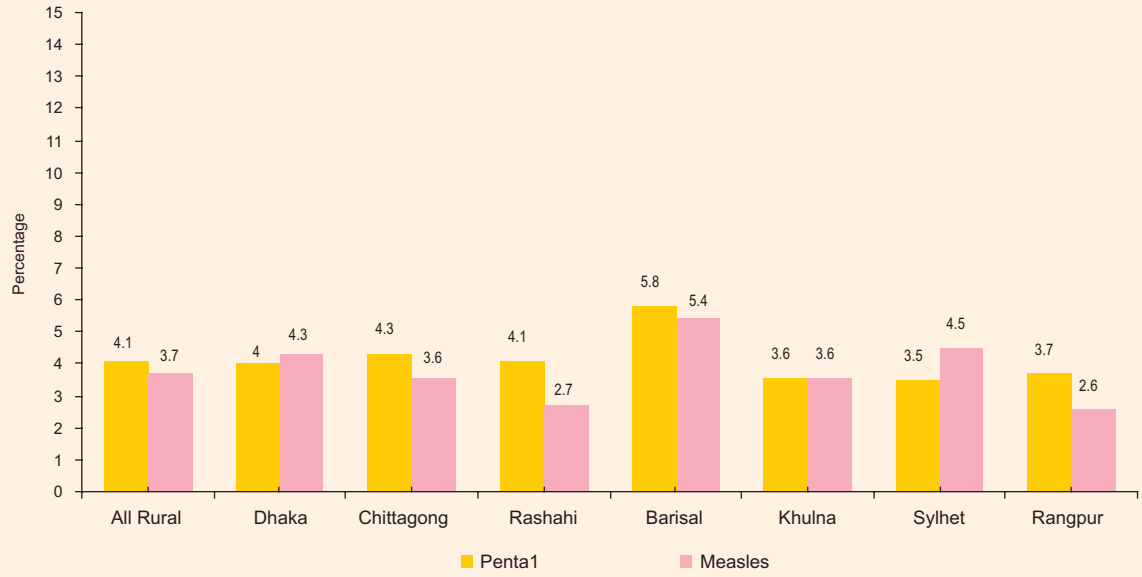
Source: CES 2011

Figure C6. Incidence of Invalid Penta1, Penta2 and Penta3 Doses by Age 12 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2011 (Card-Only)



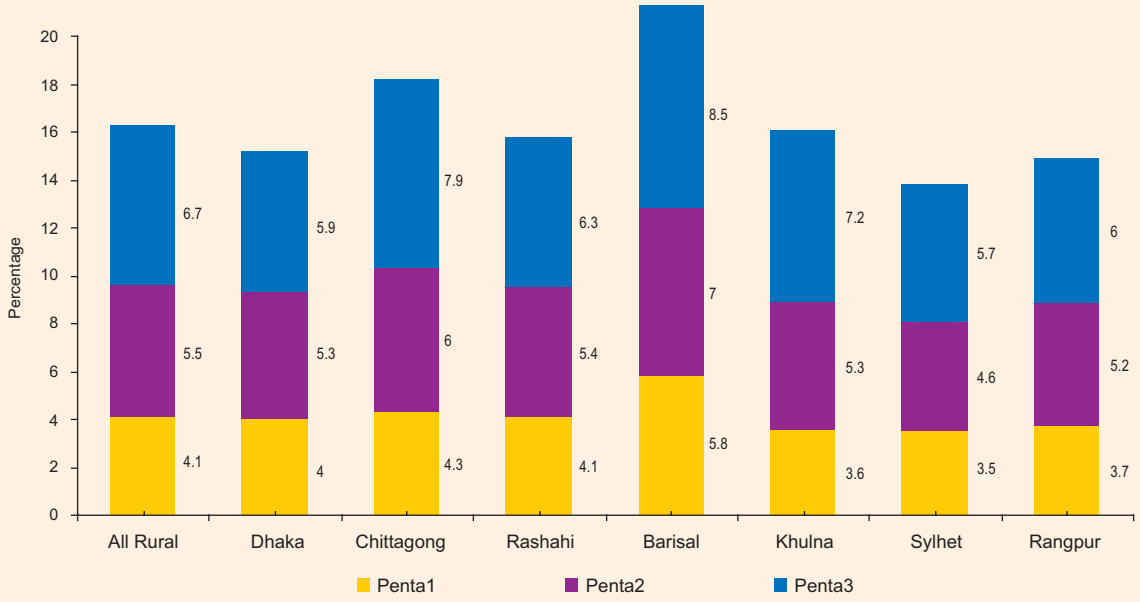
Source: CES 2011

Figure C7. Incidence of Invalid Penta1 and Measles Doses by Age 12 Months among 12-23 Months Old Children in Rural Areas by Division in 2011 (Card-Only)



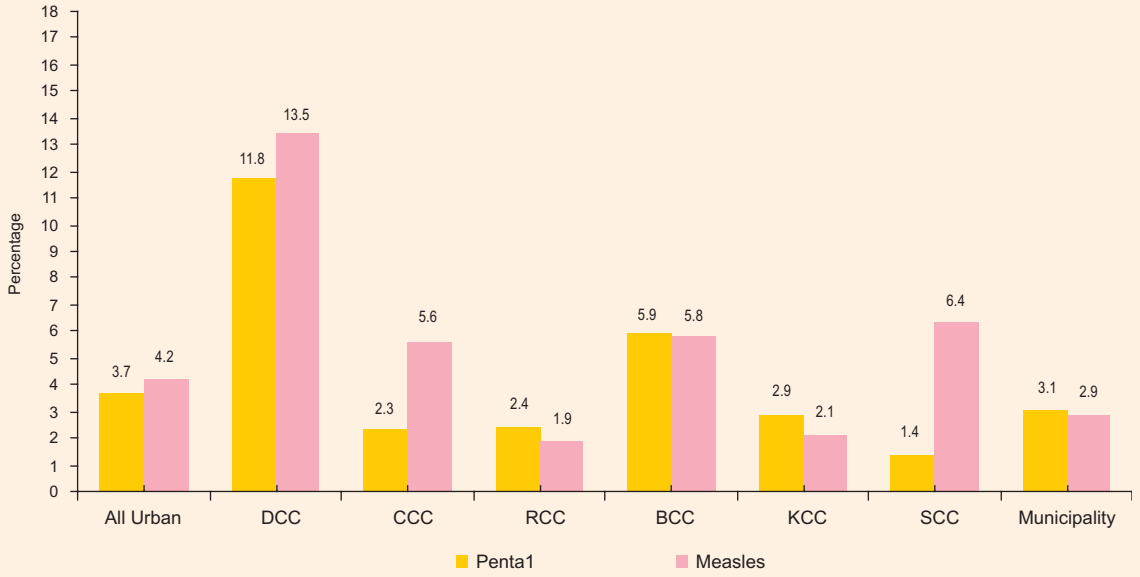
Source: CES 2011

Figure C8. Incidence of Invalid Penta1, Penta2 and Penta3 Doses by Age 12 Months among 12-23 Months Old Children in Rural Areas by Division in 2011 (Card-Only)



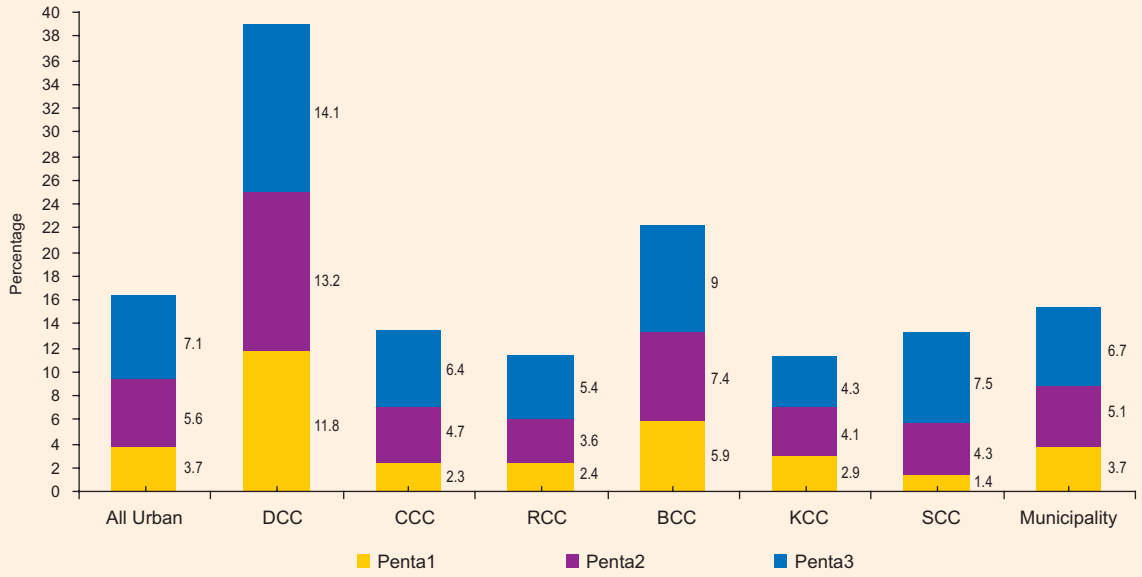
Source: CES 2011

Figure C9. Incidence of Invalid Penta1 and Measles Doses by Age 12 Months among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2011 (Card-Only)



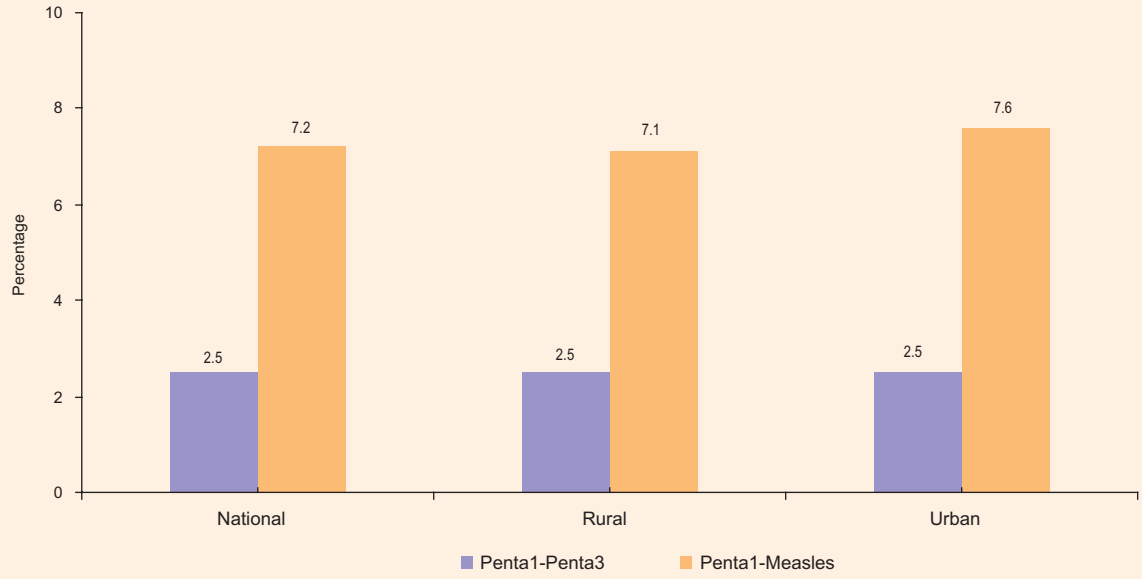
Source: CES 2011

Figure C10. Incidence of Invalid Penta1, Penta2 and Penta3 Doses by Age 12 Months among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2011 (Card-Only)



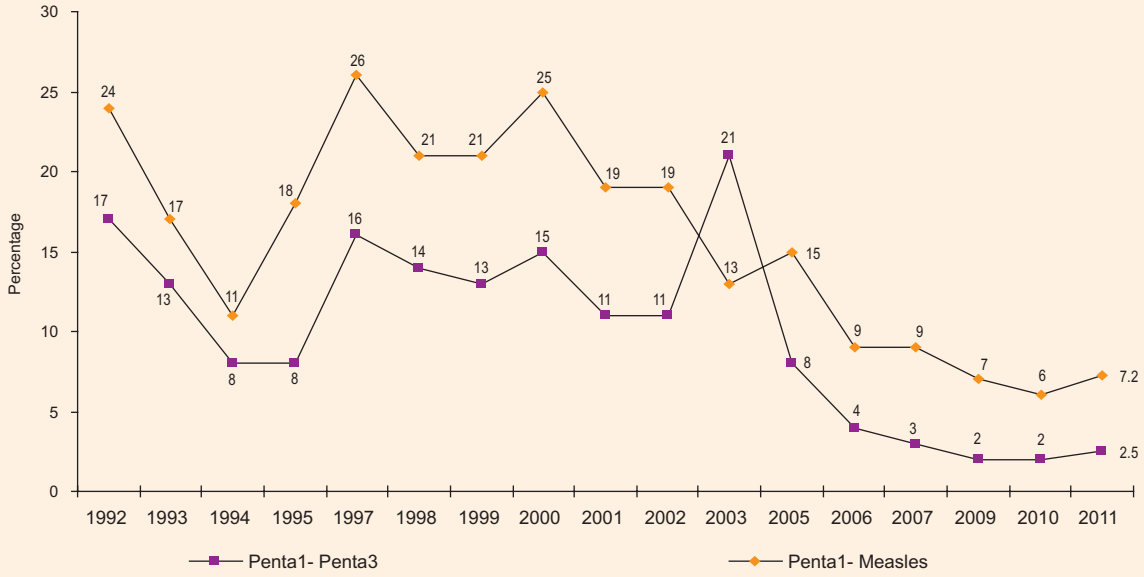
Source: CES 2011

Figure C11. Vaccination Dropout Rates for Penta1-Penta3 and Penta1-Measles among 12-23 Months Old Children in Rural and Urban Areas in 2011



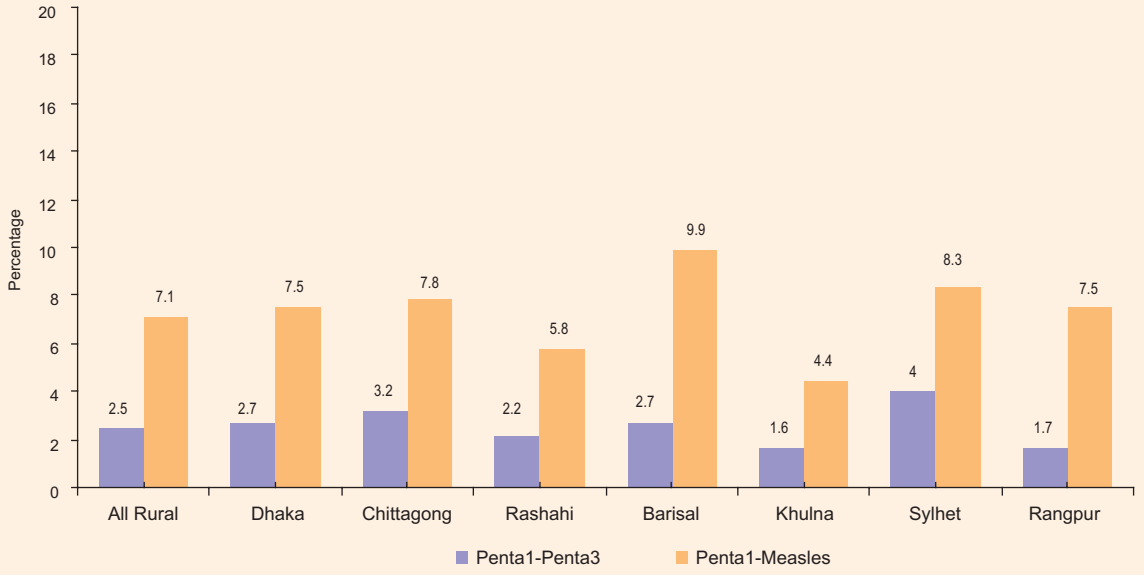
Source: CES 2011

Figure C12. Annual Trend in National Vaccination Dropout Rates for Penta1-Penta3 and Penta1-Measles among 12-23 Months Old Children From 1992 to 2011



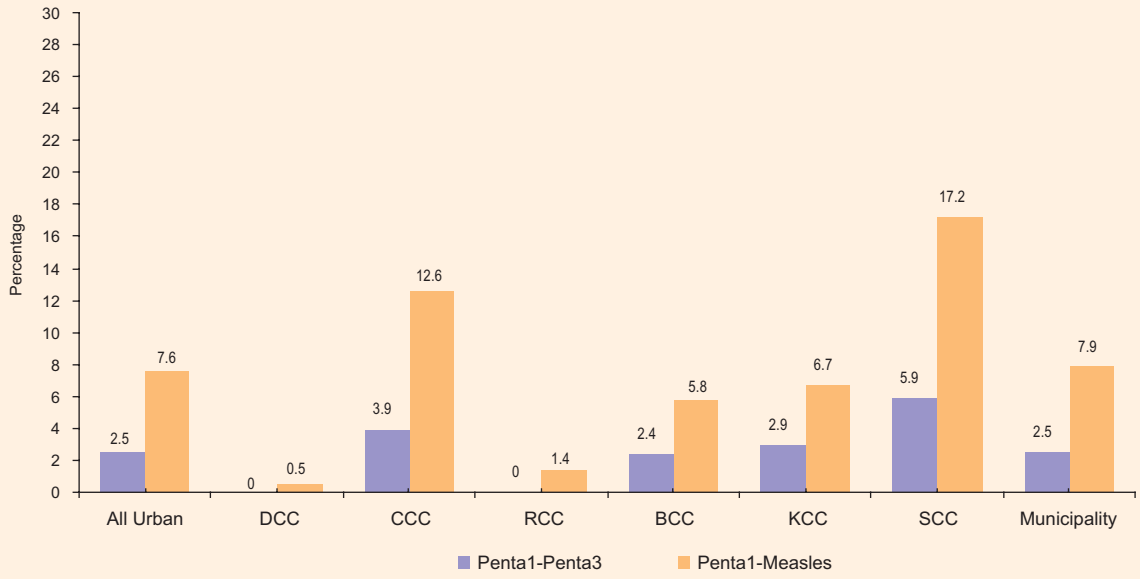
Source: Coverage Evaluation Survey 1992-1995, 1997-2002, 2003 , 2005, 2006, 2007, 2009, 2010 and 2011

Figure C13. Vaccination Dropout Rates for Penta1-Penta3 and Penta1-Measles among 12-23 Months Old Children in Rural Areas by Division in 2011



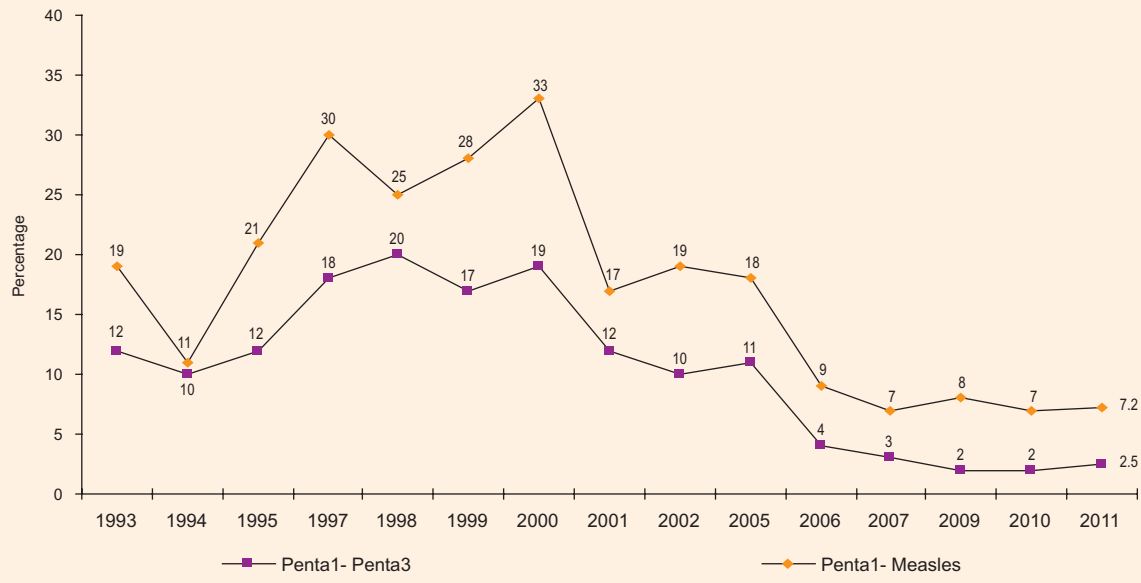
Source: CES 2011

Figure C14. Vaccination Dropout Rates for Penta1-Penta3 and Penta1-Measles among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2011



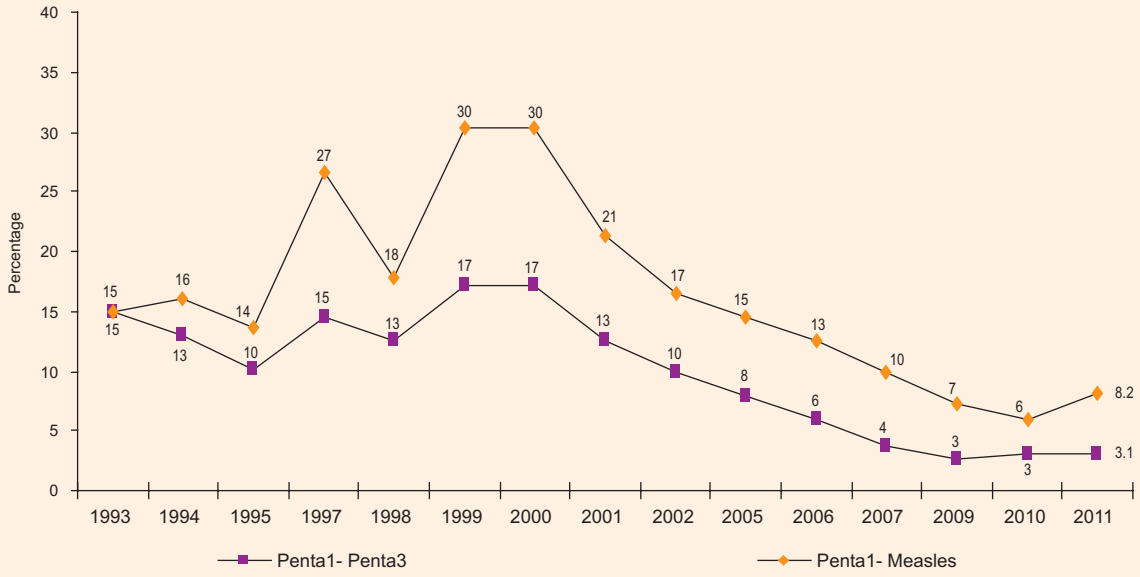
Source: CES 2011

Figure C15. Annual Trend in Vaccination Dropout Rates for Penta1-Penta 3 and Penta1-Measles among 12-23 Months Old Children in Dhaka Division from 1993 to 2011



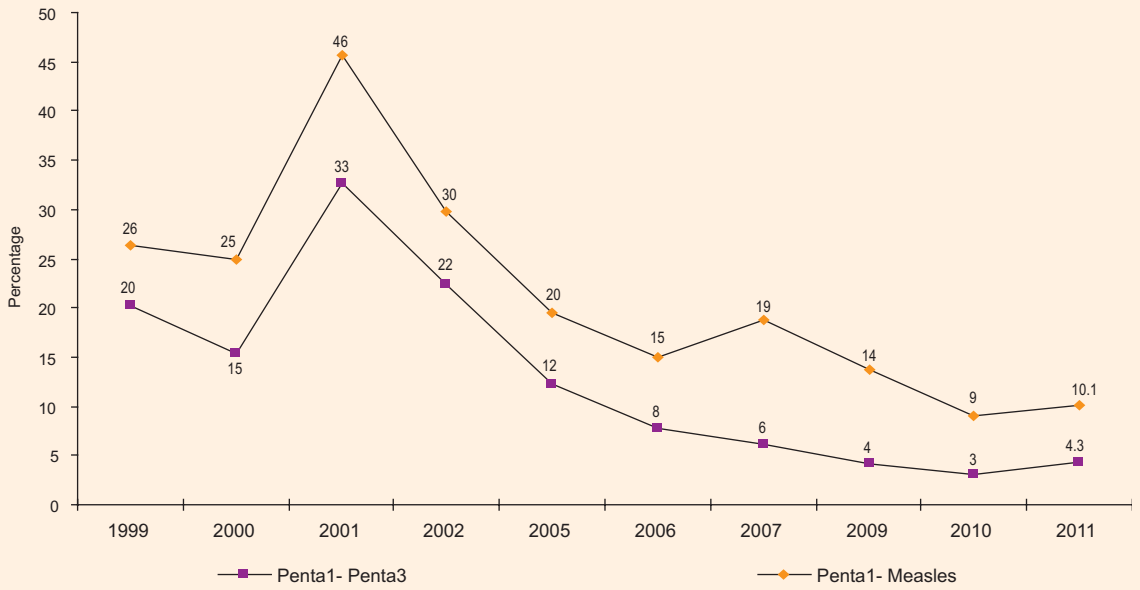
Source: Coverage Evaluation Survey 1993-1995, 1997-2002, 2005, 2006, 2007, 2009, 2010 and 2011

Figure C16. Annual Trend in Vaccination Dropout Rates for Penta 1-Penta3 and Penta1-Measles among 12-23 Months Old Children in Chittagong Division from 1993 to 2011



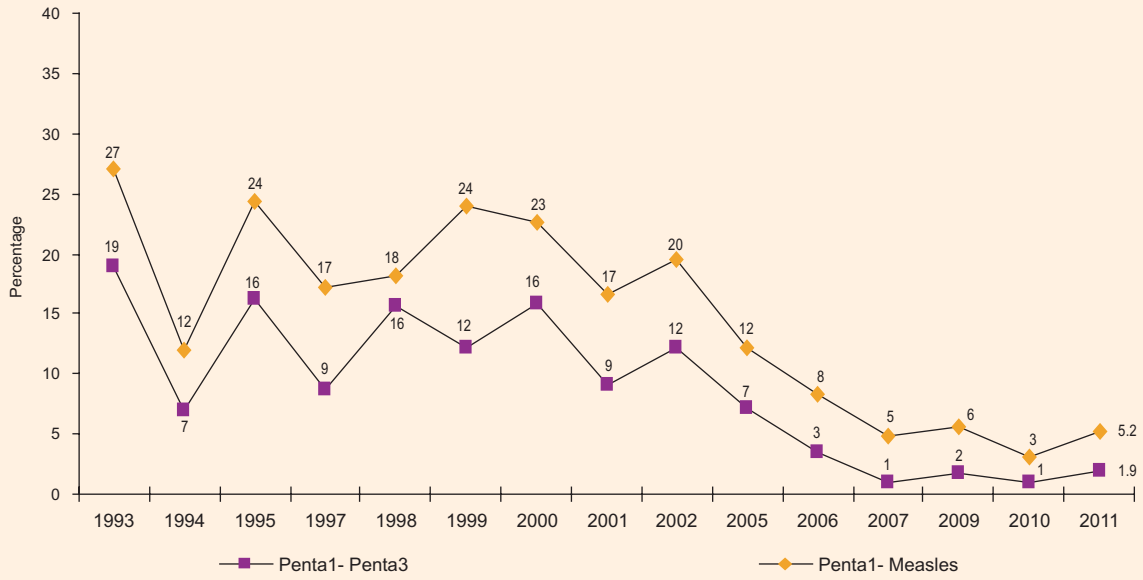
Source: Coverage Evaluation Survey 1993-1995, 1997-2002, 2005, 2006, 2007, 2009, 2010 and 2011

Figure C17. Annual Trend in Vaccination Dropout Rates for Penta1-Penta3 and Penta1-Measles among 12-23 Months Old Children in Sylhet Division from 1999 to 2011



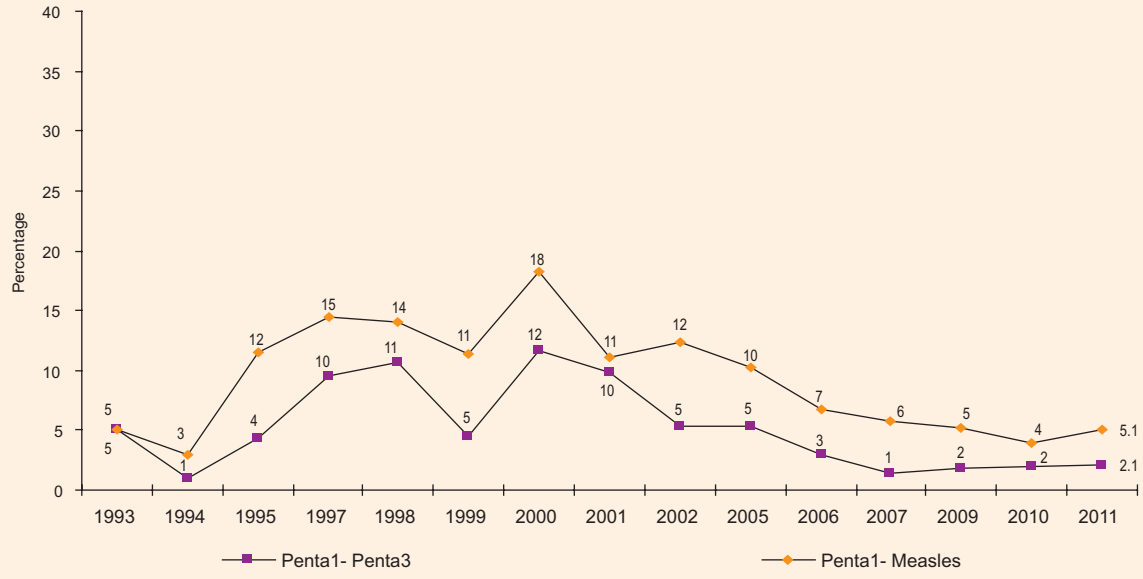
Source: Coverage Evaluation Survey 1999-2002, 2005, 2006, 2007, 2009 & 2010

Figure C18. Annual Trend in Vaccination Dropout Rates for Penta1-Penta 3 and Penta1-Measles among 12-23 Months Old Children in Rajshahi Division* from 1993 to 2011



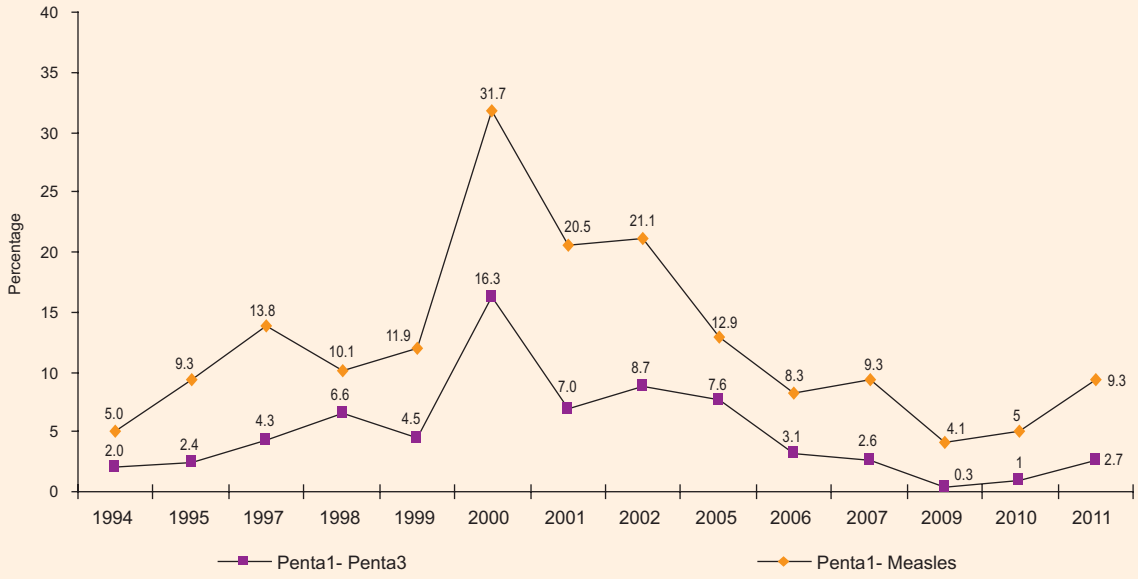
Source: Coverage Evaluation Survey 1993-1995, 1997-2002, 2005, 2006, 2007, 2009 & 2010
* Before 2010 Rangpur division included in Rajshahi division

Figure C19. Annual Trend in Vaccination Dropout Rates for Penta1-Penta3 and Penta1-Measles among 12-23 Months Old Children in Khulna Division from 1993 to 2011



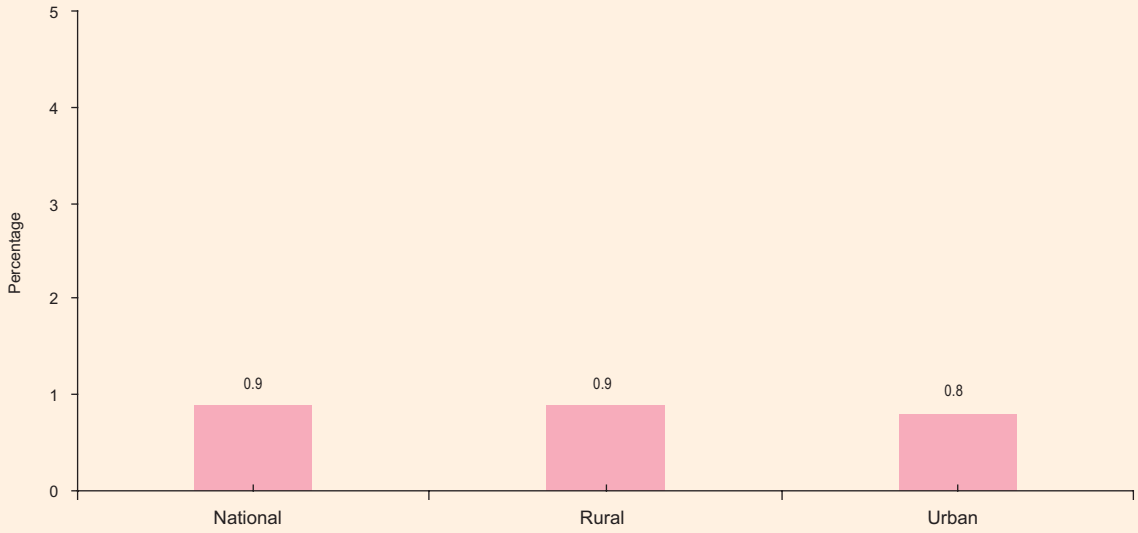
Source: Coverage Evaluation Survey 1993-1995, 1997-2002, 2005, 2006, 2007, 2009, 2010 and 2011

Figure C20. Annual Trend in Vaccination Dropout Rates for Penta1-Penta3 and Penta1-Measles among 12-23 Months Old Children in Barisal Division from 1994 to 2011



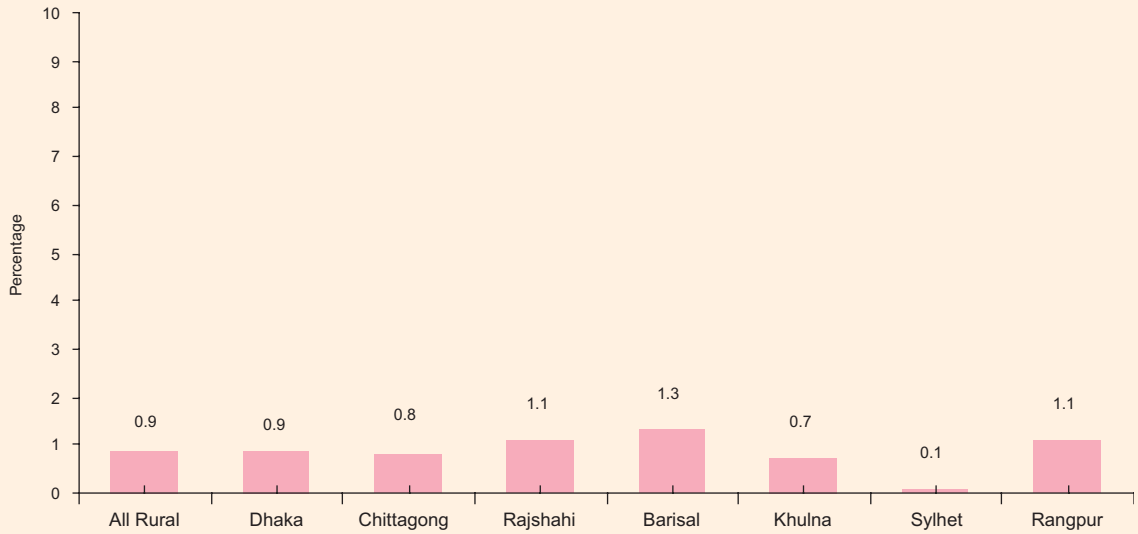
Source: Coverage Evaluation Survey 1994-1995, 1997-2002, 2005, 2006, 2007, 2009, 2010 and 2011

Figure C21. Incidence of Abscesses Following Pentavalent or Measles Vaccination among 12-23 Months Old Children by National, Rural and Urban Areas in 2011



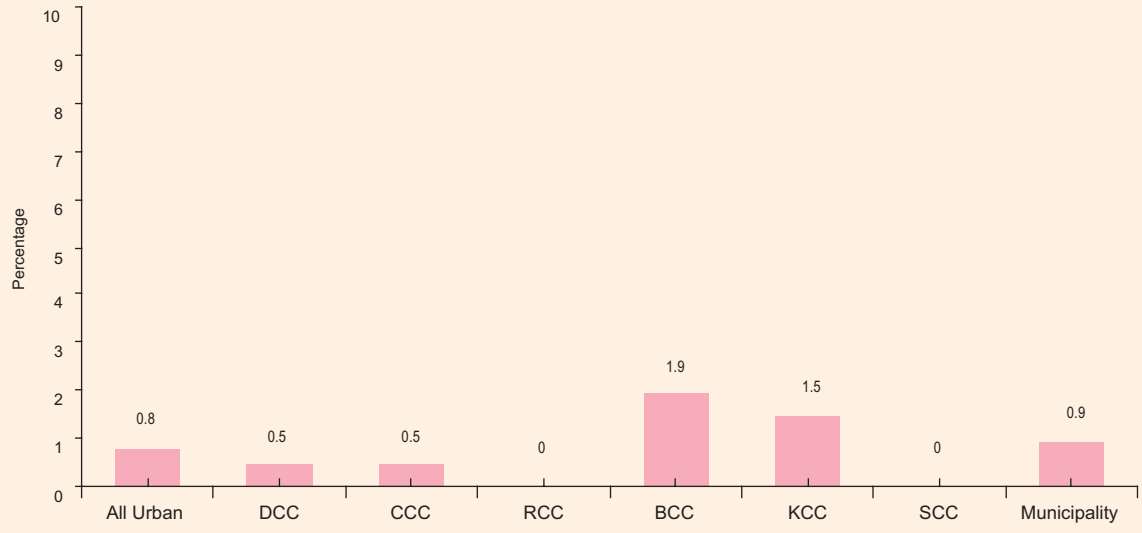
Source: CES 2011

Figure C22. Incidence of Abscesses Following Pentavalent or Measles Vaccination among 12-23 Months Old Children in Rural Areas by Division in 2011



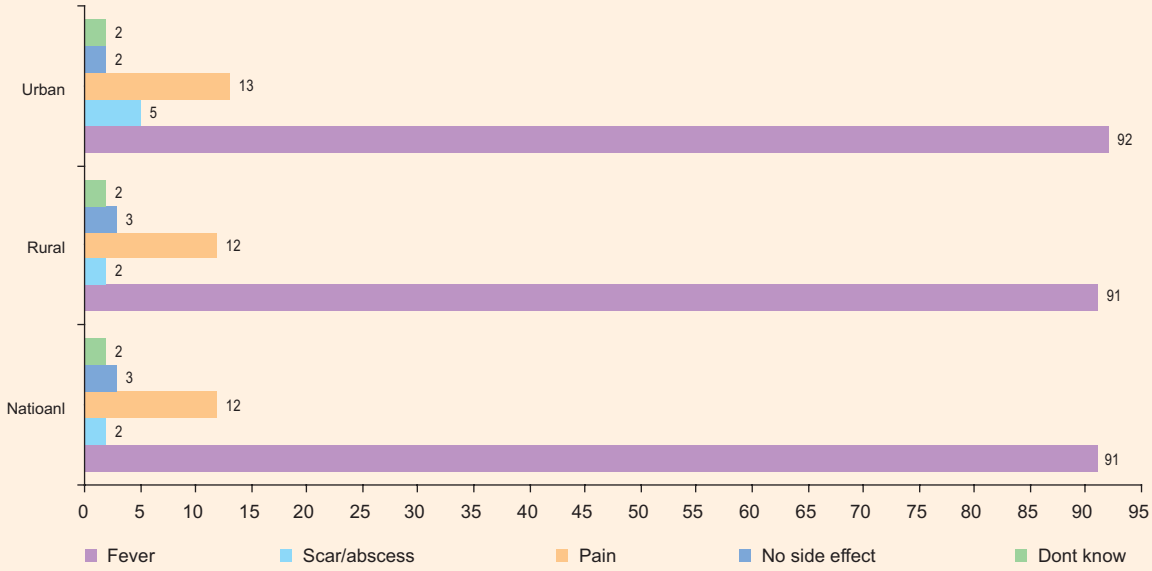
Source: CES 2011

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



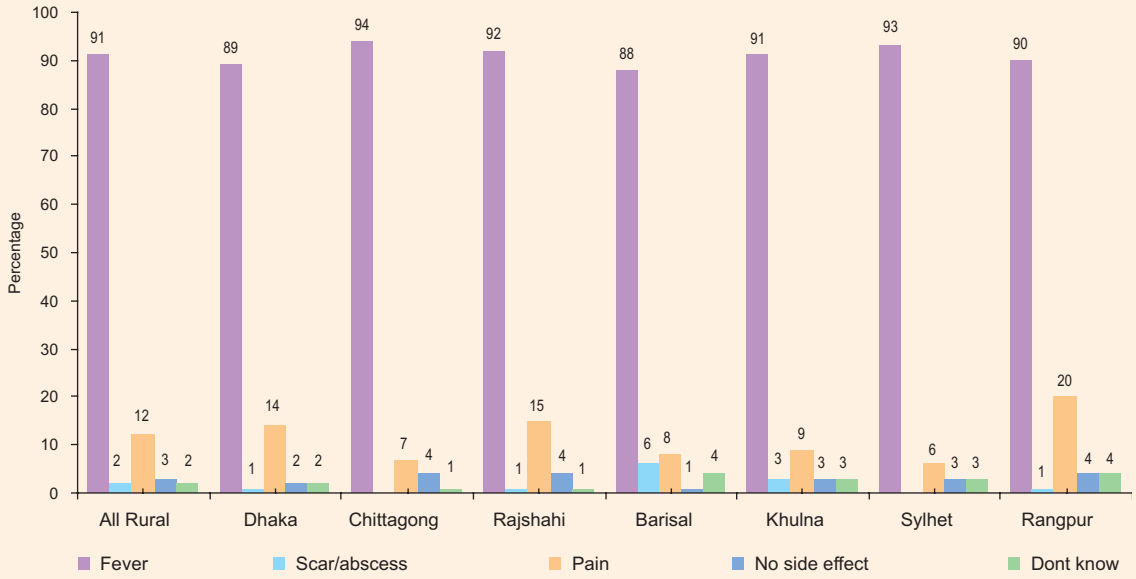
Source: CES 2011

Figure C24. Knowledge on Adverse Events Following Immunization by National, Rural and Urban Areas in 2011



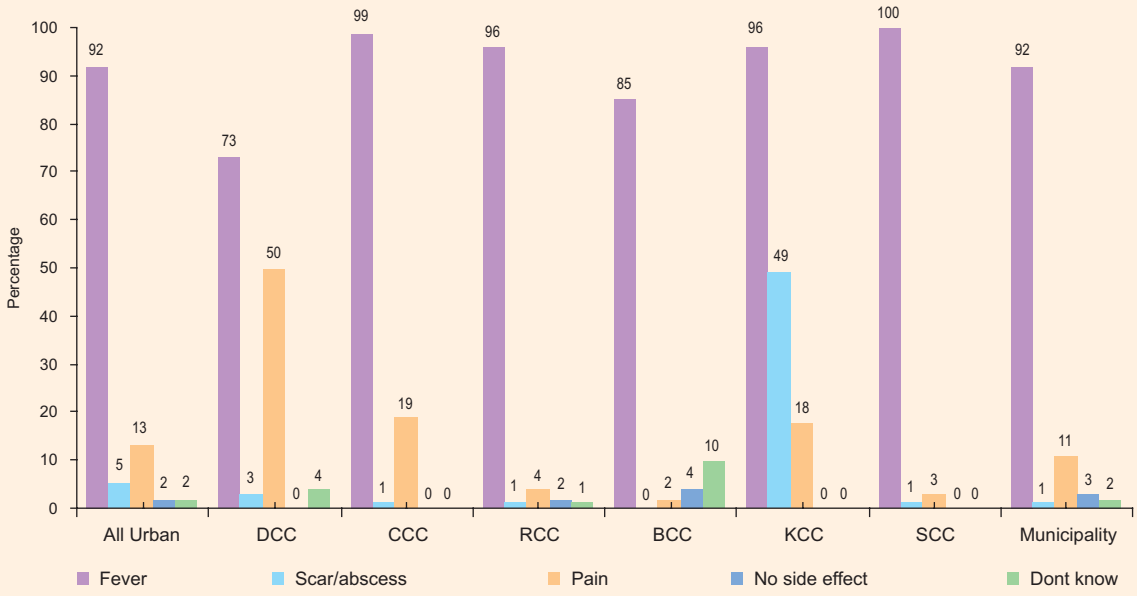
Source: CES 2011

Figure C25. Knowledge on Adverse Events Following Immunization in Rural Areas by Division in 2011



Source: CES 2011

Figure C26. Knowledge on Adverse Event Following Immunization in Urban Areas by City Corporations/ Municipality in 2011



Source: CES 2011

2.7 REASONS FOR NEVER OR PARTIAL VACCINATION

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

2.7.1 REASONS FOR NEVER VACCINATION

Mothers whose children were not vaccinated were asked about the reason for no immunization.One-third of them reported about their scare of side effects (33 percent).Fourteen percent of them informed that they don't believe in vaccination. A little over one in ten (11 percent) mothers/caregivers didn't vaccinate their children since they were busy with their household chores. About 7 percent of the mothers admitted that they were not aware of the vaccination service. A similar percentage of the mothers/caregivers (7 percent) gave the excuse that the vaccination center was too far. This idea was being followed by the fact that the mothers/caregiver left the vaccination card at home, so they did not give vaccine (5 percent); mothers/caregivers were not aware of vaccination site (4 percent); they forgot to vaccinate their children (3 percent); the child was sick, so s/he was not taken to the vaccination center (3 percent); mothers/caregivers were sick (2.2 percent); the vaccinator was

not available (1.5 percent); and the child was sick, so the vaccinator didn't give any vaccination (1.5 percent).

By area type, scare of side-effects of vaccination was revealed as the major reason for no immunization in both urban and rural areas. Forty two percent of the mothers/caregivers who reside in urban areas reported it as against 31 percent of them living in rural areas. Besides, urban mothers/caregivers were found to be more busy with their household chores, compared to rural mothers/caregivers. More than one-tenth (13 percent) of them in urban areas didn't vaccinate their children due to household chores as against 11 percent of the mothers/caregivers who reside in rural areas. Moreover, 16 percent of them in rural areas reported that they don't believe in vaccination as against 8 percent of them in urban areas. Other common reasons in both urban and rural areas were: mothers/caregivers were sick; they were unaware of vaccination site; and, the child was sick. Compared to urban mothers/caregivers, their counterparts were more unaware of the vaccination service (see Table D1).

2.7.2 REASONS FOR PARTIAL VACCINATION

A child is considered as partially vaccinated when s/he failed to receive all the doses or antigen after receiving at least one dose of any antigen.CES 2011 interrogated mothers/caregivers to know the reason for their children not being fully vaccinated. The finding shows that 18 percent of the mothers were busy with their household chores, so they could not complete all the doses or antigens. Eighteen percent of them reported that they didn't know the time of measles. Another 12 percent of them said, 'The child was sick, so s/he was not taken to the health center.' Scare of side-effects was reported by 6 percent of the mothers/caregivers, while another 5 percent of them forgot to vaccinate their children with the rest of the doses and or antigens. Moreover, another 5 percent of them reported that they were not aware of the time of second/third dose. This idea was being followed by the fact that the mothers/caregivers were outside for a walk (4 percent), mothers/caregivers were at father's home (3 percent); the child was sick, so the vaccinator didn't give (3 percent); the vaccinator was not available (3 percent); vaccination site was too far (2 percent); the session time was inconvenient (2 percent); vaccine was not available (2 percent); and mothers/caregivers didn't know about vaccination site (2 percent).

The reasons for partial vaccination in rural areas were similar to the national findings. Eighteen percent of the mothers/caregivers in rural areas reported that they couldn't vaccinate their children with all the doses or antigen due to their involvement in household chores. This statement was being followed by these facts: mothers/caregivers didn't know the time of measles vaccine (19 percent); the child was sick , so s/he was not taken to the vaccination center (12 percent); they were scare of side effects (6 percent); they didn't remember about it (6 percent); mothers/caregivers didn't know the time of second/third dose (5 percent); mothers/caregiver went outside for a walk (4 percent); mothers/caregivers were at father's house (5 percent); the child was sick, so the vaccinator didn't give (3 percent); the vaccinator was not available (3 percent); the vaccination site was too far (3 percent); vaccine was not available; and the session time was inconvenient for them (2 percent) (see Table D4).

Similarly, in urban areas, the common reasons for children not being fully vaccinated were: " mothers/caregivers were busy" (20 percent); "mothers/caregivers didn't know the time for measles vaccine" (13 percent); "the child was sick , so s/he was not taken" (13 percent); "scared of side effects" (7 percent); "mothers/caregivers didn't know the time of second/third dose" (5 percent); "mothers/caregivers went outside for a walk" (5 percent); mothers/caregivers forgot to vaccinate" (4 percent); "mothers/caregivers didn't know about vaccination site" (3 percent); "the child was sick, so the vaccinator didn't administer the vaccine"(3 percent); " the session-time was inconvenient" (3 percent); and " mothers/caregivers were at father's home" (3 percent) (see Table D4).

2.8 KNOWLEDGE ABOUT THE NUMBER OF VISITS REQUIRED FOR COMPLETE VACCINATION

CES 2011 assessed mothers/caregivers knowledge about the number of visits required for completing all the doses. A little over one-fourth (29 percent) of them reported about 4 visits. Thirty nine percent of them mentioned that it would be 5 visits. However, a little over one-fifth (22 percent) of the respondents were found to be unaware of the number of visits. By area type, 30 percent of the mothers in urban areas rightly mentioned about 4 visits as against 29 percent residing in rural areas (see Figure D1). Likewise, 39 percent of them mentioned about 5 visits throughout the country with a little variation -39 percent in rural and 40 percent in urban areas.

In the rural areas by division, the proportion of the mothers/caregivers having proper knowledge of the required at least 4 visits for full vaccination was found to be the highest (36 percent) in Sylhet division and the lowest (15 percent) in Rangpur division.The percentage of their having proper knowledge about the number of visits required for full vaccination in other divisions ranged from 22 percent in Rajshahi division to 34 percent in Dhaka and Khulna divisions (see Figure D2). In contrast, 28 percent of them in Chittagong division were found to be unaware about the required number of visits, which was being followed by Dhaka (24 percent), Khulna (23 percent), Sylhet (22 percent), Rangpur and Barisal (21 percent), and Rajshahi divisions (20 percent).

Among the city corporations, correct knowledge about the required number of visits for full vaccination was the least prevalent in SCC and RCC (21 percent) and the most prevalent in KCC (39 percent), which was being followed by BCC (30 percent), CCC (28 percent), and DCC (24 percent) (see Figure D3).

Table D1. Reasons for Never Vaccination among 12-23 Months Old Children by National, Rural and Urban Areas in 2011

Reasons	National	Rural	Urban
Didn't know that my child should be given vaccine	6.7	8.2	0
Didn't know where to go for vaccine	3.7	3.6	4.2
Fearing side effects	32.8	30.9	41.7
Rumor	0.7	0.9	0
Don't believe in vaccination	14.2	15.5	8.3
Mothers/caregivers were busy	11.2	10.9	12.5
Will give vaccine in future	2.2	2.7	0
Don't remember	3	2.7	4.2
Vaccinator was not available	1.5	1.8	0
Vaccine centre was too far	6.7	8.2	0
The child was sick, so was not taken to the health complex	3	3.6	0
The child was sick, so vaccinator didn't give	1.5	0	8.3
Mother was sick	2.3	0	12.5
They charge money to take vaccine	0.7	0.9	0
Vaccinator didn't give	0.7	0.9	0
Due to idleness	1.6	1.8	0
Did not have vaccine card, so did not give vaccine	4.5	5.6	0
Went outside for a walk/for a pleasure trip	0.8	0.9	0
Child cries, so did not give him vaccine	1.5	0.9	4.2
Lost the card, so did not go to give vaccine	0.7	0	4.1
Number of Children Never Vaccinated	**134**	**110**	**24**

Table D2. Reasons for Never Vaccination among 12-23 Months Old Children in Rural Areas by Division in 2011

Reasons	All Rural	Dhaka	CTG	Rajshahi	Rangpur	Barisal	Khulna	Sylhet
Didn't know that my child should be given vaccine	8.2	13.5	8.1	0	0	0	14.3	0
Didn't know where to go for vaccine	3.6	5.4	0	0	25	0	0	6.7
Fearing side effects	30.9	35.1	24.3	50	0	16.7	14.3	53.3
Rumor	0.9	0	2.7	0	0	0	0	0
Will give vaccine in future	0	0	0	0	0	0	0	0
Don't believe in vaccination	15.5	13.5	13.5	0	0	33.3	28.6	20
Mothers/caregivers were busy	10.9	10.8	13.5	0	0	0	28.6	6.7
Will give vaccine in future	2.7	2.7	0	25	0	0	0	6.7
Long queue in the vaccination centre	0	0	0	0	0	0	0	0
Don't remember	2.7	2.7	2.7	0	0	16.7	0	0
There was no vaccine in the center	0	0	0	0	0	0	0	0
Vaccinator was not available	1.8	5.4	0	0	0	0	0	0
Vaccine centre was too far	8.2	0	18.9	0	25	16.7	0	0
The child was sick, so was not taken to the health complex	3.6	2.7	0	0	25	0	14.3	6.7
They charge money to take vaccine	0.9	0	0	0	0	16.7	0	0
Session time was inconvenient	0	0	0	0	0	0	0	0
Vaccinator didn't give	0.9	0	0	0	25	0	0	0
Due to idleness	1.8	2.7	0	25	0	0	0	0
Did not have vaccine card, so did not give vaccine	5.5	0	16.2	0	0	0	0	0
Went outside for a walk/for a pleasure trip	0.9	2.7	0	0	0	0	0	0
Child cries, so did not give him vaccine	0.9	2.7	0	0	0	0	0	0
Number of Children Never Vaccinated	**110**	**37**	**37**	**4**	**4**	**6**	**7**	**15**

Table D3. Reasons for Never Vaccination among 12-23 Months Old Children in Urban Areas by City Corporation / Municipality in 2011

Reasons	All Urban	DCC	CCC	BCC	SCC	Other Urban
Didn't know where to go for vaccine	4.2	0	0	0	0	9.1
Fearing side effects	41.7	100	25	0	50	36.4
Don't believe in vaccination	8.3	0	0	0	0	18.2
Mothers/caregivers were busy	12.5	0	0	0	16.7	18.2
Don't remember	4.2	0	0	0	0	9.1
The child was sick, so vaccinator didn't give	8.3	0	25	0	16.7	0
Mother was sick	12.5	0	25	0	16.7	9.1
Child cries, so did not give him vaccine	4.2	0	0	100	0	0
Lost the card, so did not go to give vaccine	4.2	0	25	0	0	0
Number of Children Never Vaccinated	**24**	**2**	**4**	**1**	**6**	**11**

Table D4. Reasons for Partial Vaccination among 12-23 Months Old Children by National, Rural and Urban Areas in 2011

Reasons	National	Rural	Urban
Didn't know that my child should be given vaccine	1.2	0.9	2.7
Didn't know when to go for the second/third dose	4.9	4.8	5.4
Didn't know when to go for vaccine of measles	18	18.9	13.4
Didn't know where to go for vaccine	1.6	1.4	2.7
Fearing side effects	6.1	5.9	7
Rumor	0	0	0
Will give vaccine in future	0	0	0
Don't believe in vaccination	0.8	0.8	1.1
Mothers/caregivers were busy	18.4	18	20.4
Will give vaccine in future	1.1	1.3	0.5
Long queue in the vaccination centre	0.3	0.1	1.1
Don't remember	5.4	5.7	3.8
There was no vaccine in the center	1.8	2.1	0.5
Vaccinator was not available	2.5	3	0.5
Vaccine centre was too far	2.4	2.7	0.5
Was severe pain at the place of vaccine	0.8	0.7	1.1
Was abscess at the place of vaccine	0.6	0.3	1.6
Faced difficulty after taking vaccine	0.8	0.9	0.5
Vaccinator was not friendly	1	0.7	2.7
The child was sick, so was not taken to the health complex	11.9	11.6	12.9
The child was sick, so vaccinator didn't give	3.2	3.3	2.7
Mother was sick	1.1	1	1.6
Mothers/caregivers waited at home	0.8	0.9	0.5
They charge money to take vaccine	0.5	0.6	0
Session time was inconvenient	2	1.8	2.7
Vaccinator didn't give	0.2	0.2	0
Due to idleness	1.2	1	2.2
Was at father's house	3.4	3.5	2.7
Did not have vaccine card, so did not give vaccine	1	1	1.1
Went outside for a walk/for a pleasure trip	4	3.6	5.4
Child cries, so did not give him vaccine	0.6	0.5	1.1
My husband forbade	0	0	0
Father-in-law/mother-in-law did not allow	0	0	0
The vaccine worker does not turn up	0	0	0
Lost the card, so did not go to give vaccine	1	1.3	0
The vaccinator did not give	1.1	1.3	0.5
Don’t know	0.3	0.1	1.1
Number of Partially Vaccinated Children	**1063**	**877**	**186**

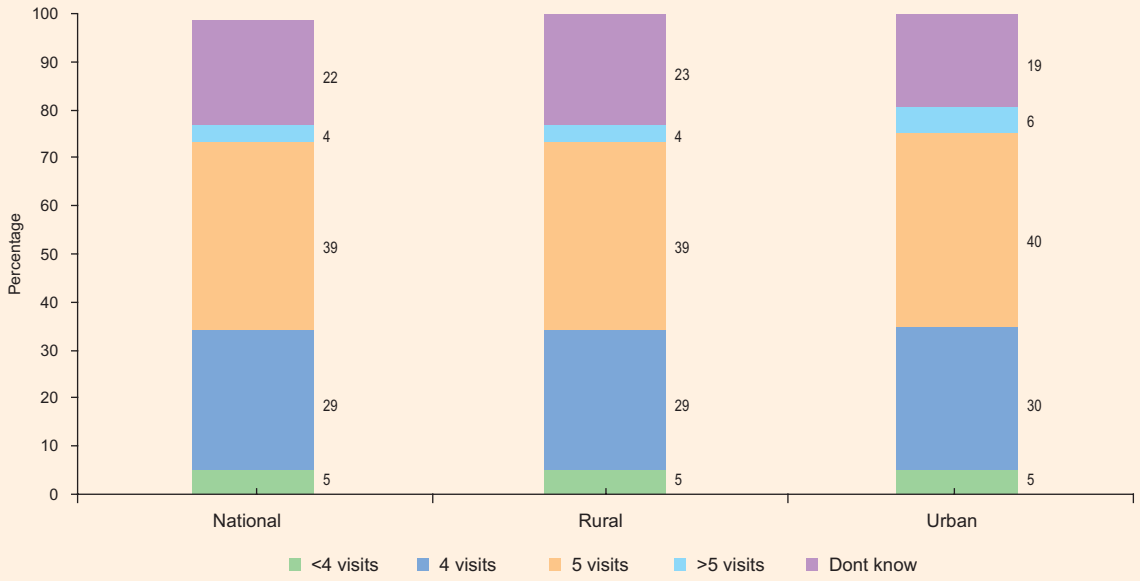
Table D5. Reasons for Partial Vaccination among 12-23 Months Old Children in Rural Areas by Division in 2011

Reasons	All Rural	Dhaka	CTG	Rajshahi	Rangpur	Barisal	Khulna	Sylhet
Didn't know that my child should be given vaccine	0.9	2.5	0	1.1	0.9	0	0	0
Didn't know when to go for the second/third dose	4.8	5.3	8	4.6	1.7	5.2	2.4	2.9
Didn't know when to go for vaccine of measles	18.9	15.6	18.4	20.7	30.2	20.7	20.2	5.9
Didn't know where to go for vaccine	1.4	2.1	1.2	1.1	2.6	0	1.2	0
Fearing side effects	5.9	5.3	5.5	10.3	6	0.9	7.1	10.3
Don't believe in vaccination	0.8	2.1	0	0	0	0.9	0	1.5
Mothers/caregivers were busy	18	21.8	19	12.6	16.4	18.1	14.3	16.2
Will give vaccine in future	1.3	1.2	1.2	2.3	0.9	0.9	0	2.9
Long queue in the vaccination centre	0.1	0	0.6	0	0	0	0	0
Don't remember	5.7	6.6	6.1	4.6	5.2	5.2	8.3	1.5
There was no vaccine in the center	2.1	3.7	0	1.1	0.9	2.6	2.4	2.9
Vaccinator was not available	3	1.2	3.1	6.9	0.9	3.4	1.2	8.8
Vaccine centre was too far	2.7	2.1	5.5	2.3	0.9	4.3	1.2	1.5
Was severe pain at the place of vaccine	0.7	0.8	0.6	2.3	0	0.9	0	0
Was abscess at the place of vaccine	0.3	0.4	0	1.1	0	0	1.2	0
Faced difficulty after taking vaccine	0.9	1.2	0.6	1.1	0	0.9	2.4	0
Vaccinator was not friendly	0.7	0.4	0	0	0	0.9	3.6	1.5
The child was sick, so was not taken to the health complex	11.6	9.1	8.6	9.2	11.2	13.8	20.2	17.6
The child was sick, so vaccinator didn't give	3.3	4.5	1.8	1.1	0.9	5.2	2.4	7.4
Mother was sick	1	0	1.2	0	0	1.7	0	7.4
Mothers/caregivers waited at home	0.9	1.2	0	0	0	0.9	2.4	2.9
They charge money to take vaccine	0.6	0.8	0	1.1	0.9	0.9	0	0
Session time was inconvenient	1.8	1.2	0	1.1	3.4	0.9	2.4	7.4
Vaccinator didn't give	0.2	0	0	0	1.7	0	0	0
Due to idleness	1	2.1	0.6	1.1	0.9	0	1.2	0
Was at father's house	3.5	2.9	3.7	8	2.6	6	1.2	0
Did not have vaccine card, so did not give vaccine	1	0.8	1.8	1.1	0.9	0	2.4	0
Went outside for a walk/for a pleasure trip	3.6	2.5	6.7	0	8.6	2.6	2.4	0
Child cries, so did not give him vaccine	0.5	0	1.8	0	0.9	0	0	0
Lost the card, so did not go to give vaccine	1.3	0.4	1.2	2.3	1.7	3.4	0	0
The vaccinator did not give	1.3	1.6	2.5	2.3	0	0	0	1.5
Don't know	0.1	0.4	0	0	0	0	0	0
Number of Partially Vaccinated Children	**877**	**243**	**163**	**87**	**116**	**116**	**84**	**68**

Table D6. Reasons for Partial Vaccination among 12-23 Months Old Children in Urban Areas by City Corporation/Municipality in 2011

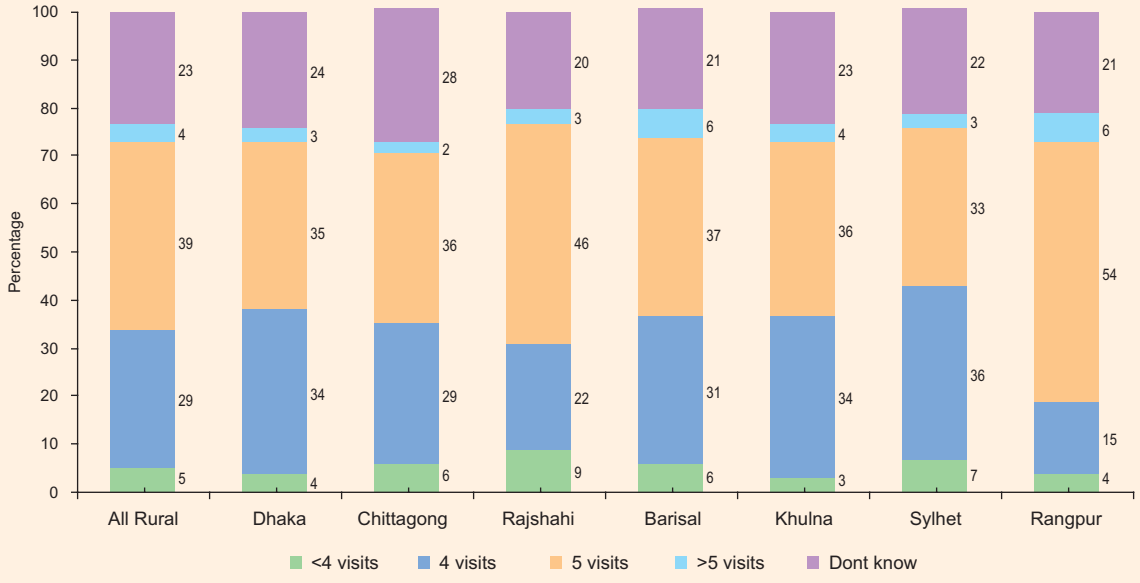
Reasons	Urban	DCC	CCC	RCC	BCC	KCC	SCC	Urban
Didn't know that my child should be given vaccine	2.7	0	0	0	7.1	0	5.7	2.2
Didn't know when to go for the second/third dose	5.4	0	7.7	0	7.1	0	2.9	6.5
Didn't know when to go for vaccine of measles	13.4	0	23.1	0	7.1	0	8.6	16.1
Didn't know where to go for vaccine	2.7	0	0	0	0	7.1	2.9	3.2
Fearing side effects	7	0	3.8	0	7.1	14.3	0	9.7
Rumor	0	0	0	0	0	0	0	0
Will give vaccine in future	0	0	0	0	0	0	0	0
Don't believe in vaccination	1.1	0	0	0	0	0	2.9	1.1
Mothers/caregivers were busy	20.4	0	23.1	66.7	35.7	14.3	20	17.2
Will give vaccine in future	0.5	0	0	0	0	0	2.9	0
Long queue in the vaccination centre	1.1	0	3.8	0	0	7.1	0	0
Don't remember	3.8	0	0	0	0	7.1	2.9	5.4
There was no vaccine in the center	0.5	0	0	0	0	0	2.9	0
Vaccinator was not available	0.5	0	0	0	0	0	2.9	0
Vaccine centre was too far	0.5	0	0	0	0	0	2.9	0
Was severe pain at the place of vaccine	1.1	0	0	0	0	7.1	0	1.1
Was abscess at the place of vaccine	1.6	0	3.8	0	0	7.1	0	1.1
Faced difficulty after taking vaccine	0.5	0	3.8	0	0	0	0	0
Vaccinator was not friendly	2.7	0	7.7	0	0	0	2.9	2.2
The child was sick, so was not taken to the health complex	12.9	100	3.8	0	7.1	7.1	20	14
The child was sick, so vaccinator didn't give	2.7	0	0	0	0	0	5.7	3.2
Mother was sick	1.6	0	0	0	0	0	0	3.2
Mothers/caregivers waited at home	0.5	0	0	0	0	0	0	1.1
They charge money to take vaccine	0	0	0	0	0	0	0	0
Session time was inconvenient	2.7	0	0	0	7.1	0	2.9	3.2
Vaccinator didn't give	0	0	0	0	0	0	0	0
Due to idleness	2.2	0	3.8	0	7.1	7.1	0	1.1
Was at father's house	2.7	0	0	0	0	7.1	2.9	3.2
Did not have vaccine card, so did not give vaccine	1.1	0	0	0	0	7.1	2.9	0
Went outside for a walk/for a pleasure trip	5.4	0	11.5	33.3	0	7.1	5.7	3.2
Child cries, so did not give him vaccine	1.1	0	0	0	7.1	0	0	1.1
The vaccinator did not give	0.5	0	0	0	7.1	0	0	0
Don’t know	1.1	0	3.8	0	0	0	0	1.1
Number of Partially Vaccinated Children	**186**	**1**	**26**	**3**	**14**	**14**	**35**	**93**

Figure D1. Number of Visits Required to Have a Child Fully Vaccinated as Reported by Mothers/Caregivers of 12-23 Months Old Children by National, Rural and Urban Areas in 2011



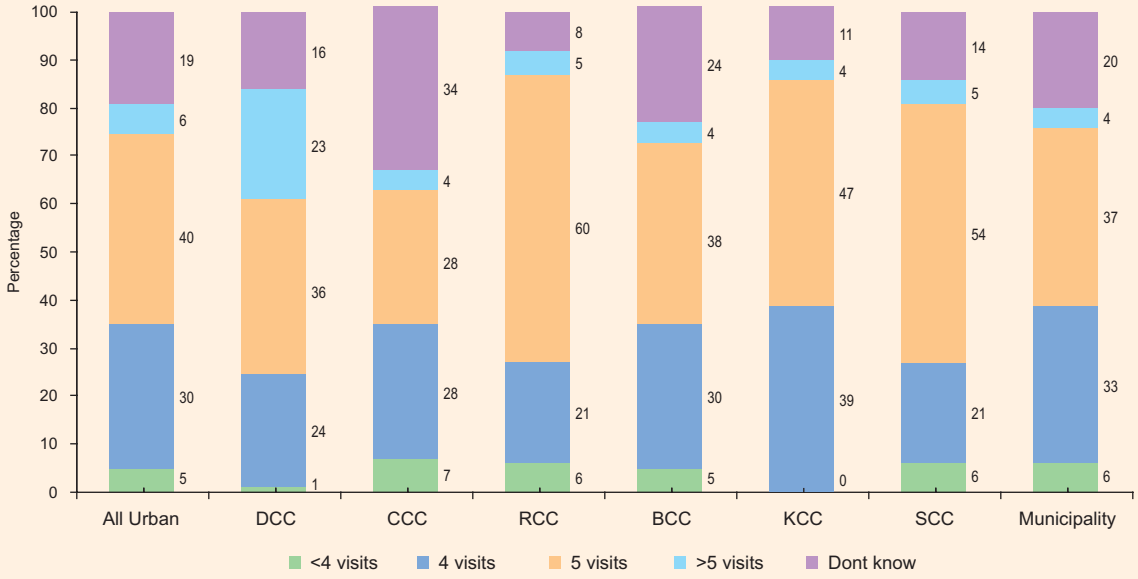
Source: CES 2011

Figure D2. Number of Visits Required to Have a Child Fully Vaccinated as Reported by Mothers/Caregivers of 12-23 Months Old Children in Rural Areas by Division in 2011



Source: CES 2011

Figure D3. Number of Visits Required to Have a Child Fully Vaccinated as Reported by Mothers/Caregivers of 12-23 Months Old Children in Urban Areas by City Corporation/Municipality in 2011



Source: CES 2011

2.9 SOURCES OF CHILDHOOD VACCINATION

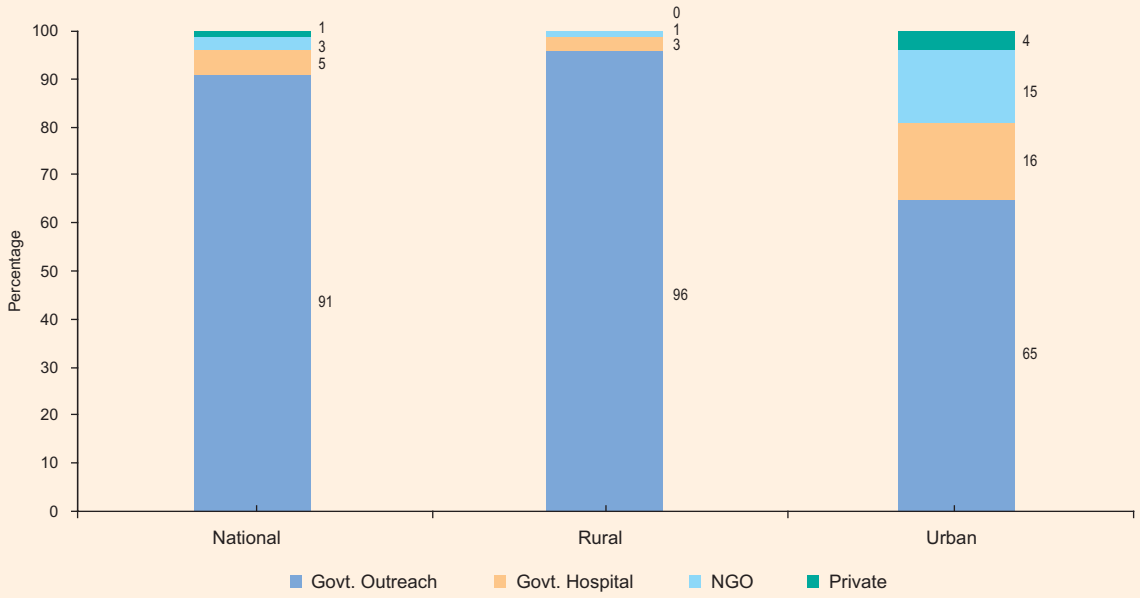
Figure E1 presents the sources of childhood vaccination. The analysis considers the source of Penta 1 to explain it in this report. Figure E1 shows that the government facilities are the prime sources of providing vaccination services in Bangladesh. Ninety one percent of the surveyed children were vaccinated at the government outreach centers while 5 percent of them at the government hospitals. About 4 percent of the children were vaccinated by NGOs and private health centers/clinics. By the place of residence, government sources emerged as the principal provider of childhood vaccination service both in rural (99 percent) and urban areas (81 percent) of Bangladesh. However, NGOs and private sources were found to be much higher in percentage in urban areas, compared to that in rural areas. Fifteen percent of the children in urban areas received Penta1 vaccine from NGOs and 4 percent from private service providers.

In the rural areas by division, the government outreach sites were found to be used most widely across the divisions, which ranged from 94 percent in Sylhet to 97 percent in Barisal and Khulna division, while the utilization of the government outreach sites was at an intermediary level in other divisions - 96 percent in Rangpur, 95 percent in Dhaka, Chittagong and Rajshahi divisions (see Figure E2).

However, among the city corporations, the utilization rate of the government outreach centers was the most prevalent in RCC (79 percent) and the least prevalent in BCC (30 percent). Utilization of government outreach centers was 61 percent in DCC, which was being followed by CCC (57 percent), SCC (52 percent), and KCC (41 percent) (see Figure E3).

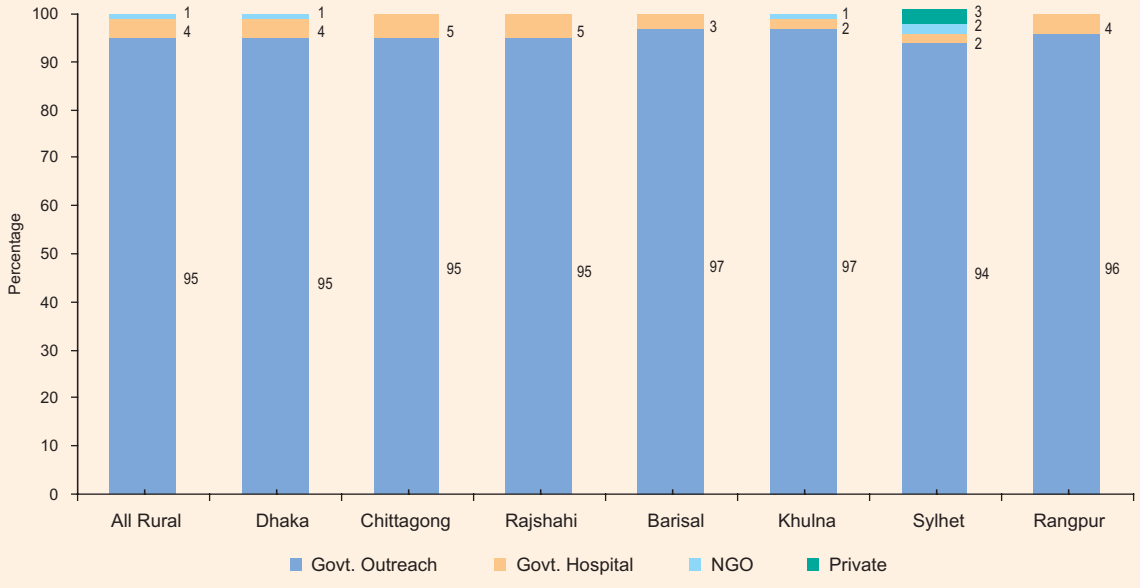
However, vaccination coverage by the NGOs was most discernible in KCC (51 percent), which was being followed by BCC (31 percent), SCC (30 percent), DCC (20 percent), CCC (14 percent), and RCC (12 percent).

Figure E1. Source of Penta1 Vaccination among 12-23 Months Old Children by National, Rural and Urban Areas in 2011



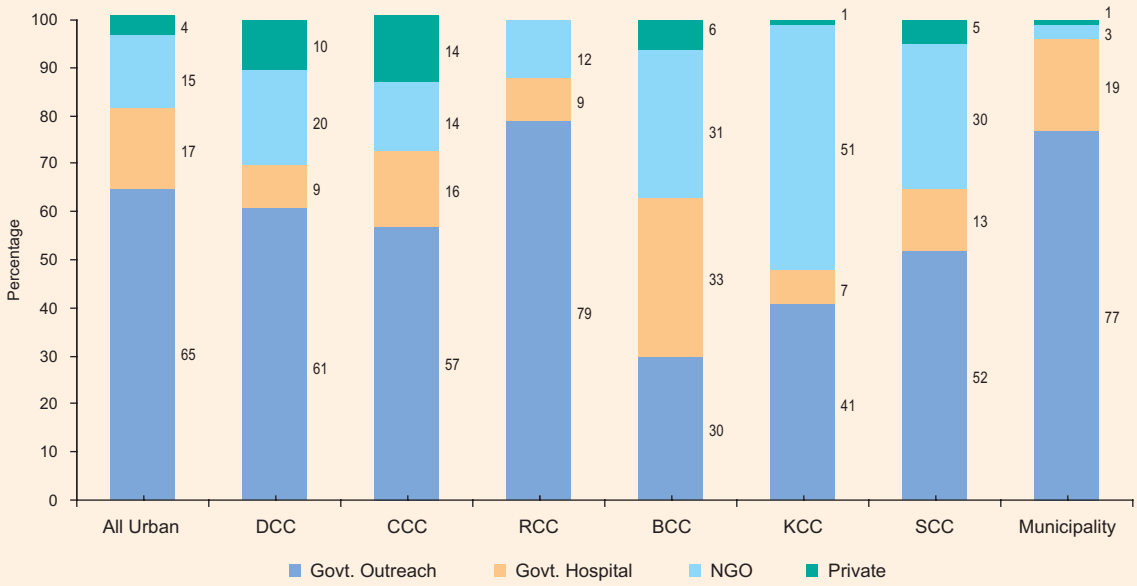
Source: CES 2011

Figure E2. Source of Penta1 Vaccination among 12-23 Months Old Children in Rural Areas by Division in 2011



Source: CES 2011

Figure E3. Source of Penta1 Vaccination among 12-23 Months Old Children in Urban Areas by City Corporation/Municipality in 2011



Source: CES 2011

CHAPTER 3
TETANUS TOXOID VACCINATION COVERAGE SURVEY AMONG MOTHERS HAVING 0-11 MONTHS OLD CHILDREN

Neonatal tetanus remains a serious problem in countries with poor immunization coverage and unclean practices at childbirth. In Bangladesh, one of the world's least developed countries; about 80 percent of women give birth without any help from a skilled birth attendant. Most deliveries take place at home, often in conditions of very poor hygiene - placing the lives of both mother and child at risk. An added problem in Bangladesh, especially in rural areas, is the traditional practice of using home-made ghee (clarified butter) to "heal" the umbilical stump. Despite this risk factor to get “Clostridium tetani. Bangladesh achieved neonatal tetanus elimination status in 2008 through administering two doses of TT vaccine of each pregnant women and 5 doses of TT to childbearing age women aged 15-49 years. UNICEF, WHO and UNFPA provided extensive financial and technical support to EPI, Bangladesh to achieve this status. In order to maintain its status EPI, Bangladesh in strong partnership with UNICEF, WHO, and UNFPA continuing their support thorough strengthen its monitoring and supervision system. Although NT is included in the EPI disease surveillance system, it is formidable to identify the critical areas where the program needs to give special emphasize or monitor the status of TT during the last child birth. In this context, CES is an important means to give the strategic direction to the program personnel in this situation. CES 2011 gathered information and provides an estimate of the children who were protected at birth. All these are presented in this chapter. Therefore, along with TT status this chapter provides information mainly about program quality, card retention rate, invalid doses and, finally PAB of children.

3.0 OBJECTIVE OF TT SURVEY

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

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

3.1 SELECTION OF SAMPLES

Mothers who gave birth to child between 01-07-2010 and 30-06-2011 were the target samples to evaluate the vaccination status against tetanus as well as post-partum Vitamin A coverage. Samples were selected from the same clusters assigned for the other types of survey under CES 2011. At first, mothers who gave birth to a child between 01-07-2010 and 30-06-2011 were identified through visits to every household for making a list. Secondly, a sampling frame was prepared with all the eligible mothers who were identified earlier. Among them, seven mothers were selected randomly to examine their TT vaccination status, card retention rates, and post-partum Vitamin A status through a pre-designed structured questionnaire.

3.2 TT VACCINATION

Maternal and Neo-natal tetanus is a major challenge to achieve the MDG goal; reduction infant mortality and maternal death. Elimination of MNT is a global program of WHO launched in 1989 Tetanus world wide. In 1999, the goal was expanded to include elimination of the maternal tetanus. During that time, there were 59 countries that had still not eliminated MNT. As of November 2011, 21 of these countries had achieved MNT elimination leaving 38 countries that still have not eliminated the disease. MNT elimination in a country is defined as neonatal tetanus rate of less than one case of neonatal tetanus per 1000 live births in every district of the country. As discussed earlier Bangladesh achieved neonatal tetanus elimination status in 2008. In May 2008, a Lot Quality Assurance (LQA) survey has been conducted in presence of the experts from abroad. The survey result showed that Bangladesh has achieved neonatal tetanus elimination status.

Complete eradication of tetanus is not possible because tetanus spores are found throughout the world in soil and the stool of people and animals-that is, tetanus exposure cannot be completely prevented. Therefore the chance of neonatal tetanus is always like country Bangladesh where 80 percent of the deliveries are taking place at home. The best way to prevent neonatal tetanus is to immunize women of childbearing age with TT vaccine and to ensure clean delivery practice.

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

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

Single dose of TT vaccine does not ensure any protection against tetanus, it requires two doses of duly administered TT vaccines to ensure protection for 3 years. TT3 ensures protection for 5 years, TT4 for 10 years. After TT5 being administered, a woman gets adequate tetanus antibody in her body to-protect her whole reproductive life against tetanus. Table A9 below shows the complete TT vaccination schedule.

Table A9: The TT Vaccination Schedule

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

3.3 LEVELS OF THE TT COVERAGE

CES 2011 was conducted to collect information about the TT vaccination from the mothers who had given birth to children between 01-07-2010 and 30-06-2011 with an aim to assess the protective status of the newborn against Tetanus. TT vaccination status of the surveyed mothers was analyzed in two dimensions - crude TT vaccination coverage and valid TT vaccination coverage.

Crude TT vaccination coverage is defined as the vaccination coverage which is estimated without considering proper interval between the consecutive doses. Crude TT vaccination coverage is displayed in Figure F1, which shows that across the country 58 percent of the mothers completed all the 5 doses of TT vaccine. There was no variation in the coverage between the rural and the urban areas in terms access to the vaccination service as well as TT5 and TT2 coverage. Ninety eight percent of the mothers, both from rural and urban areas, received TT1 and 96 percent of them received TT2. More than half of the mothers (58 percent) from the rural and the urban areas received all doses of tetanus toxoid.

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

Generally speaking, more than one-third (42 percent) of the mothers received all the 5 doses of valid TT vaccination nationally. However, there was a slight variation between urban and rural areas in this regard. Forty four percent of the mothers in urban areas received 5 doses of TT vaccine as against 42 percent of the mothers who reside in rural areas. Similar to crude TT2 coverage, valid TT2 coverage was found to be 96 percent across the country. The urban-rural analysis shows no difference between the rural and the urban areas. Likewise, trend in the coverage for the subsequent doses was found to be similar to that in the crude coverage. The valid TT3 coverage was 84 percent

nationally. It declined down to 64 percent for TT4 and 42 percent for TT5 doses. Similarly, in urban areas, valid TT3 coverage was 85 percent, and TT4 was 65 percent as against 83 percent coverage for TT3 and 64 percent for TT4 in rural areas (see Figure F2).

Aforesaid analytical findings point towards the protective status of the women against tetanus by the specific time period. According to the survey findings, across the country 42 percent of the surveyed mothers achieved the status of being immunized against tetanus for the whole reproductive life. By area type, a slight variation was observed between the mothers in urban and those residing in rural areas. Furthermore, 96 percent of the mothers received TT2 doses nationally without any variation between the rural and the urban areas.

3.4 TRENDS IN CRUDE TT2 AND TT3 COVERAGE

The national trend of TT2 and TT3 vaccination coverage has been shown in Figure F3. It shows that since 2000 the coverage of TT3 is escalating rapidly without any fluctuation. It increased from 56 percent in 2000 to 87 percent in 2010, and 88 percent in 2011.As against that in CES 2006, TT3 coverage rate increased by 8 percentage points-80 percent in 2006 to 88 percent in 2011. However, a slow upward trend in TT2 coverage was observed with fluctuations since 1997. During the last one decade, TT2 coverage increased by 6 percentage points - from 89 percent in 2000 to 95 percent in 2010. Between CESs 2010 and CES 2011, TT2 coverage increased by 1 percentage point (95 percent in 2010, and 96 percent in 2011) (see Figure F3).

Figures F4-F9 shows the trends in the crude TT2 vaccination coverage by division. The figures show a fluctuating but upward trend in TT2 coverage in each division since 1997. In Dhaka division, the coverage rate fluctuated during the years 1999-2005 except in 2003. However, a plateau rate was observed in CES 2006, CES 2007, and CES 2009. And, it increased by 1 percentage point - from 95 percent in 2009 to 96 percent in the CES 2011 (see Figure F4). In Chittagong division, the trend fluctuated with an inclination for increase throughout 1993-2010. The coverage increased from 81 percent in 2000 to 93 percent in 2010. Again, it increased up to 95 percent in 2011. However, TT2 coverage decreased by 2 percentage points - from 97 percent in 2007 to 95 percent in 2011, and increased by 2 percentage points – from 93 percent in 2010 to 95 percent in 2011. Likewise, in Rajshahi division it increased by 8 percentage points - from 89 percent in 2000 to 97 percent in 2011 (see Figure F6). Compared to that in CES 2010, it decreased by 1 percentage point in 2011. Similarly, in Barisal division the coverage increased from 88 percent in 2000 to 96 percent in 2011 (see Figure F7). Furthermore, in Khulna division a trend of gradual increase along with fluctuation in the coverage was observed since 1997. TT2 coverage rate was plateau during the years 1998-2000 and 2003-2005. Between CES 2009 and CES 2011, the coverage rate decreased by 1 percentage point - 97 percent in 2009 to 96 percent in 2011 (see Figure F8). In Sylhet division, although there is a fluctuation in the coverage, TT2 coverage increased from 77 percent in 2000 to 94 percent in 2011 (see Figure F9). An analysis of the trends shows that there was no improvement in the coverage of Khulna and Dhaka divisions between the CES 2010 and CES 2011. However, compared to that in CES 2010, TT2 coverage decreased by 1 percentage point in Rajshahi and increased by 2 percentage points in Sylhet divisions.

3.5 RURAL COVERAGE BY DIVISION

Figures F10-F11 show TT vaccination coverage in rural areas by division. Both crude and valid TT vaccination coverages are discussed below:

CRUDE TT VACCINATION COVERAGE

Crude TT vaccination coverage in the rural areas by division is presented in Figure F10. It shows that access to TT vaccination was the highest in Rajshahi and Rangpur divisions (99 percent) and the lowest in Sylhet and Chittagong divisions (96 percent).This rate was 98 percent in Khulna, Dhaka, and Barisal divisions.

Like TT1 coverage, TT2 coverage was found to be the highest in Rajshahi (97 percent), and Rangpur divisions and the lowest in Chittagong and Sylhet divisions (95 percent). It was 96 percent in Khulna, Dhaka, and Barisal divisions.

Similar to TT2 coverage, TT3 coverage was found to be the highest (90 percent) in Rajshahi and Rangpur divisions and the lowest (82 percent) in Barisal division. The intermediary range of TT3 coverage rate in other divisions ranged from 86 percent in Khulna division to 88 percent in Sylhet and Chittagong divisions.

As regards to TT4 coverage, 78 percent of the mothers from Sylhet, 76 percent from Chittagong and Rajshahi, 75 percent from Rangpur,74 percent from Dhaka, 72 percent from Khulna, and 68 percent mothers from Barisal divisions received it.

However, TT5 coverage was found to be the highest (62 percent) in Chittagong and the lowest (51 percent) in Barisal divisions. It was found to be 54 percent in Khulna division, 57 percent in Rajshahi, 59 percent in Rangpur, 60 percent in Dhaka, and 61 percent in Sylhet divisions.

VALID TT VACCINATION COVERAGE

A TT vaccination dose is considered valid when it is administered as per the EPI- recommended TT vaccination schedule. Figure F11 presents valid TT vaccination coverage. It shows that TT1 coverage was at or over 96 percent in all divisions. TT2 vaccination coverage was associated with PAB. A single dose of TT does not confirm any protection against tetanus. To protect the child against tetanus at birth throughout the reproductive period, a woman should receive all the 5 doses of TT vaccines following the EPI- recommended TT vaccination schedule, or complete 2 doses of TT by maintaining the exact vaccination schedule at least 1 month prior to the delivery of the child. Findings of CES 2011 revealed that TT2 coverage was the highest (97 percent) in Rajshahi and Rangpur divisions and the lowest (94 percent) in Chittagong, and Sylhet divisions. It was 96 percent in Khulna, Dhaka, and Barisal divisions.

Similarly, valid TT3 vaccination coverage was found to be the highest (86 percent) in Rajshahi and Rangpur divisions and the lowest (77 percent) in Barisal division. In other divisions it was intermediary that ranged from 83 percent in Khulna, Dhaka and Chittagong divisions to 85 percent in Sylhet division.

As regards the TT4 coverage, it was found to be the highest (67 percent) in Rangpur, and the lowest (53 percent) in Barisal division, which was being followed by Khulna (62 percent), Rajshahi (64 percent), Dhaka and Chittagong (65 percent) divisions, and Sylhet division (66 percent).

On the contrary, TT5 coverage rate was found to be the highest in Chittagong (46 percent) and the lowest in Barisal division (33 percent). It was 45 percent in Sylhet, 44 percent in Dhaka, 43 percent in Rangpur, 40 percent in Khulna, and 39 percent in Rajshahi divisions.

3.6 LEVELS OF THE COVERAGE BY THE SURVEY UNIT

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

3.7 TT COVERAGE BY CITY CORPORATION

Figure F12 presents the crude TT vaccination coverage rate by city corporation. Access to TT1 vaccination was found to be universal in RCC. Regarding access to TT vaccination no variation was observed in DCC and SCC. It was 95 percent in both the city corporations.The coverage rate of TT1 vaccination was found to be 99 percent in KCC, 98 percent in BCC, and the lowest - 95 percent - in SCC.

Similar to TT1, crude TT2 coverage was found to be the highest in RCC (98 percent), and the lowest in SCC (92 percent). However, TT2 coverage was 97 percent in KCC and BCC, 95 percent in DCC and CCC. Likewise, TT3 coverage rate was found to be the highest in RCC (96 percent) and the lowest in DCC (84 percent).The second highest coverage rate was observed in BCC (91 percent).TT3 coverage rates were 88 percent in CCC, 86 percent in SCC, and 85 percent in KCC. Moreover, the coverage rate of TT4 was the highest (82 percent) in RCC, which was being followed by SCC (77 percent), DCC and BCC (75 percent), CCC (72 percent), and KCCs (70 percent).

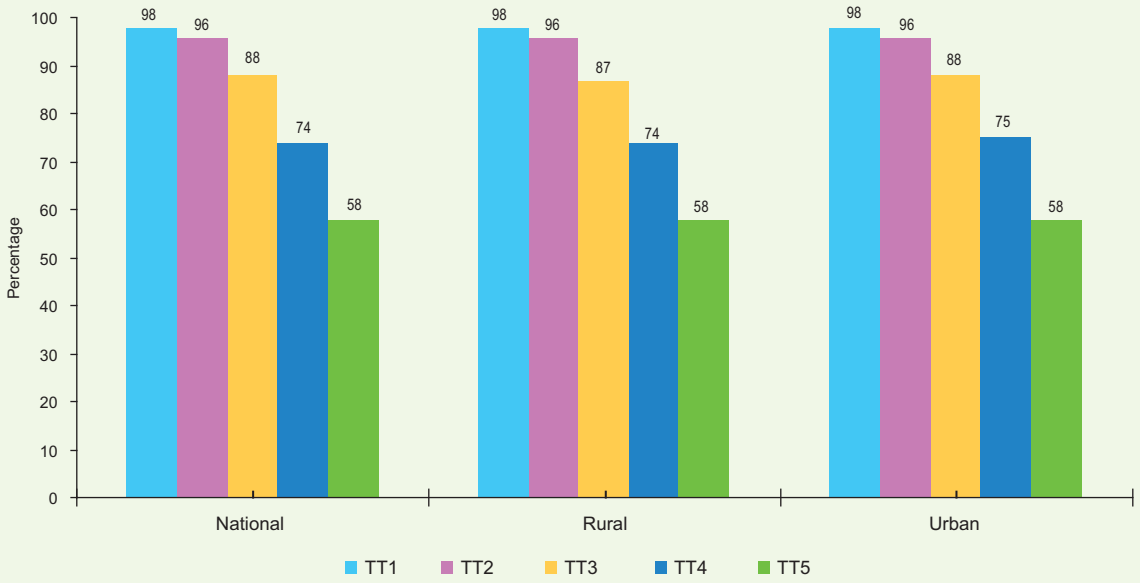
As it was expected, crude TT5 coverage was found to be the highest in RCC and SCC (60 percent) and the lowest in KCC (50 percent). TT5 coverage in other city corporations ranged between 57 percent in BCC and 58 percent in CCC, and DCC (see Figure F12).

Figure F13 shows valid TT vaccination coverage. Valid TT2 coverage was found to be the highest (98 percent) in RCC and the lowest (92 percent) in SCC. However, TT2 coverage rate was at or above 95 percent in other city corporations.

Among the city corporations, higher percentage of the mothers in Rajshahi City Corporation (95 percent) received the valid dose of TT3 than those residing in other city corporations. Eighty seven percent mothers in BCC received valid TT3, which was being followed by KCC (84 percent), DCC and CCCs (82 percent), and SCC (76 percent). Likewise, 77 percent of the mothers in RCC received TT4. It was 69 percent in DCC, 63 percent in BCC, 61 percent in KCC, and 56 percent in CCC and SCCs.

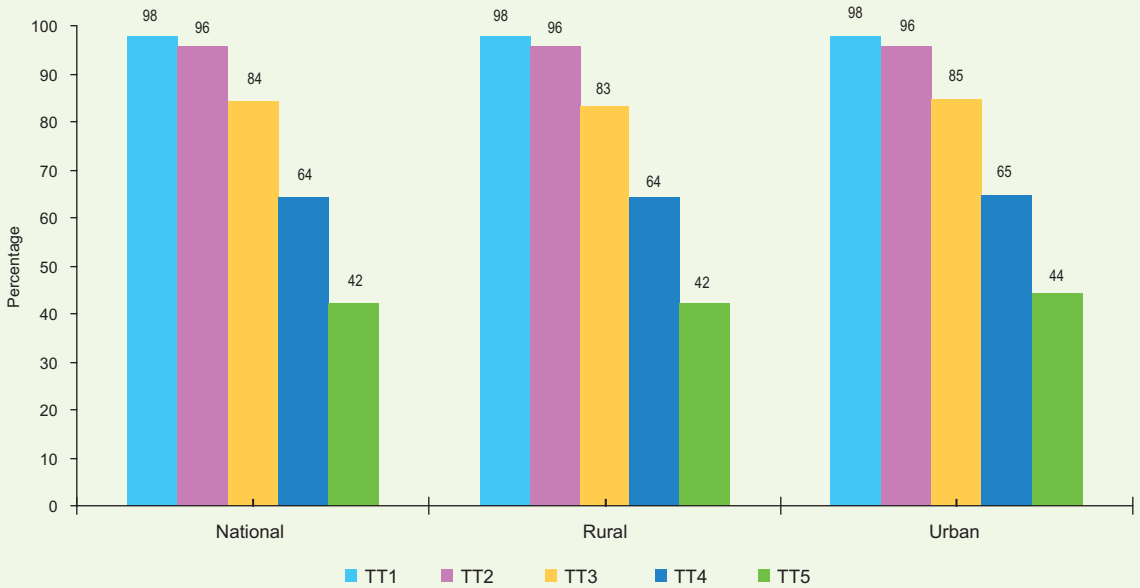
In contrast, TT5 coverage was found to be the highest (54 percent) in DCC and the lowest (34 percent) in SCC. A little over half of the mothers in RCC (51 percent), 41 percent of the mothers in KCC, 37 percent in BCC, and 36 percent of the mothers in CCC received 5 doses of valid TT vaccine (see Figure F13).

Figure F1. Crude TT Vaccination Coverage among Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2011 (Card + History)



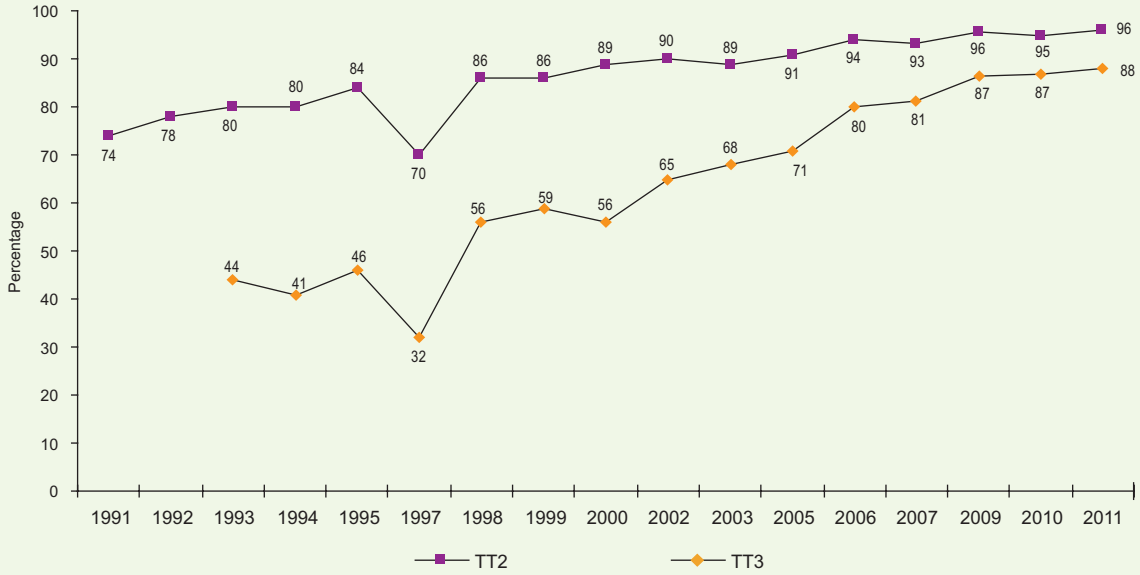
Source: CES 2011

Figure F2. Valid TT Vaccination Coverage among Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2011 (Card + History)



Source: CES 2011

Figure F3. Annual Trend in Crude TT2 and TT3 Vaccination Coverage among Mothers of 0-11 Months Old Children at National Level from 1991 to 2011* (Card + History)



Source: Coverage Evaluation Survey 1991-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009, 2010 and 2011
* Since the TT3 coverage rate was not available for 1992, it is given from 1993 instead of 1991.

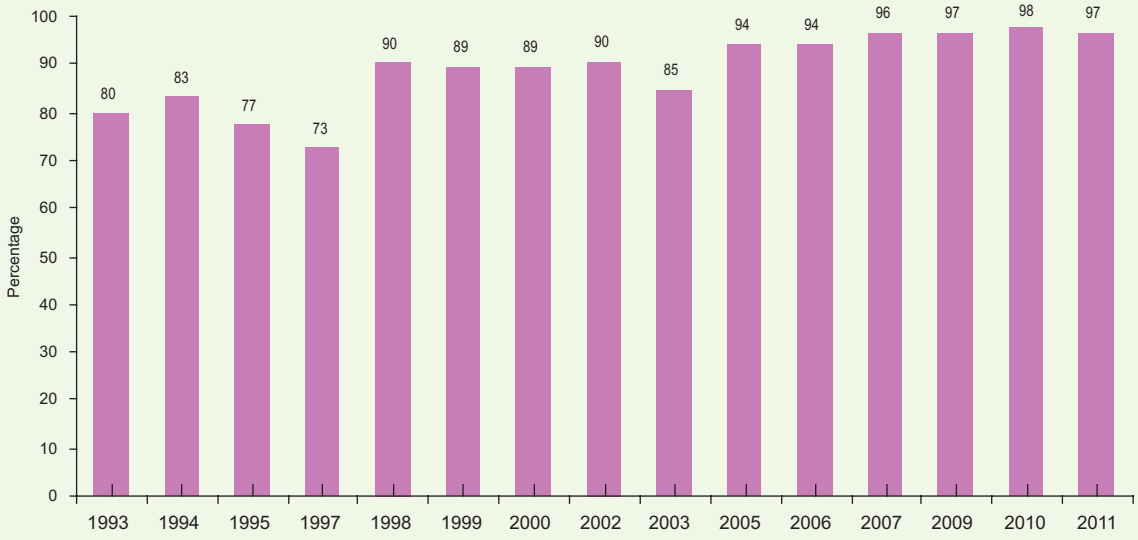
Figure F4. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Dhaka Division from 1993 to 2011 (Card + History)

Source: CES 2011

Figure F5. **Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Chittagong Division from 1993 to 2011 (Card + History)**

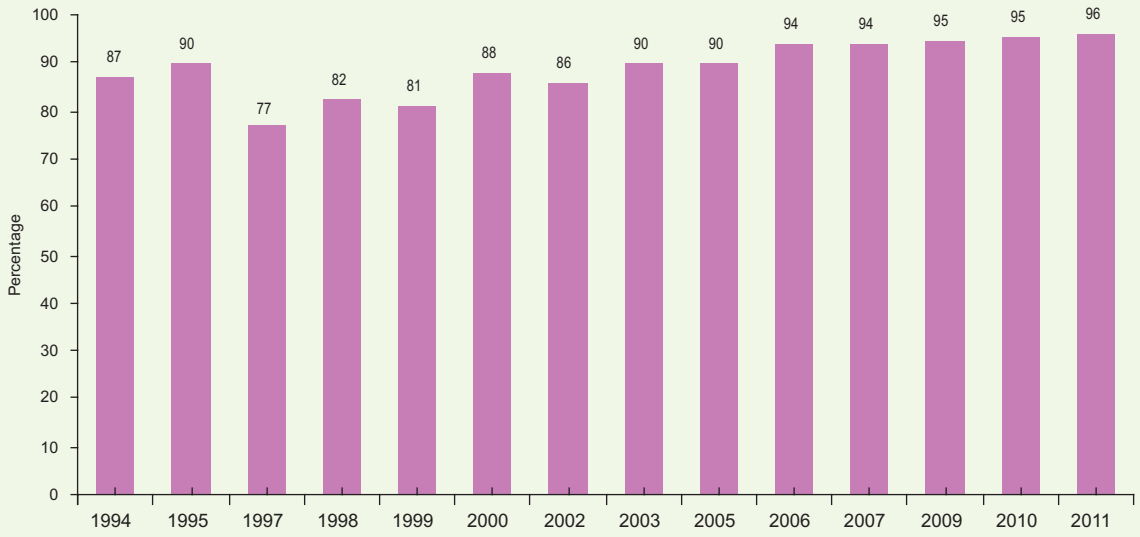
Source: CES 2011

Figure F6. **Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Rajshahi Division from 1993 to 2011 (Card + History)**



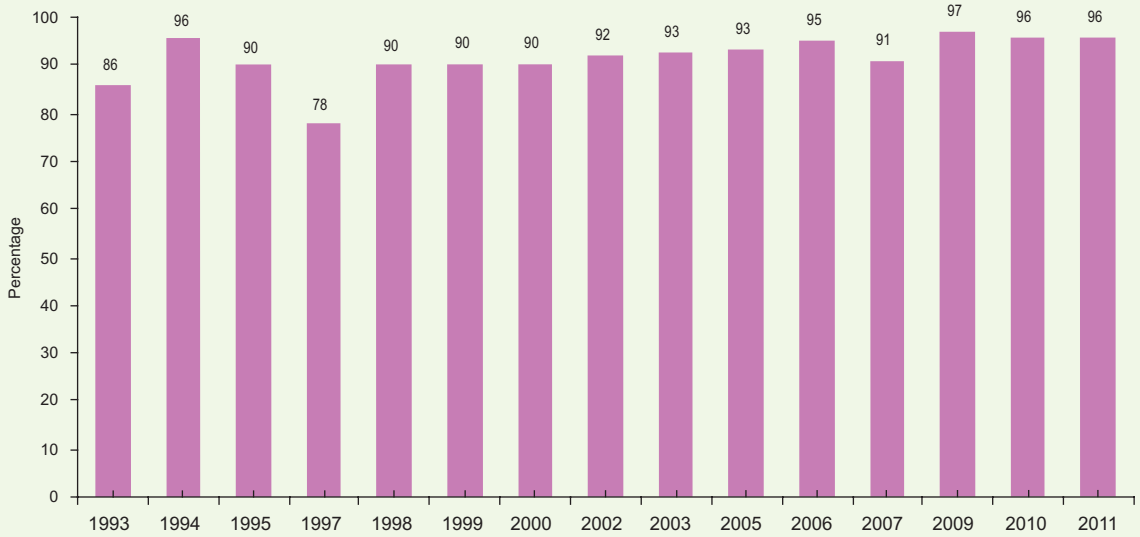
Source: CES 2011

Figure F7. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Barisal Division from 1994 to 2011 (Card + History)



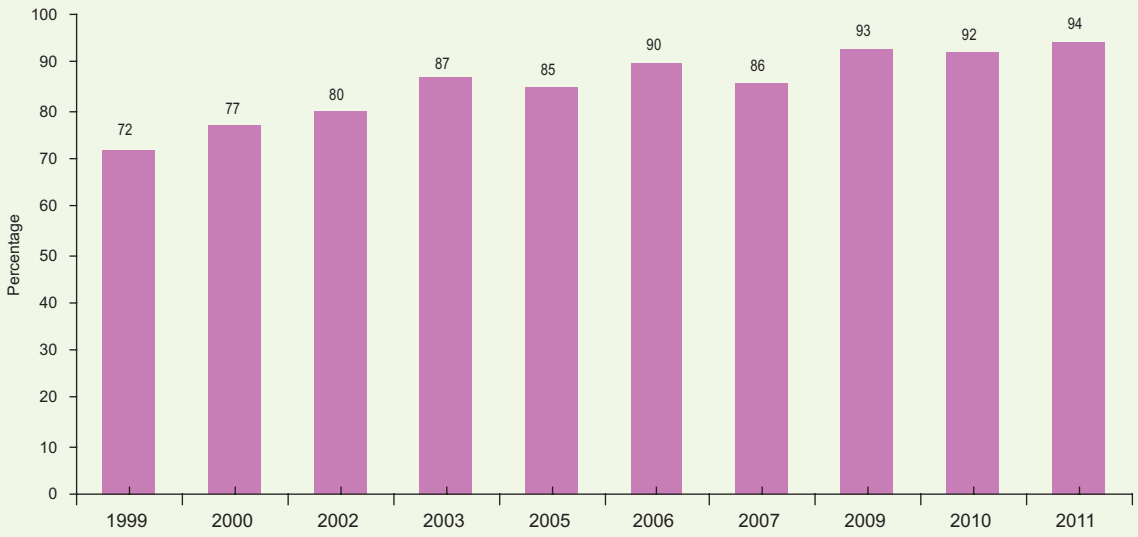
Source: CES 2011

Figure F8. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Khulna Division from 1993 to 2011 (Card + History)



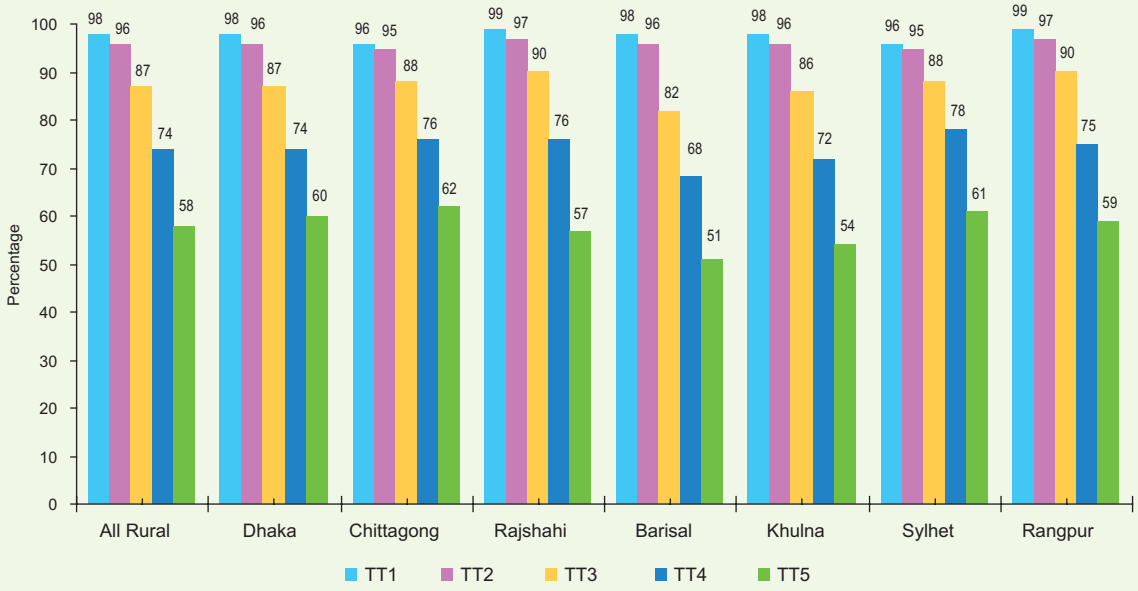
Source: CES 2011

Figure F9. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Sylhet Division from 1999 to 2011 (Card + History)



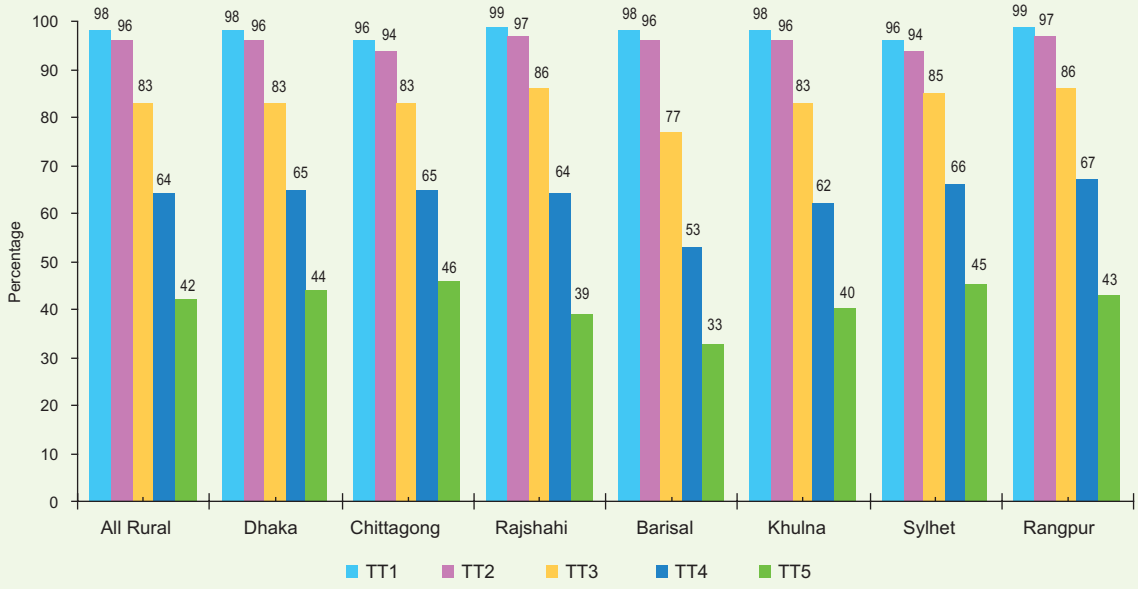
Source: CES 2011
Note: Before 1999, Sylhet division was a part of Chittagong division
Source: Coverage Evaluation Surveys (CESs) for 1994-1995, 1997-2002,2003, 2005, 2006, 2007, 2009, 2010 and 2011

Figure F10. Crude TT Vaccination Coverage among Mothers of 0-11 Months Old Children In Rural Areas by Division in 2011 (Card + History)



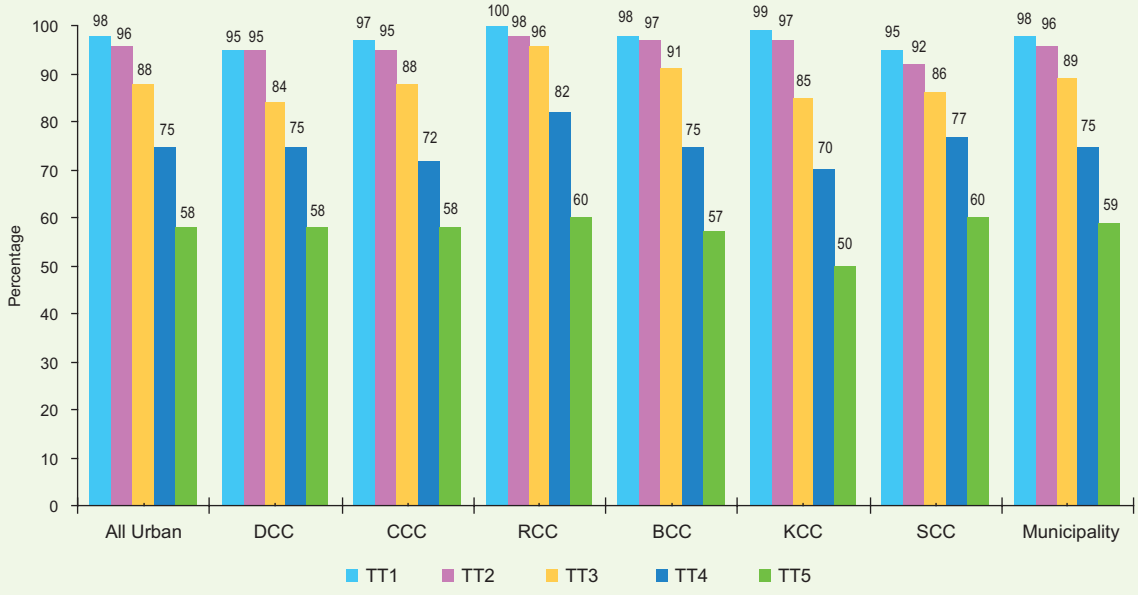
Source: CES 2011

Figure F11. Valid TT Vaccination Coverage among Mothers of 0-11 Months Old Children In Rural Areas by Division in 2011 (Card + History)



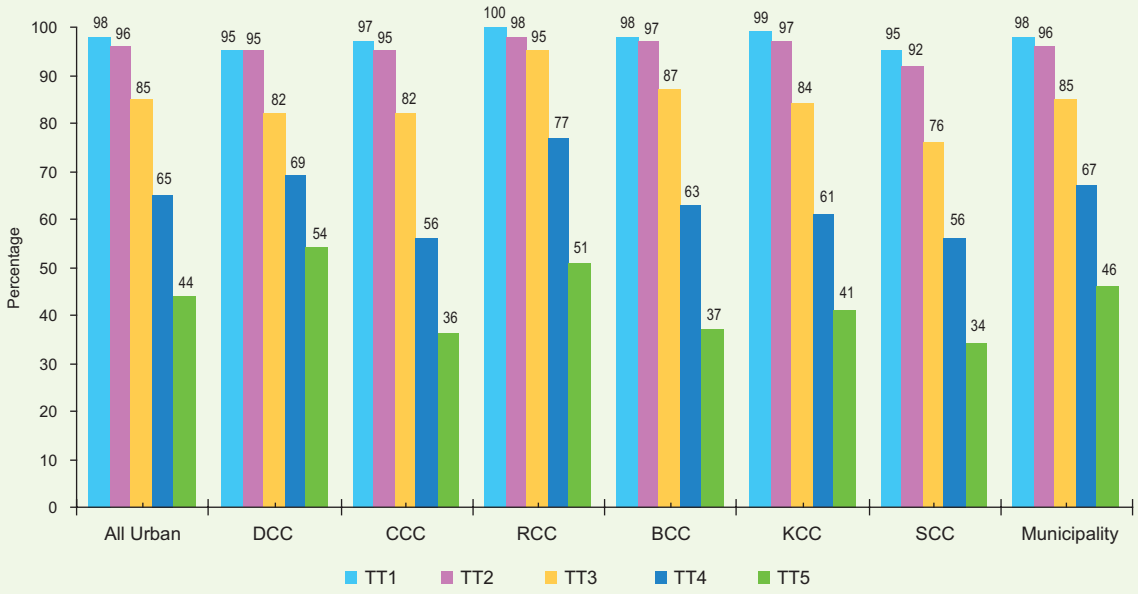
Source: CES 2011

Figure F12. Crude TT Vaccination Coverage among Mothers of 0-11 Months Old Children In Urban Areas by City Corporation/Municipality in 2011 (Card + History)



Source: CES 2011

Figure F13. Valid TT Vaccination Coverage among Mothers of 0-11 Months Old Children In Urban Areas by City Corporation/Municipality in 2011 (Card + History)



Source: CES 2011

3.8 TT CARD STATUS AMONG THE MOTHERS

To assess the status of TT vaccination card, respondents were asked whether they had TT vaccination card. A little over one-third (36 percent) of the mothers reported that they had it. However, 54 percent mentioned that they lost it. Fifty three percent of the mothers residing in rural areas and 62 percent of them in urban areas lost the card. Likewise, card retention rate was found to be 40 percent across the country with 7 percentage points difference between rural (41 percent) and urban areas (34 percent) (see Figure G1).

By rural division, card retention rate was the highest (51 percent) in Rangpur and the lowest (34 percent) in Dhaka. The intermediary rates ranged from 36 percent in Sylhet to 48 percent in Khulna (see Figure G2). However, card retention rates in Chittagong, Barisal, and Rajshahi divisions were 39 percent, 41 percent, and 46 percent, respectively.

Among the city corporations, card retention rate was found to be the highest (50 percent) in RCC and the lowest (9 percent) in DCC. In other city corporations, the rates were 40 percent in KCC, 33 percent in CCC and SCCs, and 30 percent in BCC (see Figure G3).

The rural-urban analysis shows that card retention rate was 7 percentage points higher in rural areas, compared to that in urban areas. Among the rural areas by division, it was the lowest in Dhaka division. Compared to that in rural areas, the rate is lower in urban areas, which needs more attention from the program personnel to motivate mothers living in the city corporations along with other divisions to retain the card since more than half (54 percent) of the mothers are not retaining it throughout the country.

3.9 INCIDENCE OF INVALID DOSES

Figure G4 shows the incidence of invalid TT doses among the surveyed mothers. The survey findings indicate that the incidence was more prevalent for TT4 and that the incidence rate was decreasing for the subsequent doses. Thirteen percent of the total surveyed mothers received invalid doses of TT3 across the country. There was no variation between rural and urban areas in this regard. The incidence rate of invalid doses for TT4 was 14 percent across the country - 14 percent in rural and 13 percent in urban areas. However, for TT5 the rate was 13 percent nationally - 13 percent in rural and 11 percent in urban areas.

In rural areas by division, 17 percent of the mothers were found to have received invalid TT3 in Chittagong division. The rate of invalid TT3 was the lowest in Khulna division (10 percent). It was 16 percent in Barisal, which was being followed by Dhaka (12 percent), Rangpur and Sylhet (11 percent) divisions.

As regard to the incidence of invalid TT4 dose, it was found to be the highest (19 percent) in Sylhet and the lowest (12 percent) in Khulna, Rangpur, and Dhaka divisions. Furthermore, invalid doses of TT4 were 18 percent in Barisal and 15 percent in Rajshahi divisions. In contrast, the invalid rate of TT5 dose was found to be the lowest (10 percent) in Khulna and the highest (17 percent) in Barisal. In other divisions, the rate ranged between 12 percent in Dhaka and 16 percent in Chittagong division (see Figure G5).

By city corporation, the highest rate (30 percent) of invalid TT3 dose was revealed in SCC and the lowest (3 percent) in RCC. One-fourth (25 percent) of the mothers in CCC, 17 percent in BCC, and 5 percent in KCC and DCCs received invalid TT3 doses. On the contrary, 24 percent mothers in SCC, 20 percent in CCC, 16 percent in BCC, 10 percent in KCC, 8 percent in DCC, and 7 percent in RCC received invalid TT4 doses.

However, one-fifth (20 percent) of the mothers in BCC received invalid TT5 dose. The incidence of invalid TT5 dose was 19 percent in SCC, which was being followed by CCC (17 percent), KCC (7 percent), RCC (4 percent), and DCC (3 percent) (see Figure G6).

The analysis of the invalid TT2 dose shows that no mother in any of the rural divisions received it. Incidence of invalid TT2 dose was similar in all city corporations except Chittagong and Barisal. The highest invalid dose for TT3-TT5 can be minimized through increasing card retention rate as well as by refraining oneself from administering unnecessary dose when the newborn baby is protected. EPI program can save a huge number of vaccines through an effective communication program.

3.10 SCREENING FOR TT VACCINATION OF MOTHERS

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

Mothers were asked whether the vaccinator screened their TT status while the health workers visited the site to vaccinate their children. Nationally, 35 percent of the mothers reported that their TT status was screened. A slightly higher percentage of the mothers in urban areas were screened, compared to the rural mothers (40 percent in urban and 35 percent in rural) (see Figure G7).

In rural areas by division, the proportion of the screened mothers was found to be the highest (45 percent) in Rajshahi and the lowest (28 percent) in Dhaka divisions. The proportion in other divisions ranged between 30 percent in Chittagong and 44 percent in Rangpur divisions (see Figure G8).

Among the city corporations, the proportion of the screened mothers was found to be the highest (77 percent) in KCC, which was being followed by SCC (55 percent), BCC (45 percent), RCC (39 percent), CCC (33 percent), and DCC (13 percent) (see Figure G9).

The findings shown above indicate that the missed opportunity was availed of by 35 percent of the mothers across the country. Among the rural divisions, the proportion was found to be the lowest (28 percent) in Dhaka and the highest (45 percent) in Rajshahi. In contrast, among the city corporations the rate of one's availing himself/herself of the missed opportunity was the highest (77 percent screened) in KCC and the lowest (13 percent screened) in DCC.

3.11 CHILDREN PROTECTED AT BIRTH (PAB) AGAINST TETANUS

Protection at birth (PAB) of the newborn baby in order to reduce NT death is the ultimate outcome of TT vaccination. The percentage of PAB is estimated as the number of infants protected is divided by the total number of births. EPI CES 2011 estimated the PAB of newborn babies through examining the time of receiving TT doses against the recommended TT vaccination schedule (shown in Table A9). In the country, 93 percent of the children are found to be protected at birth against tetanus. The rural-urban variation was 2 percentage points (92 percent in rural and 94 percent in urban areas) (see Figure G10). National trend of PAB is shown in Figure G11. It shows a slow but gradual increase with some minor fluctuations in PAB since 1999. PAB against tetanus increased by 9 percentage points from 83 percent in 1999 to 92 percent in 2010. However, compared to that in CES 2010, PAB status increased by 1 percentage point from 92 percent in 2010 to 93 percent in 2011.

Among the rural divisions, PAB against tetanus was found to be the highest (94 percent) in Rangpur and the lowest (90 percent) in Sylhet. Ninety three percent of the children were protected at birth against tetanus in Rajshahi and Barisal divisions, which was being followed by Dhaka, Chittagong, and Khulna (92 percent) divisions (see Figure G12).

In contrast, the proportion of the children protected at birth against tetanus was found to be the highest (98 percent) in RCC and the lowest (91 percent) in SCC. Ninety five percent of the children were protected at birth in DCC, which was being followed by CCC and BCC (94 percent) and KCC (93 percent) (see Figure G13).

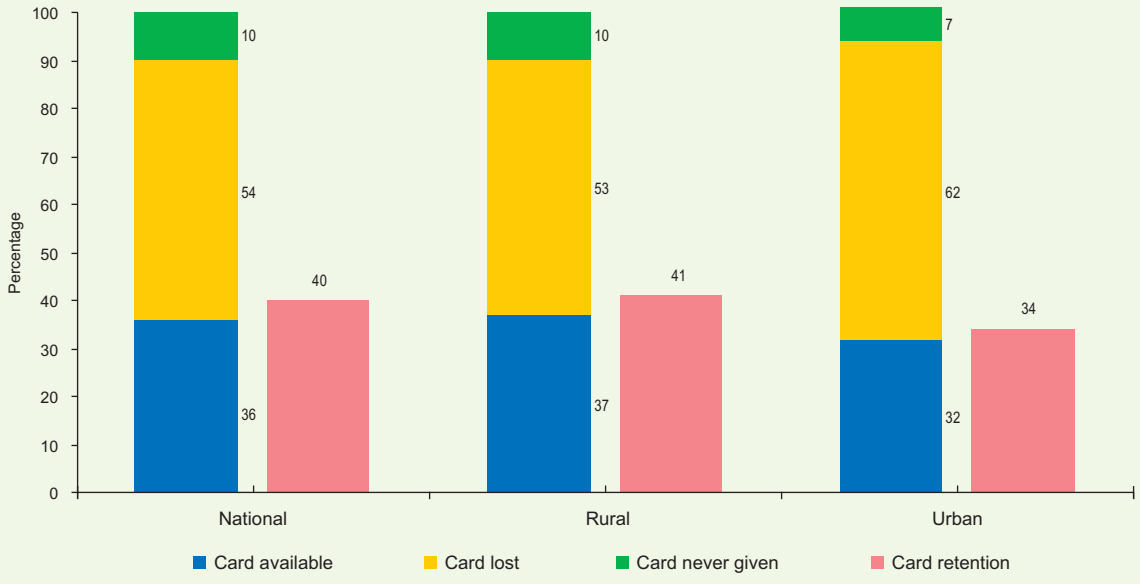
3.12 TT2 COVERAGE AND PAB STATUS

TT2 coverage and PAB status are mostly related to each other. Figures G14-G16 show TT2 coverage and PAB status by age. Figure G14 shows that across the country, 93 percent of the newborn babies were protected at birth as against 96 percent by TT2 coverage. By age, differences between PAB and TT2 are more at the age of 30 and above. Seventy five percent of the newborn babies whose mothers' age was 40 and/ or above were protected at birth against tetanus with 87 percent coverage of TT2 dose. However, the difference was found smaller among the lower age groups. There was no difference between the coverage rate of TT2 dose and PAB at the age of 15-19 years (TT2 coverage was 95 percent and PAB was 95 percent) (see Figure G14).

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

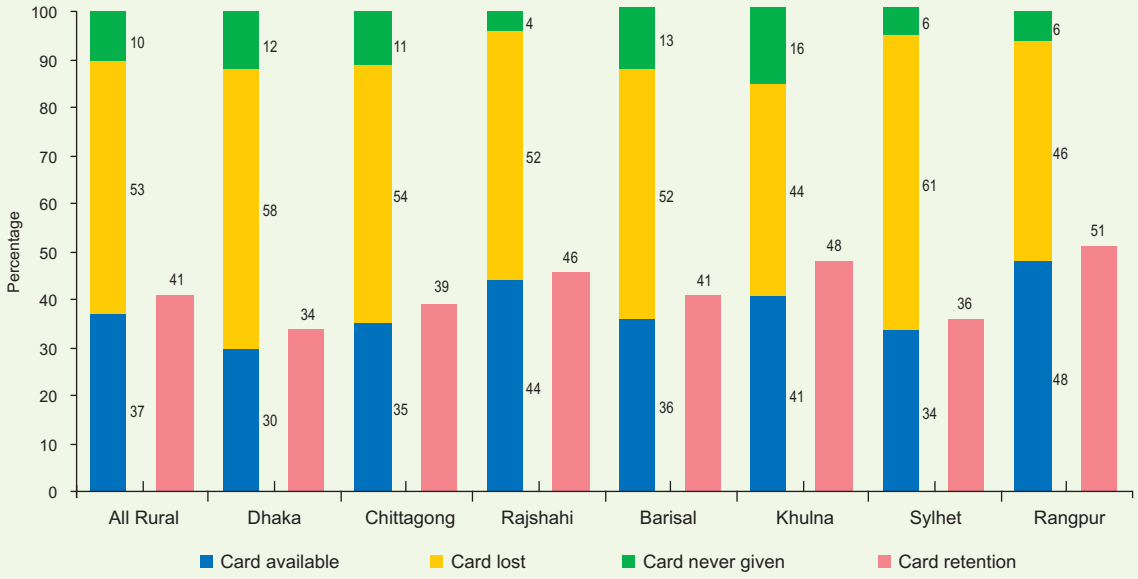
It is important to mention here that the coverage rate of TT2 dose and PAB status is not always related in all cases. For example, a mother can give birth after 4 years of receiving TT2 dose. She can receive the 3rd dose of TT during her pregnancy period. Then the newborn is protected in relation to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

Figure G1. TT Vaccination Card Status among Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2011



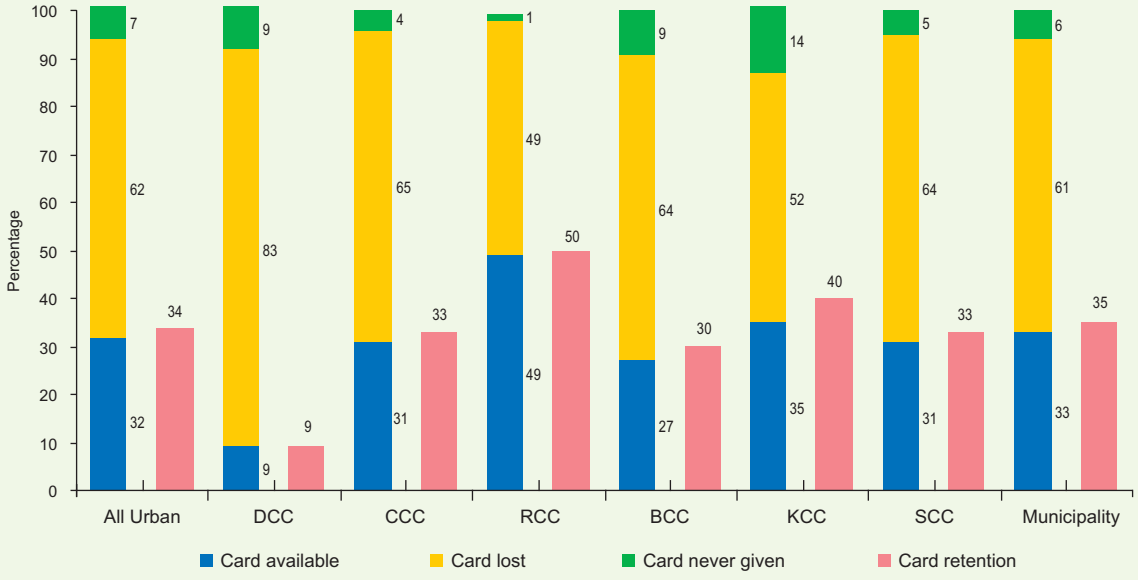
Source: CES 2011

Figure G2. TT Vaccination Card Status among Mothers of 0-11 Months Old Children in Rural Areas by Division in 2011



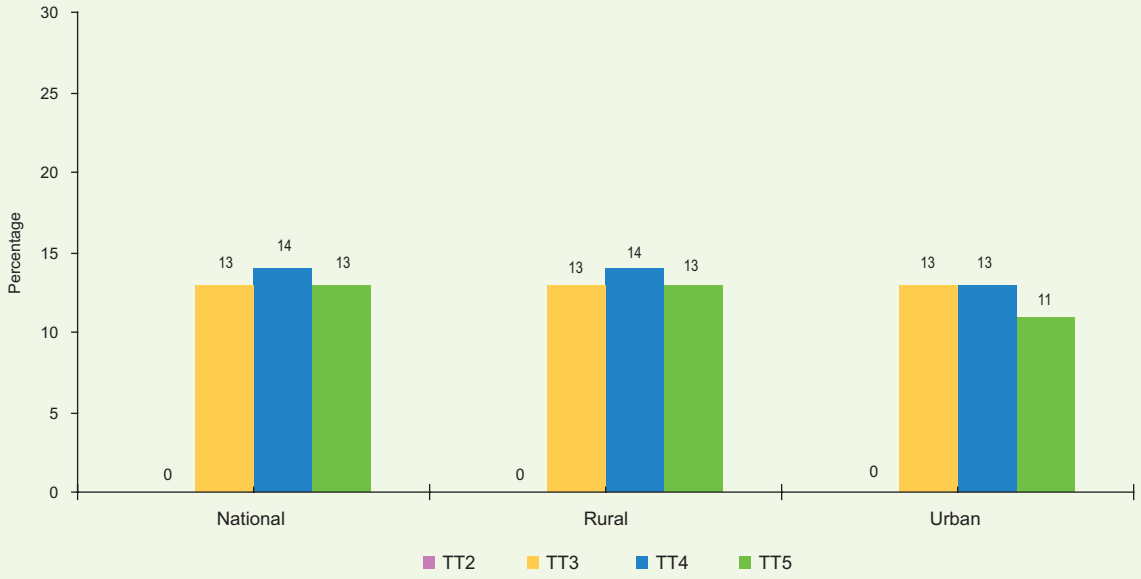
Source: CES 2011

Figure G3. TT Vaccination Card Status among Mothers of 0-11 Months Old Children in Urban Areas by City Corporation/ Municipality in 2011



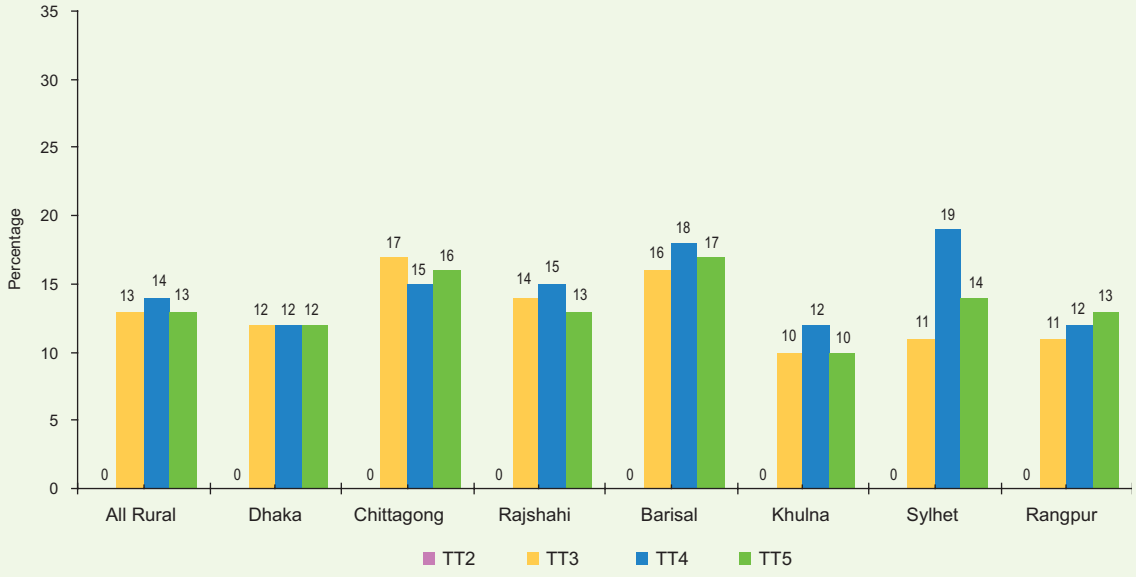
Source: CES 2011

Figure G4. Incidence of Invalid TT Doses among Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2011 (Card + History)



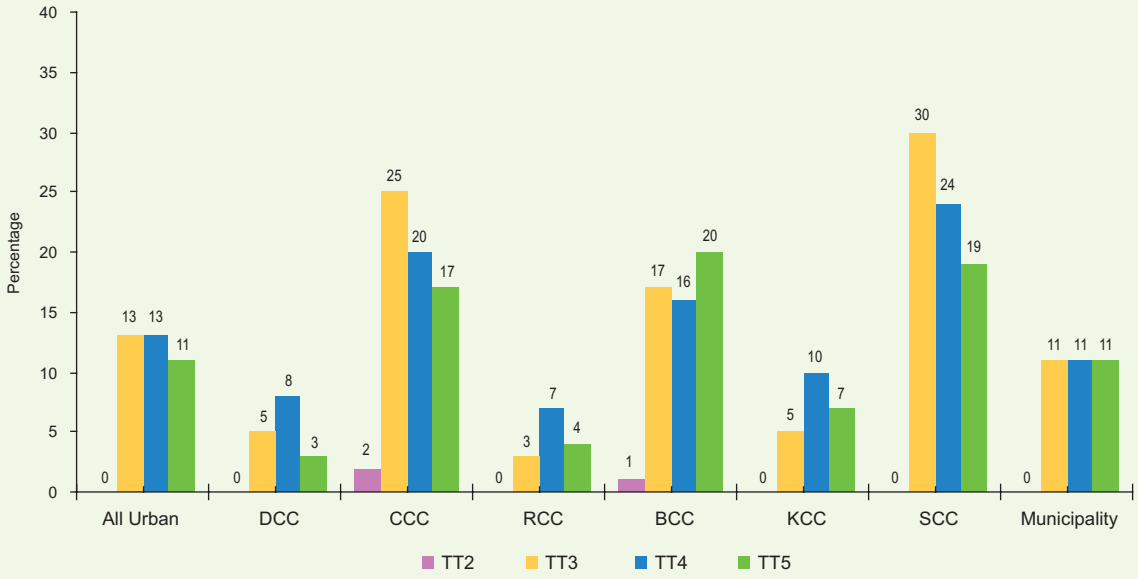
Source: CES 2011

Figure G5. Incidence of Invalid TT Doses among Mothers of 0-11 Months Old Children in Rural Areas by Division in 2011 (Card + History)



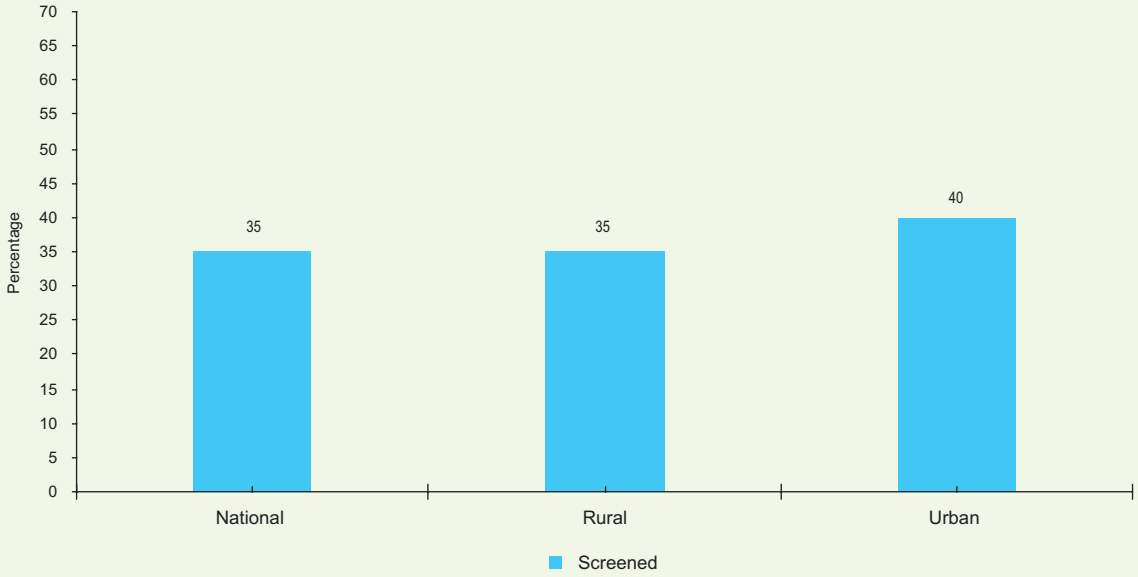
Source: CES 2011

Figure G6. Incidence of Invalid TT Doses among Mothers of 0-11 Months Old Children in Urban Areas by City Corporation/ Municipality in 2011 (Card + History)



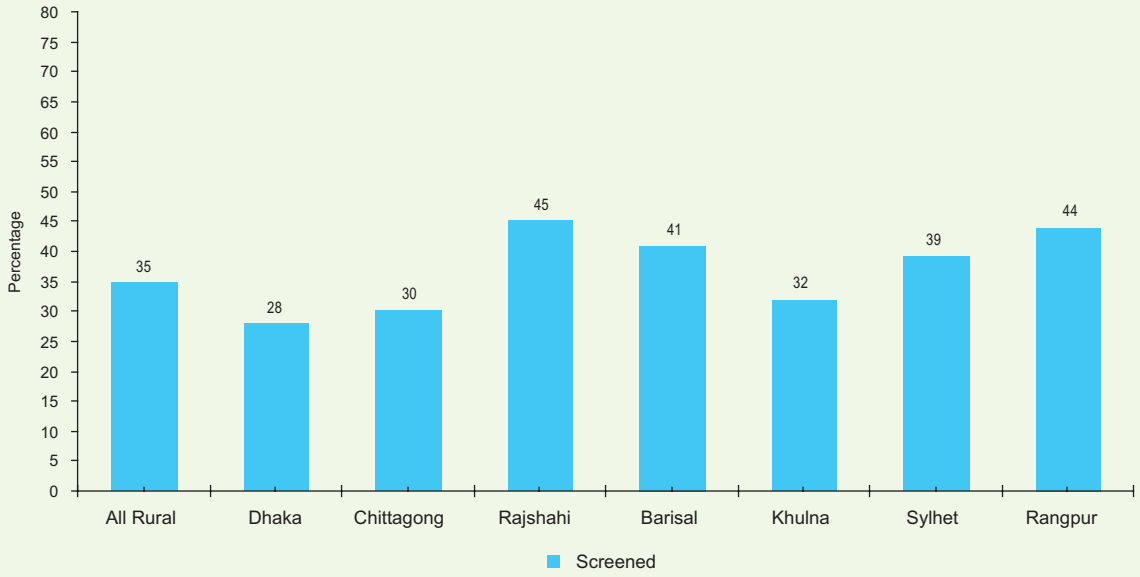
Source: CES 2011

Figure G7. Percentage of Mothers of 0-11 Months Old Children Screened for TT Status during Child's Vaccination by National, Rural and Urban Areas in 2011



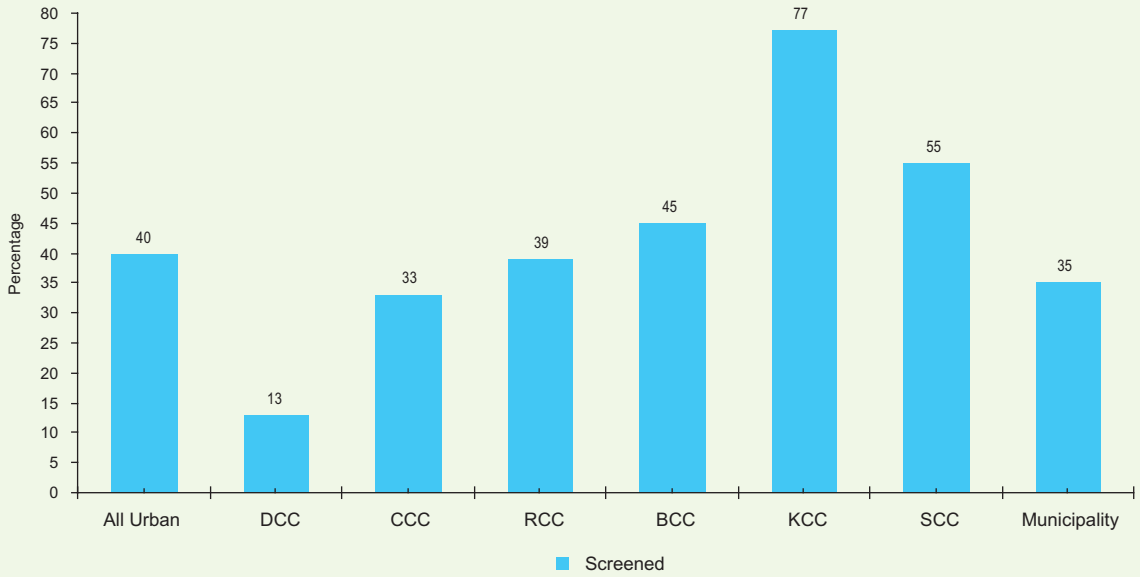
Source: CES 2011

Figure G8. Percentage of Mothers of 0-11 Months Old Children Screened for TT Status during Child's Vaccination in Rural Areas by Division in 2011



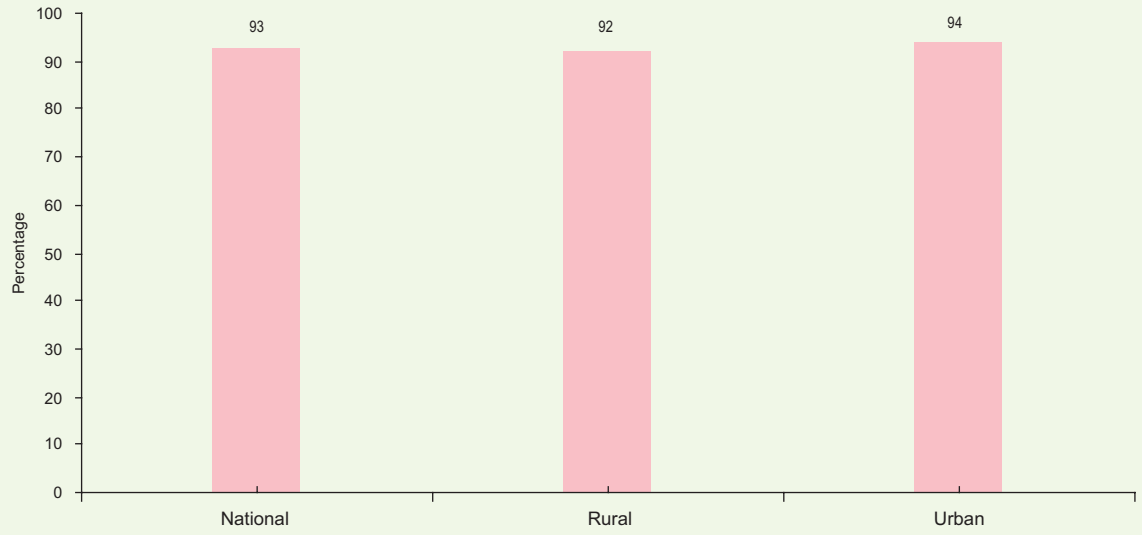
Source: CES 2011

Figure G9. Percentage of Mothers of 0-11 Months Old Children Screened for TT Status during Child's Vaccination in Urban Areas by City Corporation/ Municipality in 2011



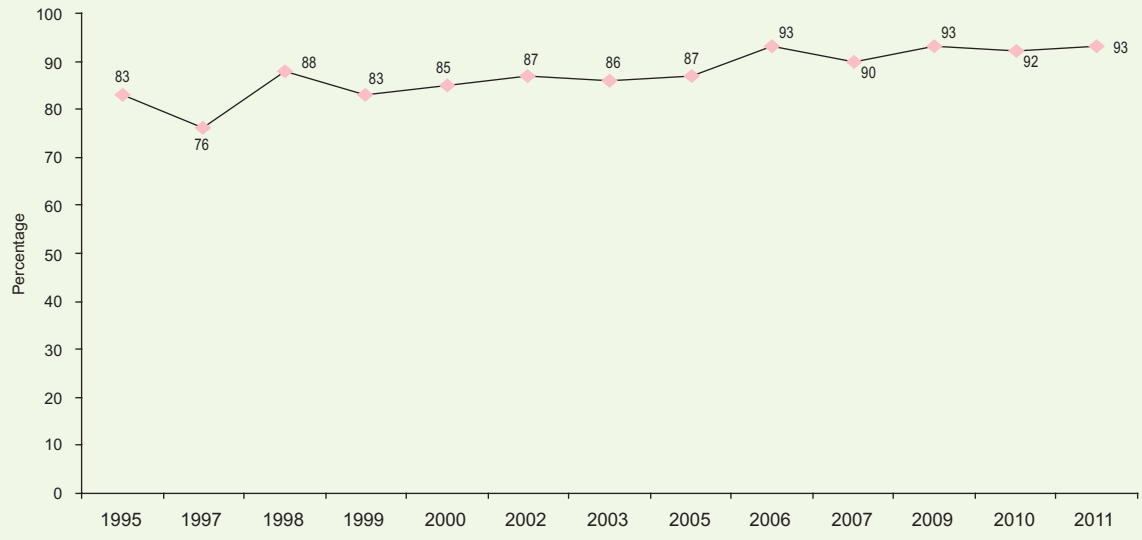
Source: CES 2011

Figure G10. Percentage of Newborns Protected at Birth (PAB) against Tetanus by National, Rural and Urban Areas in 2011



Source: CES 2011

Figure G11. Percentage of Newborns Protected at Birth against Tetanus at National Level from 1995 to 2011

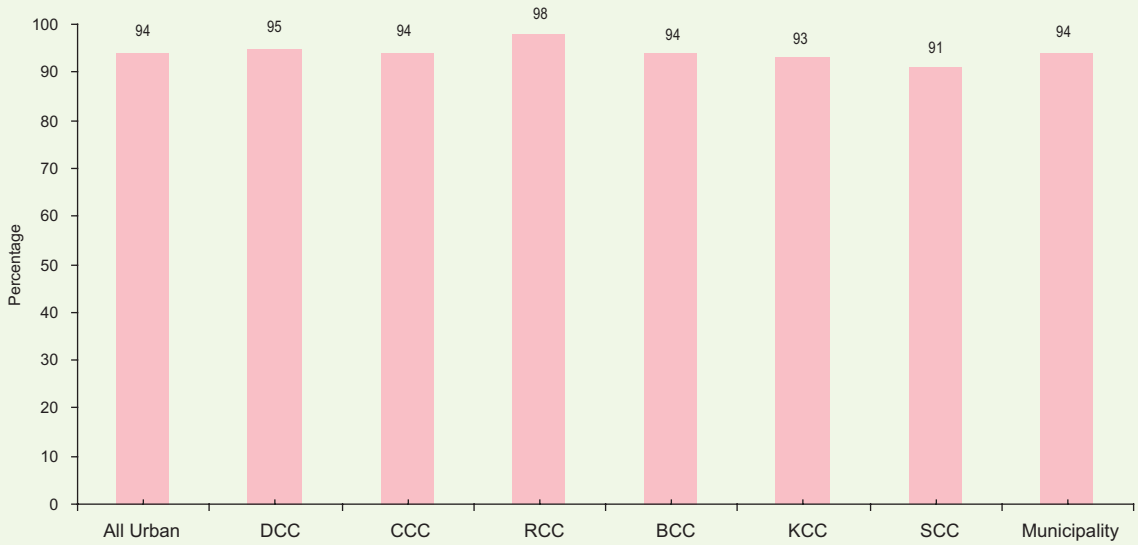


Source: Coverage Evaluation Surveys (CESs) for 1995, 1997, 1998, 1999, 2000, 2002, 2003, 2005, 2006, 2007, 2009, 2010 & 2011

Figure G12. Percentage of Newborns Protected at Birth against Tetanus in Rural Areas by Division in 2011

Source: CES 2011

Figure G13. Percentage of Newborns Protected at Birth against Tetanus in Urban Areas by City Corporation/ Municipality in 2011



Source: CES 2011

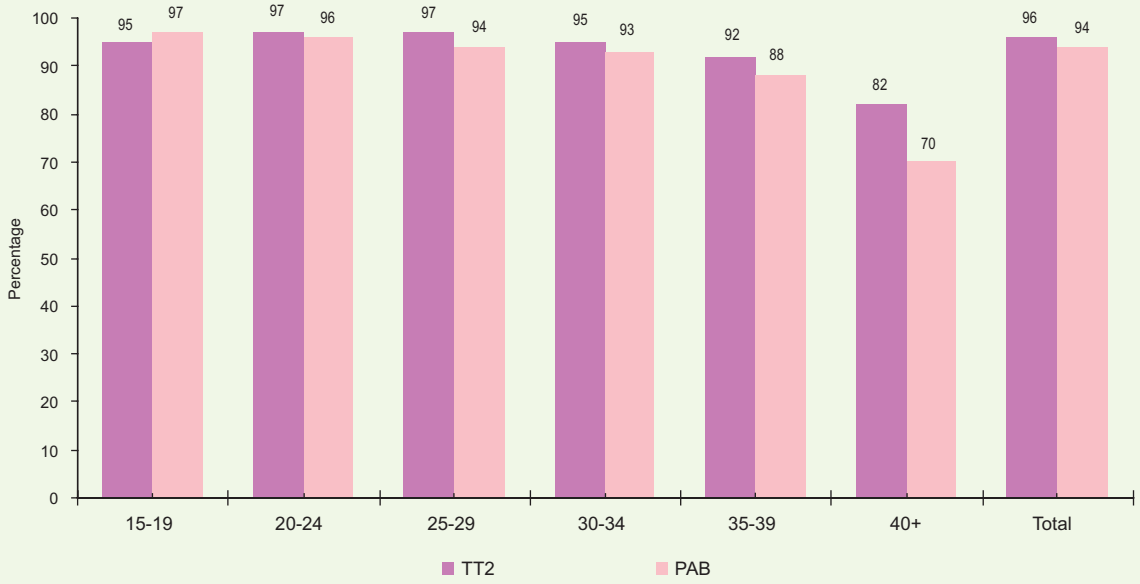
Figure G14. Percentage of Mother Received TT2 and Percentage of New Born Protected at Birth by Age Group of Mother in 2011

Source: CES 2011

Figure G15. Percentage of Mother Received TT2 and Percentage of New Born Protected at Birth by Age Group of Mother in Rural Areas in 2011

Source: CES 2011

Figure G16. Percentage of Mother Received TT2 and Percentage of New Born Protected at Birth by Age Group of Mother in Urban Areas in 2011



Source: CES 2011

3.13 MOTHERS' KNOWLEDGE ABOUT TT VACCINATION

In total, a woman requires 5 doses of TT vaccine for gaining lifetime tetanus antibody. EPI CES 2011 made an assessment of the mothers' knowledge about the number of doses required. It was done by asking them the question as to how many doses of TT vaccine a woman should receive to get full protection against tetanus for her reproductive life. More than half (58 percent) of the mothers mentioned about 5 doses. However, the urban-rural analysis shows 4 percent difference between the mother's living in urban areas and those belonging to rural areas. Fifty eight percent of them in rural areas mentioned about 5 doses as against 62 percent urban mothers (see Figure H1).

In rural areas by division, the highest (64 percent) percentage of mothers in Rangpur, 62 percent in Dhaka, 60 percent in Rajshahi, 58 percent in Sylhet, 56 percent in Khulna, 53 percent in Chittagong, and 45 percent in Barisal divisions reported about 5 doses (see Figure H2).

Among the city corporations, the percentage of mothers having correct knowledge about the number of TT doses was found to be the highest in RCC (86 percent) and the lowest in CCC (42 percent). The percentages were 80 percent in DCC, 72 percent in KCC, 54 percent in BCC, and 49 percent in SCC (see Figure H3)

Overall, 34 percent of the mothers across the country reported that they were unaware of the number of TT doses. By area type, compared to those residing in urban areas, rural mothers were found to be more unaware of it (34 percent in rural areas and 32 percent in urban areas). Proper knowledge about the number of doses is important both for the proper use of TT vaccine as well as the PAB of the newborn baby. To increase the mother's knowledge, more Behavioral Change Communication activities such as courtyard meeting, interpersonal communication, and counseling in the EPI session needs to be ensured.

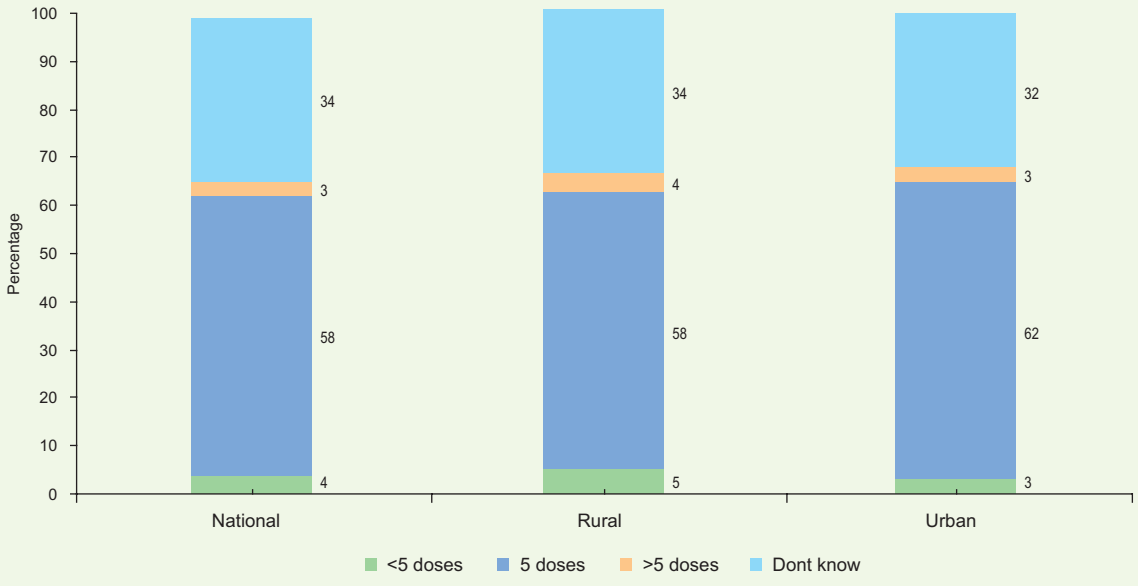
3.14 SOURCES OF TT VACCINATION

Sources of TT1 vaccination were investigated in EPI CES 2011. Throughout the country, an overwhelming majority (92 percent) of the mothers reported about the government outreach centers while only 5 percent of them referred to the government hospitals. A small percentage (3 percent) reported about NGOs and private health facilities. However, sources varied a little by area type. Ninety six percent mothers in rural areas received TT1 from the government sources as against 76 percent in urban areas. Eleven percent mothers reported about NGOs and private sources in urban areas. However, no mothers in rural areas reported about NGOs and private clinic/hospitals.

Similar to the national findings, at or above 96 percent of the mothers received TT1 from the government outreach centers in Dhaka, Rajshahi, Khulna, and Rangpur divisions. The utilization rate of government outreach centers was 94 percent in Chittagong and Sylhet and 93 percent in Barisal division. Rajshahi division had the highest utilization rate of government outreach centers (98 percent). The percentage of NGO sources was found to be much lower in every division (see Figure I2).

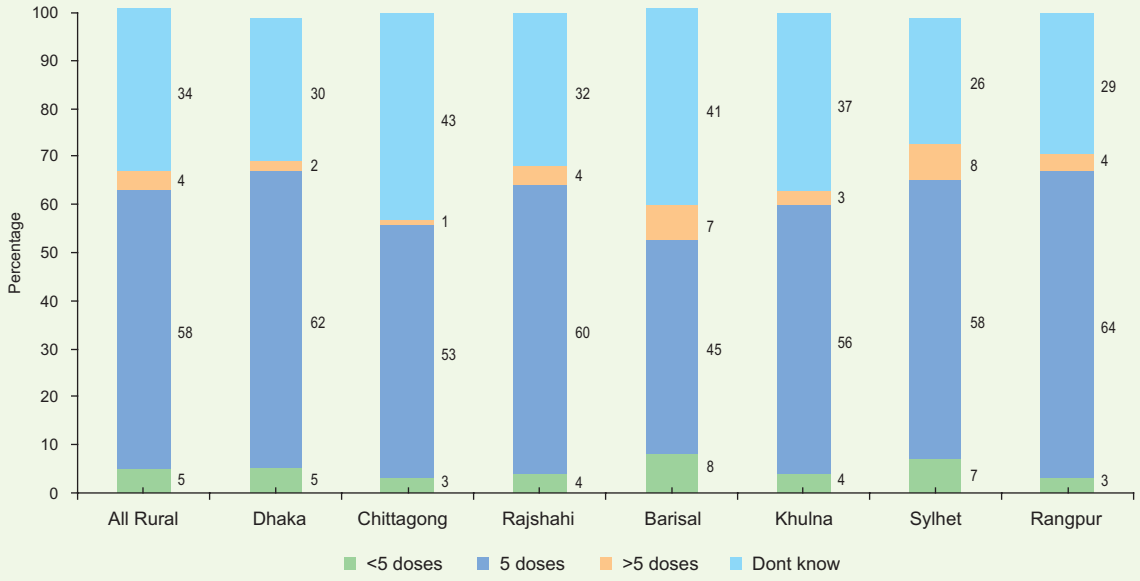
Among the city corporations, the government outreach centers were used most often in SCC (91 percent) and the least in DCC (54 percent). On the contrary, the government hospitals/clinics were mostly utilized in DCC (21 percent) and the least in SCC (3 percent). Furthermore, delivery of vaccination services by NGOs was most prevalent in KCC (37 percent) and the least in DCC (4 percent) (see Figure I3).

Figure H1. Number of TT Doses Required During Reproductive Period for Protection against Tetanus as Reported by Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2011



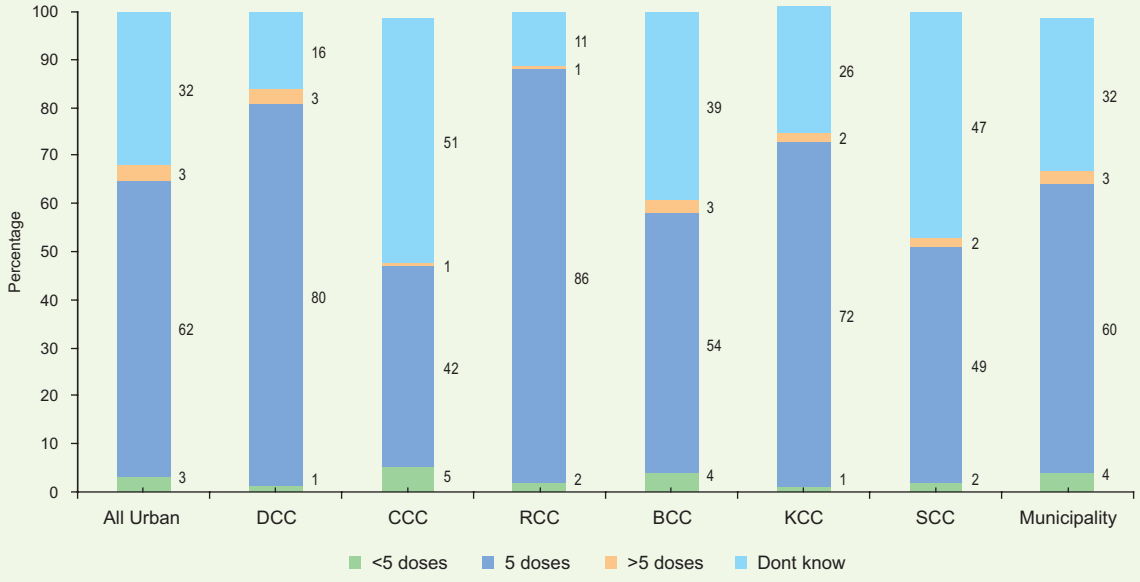
Source: CES 2011

Figure H2. Number of TT Doses Required During Reproductive Period for Protection against Tetanus as Reported by Mothers of 0-11 Months Old Children in Rural Areas by Division in 2011



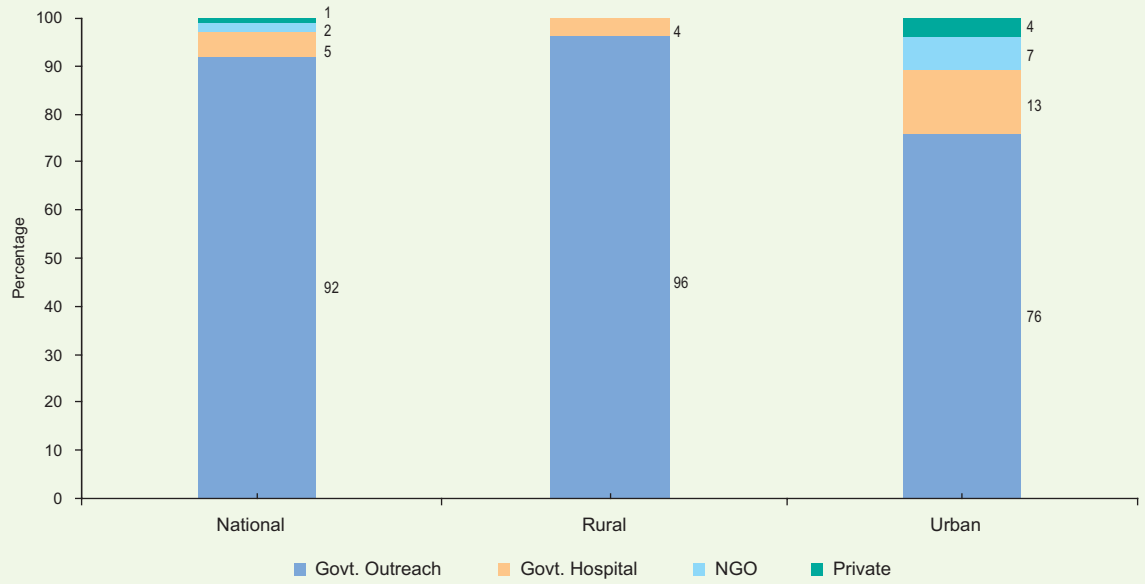
Source: CES 2011

Figure H3. Number of TT Doses Required During Reproductive Period for Protection against Tetanus as Reported by Mothers of 0-11 Months Old Children by City Corporation/ Municipality in 2011



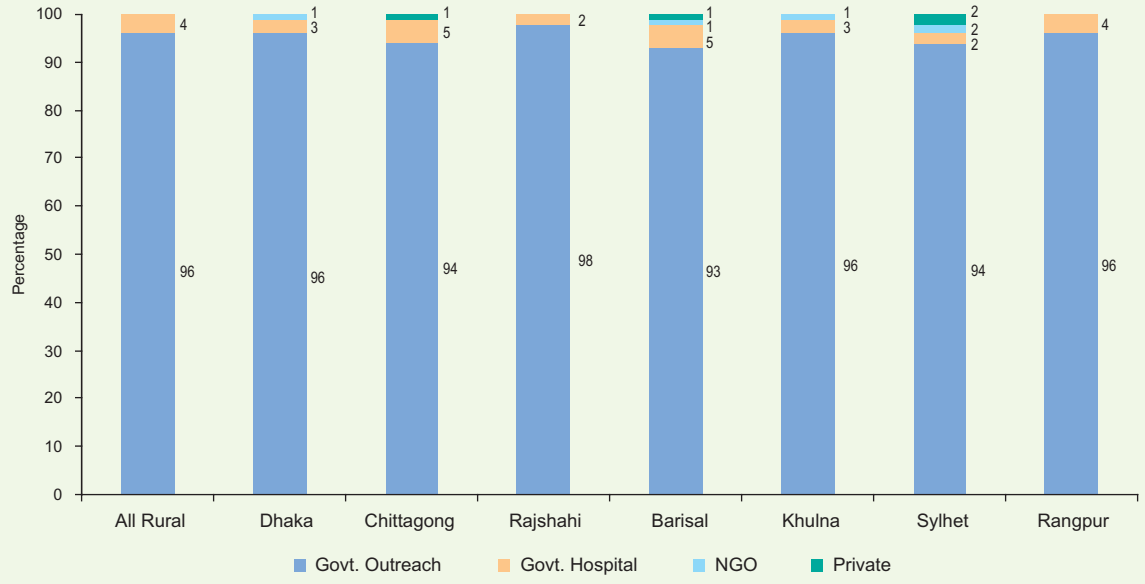
Source: CES 2011

Figure I1. Sources of TT1 Vaccination among Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2011



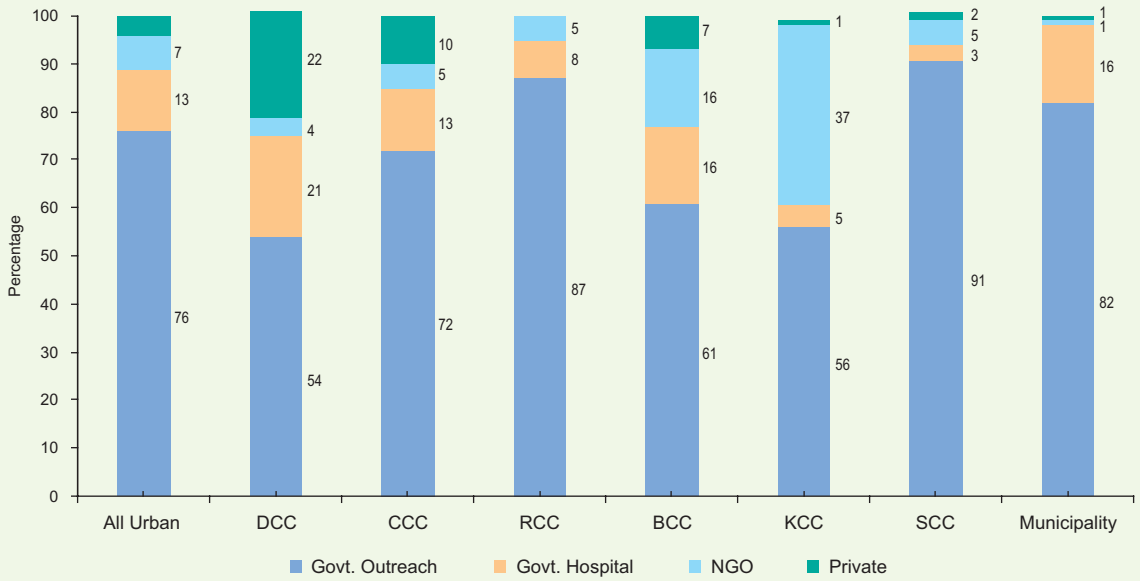
Source: CES 2011

Figure I2. Sources of TT1 Vaccination among Mothers of 0-11 Months Old Children in Rural Areas by Division in 2011



Source: CES 2011

Figure I3. Sources of TT1 Vaccination among Mothers of 0-11 Months Old Children in Urban Areas by City Corporation/ Municipality in 2011



Source: CES 2011

CHAPTER 4
TETANUS TOXOID VACCINATION COVERAGE SURVEY AMONG THE WOMEN AGED BETWEEN 18-49 YEARS

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

4.0 OBJECTIVES OF THE TT VACCINATION COVERAGE OF THE WOMEN AGED BETWEEN 18-49 YEARS

Tetanus toxoid (TT) survey undertook the following objectives:

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

4.1 SELECTION OF SAMPLES

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

4.2 LEVELS OF TT VACCINATION COVERAGE

Two types of TT vaccination coverage - crude and valid - among the women with childbearing age (18-49 years) were assessed in CES 2011. Crude coverage which is defined as the act of administering TT vaccines without following EPI-recommended vaccination schedule is shown in Figure J1. It indicates that 50 percent women received all the 5 doses of TT vaccines across the country with a slight variation in the coverage among the women residing in urban and rural areas (54 percent in urban and 49 percent in rural areas).

Regarding the subsequent doses, it can be said that a gradual decreasing trend in the coverage was observed in the findings. Among the surveyed women, 92 percent received TT1, 90 percent TT2, 81 percent TT3, and 66 percent TT4. A similar declining trend was observed both in rural and urban areas. Ninety two percent of the surveyed women in rural areas received TT1 as against 94 percent in urban areas. Besides, TT2 coverage rate was 89 percent, TT3 80 percent, and TT4 65 percent in rural areas as against the coverage rate of 93 percent for TT2, 85 percent for TT3, and 71 percent for TT4 in urban areas (see Figure J1).

Figure J2 illustrates the valid TT vaccination coverage. It indicates that about one-third (32 percent) of the total surveyed women received 5 doses of TT vaccine across the country - 32 percent in rural and 34 percent in urban areas. The coverage of TT2 was 90 percent nationally. By specific area, it was 89 percent in rural and 93 percent in urban areas. A decreasing trend in the coverage of TT3 and TT4 was observed irrespective of area. Seventy six percent of the surveyed women received TT3, and more than half of them (53 percent) received TT4. However, by area 75 percent of the women in rural and 80 percent in urban areas received 3 doses of valid TT vaccine. More than half of the women both in rural (52 percent) and urban (56 percent) areas received 4 doses of valid TT vaccine.

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

4.3 TT VACCINATION COVERAGE BY RURAL DIVISION

CRUDE TT VACCINATION COVERAGE

Figure J3 illustrates crude vaccination coverage in rural areas by division. It shows that Rajshahi, Khulna, and Rangpur divisions had the highest (93 percent) crude TT1 vaccination coverage and Dhaka, Barisal, and Chittagong had the lowest crude coverage (91 percent). It was found 92 percent in Sylhet division.

Likewise, the highest TT2 coverage was observed in Rajshahi and Sylhet (90 percent), which was being followed by Rangpur, Khulna, and Dhaka (89 percent), Barisal, and Chittagong (88 percent) divisions.

As it was expected, TT3 coverage was lower compared to that in TT2 in every division. The highest TT3 coverage rate was revealed in Sylhet division (84 percent) and the lowest (77 percent) in Rangpur and Barisal divisions. The coverage rates in other divisions were 81 percent in Chittagong, 80 percent in Dhaka, 79 percent in Rajshahi and Khulna divisions.

As regards the TT4, the coverage was found to be the highest in Sylhet (76 percent) and the lowest in Rangpur divisions (59 percent). The coverage rates were 68 percent in Chittagong divisions, which was being followed by Dhaka (66 percent), Khulna (64 percent), Rajshahi (62 percent), and Barisal (60 percent) divisions

Moreover, TT5 vaccination coverage was the lowest (40 percent) in Rangpur and the highest (64 percent) in Sylhet division. TT5 coverage rates were 53 percent in Chittagong, 51 percent in Dhaka, 47 percent in Khulna, 46 percent in Rajshahi, and 44 percent in Barisal divisions (see Figure J3).

VALID TT VACCINATION COVERAGE

As has been mentioned earlier, valid vaccination coverage in terms of TT vaccination is defined as the coverage of vaccination after following the EPI-recommended TT vaccination schedule. Findings of valid coverage in rural areas by division are presented in Figure J4. It shows that TT1 vaccination coverage was over 90 percent in all divisions. The lowest TT1 coverage rate was revealed in Dhaka, Chittagong, and Barisal divisions (91 percent). It should be mentioned here that TT1 dose indicates the entry in TT vaccination service and doesn't give protection against tetanus.

Likewise, TT2 coverage was 88 percent in Barisal and Chittagong divisions, 89 percent in Rangpur, Khulna, and Dhaka divisions, and 90 percent in Sylhet and Rajshahi divisions.

TT3 is administered at least 6 months after administering TT2. A little over three-quarters of the women (81 percent) in Sylhet division received 3 doses of TT vaccine as against 78 percent of them in Chittagong, 76 percent in Dhaka, 75 percent in Khulna, 74 percent in Rajshahi, and 71 percent in Barisal and Rangpur divisions.

Furthermore, 66 percent women in Sylhet received TT4, which was being followed by Chittagong (55 percent), Dhaka (54 percent),Khulna (53 percent), Rajshahi (49 percent), Rangpur (47 percent), and Barisal divisions (44 percent).

The final goal of TT vaccination is to ensure desired immune status of the recipients against tetanus for their whole reproductive life by giving them 5 doses of TT vaccines. Hence, the valid TT5 coverage indicates that a woman achieved immunity against tetanus for her whole reproductive life. Figure J4 shows that compared to those residing in other divisions higher percentage of women in Sylhet division (44 percent) received all the five doses of TT vaccine. The lowest TT5 coverage was revealed in Barisal division (23 percent), which was being followed by Dhaka (35 percent), Chittagong (34 percent), Khulna (32 percent), Rajshahi (28 percent), and Rangpur (25 percent) divisions.

4.4 LEVELS OF THE COVERAGE BY THE SURVEY UNIT

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

4.5 TT VACCINATION COVERAGE BY CITY CORPORATION

Similar to the assessment of TT vaccination coverage in rural areas by division, CES 2011 analyzed the data by city corporation with an aim to make an assessment of the coverage of six city corporations separately. The results are presented in Figure J5-J6. Figure J5 shows crude TT vaccination coverage and Figure J6 valid vaccination coverage.

CRUDE TT VACCINATION COVERAGE

Figure J5 shows crude TT vaccination coverage of all doses. TT1 dose indicates the entry in TT vaccination service. Ninety eight percent women in Khulna City Corporation (KCC) received TT1 as against the lowest - 89 percent- in Sylhet City Corporation (SCC). However, 97 percent women in Rajshahi City Corporation (RCC), 96 percent in Dhaka City Corporation (DCC), 92 percent in Barisal and Chittagong City Corporations (CCC) received TT1 vaccine.

As per EPI vaccination schedule, women received TT2 at least 28 days after receiving TT1. As it was expected, TT2 coverage was found to be lower than TT1 in every city corporation. Among the city corporations, TT2 coverage was revealed to be the highest in Khulna (96 percent) and Dhaka City Corporations and the lowest in Sylhet City Corporation (87 percent).TT2 coverage rates in other city corporations were intermediary that ranged between 90 percent in Chittagong City Corporation and 94 percent in Rajshahi City Corporation. The rate was 92 percent in Barisal City Corporation.

Likewise, TT3 coverage rate was found at or above 77 percent across the city corporations. It was 77 percent in Sylhet, 81 percent in Barisal, 83 percent in Chittagong, 88 percent in Rajshahi, 90 percent in Khulna, and 94 percent in Dhaka City Corporations.

Furthermore, TT4 coverage rate was found to be the highest (76 percent) in Dhaka and Rajshahi City Corporations, which was being followed by Barisal (74 percent), Chittagong (72 percent), Khulna (71 percent), and Sylhet City Corporations (63 percent).

Among the surveyed women, crude TT5 coverage was found to be the highest (61 percent) in Chittagong. The lowest (46 percent) TT5 coverage rate was noticed in Khulna. TT5 coverage rates in other city corporations ranged between 52 percent in Sylhet City Corporation and 59 percent in Rajshahi City Corporations (see Figure J5).

VALID TT VACCINATION COVERAGE

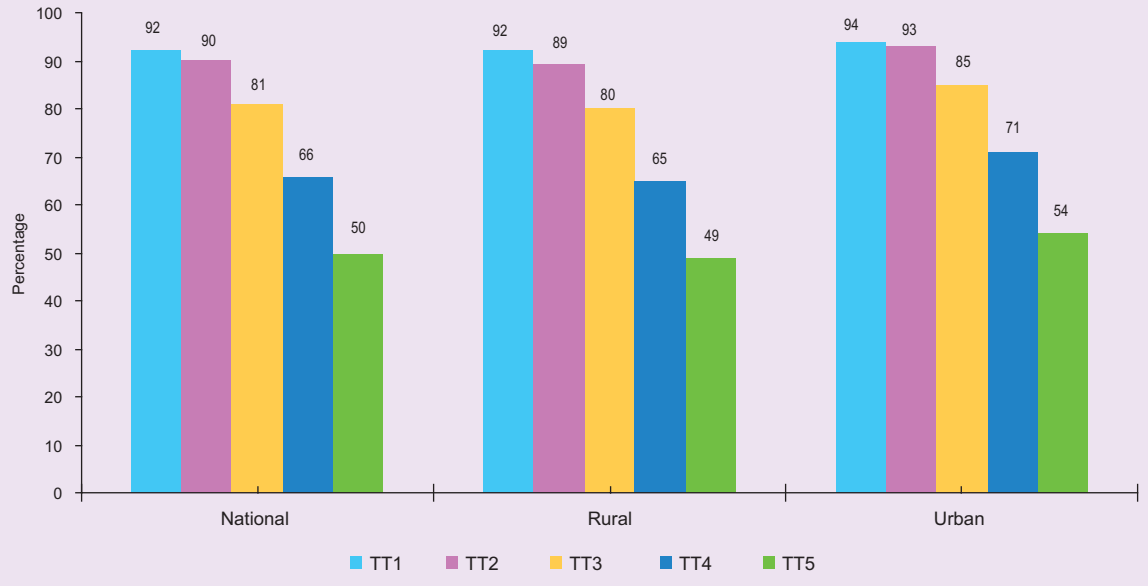
Valid TT vaccination coverage is shown in Figure J6. Since there is no question of validity of TT1, the analysis of TT1 is dropped from this section. TT2 coverage was found to be the highest in Dhaka and Khulna City Corporations (96 percent) and the lowest in Sylhet City Corporation (87 percent). The coverage in other city corporations was intermediary that ranged from 90 percent in Chittagong City Corporation to 94 percent in Rajshahi City Corporation.

As it was expected, compared to TT2, TT3 coverage rates were lower in all city corporations. TT3 coverage was found to be the highest in KCC (85 percent) and the lowest in SCC (70 percent). However, TT3 coverage was found to be 84 percent in RCC, which was being followed by DCC (83 percent), BCC (81 percent), and CCC (79 percent).

Furthermore, TT4 coverage was found to be the highest (69 percent) in RCC and the lowest (45 percent) in SCC. TT4 coverage rates in other divisions ranged from 48 percent in CCC to 54 percent in BCC. It was 52 percent in DCC.

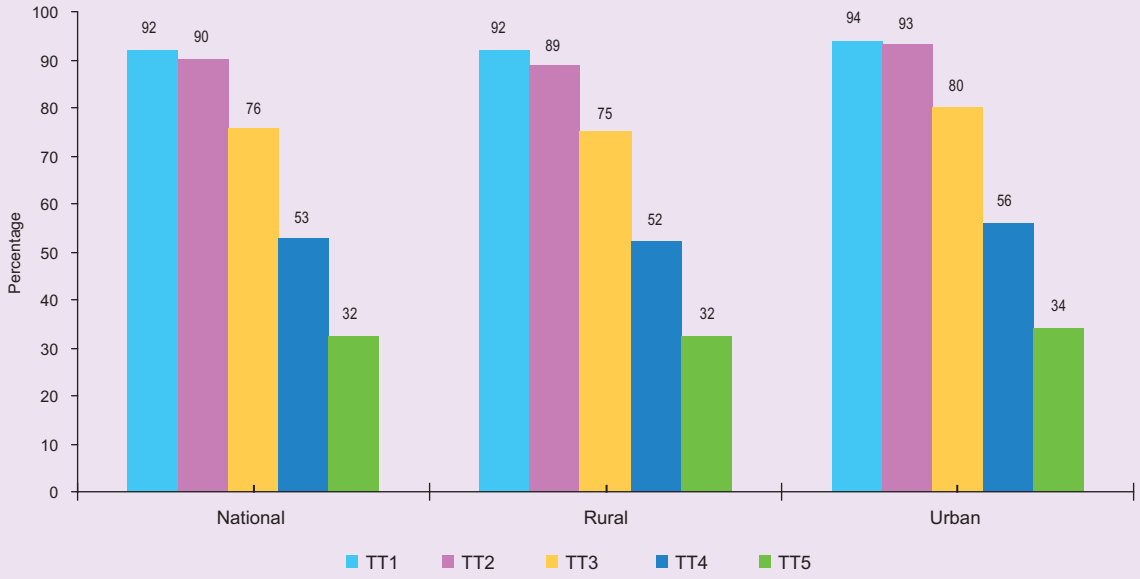
The coverage of TT5 is the ultimate goal of TT vaccination in EPI program. This coverage rate was the highest (46 percent) in RCC and the lowest (25 percent) in CCC. The coverage rates in other city corporations were 31 percent in SCC and BCC, 32 percent in KCC, and 34 percent in DCC, respectively (see Figure J6). The program should pay more attention to the low performing city corporations.

Figure J1. Crude TT Vaccination Coverage among Women Aged 18-49 Years Old by National, Rural and Urban Areas in 2011 (Card + History)



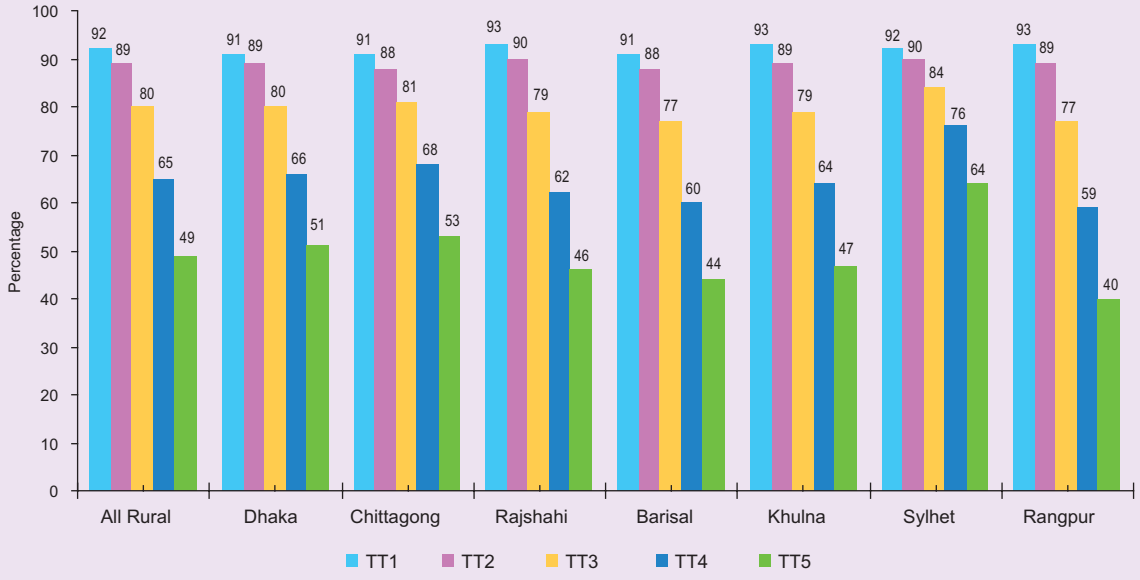
Source: CES 2011

Figure J2. Valid TT Vaccination Coverage among Women Aged 18-49 Years Old by National, Rural and Urban Areas in 2011 (Card + History)



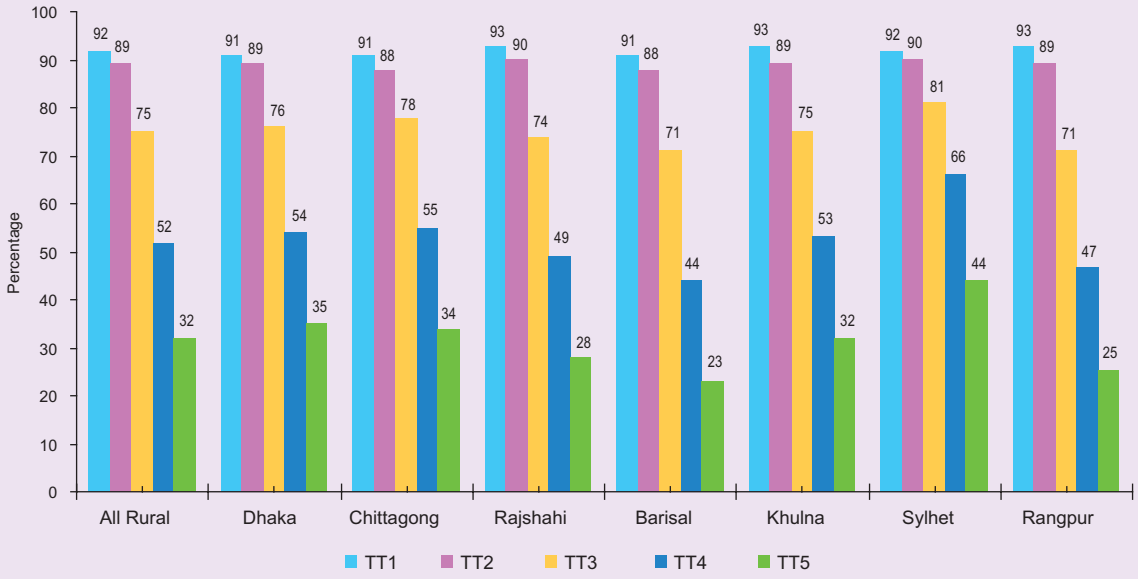
Source: CES 2011

Figure J3. Crude TT Vaccination Coverage among Women Aged 18-49 Years Old in Rural Areas by Division in 2011 (Card + History)



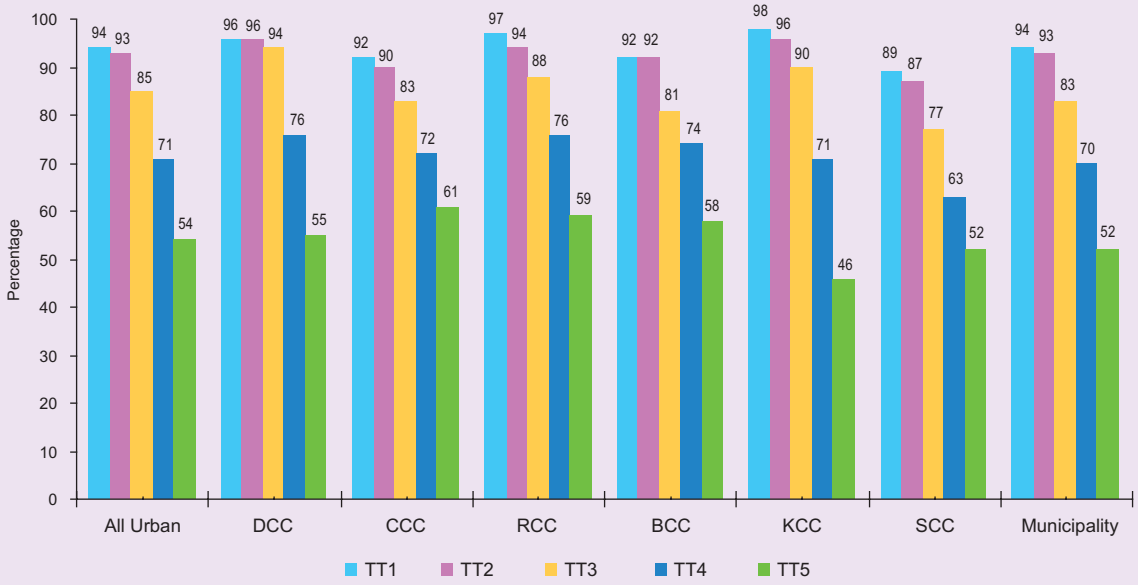
Source: CES 2011

Figure J4. Valid TT Vaccination Coverage among Women Aged 18-49 Years Old in Rural Areas by Division in 2011 (Card + History)



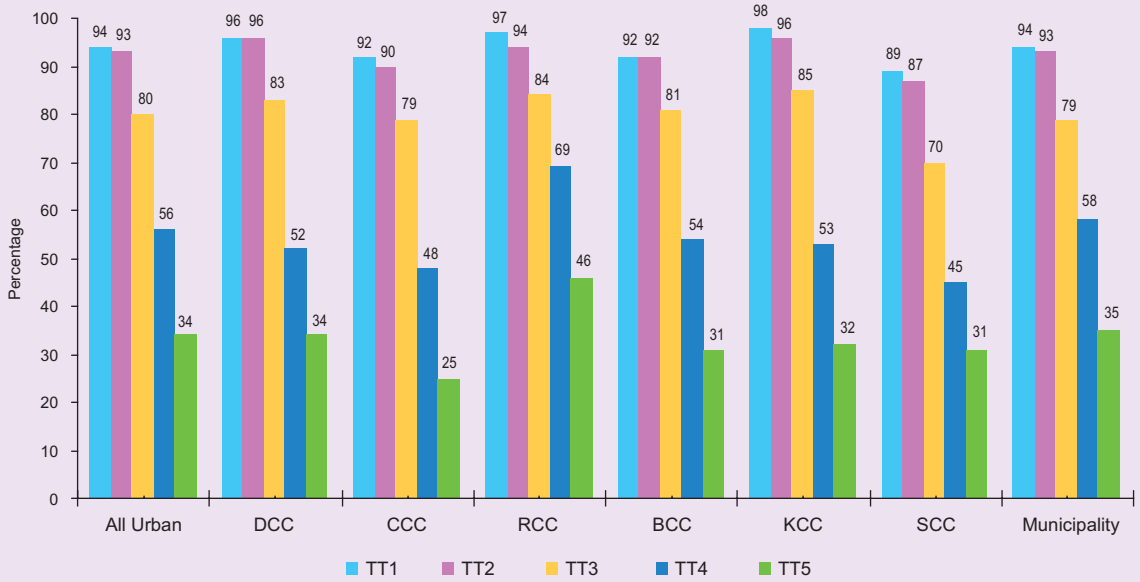
Source: CES 2011

Figure J5. Crude TT Vaccination Coverage among Women Aged 18-49 Years Old in Urban Areas by City Corporation/Municipality in 2011 (Card + History)



Source: CES 2011

Figure J6. Valid TT Vaccination Coverage among Women Aged 18-49 Years Old in Urban Areas by City Corporation/ Municipality in 2011 (Card + History)



Source: CES 2011

4.6 STATUS OF RETENTION OF TT CARD AMONG WOMEN

Retention of TT vaccination card is important for avoiding the act of administering unnecessary doses as well as saving TT vaccines. During the survey, women were asked whether they had vaccination cards. The analysis of the data is shown in K1. Thirty-one percent of the women reported of having the vaccination card. However, there was a slight difference between urban (25 percent) and rural areas (32 percent) in this regard. In terms of card retention, the rate revealed 35 percent nationally with a variation between urban and rural areas. Rural women (36 percent) were found to be more likely to retain vaccination card, compared to those residing in urban areas (27 percent).

Likewise, in rural areas by division, card retention rate was found to be the highest (46 percent) in Khulna division and the lowest (31 percent) in Dhaka division. The intermediary rates ranged between 32 percent in Sylhet division and 44 percent in Rangpur division (see Figure K2).

By city corporation, card retention rate was the highest (35 percent) in RCC and the lowest (8 percent) in DCC.The second highest (29 percent) card retention rate was found in KCC, which was being followed by CCC (19 percent), BCC and SCC (18 percent) (see Figure K3).

4.7 INCIDENCE OF INVALID DOSES

As has been mentioned in Chapter 3, TT vaccine should be administered following the exact interval as per the EPI-recommended TT vaccination schedule. If a woman receives any subsequent dose of TT vaccine before the minimum interval period recommended by EPI, the dose of the vaccine

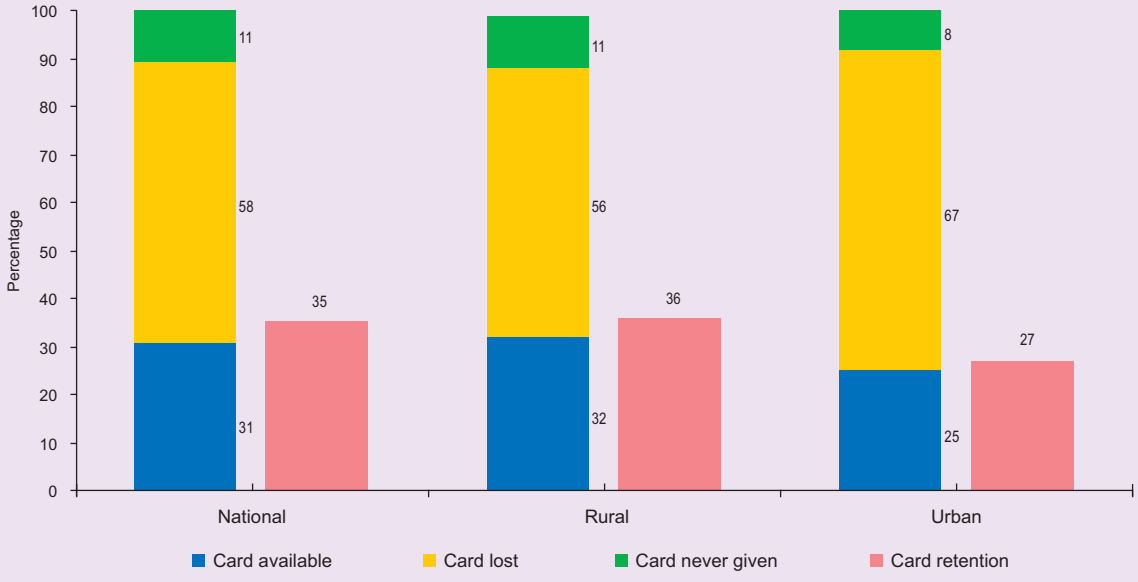
would be considered as invalid. An estimate of invalid TT doses was made through the analysis of the gap between the consecutive doses and has been presented in Figure K4. It shows that the incidence was more prevalent in case of TT3 dose. More than one in ten (16 percent) of the total surveyed women received invalid dose of TT3 across the country. More urban women (18 percent) received invalid TT3 dose, compared to those residing in rural areas (16 percent).

However, across the country, the incidence rates of invalid doses of TT4 and TT5 were 14 percent for both. Fourteen percent women in rural areas received invalid TT4, another 13 percent received invalid TT5 in rural areas as against 15 percent of the women who received invalid TT4, and 16 percent invalid TT5 in urban areas.

Similar to the national findings, the incidence rates of invalid TT3 were higher than those of TT4 and TT5 in all divisions except in Sylhet. Among the divisions, invalid TT3 rates were the highest (20 percent) in Barisal division and the lowest (12 percent) in Sylhet division. Similarly, incidence of invalid doses of TT4 was found to be the highest (18 percent) in Barisal division. The lowest (12 percent) incidence of invalid doses of TT4 was revealed in Khulna and Rangpur divisions. As it was expected, in case of TT5 the highest (20 percent) invalid dose was in Barisal division, which was being followed by Chittagong (17 percent), Sylhet (14 percent), Rajshahi (13 percent), Dhaka (12 percent), Khulna and Rangpur (11 percent) divisions (see Figure K5).

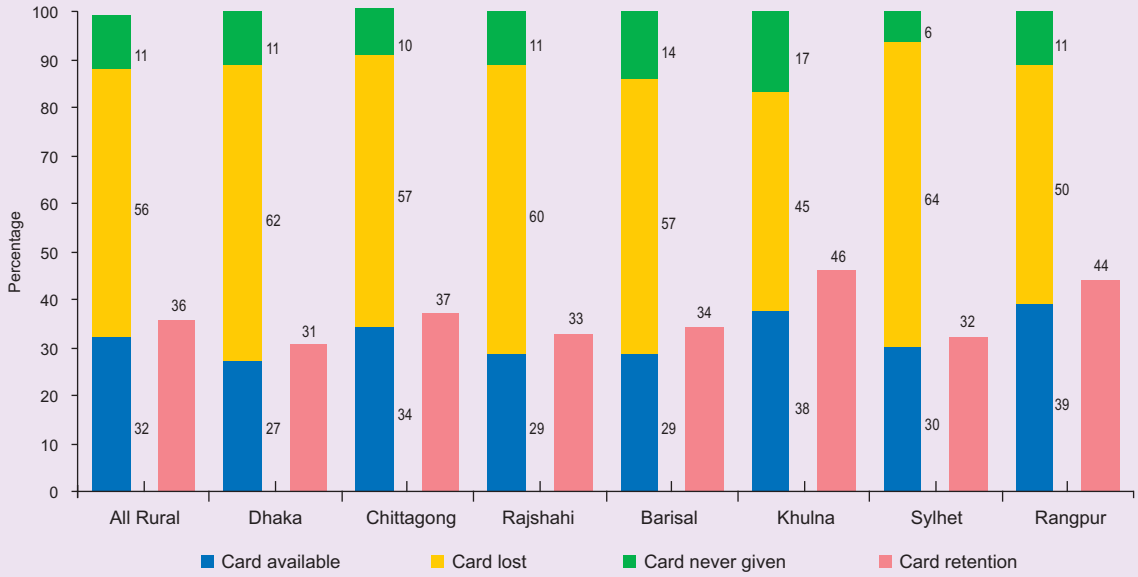
As it was expected, among the city corporations the rate of invalid TT3 was the highest (37 percent) in CCC and the lowest (11 percent) in KCC. However, the rate of invalid TT4 was the lowest (8 percent) in RCC and the highest (27 percent) in DCC. Similar to invalid TT3 and TT4, rates of invalid TT5 dose were found to be the highest (34 percent) in CCC and the lowest (9 percent) in KCC. The rates that were intermediary ranged from 11 percent in RCC to 22 percent in SCC (see Figure K6).

Figure K1. TT Vaccination Card Status among 18-49 Years Women by National, Rural and Urban Areas in 2011



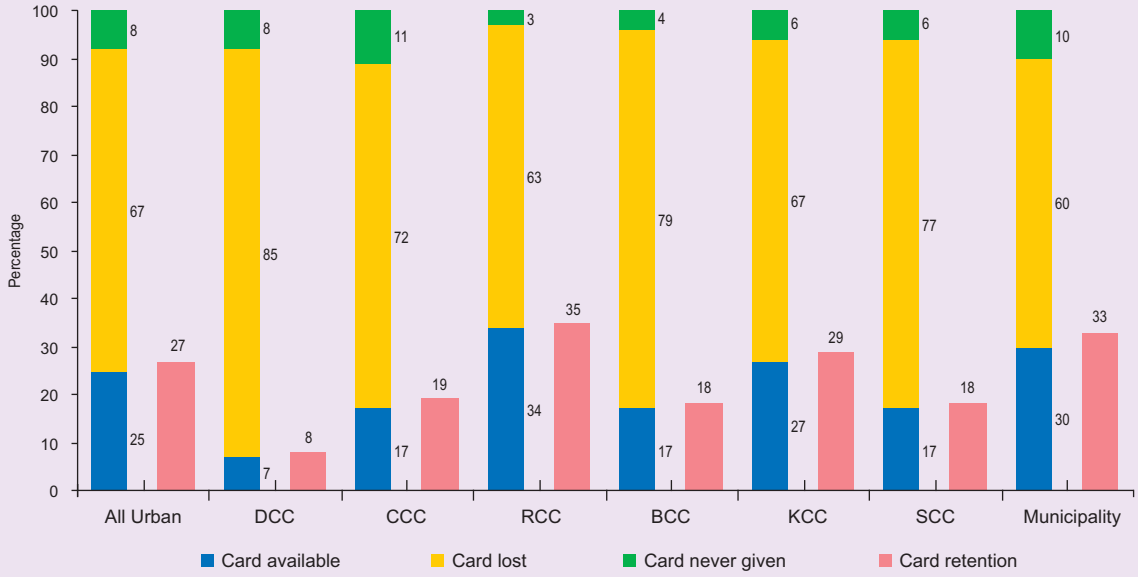
Source: CES 2011

Figure K2. TT Vaccination Card Status among Women Aged 18-49 Years Old by Rural Areas by Division in 2011



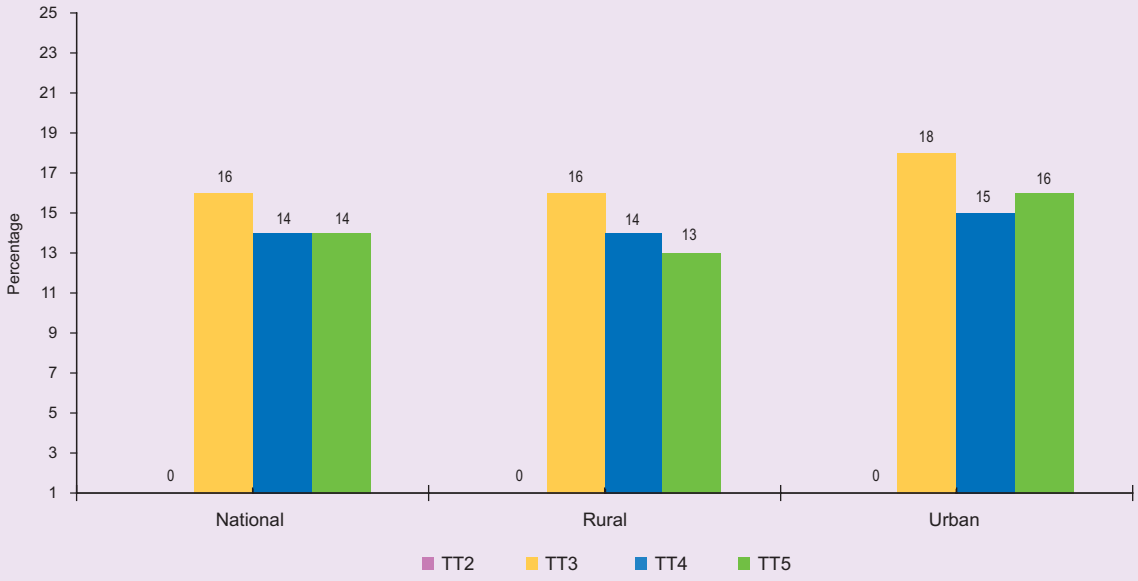
Source: CES 2011

Figure K3. TT Vaccination Card Status among Women Aged 18-49 Years Old by Urban Areas by City Corporation/Municipality in 2011



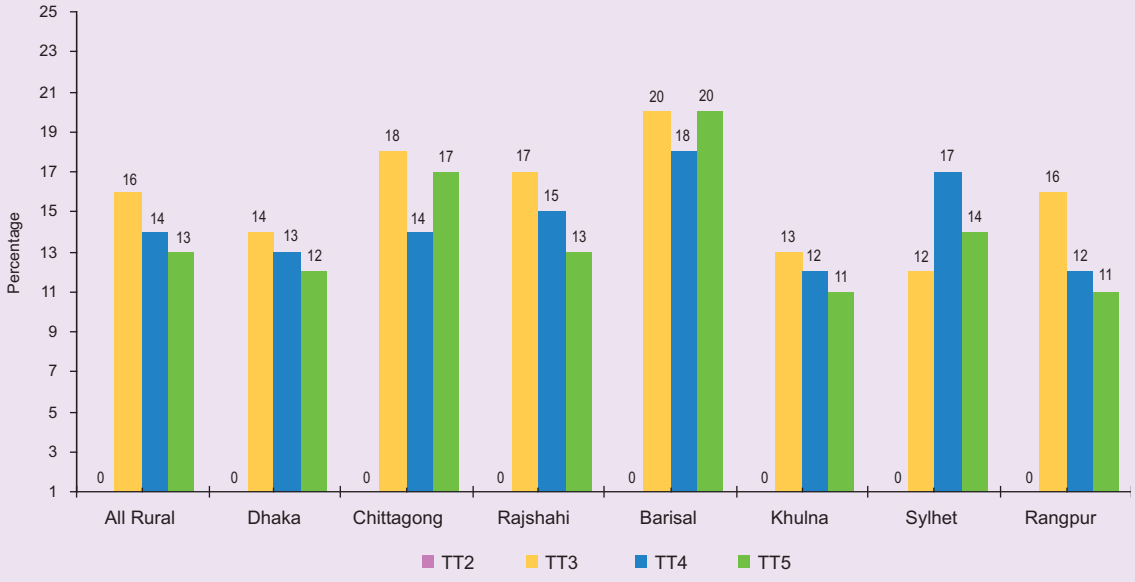
Source: CES 2011

Figure K4. Incidence of Invalid TT Doses among Women Aged 18-49 Years Old by National, Rural and Urban Areas in 2011 (Card + History)



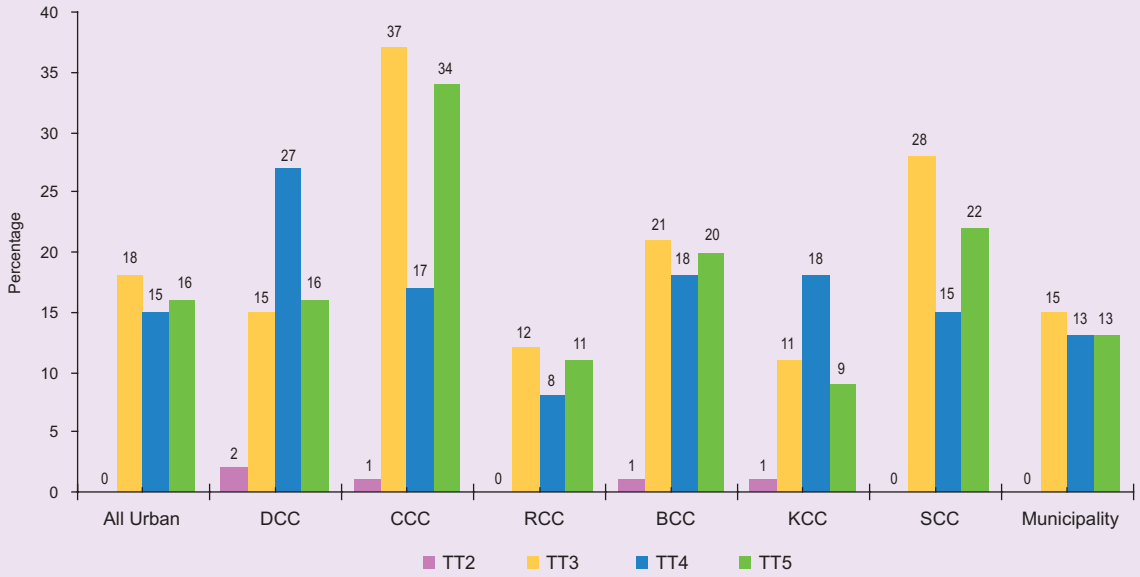
Source: CES 2011

Figure K5. Incidence of Invalid TT Doses among Women Aged 18-49 Years Old in Rural Areas by Division in 2011 (Card + History)



Source: CES 2011

Figure K6. Incidence of Invalid TT Doses among Women Aged 18-49 Years Old in Urban Areas by City Corporation/ Municipality in 2011 (Card + History)



Source: CES 2011

4.8 WOMEN'S KNOWLEDGE ABOUT TT DOSES

Proper knowledge about the required number of TT vaccine is important for both the service providers and the recipients as well as for programmatic aspect. The act of administering unnecessary dose is a wastage of time and money. According to EPI program, a woman should receive 5 doses of TT vaccine for gaining a lifetime adequate protective antibody against tetanus. EPI CES 2011 made an assessment of the women's knowledge about the number of doses a woman required for protective antibody against tetanus for the whole reproductive life. Women were asked as to how many TT vaccines are required by a childbearing aged woman to protect herself from tetanus for her whole reproductive life. About half (49 percent) of them reported about 5 doses of TT vaccine. As it was expected, percentage of women who had proper knowledge was 5 percent higher in urban areas (53 percent) than in rural areas (48 percent). However, across the country more than one-third mothers (42 percent) reported that they were not aware of the required number of TT doses. By residence, a slight variation between women living in urban (39 percent) and those in rural areas (42 percent) was observed in the finding (see Figure L1).

In the rural areas by division, the percentage of the women with knowledge of 5 doses of TT vaccine was found to be the highest in Dhaka division (53 percent) and the lowest in Rajshahi division (41 percent). Moreover, 51 percent of the surveyed women reported in favor of 5 doses in Sylhet division, which was being followed by Khulna (50 percent), Rangpur (48 percent), Chittagong (47 percent), and Barisal divisions (42 percent) (see Figure L2). And, 48 percent of them in Chittagong, 47 percent in Rajshahi, 46 percent in Barisal, 42 percent in Rangpur, 41 percent in Khulna, 38 percent in Dhaka, and 35 percent in Sylhet divisions were not aware of the number of TT doses required by a woman to protect herself against tetanus (see Figure L2).

However, in urban areas by city corporation, 72 percent of the women in RCC reported in favor of 5 doses, which was being followed by KCC (70 percent), DCC (61 percent), BCC (51 percent), SCC (35 percent), and CCC (32 percent) (see Figure L3). Furthermore, 59 percent of the women in CCC were found to be unaware of the number of TT doses, which was being followed by SCC (54 percent), BCC (45 percent), DCC (31 percent), KCC (27 percent), and RCC (21 percent).

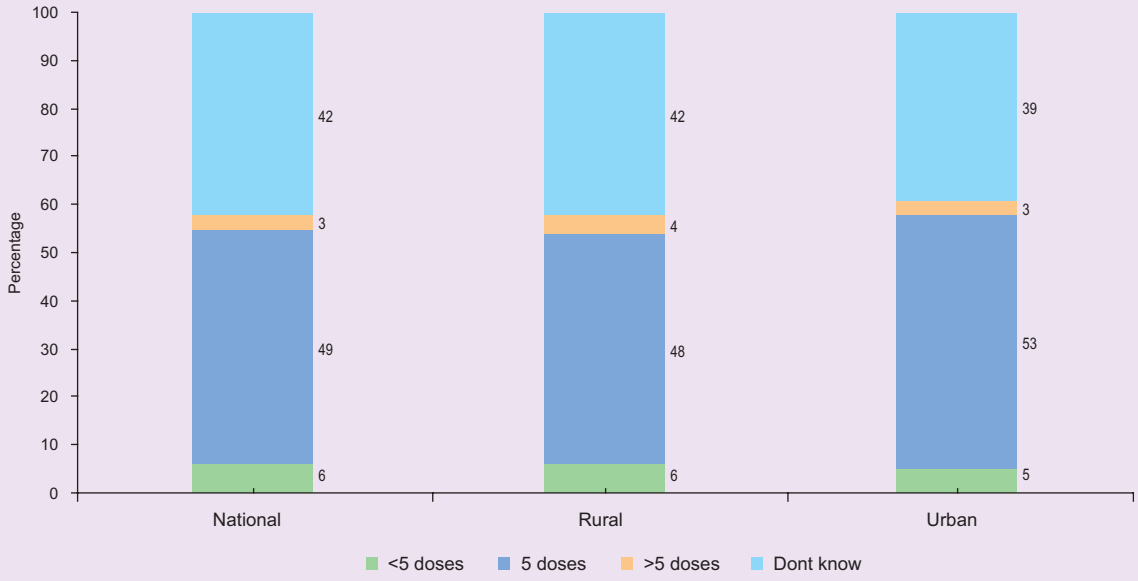
4.9 SOURCES OF TT VACCINATION

Sources of TT1 vaccine were investigated in CES 2011. Women of CBA who received TT1 were asked from where they received it. Across the country, 91 percent of them reported about the government outreach centers. The urban-rural difference was 20 percentage points in this regard. As against 75 percent of urban women 95 percent of the rural women received TT1 from the government outreach centers. Besides, government hospitals were found to be the second highest service providers of TT vaccine, which was being followed by NGOs and private sources. Utilization of the government sources was found almost universal, irrespective of types of areas. However, utilization of NGOs and private service was the highest in urban areas (12 percent) (see Figure M1). Almost none in the rural area reported about her visiting an NGO/private health centers/clinic for TT vaccination.

Similar findings were observed while analyzing the data of rural areas by division. Although the findings varied from one division to another, the government was found to be the prime service provider (see Figure M2). Ninety six percent women in Khulna, 95 percent in Dhaka, Rajshahi, and Sylhet, and 94 percent in Barisal and Chittagong divisions received TT1 from the government source. However, utilization of the government source was found to be the lowest in Rangpur division (93 percent).

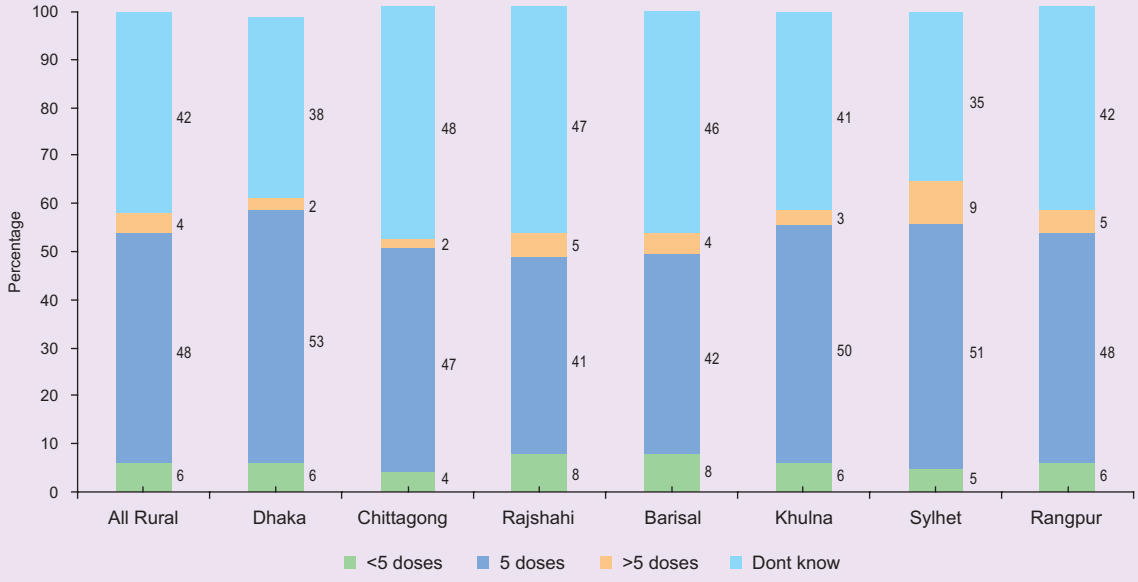
Among the city corporations, the utilization rate of the government outreach centers was the highest in RCC (90 percent) and the lowest in KCC (44 percent). It was 89 percent in SCC, 76 percent in CCC, 61 percent in BCC, and 56 percent in DCC (Figure M3).

Figure L1. Number of TT Doses Required During Reproductive Period for Protection against Tetanus as Reported by Women Aged 18-49 Years Old by National, Rural and Urban Areas in 2011



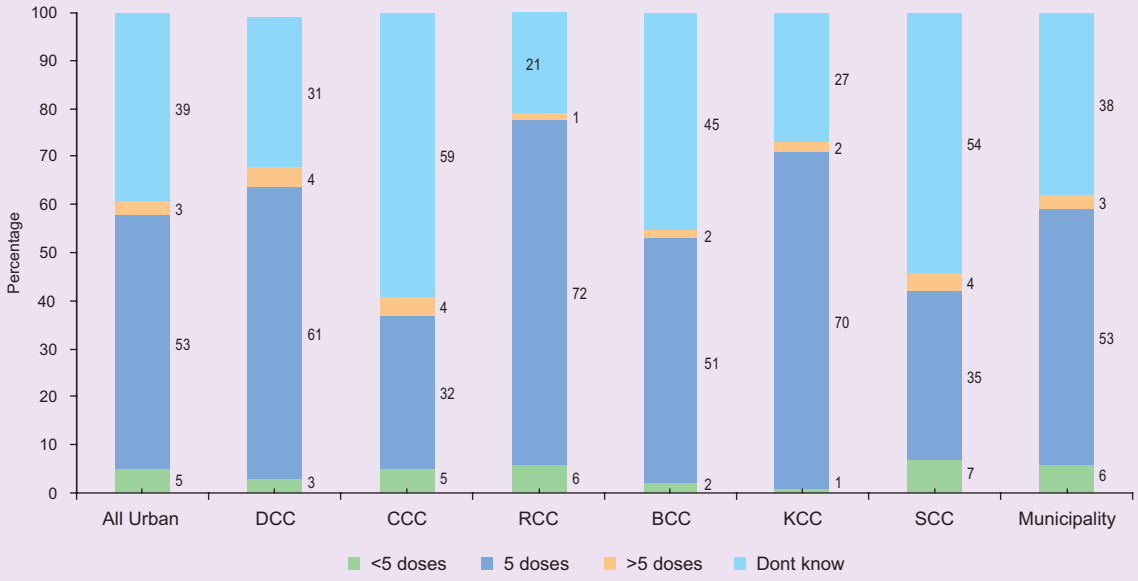
Source: CES 2011

Figure L2. Number of TT Doses Required During Reproductive Period for Protection against Tetanus as Reported by Women Aged 18-49 Years Old in Rural Areas by Division in 2011



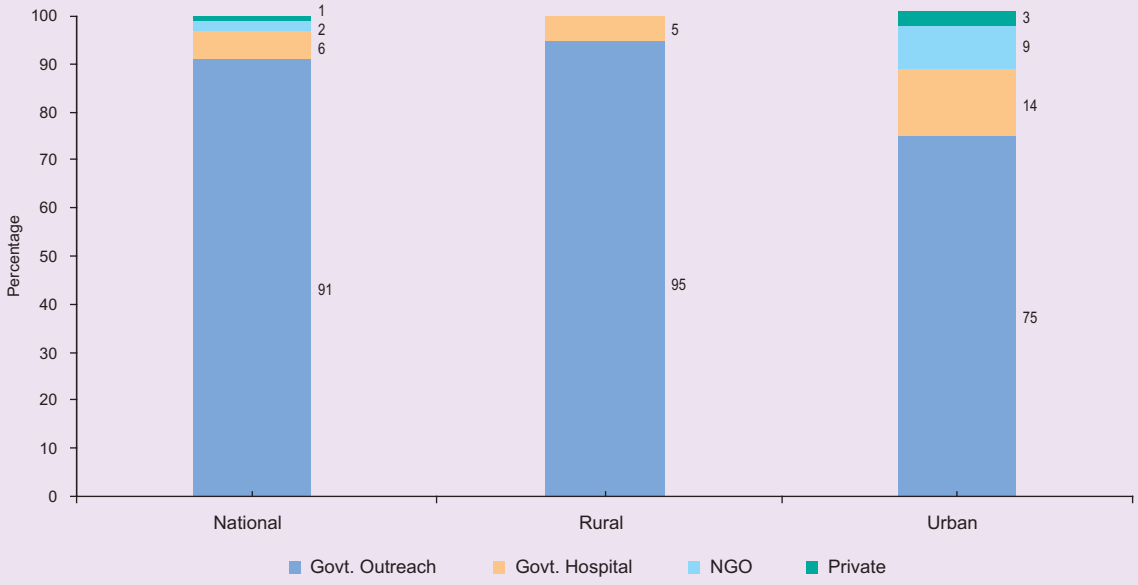
Source: CES 2011

Figure L3. Number of TT Doses Required During Reproductive Period for Protection against Tetanus as Reported by Women Aged 18-49 Years Old by City Corporation/ Municipality in 2011



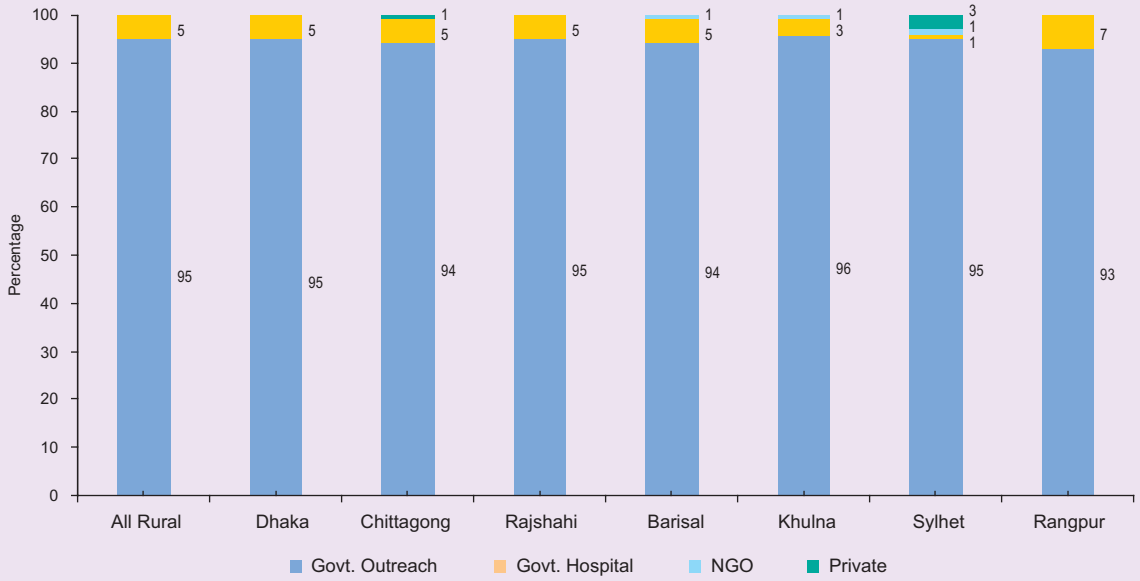
Source: CES 2011

Figure M1. Sources of TT1 Vaccination among Women Aged 18-49 Years Old by National, Rural and Urban Areas in 2011



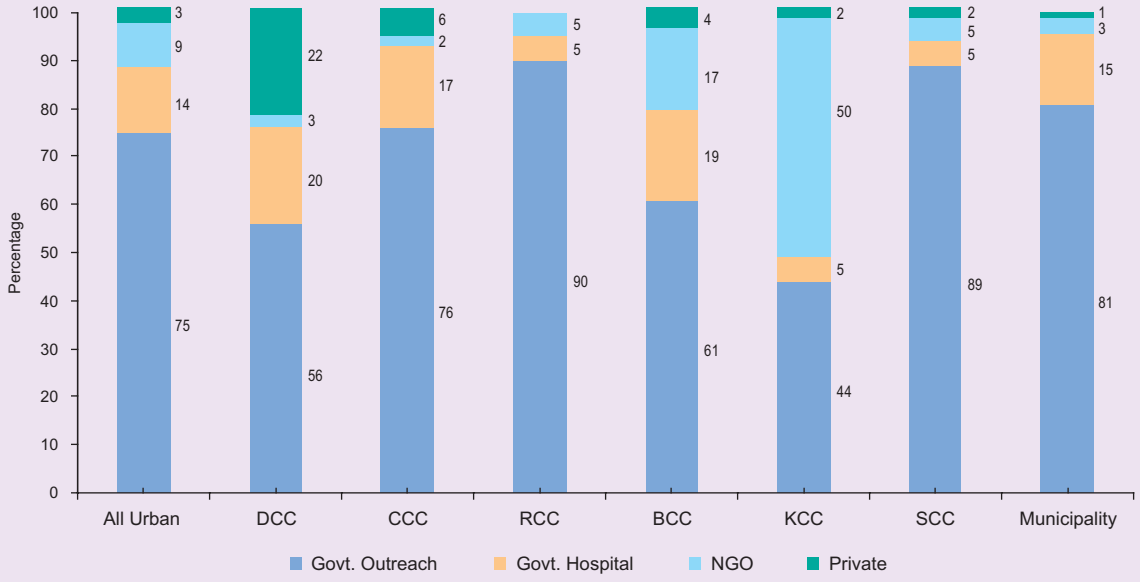
Source: CES 2011

Figure M2. Sources of TT1 Vaccination among Women Aged 18-49 Years Old in Rural Areas by Division in 2011



Source: CES 2011

Figure M3. Sources of TT1 Vaccination among Women Aged 18-49 Years Old in Urban Areas by City Corporation/Municipality in 2011



Source: CES 2011

CHAPTER 5
OPV COVERAGE DURING 19th NIDs

This chapter provides information which has been obtained through CES 2011 on OPV coverage during 19th NIDs among children 0-59 month old along with reasons for not receiving OPV. Additionally, sources of information about NID are discussed.

In order to present the national OPV coverage during 19th NIDs as well as for an understanding about the methodology and findings of the 19th NIDs Survey, a brief description of NIDs is provided in the following. It describes the purposes of NIDs as a supplementary immunization strategy, how they are conducted in Bangladesh, and how child-to-child search activity is carried out to identify and vaccinate the children who are left out from vaccination at the NID fixed-site.

5.0 OBJECTIVES OF THE 19TH NIDS SURVEY

The survey on 19th NID was carried out as part of CES 2011 with a view to achieve the following objectives:

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

5.1 NIDS AS A SUPPLEMENTARY STRATEGY

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

As a part SIAs, the Government has decided to observe the 19th National Immunization Day to prevent the importation of polio virus. All children aged 0-5 years will be given two drops of the polio vaccine on both the days, immediately followed by the special search for those who may have missed the doses. The Government of Bangladesh (GOB) with support of UNICEF, WHO, Rotary International and the Centers for Disease Control and Prevention (CDC, Atlanta), immunized 2.2 million under-5 children with two drops of polio across the country. Along with OPV Vitamin “A” capsule were feed children 12-59 months and Albandazole tablet were given to the children aged 24-59 months during 19th NID held on January 8, and February 12, 2011.

5.1.1 ORGANIZING THE NIDS

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

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

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

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

Alongside the 68,000 government health and family planning workers, plus other semi-government and NGO workers, about 650,000 community volunteers from all walks of life worked as vaccinators in the 19th NIDs. The volunteers represented participation from a cross-section of people, including teachers, students, religious personalities, women groups, members of the community-based micro-finance organizations, members of the Village Defence Party (VDP), and organizations of many indigenous groups.

5.1.2 CHILD-TO-CHILD SEARCH

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

5.2 SELECTION OF SAMPLES

The survey on 19th NIDs was implemented over a representative national NID sample of 0-59 months old children, drawn from the cluster samples for CES 2011 in the following manner. While visiting all households in every cluster, the interviewers listed all the eligible children (aged between 0-59 months) of that cluster to make the sampling frame. Then seven children were selected randomly from the sampling frame to administer the questionnaires.

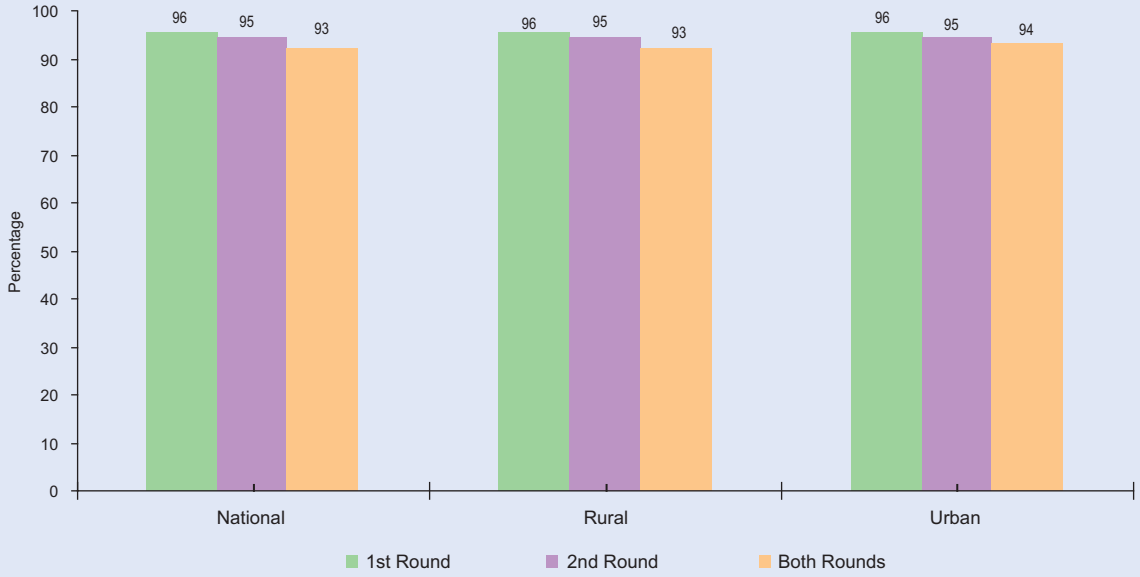
5.3 OPV COVERAGE

Ninety six percent of the children aged between 0-59 months were vaccinated with OPV during the first round of 19th NID held on 8th January, 2011. By vicinity, there was no such difference in coverage between the rural and the urban areas. Ninety six percent of the children were vaccinated with OPV both in the rural and the urban areas during the 1st round of 19th NID. Likewise, during the 2nd round 95 percent of the children across the country received OPV. Similar to the 1st round, urban-rural variation in OPV coverage was not observed. Ninety five percent of the children received OPV both in the rural and the urban areas (see Figure N1). As regards the source of OPV vaccination, it was found that 98 percent of the children received it from the fixed site during NID and 1 percent of them received it during child- to- child search following the NIDs in both the rounds (see Figure N2).

However, 93 percent children received OPV in both the rounds. There was no remarkable difference in the OPV coverage between the urban (94 percent) and rural areas (93 percent) (see Figure N1).

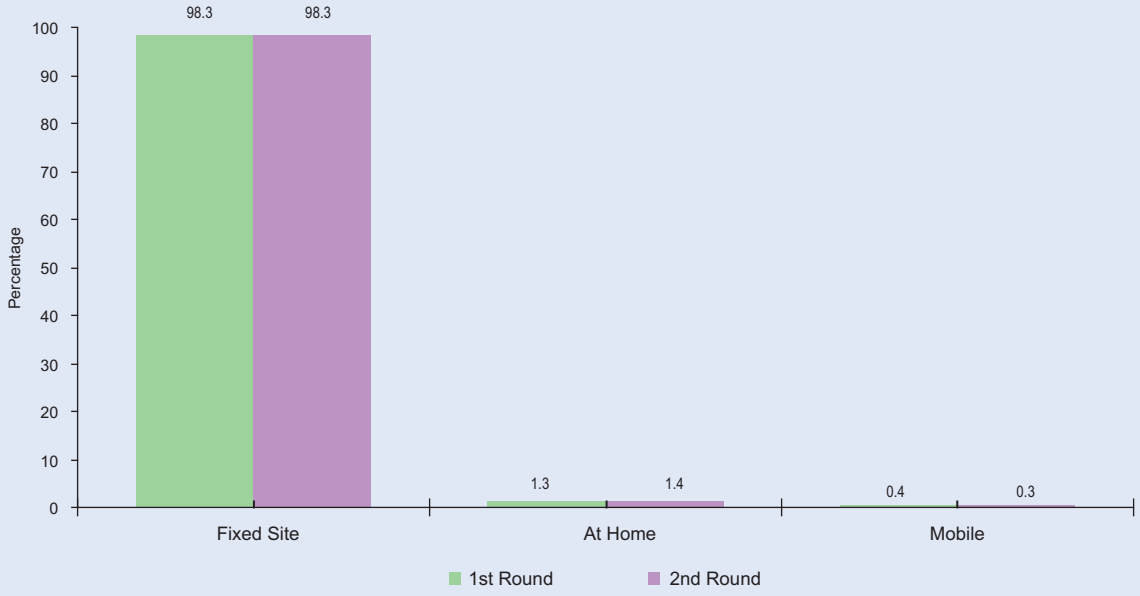
As has been mentioned earlier, 93 percent of the rural children received OPV during 19th NIDs in both the rounds. By rural division, OPV coverage was the highest in Khulna (98 percent) and the lowest in Barisal divisions (88 percent). The second highest OPV coverage was found in Sylhet (96 percent), which was being followed by Dhaka (94 percent), Rajshahi (93 percent), Rangpur (92 percent), and Chittagong (91 percent) divisions (see Figure N4). Likewise, in the city corporation areas, the highest OPV coverage in both the rounds was in KCC (99 percent), which was being followed by RCC (98 percent), DCC (95 percent), BCC (92 percent), CCC and SCC (91 percent) (see Figure N5).

Figure N1. OPV Coverage among 0-59 Months Old Children during 19th NIDs by National, Rural and Urban Areas in 2011



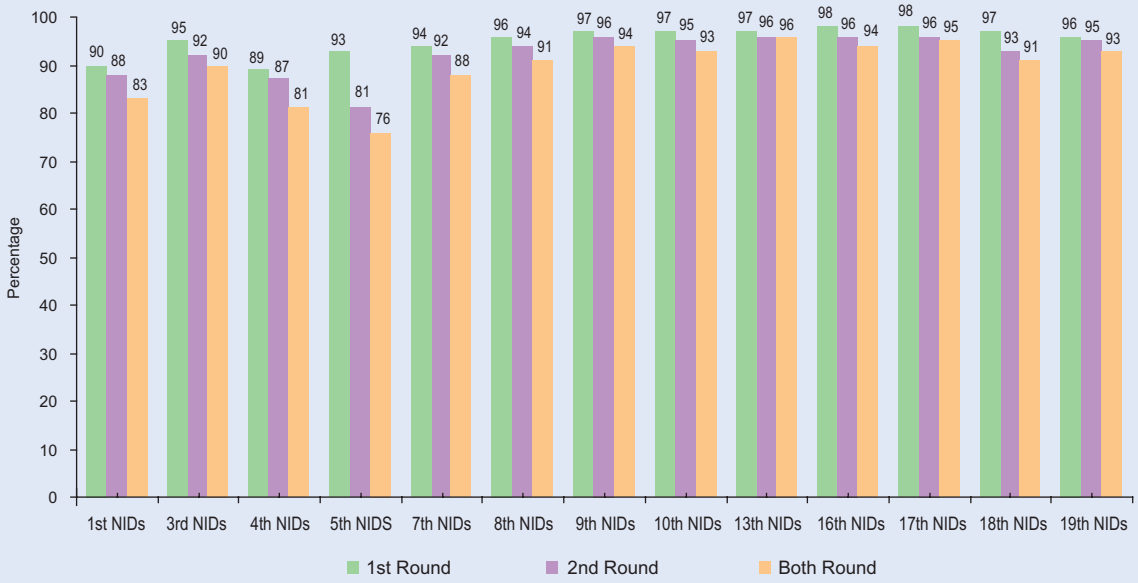
Source: CES 2011

Figure N2. Sources of Receiving OPV during 19th NIDs



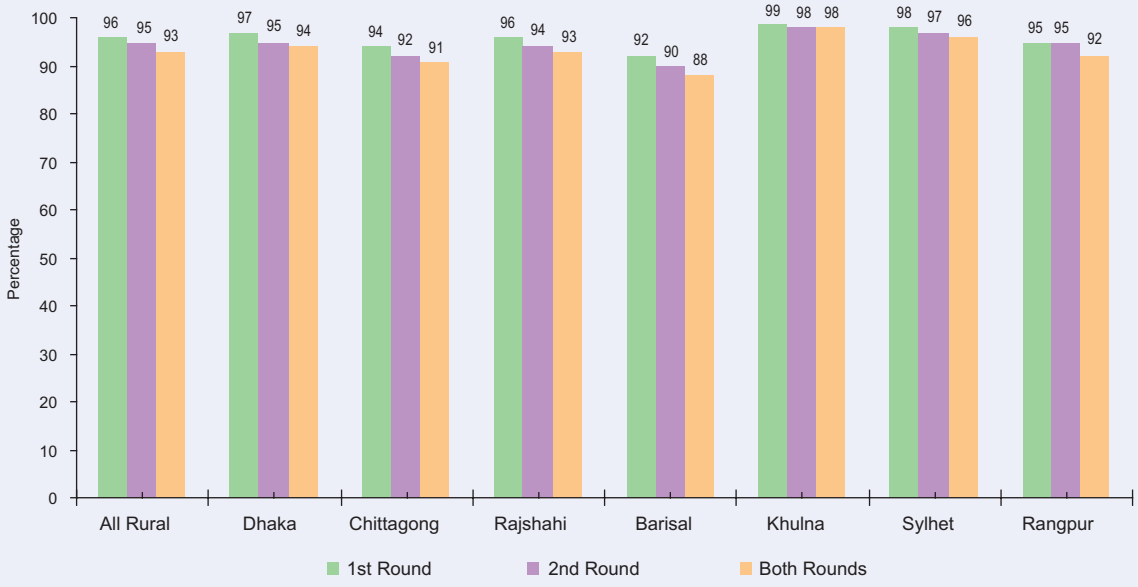
Source: CES 2011

Figure N3. OPV Coverage among 0-59 Months Old Children by NIDs from 1995 to 2011



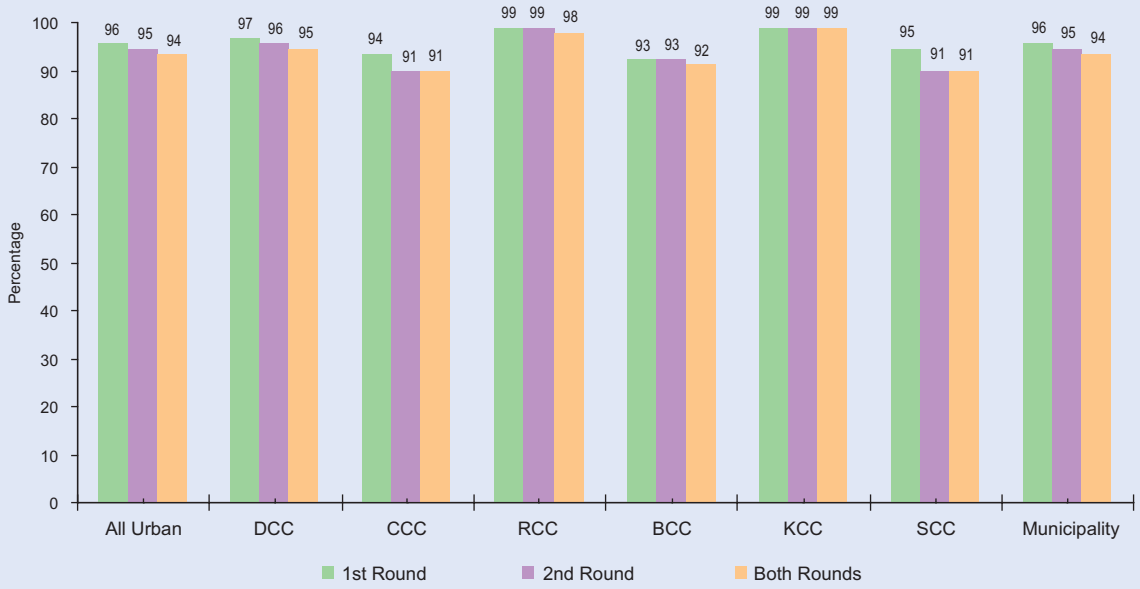
Source: CES 2011

Figure N4. OPV Coverage among 0-59 Months Old Children in 19th NIDs in Rural Areas by Division in 2011



Source: CES 2011

Figure N5. OPV Coverage among 0-59 Months Old Children in 19th NIDs in Urban Areas by City Corporation/Municipality in 2011



Source: CES 2011

5.4 REASONS FOR NOT HAVING CHILDREN VACCINATED AT THE FIXED SITES

Specific reasons for children not being vaccinated were investigated in CES 2011. Mothers/caregivers were asked about the reasons for their children not being vaccinated with OPV at the fixed site or not being vaccinated at all. One-third (33 percent) of them reported that they did not know about the campaign. Fourteen percent of them stated that they were not at home - 14 percent in rural and 11 percent in urban areas. More than one in ten mothers/caregivers (13 percent) reported that they were busy with their household work while NID was conducted. The other reasons were: mothers/caregivers waited at home (9 percent); mothers/caregivers were travelling (7 percent); the vaccination center was too far (6 percent); and the child was sick (4 percent) (see Table O1).

However, as the cause for not receiving OPV during the 2nd round more than one-third (37 percent) of the mothers/caregivers reported that they were unaware of the campaign. The other most common causes were: mothers/caregivers were not at home (14 percent); mothers/caregivers were busy with their household work (11 percent); mothers/caregivers waited at home for vaccinator (9 percent); they were travelling (7 percent); vaccination center was too far (6 percent);and the child was sick (3 percent) (see Table O2).

5.5 SOURCES OF INFORMATION ABOUT 19TH NIDS

Mothers/ caregivers were asked about the sources of information about 19th NIDs. More than half (51 percent) of them mentioned about the visit of the health workers. About one-third (30 percent) of the mothers/caregivers mentioned about family/neighbors. One-quarter (25 percent) of them mentioned about mosque-miking. A little over 20 percent of them referred to mobile miking. This factor was being followed by television (16 percent), volunteers (4 percent), and NGO worker (3 percent.

Likewise, in rural areas, the most common sources of information were: health workers (55 percent), family/neighbors (30 percent), mosque-miking (27 percent), mobile miking (19 percent), and television (12 percent)

However, in the urban areas common sources of information were: television (39 percent), health worker (32 percent), mobile miking (30 percent), family/neighbors (28 percent), and mosque miking (13 percent) (see Figure O1).

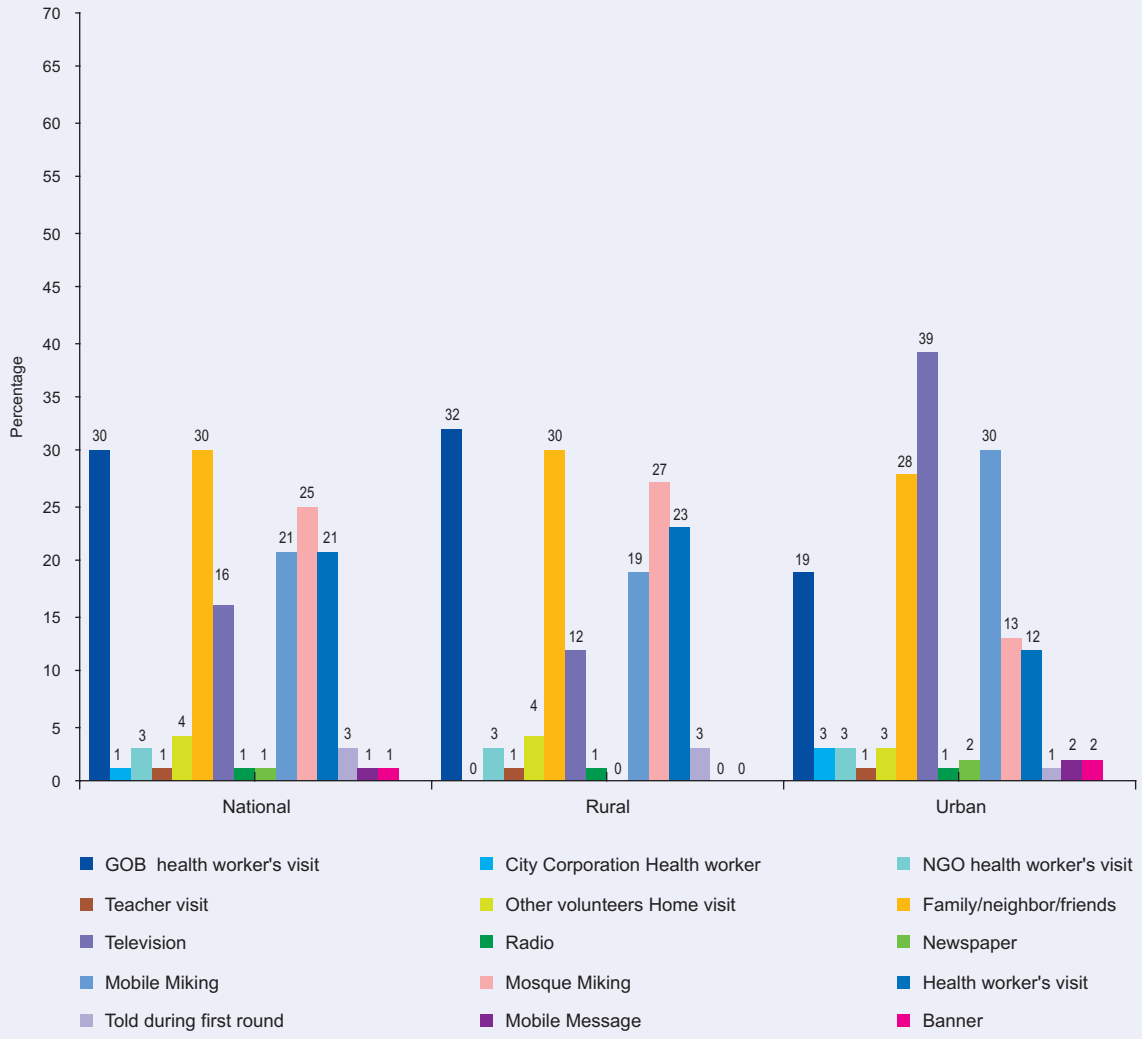
Table O1: Reasons as to why Children did not receive during 1st Round of 19th NID in 2011 by National, Rural and Urban Areas

Reasons	National	Rural	Urban
Didn't know	33.2	32.6	37.3
Was very busy	12.6	11.6	18.6
Went on traveling	7.4	7.9	4.2
Doesn't believe in vaccine	2.2	2	3.4
The child was fed in the previous time	0.8	0.8	0.8
The child was sick, so he/she was not taken	4	3.7	5.9
The child was sick, so vaccine was not given	0.6	0.4	1.7
No Vaccine	1.8	1.8	1.7
No Vaccinator	2.2	2.6	0
There was a long queue	0.5	0.5	0
The centre was too far	6.3	6.8	3.4
Time was inconvenient	1.1	1.1	0.8
Fear of side effect	1.6	1.5	2.5
Waited for home visit	9.3	9.9	5.1
Religious/Social obstacles	0.2	0.3	0
Was not at home	13.5	13.9	11
Lives in another ward,That's why the vaccinator did not give vaccine	1.3	1.5	0
Child was not aged enough	0.8	0.4	3.4
Vaccinator came home and gave the vaccine	0.2	0.3	0
Demanded for money	0.1	0.1	0
The Doctor did not fed	0.2	0.3	0
The child did not want to take	0	0	0
Number of Children Who didn't Receive OPV	**852**	**734**	**118**

Table O2: Reasons as to why Children did not receive OPV during 2nd Round of 19th in 2011 by National, Rural and Urban Areas

Reasons	National	Rural	Urban
Didn't know	36.5	36	39.1
Was very busy	11	10.1	15.9
Went on traveling	6.7	5.8	11.9
Doesn't believe in vaccine	1.5	1.3	2.6
The child was fed in the previous time	1.9	1.7	3.3
The child was sick, so he/she was not taken	2.8	3	2
The child was sick, so vaccine was not given	0.9	0.8	1.3
No Vaccine	1.3	1.1	2
No Vaccinator	3.3	3.8	0.7
There was a long queue	0.4	0.3	0.7
The centre was too far	5.8	6.7	0.7
Time was inconvenient	0.8	0.8	0.7
Fear of side effect	1.3	1.1	2
Waited for home visit	9	9.9	4
Religious/Social obstacles	0.3	0.3	0
Was not at home	14.3	15.1	9.9
Lives in another ward,That's why the vaccinator did not give vaccine	1.1	1.1	0.7
Child was not aged enough	0.6	0.3	2
Vaccinator came home and gave the vaccine	0.3	0.2	0.7
Demanded for money	0.3	0.3	0
The Doctor did not fed	0	0	0
The child did not want to take	0	0	0
Number of Children Who didn't Receive OPV	**1028**	**877**	**151**

Figure O1. Sources of Information of 19th NIDs by National, Rural and Urban Areas in 2011



Source: CES 2011

CHAPTER 6
VITAMIN A AND ANTHELMINTIC COVERAGE DURING VITAMIN A PLUS CAMPAIGN

Vitamin A deficiency poses a major threat to the health and survival of children and mothers. Vitamin A supplementation contributes to build the immune system, helping children to better cope with common infections. Vitamin A-supplementation also helps children to grow faster, to be less anemic, and it reduces the mortality rate. According to WHO and UNICEF Vitamin A capsules save the lives of over 30,000 children per year and reduces illness among thousands of others in Bangladesh alone. Improved Vitamin A status is associated with reduction in the rate of hospital admissions and reduced need for out-patient services at clinics. Guaranteeing high Vitamin A supplementation coverage of children is therefore critical, not only to eliminate Vitamin A deficiency but also as a central element of the child survival agenda. Health and Family Welfare Ministry of Bangladesh with the financial and technical assistance from UNICEF, WHO and Micronutrient Initiative (MI) feed Vitamin “A” capsule each year to the children aged 12-59 months old while conduct NID.

In 2011, other than Vitamin A supplementation with NID, a special Vitamin “A” plus campaign was conducted across the country. The National Vitamin "A" Plus Campaign- 2011 was held on 29th May, 2011 for enhancing the growth and immune system of the children. Vitamin "A" capsules were administered to the children aged between one and five years while de-worming tablets to the children aged two to five years at all immunization centers across the country from 8 am to 4 pm. Public Health Nutrition Institute, under the Ministry of Health and Family Welfare, in collaboration with

the Expanded Programme on Immunization (EPI) conducted the campaign. The campaign was supported by UNICEF, WHO and the Micronutrient Initiative.

About 19 million children aged one to five years were given lifesaving vitamin A capsules while about 17 million children aged two to five years fed anti-worm tablets under this program. The government of Bangladesh has estimated coverage of Vitamin A through its own monitoring mechanism. In addition, Vitamin "A" plus survey was conducted along with EPI CES 2011 to estimate the actual coverage across the country. The finding of the survey is discussed below.

6.1 OBJECTIVES OF THE VITAMIN A COVERAGE SURVEY

Vitamin "A" Coverage survey was carried out as part of CES 2011 with a view to achieve the following objectives:

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

6.2 VITAMIN A SUPPLEMENTATION COVERAGE AMONG THE INFANTS, POSTPARTUM WOMEN, AND CHILDREN

Vitamin A deficiency (VAD) is a major contributor to child mortality. Sustained control of VAD is essential to meet the Millennium Development Goal (MDG) for reduction of child mortality. The Government of Bangladesh provides Vitamin A to the infant and post partum women through routine immunization program and 12-59 months old children with NID program. In 2011, the Government of Bangladesh conducted National Vitamin A Plus campaign separately on May 29 with support from Micronutrient Initiative, UNICEF, and WHO. Through this campaign, the government of Bangladesh has provided a high potency Vitamin A capsule (200,000 IU) among the children aged between 12-59 months. Vitamin A (200,000 IU) is given to the children (12-59 months old) during the national Vitamin A Plus campaign; an infant (9-11 months) receives one vitamin A capsule (100,000 IU) and post partum mothers receive one vitamin A capsule (200,000 IU) (within 6 weeks of delivery) through routine EPI. In 2011, GoB piloted Vitamin A supplementation (100,000 IU) to children aged 6-11 months in 5 districts and 2 CCs.

INFANTS

Vitamin A Supplementation (VAS) (100,000 IU) among the infants aged between 9-11 months under routine EPI was 85 percent across the country. The coverage of VAS among the infants who were 9-11 months old was 86 percent in rural and 83 percent in urban areas (see Figure P1). It is important to mention here that VAS is given while the child visits for measles vaccine. As it was expected, the coverage of measles was almost similar to that of VAS. Nationally, 85 percent of the children received Vitamin A as against 85 percent measles coverage. There was no difference between measles and Vitamin A supplementation coverage across the country.

In rural areas by division, coverage of Vitamin A supplementation among the infants was found to be the highest Rajshahi, and Khulna divisions (90 percent) and the lowest in Sylhet division (81 percent). VAS coverage in other divisions ranged from 82 percent in Barisal division to 86 percent in Rangpur division, which was being followed by Dhaka and Chittagong (84 percent) divisions (see Figure P2). However, in city corporations, it ranged from the lowest - 69 percent - in SCC to the highest - 93 percent - in RCC (see Figure P3).

Sex differential in the coverage of VAS was examined in the survey. The findings show no marked differences in the coverage of VAS by sex between the people in urban and those living in rural areas. A slightly higher percentage of males (86 percent) received Vitamin A than their female counterparts (85 percent) in rural areas. Similarly, 83 percent of the females in urban areas received Vitamin A as against 84 percent of males (see Figure P4).

CHILDREN AGED BETWEEN 12-59 MONTHS

Vitamin A capsule (200,000 IU) is given to the children aged between 12-59 months during the NAVC. During the Vitamin A Plus campaign held on 29th May, 2011, Vitamin A was provided to the children aged 12-59 months old. Ninety two percent of the eligible children received Vitamin A capsule during Vitamin A Plus campaign. The urban-rural analysis shows almost no marked variation between urban and rural areas. Ninety three percent children in urban areas received Vitamin A as against 92 percent residing in rural areas (see Figure P1).

By rural division, Vitamin A Supplementation (VAS) coverage was found to be the highest (96 percent) in Khulna division and the lowest (89 percent) in Barisal and Chittagong divisions. It was 95 percent in Sylhet, 93 percent in Rangpur and Dhaka, and 90 percent in Rajshahi divisions (see Figure P2).

Figure P3 illustrates VAS coverage by city corporation. It shows that VAS coverage was the highest (97 percent) in Dhaka City Corporation and the lowest (89 percent) in Chittagong City Corporation. Furthermore, there was no difference in VAS coverage among BCC and KCC (91 percent). However, the second highest (96 percent) coverage was in RCC, which was being followed by SCC (90 percent) (see Figure P3).

In terms of sex differentiation, nationally no marked difference was observed between males and females. Almost similar findings were noticed while considering VAS coverage by area type (see Figure P5).

POST-PARTUM WOMEN

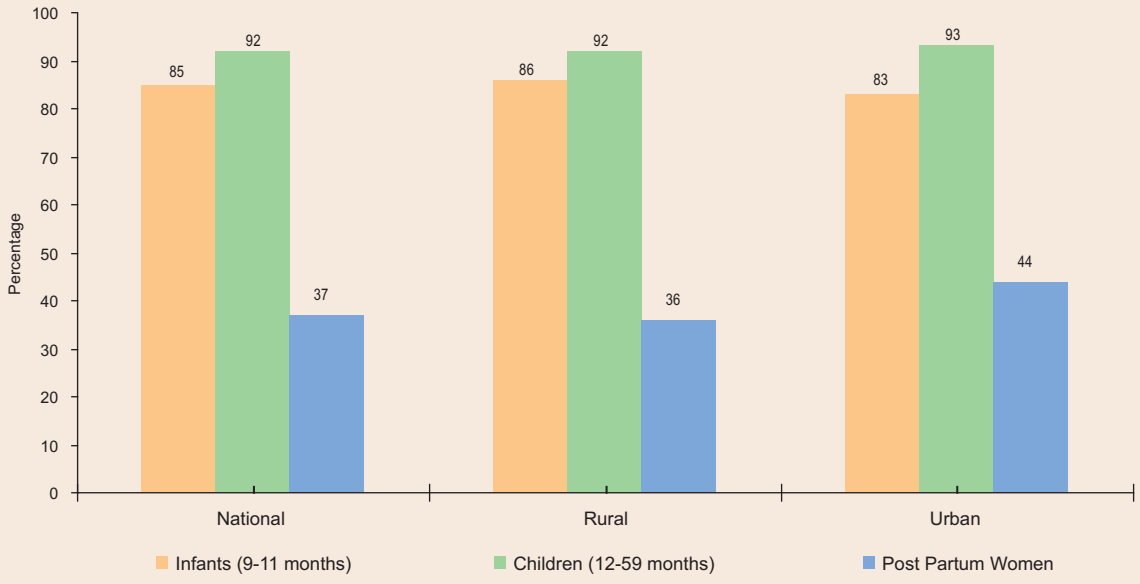
As has been mentioned earlier, Vitamin A capsule (200,000 IU) was given to the post- partum women within 6 weeks of delivery under routine EPI program. Coverage of Vitamin A among the mothers with children aged between 0-11 months is shown in Figure P1. It shows that 37 percent of the postpartum women received Vitamin A capsule across the country. The urban-rural differentiation was 8 percentage points. Forty four percent women in urban areas received VAS as against 36 percent residing in rural areas.

By rural division, VAS coverage among postpartum women ranged from 26 percent in Khulna division to 47 percent in Rangpur division. It was 33 percent in Dhaka and Rajshahi, 35 percent in Chittagong, 41 percent in Sylhet, and 43 percent in Barisal divisions (see Figure P2). However, among the city corporations, VAS coverage was the highest (63 percent) in Khulna City Corporation and the lowest (32 percent) in Sylhet City Corporation. The coverage in other city corporations ranged from 35 percent in Chittagong City Corporation to 58 percent in Rajshahi City Corporation (see Figure P3).

VITAMIN A COVERAGE AMONG 6-11 MONTHS OLD CHILDREN

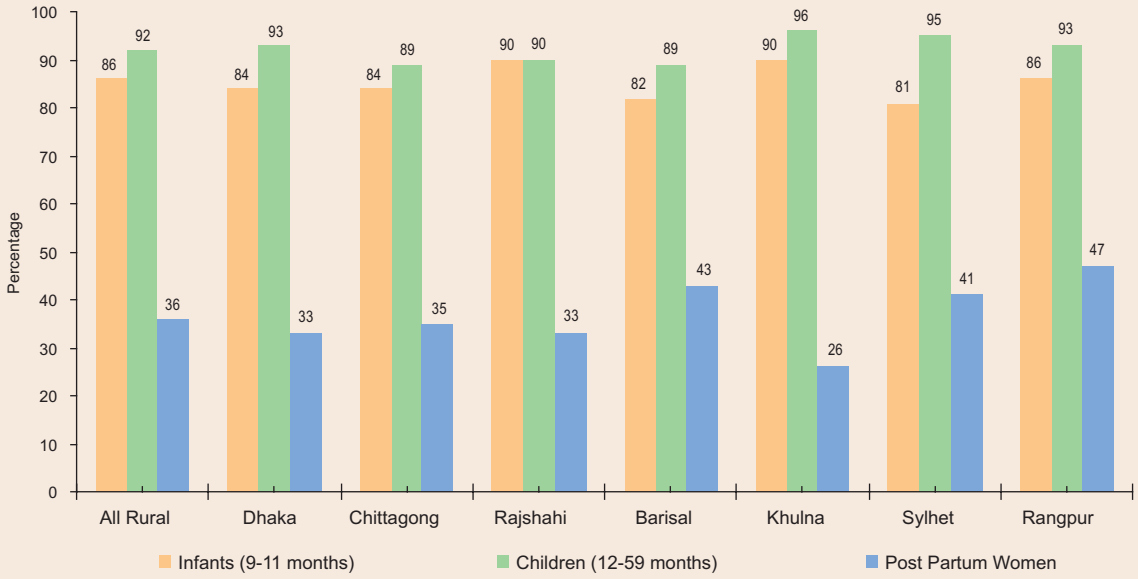
In 2011, as part of a new trial, infants aged between six and eleven months was given Vitamin A (100,000 IU) supplementation in 5 districts and 2 CCs during the Vitamin A Plus campaign held on 29th May, 2011. A separate analysis was made for this new target group and is presented in this report. By district and CC, the coverage was found to be the highest (99 percent) in Gopalganj, and the lowest (70 percent) in Barisal district. RCC and Maulvibazar district achieved the second highest position with 93 percent coverage, which was being followed by Satkhira (88 percent), Comilla (84 percent), and BCC (83 percent) (see Figure P6)

Figure P1. Vitamin A Coverage among infants aged 9-11 months in Childhood Vaccination Survey, Vitamin A Supplementation Coverage among Children 12-59 Months during Vitamin A Plus Campaign and Vitamin A Coverage among Postpartum Women in TT Survey



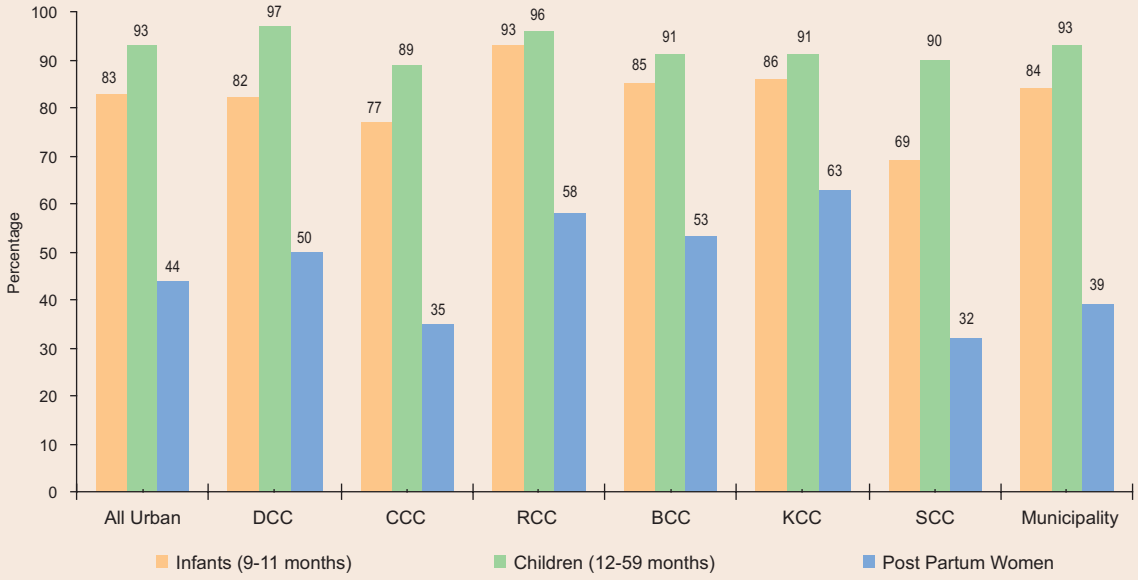
Source: CES 2011

Figure P2. Vitamin A supplementation Coverage during Vitamin A Plus Campaign among Children aged 12-59 months, Infants aged 9-11 months, and Postpartum women In Rural Areas by Division in 2011



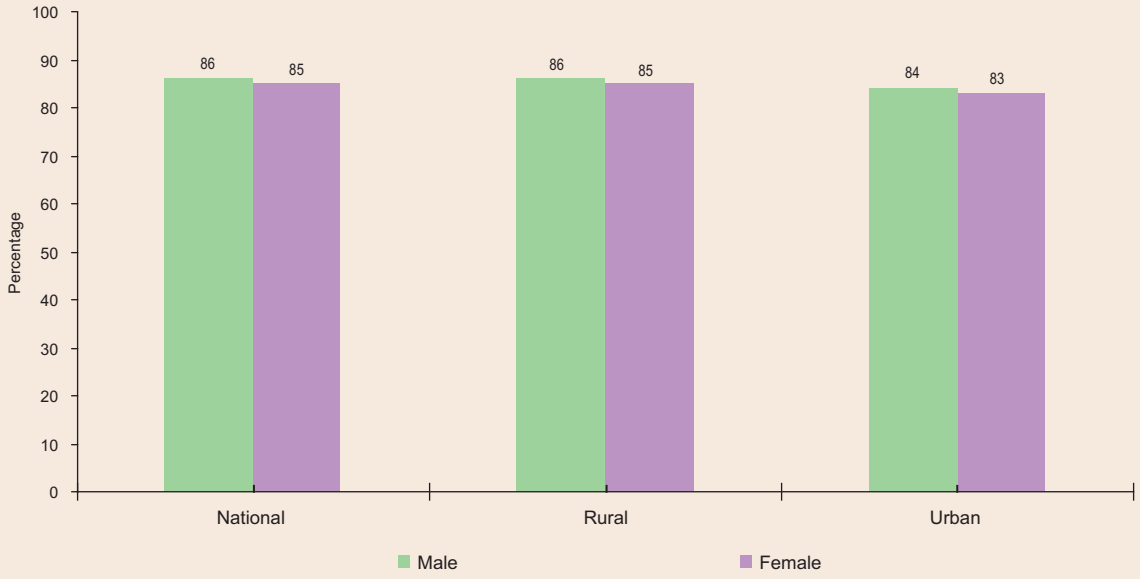
Source: CES 2011

Figure P3. Vitamin A supplementation Coverage during Vitamin A Plus Campaign among Children aged 12-59 months, Infants aged 9-11 months, and Postpartum women In Urban Areas by City Corporation/ Municipality in 2011



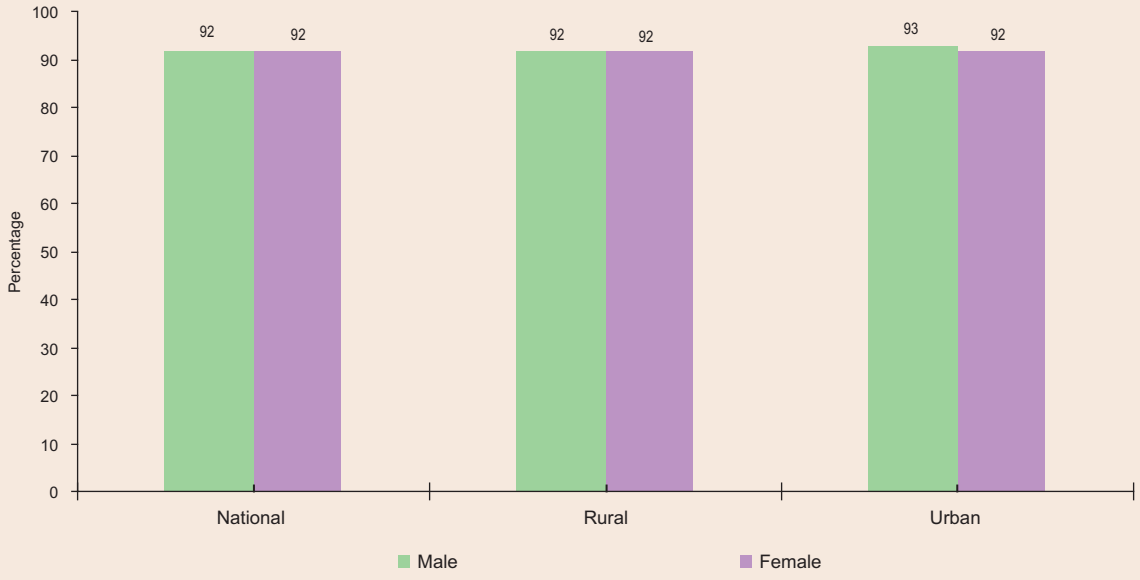
Source : CES 2011

Figure P4. Vitamin A Coverage among Infants Aged 9-11 Months in Childhood Vaccination Survey by Region and Sex in 2011



Source: CES 2011

Figure P5. Vitamin A Supplementation Coverage among Children aged 12-59 months during Vitamin A Plus Campaign by Region and Sex in 2011

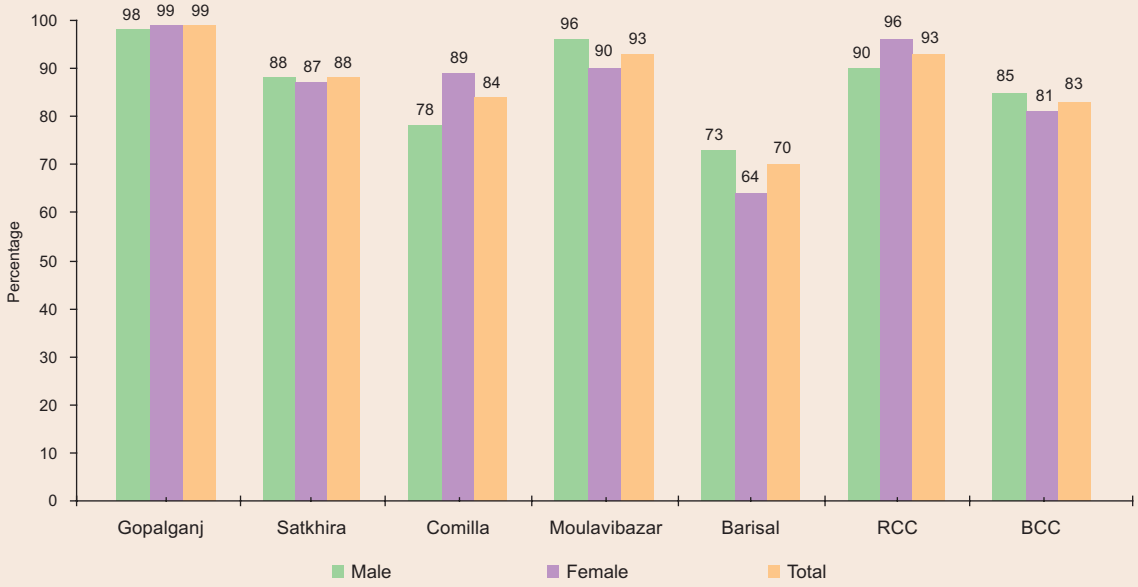


Source: CES 2011

Figure P6. Vitamin A Supplementation Coverage among 6-11 Months Old Children during Vitamin A Plus Campaign by Districts/City Corporations in 2011

Source : CES 2011

Figure P7. Vitamin A Supplementation Coverage among Children aged 6-11 months during Vitamin A Plus Campaign by Sex in 2011



Source : CES 2011

6.2.1 REASONS FOR CHILDREN NOT RECEIVING VAC DURING VITAMIN A PLUS CAMPAIGN

CES 2011 investigated the causes as to why the children didn't receive Vitamin A Capsule (VAC) during the 19th NIDS. To find out the reasons, mothers/care givers were asked why their children didn't receive VAC during Vitamin A Plus held on 29th May, 2011. A little over half (53 percent) of them reported that they were not aware of NID. Eighteen percent of them mentioned that they were not at home during NID. However, 6 percent reported that they were busy with their household chores. Lack of awareness about the NID/Vitamin A supplementation was the most common cause for not receiving VAC in both rural (53 percent) and urban (48 percent) areas (see Table P1).

In rural areas by division, the percentage of children who did not receive VAC due to the lack of awareness was the highest (64 percent) in Sylhet division. It was being followed by Barisal (63 percent), Rajshahi (55 percent), Chittagong (54 percent), Khulna (52 percent), Dhaka (48 percent), and Rangpur divisions (46 percent) (see Table P2).

Likewise, in urban areas by city corporation, there very few children who didn't receive VAS. As has been reported by the mothers/caregivers, lack of awareness about NID was the most common reason for not receiving VAS.

Table P1: Reasons as to why Children did not receive Vitamin A Supplement during Vitamin A Plus Campaign in 2011 by National, Rural and Urban Areas

Reasons for not receiving Vitamin A	National	Rural	Urban
Didn't know	52.5	53.2	48.3
Was very busy	6.2	5.4	10.3
Went on traveling	4.1	3.7	6.3
Doesn't believe in VITAMIN A	0.8	0.8	0.6
The child was fed in the previous time	1.4	0.9	4
The child was sick, so he/she was not taken	1.6	1.4	2.3
The child was sick, so Vita A was not given	2.5	2.9	0.6
No Vitamin A	2.5	2.6	2.3
No Vaccinator	2	2.1	1.1
There was a long queue	0	0	0
The centre was too far	2.9	3.1	1.7
Time was inconvenient	1.1	1.2	0.6
Fear of side effect	1.5	1.3	2.3
Waited for home visit	1	0.8	2.3
Religious/Social obstacles	0.3	0.3	0
Was not at home	17.5	18.1	13.8
Lives in another ward, That's why the vaccinator did not give vaccine	1.9	1.7	2.9
Child was not aged enough	0.2	0.1	0.6
The doctor did not feed	0.1	0.1	0
The child did not want to take	0.1	0.1	0
Number of Children Who did not receive Vitamin A	**1151**	**977**	**174**

Table P2: Reasons as to why Children did not receive Vitamin A Supplement during Vitamin A Plus Campaign in 2011 in rural areas by Division

Reasons for not receiving Vitamin A	Rural Total	Dhaka	CTG	RAJ	BSL	KHL	SYL	Rangpur
Didn't know	53.2	47.9	53.8	54.8	63.3	51.9	64.4	46.4
Was very busy	5.4	4.5	4.4	6.8	3.1	12.3	2.2	6.4
Went on traveling	3.7	2.9	4.4	2.7	3.9	4.9	2.2	4.5
Doesn't believe in VITAMIN A	0.8	0	1.8	0.7	0.8	0	0	1.8
The child was fed in the previous time	0.9	2.9	0.4	0	0	0	0	0.9
The child was sick, so he/she was not taken	1.4	2.1	1.3	0	1.6	2.5	4.4	0
The child was sick, so Vita A was not given	2.9	4.1	0.9	6.8	0.8	2.5	0	2.7
No Vitamin A	2.6	2.9	1.8	2.7	2.3	4.9	0	2.7
No Vaccinator	2.1	5	2.2	0	0.8	1.2	0	1.8
The centre was too far	3.1	2.9	8	0.7	1.6	1.2	2.2	0
Time was inconvenient	1.2	0.4	1.8	0.7	0.8	1.2	0	3.6
Fear of side effect	1.3	1.2	0.9	0.7	2.3	2.5	4.4	0
Waited for home visit	0.8	1.2	1.3	0	1.6	0	0	0
Religious/Social obstacles	0.3	0.4	0.4	0	0.8	0	0	0
Was not at home	18.1	20.7	13.8	21.2	12.5	11.1	20	28.2
Lives in another ward, That's why the	1.7	0.8	1.8	2.1	3.1	3.7	0	0.9
vaccinator did not give vaccine Child was not aged enough	0.1	0	0	0	0.8	0	0	0
The doctor did not feed	0.1	0	0.4	0	0	0	0	0
The child did not want to take	0.1	0	0.4	0	0	0	0	0
Number of Children Who did not receive Vitamin A	**977**	**242**	**225**	**146**	**128**	**81**	**45**	**110**

Table P3: Reasons as to why Children did not receive Vitamin A Supplement during Vitamin A Plus Campaign in 2011 in Urban Areas by City Corporation/Municipality

Reasons for not receiving Vitamin A	Urban Total	DCC	CCC	RCC	BCC	KCC	SCC	Other Urban
Didn't know	48.3	50	52.2	50	66.7	27.8	52.4	46.3
Was very busy	10.3	33.3	8.7	0	22.2	5.6	14.3	7.5
Went on traveling	6.3	0	0	0	0	44.4	9.5	1.3
Doesn't believe in VITAMIN A	0.6	0	0	0	0	0	4.8	0
The child was fed in the previous time	4	0	4.3	0	0	0	0	7.5
The child was sick, so he/she was not taken	2.3	0	0	12.5	0	5.6	0	2.5
The child was sick, so Vita A was not given	0.6	16.7	0	0	0	0	0	0
No Vitamin A	2.3	0	4.3	0	5.6	0	4.8	1.3
No Vaccinator	1.1	0	0	0	5.6	0	4.8	0
The centre was too far	1.7	0	0	0	0	0	4.8	2.5
Time was inconvenient	0.6	0	4.3	0	0	0	0	0
Fear of side effect	2.3	0	0	12.5	0	0	4.8	2.5
Waited for home visit	2.3	0	0	0	0	5.6	0	3.8
Was not at home	13.8	0	17.4	12.5	0	5.6	0	22.5
Lives in another ward, That's why	2.9	0	8.7	12.5	0	5.6	0	1.3
the vaccinator did not give vaccine								
Child was not aged enough	0.6	0	0	0	0	0	0	1.3
Number of Children Who did not receive Vitamin A	**174**	**6**	**23**	**8**	**18**	**18**	**21**	**80**

6.2.2 SOURCES OF INFORMATION ABOUT VITAMIN A PLUS CAMPAIGN

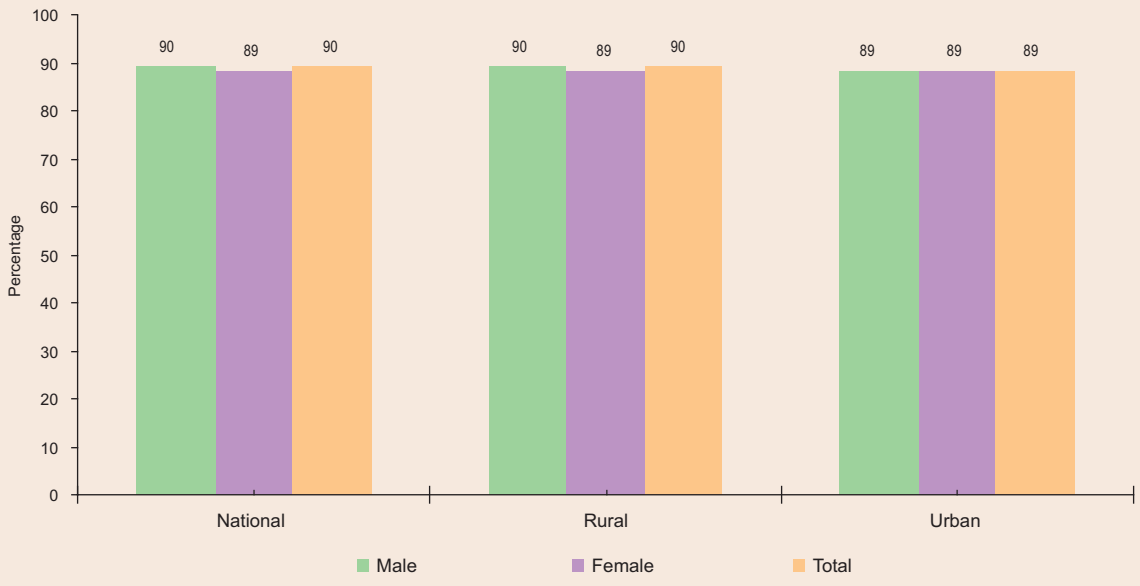
CES 2011 investigated the sources of receiving information about Vitamin A Plus campaign. Overall, in Bangladesh the significant sources of information were GoB field workers (28 percent), neighbors (31 percent), mosque-miking (24 percent), health workers (21 percent), mobile-miking (19 percent), television (15 percent), volunteers (5 percent), and NGO workers (3 percent). The pattern of receiving information in the rural areas is quite similar to that across the country. In urban areas, the frequent and significant source was TV (34 percent). The other sources were neighbors (31 percent), mobile-miking (26 percent), health workers' visit (15 percent), mosque-miking (13 percent), and GoB/NGO worker's (18 percent). The corresponding sources in rural areas were family/neighbors (31 percent), GoB field workers (30 percent), mosque-miking (26 percent), health worker's visit (23 percent), mobile miking (18 percent), television (11 percent), and volunteers (5 percent) (see Table Q4).

6.3 ANTHELMINTIC COVERAGE AMONG CHILDREN

Albandazole tablet as an anthelmintic was given to the children aged between 24-59 months during Vitamin A Plus campaign held on 29th May, 2011. The survey findings are presented in Figure Q1. It shows that 90 percent of the children received Anthelmintic treatment during Vitamin A Plus campaign (see Figure Q1). The coverage was 1 percentage point higher in rural areas (90 percent), compared to that in urban areas (89 percent).

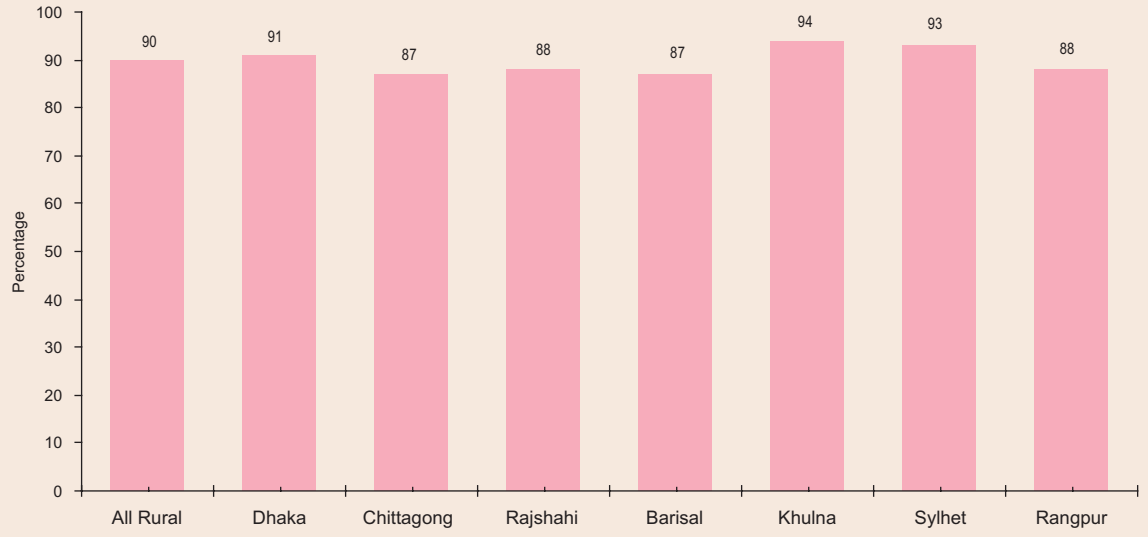
In rural areas by division, the coverage of Anthelmintic treatment was the highest (94 percent) in Khulna division and the lowest (87 percent) in Barisal and Chittagong divisions. In other divisions, it ranged from 88 percent in Rangpur and Rajshahi to 93 percent in Sylhet division (see Figure Q2). However, among the city corporations, the highest coverage rate was in Dhaka City Corporation (96 percent). Khulna City Corporation had the second highest position with 91 percent coverage. The lowest anthelmintic coverage was 84 percent which was found to be in CCC. It was being followed by SCC (85 percent), and RCC and BCC (88 percent) (see Figure Q3).

Figure Q1. Anthelmintic Coverage among Children Vitamin A Plus Campaign in 2011 by National, Rural and Urban Areas



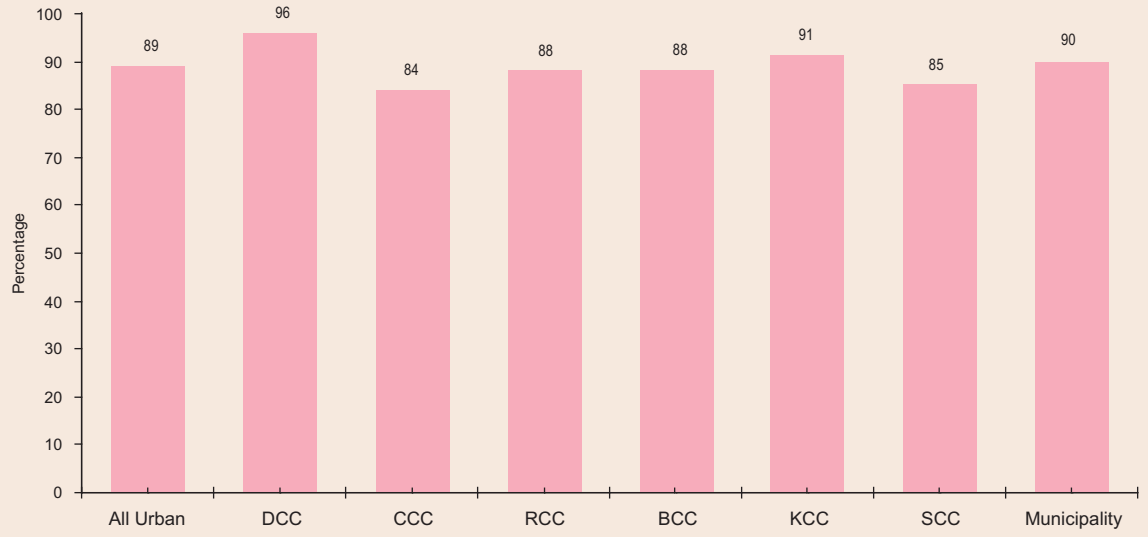
Source: CES 2011

Figure Q2. Anthelmintic Coverage among Children during Vitamin A Plus Campaign in 2011 in Rural Areas by Division



Source: CES 2011

Figure Q3. Anthelmintic Coverage among Children during Vitamin A Plus Campaign in 2011 in Urban Areas by City Corporation/Municipality



Source: CES 2011

6.3.1 REASONS FOR CHILDREN NOT RECEIVE ANTHELMINTIC

Mothers/caregivers, whose children didn't receive Anthelmintic treatment during Vitamin A Plus campaign, were asked to show the causes for not feeding it. Table Q1 shows that 39 percent of them reported that they didn't know about it while 12 percent mentioned that they were not at home during the campaign. This statement was being followed by some other reasons: mothers/caregivers were busy (9 percent); the child was fed in the past (9 percent); the child was sick (5 percent); scared of side-effects and Anthelmintic tablet was not available (4 percent) (see Tables Q1).

Lack of awareness about NID was the most common cause for not receiving anthelmintic in both rural (41 percent) and urban (32 percent) areas (see Table Q1). In rural areas, most of the mothers/caregivers mentioned about their lack of awareness as a cause for not receiving Anthelmintic. The proportion was found to be the highest - 54 percent - in Sylhet division, and the lowest - 25 percent – in Rangpur division. About half (47 percent) of them in Khulna division mentioned it. This was being followed by Chittagong (45 percent), Barisal (44 percent), Rajshahi (41 percent), and Dhaka divisions (40 percent) (see Table Q2).

Similar to that in rural areas, most of the mothers/caregivers in city corporation areas except CCC reported that they were not aware of Vitamin A Plus campaign. It was 45 percent in SCC, which was being followed by BCC (44 percent), CCC (36 percent), DCC (22 percent), KCC (32 percent), and RCC (8 percent) (see Table Q3). The variations might be due to the lack of social mobilization efforts to inform mothers and caregivers about the campaign.

Table Q1: Reasons as to why Children did not receive Anthelmintic during Vitamin A Plus Campaign in 2011 by Region

Reasons for not receiving Anthelmintic	National	Rural	Urban
Didn't know	39.2	40.7	32.1
Was very busy	9.4	9	11.1
Went on traveling	3.4	3.3	3.8
Doesn't believe in Anthelmintic Tablet	1.6	1.3	3.1
The child was fed in the previous time	9.1	7.9	14.9
The child was sick, so he/she was not taken	2.2	2.3	1.9
The child was sick, so vaccine was not given	5	4.9	5.3
No Anthelmintic Tablet	3.5	3.5	3.8
No Vaccinator	1.5	1.7	0.4
There was a long queue	0	0	0
The centre was too far	2.4	2.8	0.8
Time was inconvenient	1	1.2	0
Fear of side effect	4.1	3.2	8.8
Waited for home visit	1.5	1.5	1.5
Religious/Social obstacles	0.2	0.2	0
Was not at home	11.6	12.6	6.9
Child was not aged enough	2.7	2.5	3.4
The child refused to eat	0.6	0.4	1.5
The doctor did not feed	0.5	0.6	0
The child did not want to take	0.4	0.3	0.8
Number of Children who did not receive Anthelmintic tablet	**1529**	**1267**	**262**

Table Q2: Reasons as to why Children did not receive Anthelmintic during Vitamin A Plus Campaign in 2011 in Rural Areas by Division

Reasons for not receiving Anthelmintic	Rural Total	Dhaka	CTG	RAJ	BSL	KHL	SYL	Rangpur
Didn't know	40.7	39.9	44.7	41.4	44.2	47.2	54.4	25
Was very busy	9	8	6	11.3	13	7.4	7	10.9
Went on traveling	3.3	2.8	3.5	2.7	5.8	3.7	1.8	2.6
Doesn't believe in Anthelmintic Tablet	1.3	1.4	1.8	1.1	1.3	0.9	1.8	1
The child was fed in the previous time	7.9	5.2	10.6	4.3	7.1	10.2	5.3	11.5
The child was sick, so he/she was not taken	2.3	1.7	2.5	2.7	1.9	4.6	1.8	1.6
The child was sick, so vaccine was not given	4.9	5.6	2.8	5.9	1.9	4.6	3.5	8.9
No Anthelmintic Tablet	3.5	4.2	2.8	1.6	3.2	3.7	1.8	5.7
No Vaccinator	1.7	3.5	2.1	0.5	0.6	0	0	2.1
The centre was too far	2.8	3.8	5.7	1.6	1.3	1.9	0	0.5
Time was inconvenient	1.2	0.7	1.8	0.5	0.6	0.9	0	2.6
Fear of side effect	3.2	4.9	2.1	2.2	1.9	3.7	3.5	3.6
Waited for home visit	1.5	0.7	1.1	3.8	1.9	0.9	0	1.6
Religious/Social obstacles	0.2	0.7	0	0.5	0	0	0	0
Was not at home	12.6	16	10.3	15.1	9.7	7.4	12.3	14.1
Child was not aged enough	2.5	0	1.1	3.2	2.6	1.9	5.3	7.3
The child refused to eat	0.4	0.3	0	0.5	1.3	0.9	0	0
The doctor did not feed	0.6	0.7	0.7	0	0.6	0	1.8	1
The child did not want to take	0.3	0	0.4	1.1	0.6	0	0	0
Number of Children who did not receive Anthelmintic tablet	**1267**	**288**	**282**	**186**	**154**	**108**	**57**	**192**

Table Q3: Reasons as to why Children did not receive Anthelmintic during Vitamin A Plus Campaign in 2011 in Urban Areas by City Corporation/ Municipality

Reasons for not receiving Anthelmintic	Urban Total	DCC	CCC	RCC	BCC	KCC	SCC	Other Urban
Didn't know	32.1	22.2	36.4	8	44	31.6	45.2	30.8
Was very busy	11.1	11.1	15.2	16	20	0	12.9	8.3
Went on traveling	3.8	11.1	3	0	0	21.1	6.5	1.7
Doesn't believe in Anthelmintic Tablet	3.1	33.3	0	4	0	5.3	6.5	0.8
The child was fed in the previous time	14.9	0	12.1	20	24	5.3	9.7	16.7
The child was sick, so he/she was not taken	1.9	0	3	4	0	5.3	3.2	0.8
The child was sick, so vaccine was not given	5.3	22.2	3	8	8	0	0	5.8
No Anthelmintic Tablet	3.8	0	9.1	4	4	0	3.2	3.3
No Vaccinator	0.4	0	0	0	0	0	3.2	0
The centre was too far	0.8	0	0	0	0	0	3.2	0.8
Fear of side effect	8.8	0	6.1	24	0	10.5	3.2	10
Waited for home visit	1.5	0	0	0	0	5.3	0	2.5
Was not at home	6.9	0	9.1	0	0	10.5	0	10.8
Child was not aged enough	3.4	0	0	12	0	0	0	5
The child refused to eat	1.5	0	0	0	0	5.3	3.2	1.7
The child did not want to take	0.8	0	3	0	0	0	0	0.8
Number of Children who did not receive Anthelmintic tablet	**262**	**9**	**33**	**25**	**25**	**19**	**31**	**120**

Table Q4: Sources of Information about Vitamin A Plus Campaign by National, Rural and Urban Areas in 2011

	National	Urban	Rural
GOB FW visit	27.8	18.1	29.7
City Corporation FW visit	1.6	4.5	1
NGO worker Visit	2.9	2.8	2.9
Teacher visit	1.2	0.6	1.3
Other volunteers Visit	4.9	3.1	5.3
Family/neighbor/friends	30.6	31	30.6
Television	14.5	34	10.6
Radio	0.5	0.9	0.5
Poster	0.3	0.8	0.2
Newspaper	0.4	1.5	0.2
Mobile Miking	19	26.2	17.6
Mosque Miking	24.1	13.2	26.2
Healthworker visit	21.3	14.5	22.7
Told during previous round	2.7	2.1	2.9
By Guard (Chowkider)	0	0	0.1
Through mobile message	0.3	1.2	0.2
School	0.1	0.2	0
Banner	0.5	2.4	0.1
Don’t know	0	0	0

CHAPTER 7
DISCUSSION AND PROGRAMATIC IMPLICATIONS

7.1 DISCUSSION AND PROGRAMMATIC IMPLICATION

As a part of regular monitoring activities of EPI program in Bangladesh, CES 2011 was conducted in 72 survey units following the WHO 30 clusters sampling technique. Seven groups of survey respondents were covered under five types of survey in CES 2011. Survey results were discussed separately in the previous chapters of this report. This chapter provides an analytic description of the findings while taking into consideration the strength and weakness of the EPI program.

Under childhood vaccination survey, coverage was estimated based on information recorded on vaccination card as well as taking history from the mothers/caregivers when the vaccination card was not available. As regards to the types of coverage, two types - crude and valid coverages - were estimated and presented in the report. The finding shows that 80 percent of the children received all the antigens with valid doses by the age of 12 months while crude coverage was 92 percent. Compared to that in CES 2010, valid coverage increased by 1 percentage point in 2011 (79 percent in 2010 and 80 percent in 2011). Gap between two types (crude and valid) of coverage was 12 percentage points although the gap between access to vaccination (BCG vaccination) and the crude vaccination coverage was 7 percentage points. The act of administering invalid doses attributed to make such differences between valid and crude coverage's. Across the country, invalid

Penta3 was found to be 6.8 percent and measles 3.8 percent. Moreover, the gap between BCG and crude coverage also important to discuss vaccination coverage. As regards to access to vaccination service with BCG, it was found 99.1 percent nationally. The gap between the crude coverage and access to vaccination service was 7 percentage points, which indicates that 7 percent of the children nationally dropped from vaccination service after receiving BCG.

By area, valid coverage was found to be slightly higher in rural areas (81 percent) compared to that in urban areas (78 percent). Likewise, crude coverage was 92 percent in rural and 91 percent in urban areas. However, by gender, there was no difference between male and female in terms of access to vaccination service. Questioning the full coverage with all doses of each antigen, irrespective of EPI vaccination schedule, it was found slightly higher among the males (93 percent) compared to the females (91 percent). On the contrary, no difference was observed between the males and the females while valid coverage (80 percent for both the males and the females) was estimated.

Among the divisions, crude coverage was found to be the highest in Rajshahi division (95 percent) and the lowest in Sylhet division (88 percent). It was 94 percent in Khulna, 92 percent in Rangpur and Dhaka divisions, and 90 percent in Chittagong and Barisal divisions. The highest difference between crude and valid coverage was observed in Barisal division. Valid coverage in Barisal division was 75 percent as against 90 percent of crude coverage. Tapering the gap between the two coverages resulted in higher valid vaccination coverage. Among the divisions, the highest valid vaccination coverage was revealed in Rajshahi division (86 percent) with the least gap of 9 percentage points - between the crude and valid coverages. The act of administering vaccine by following the exact age and interval contributes to lower gap between crude and valid coverages. Invalid Penta3 doses were 5.9 percent in Rajshahi division as against 9 percent in Barisal division. In contrast, invalid measles dose was 2.4 percent in Rajshahi division as against 5.4 percent in Barisal division.

Regarding access to vaccination service with BCG, it was found to be the highest in Rajshahi division (99.7 percent), and the lowest (97.9 percent) in Sylhet division. It was 99.6 percent in Khulna and Rangpur, 99.5 percent in Barisal, and 98.4 percent in Chittagong divisions. Access to vaccination services indicates how many children are still out of vaccination service. More than 2 percent of the children in Sylhet, 1.6 percent in Chittagong, 1.1 percent in Dhaka, 0.5 percent in Barisal, 0.4 percent in Khulna and Rangpur divisions, and 0.3 percent of them in Rajshahi division didn't receive any vaccine. Although access to vaccination service of Barisal division (99.5 percent) is almost similar to Khulna and Rangpur divisions (99.6 percent), crude coverage was 4.4 percentage points lower in Barisal division compared to Khulna division. High dropout rate attributed to the low vaccination coverage in Barisal division. And, the dropout rate was the highest (10.1 percent) in Sylhet division. It was 9.3 percent in Barisal, 8.2 percent in Chittagong, 7.4 percent in Rangpur, 7.2 percent in Dhaka, and 5.2 percent in Rajshahi and 5.1 percent in Khulna divisions.

Although an escalating trend in the vaccination coverage was observed across the country, there are dissimilarities in full vaccination coverages across the divisions. Coverage in some of the divisions is below the national coverage (80 percent), which is the result of low performance in some of the districts under those divisions. The coverage was found to be 80 percent in Dhaka, 78 percent in Chittagong division, and 75 percent in Barisal, and Sylhet divisions.

The survey findings suggest that low performance of some of the districts attributed to lower vaccination coverage by the age of 12 months in Chittagong, Dhaka, Barisal, and Sylhet divisions. Compared to that in CES 2010, coverage in Dhaka division increased by 2 percentage points (78 percent in 2010, and 80 percent in 2011) in 2011. Among the districts, valid coverage increased in

9 districts while it decreased in 7 districts which are Dhaka, Gazipur, Kishoreganj, Mymensingh, Narayanganj, Netrokona, and Shariatpur. The coverage remained the same in Faridpur district. Among the districts, the highest difference in the coverage was observed in Narayanganj district. It decreased by 9 percentage points - from 86 percent in 2010 to 77 percent in 2011. On the contrary, the highest improvement in the coverage was observed in Jamalpur districts- 77 percent in 2010 and 86 percent in 2011. It increased by 7 percentage points in Gopalganj, 6 percentage points in Munshiganj and Manikganj, 3 percentage points in Rajbari and Sherpur, and 2 percentage points in Madaripur districts. One percentage point increase in the vaccination coverage in Dhaka division is a result of the improvement in the coverage in those districts.

However, coverage in Gazipur, Netrokona, Shariatpur, Madaripur, Dhaka, Faridpur, Mymensingh, Narayanganj, and Rajbari districts was below the divisional coverage of 79 percent. The analysis shows that the difference between crude and valid coverages of these districts is higher, compared to the districts those coverage is equal or more than divisional coverage. It was found that the act of administering invalid doses attributed to the lower coverage of those districts. Incidence of invalid Penta3 was 12 percent in Mymensingh, 8 percent in Madaripur, 7 percent in Netrokona and Narayanganj district, 5 percent in Gazipur and Rajbari districts. Among these districts, the act of administering invalid doses of measles was the highest (8 percent) in Faridpur and Rajbari districts. It was 6 percent in Narayanganj and Netrokona and Mymensingh districts, and 3 percent in Shariatpur and Madaripur, and 2 percent in Gazipur districts. Moreover, Penta1-measles dropout rates were 16 percent in Gazipur, 13 percent in Shariatpur, 12 percent in Dhaka, 11 percent in Mymensingh, 10 percent in Netrokona, 9 percent in Faridpur, 8 percent in Madaripur and Rajbari districts. Regarding access to vaccination service, it was found to be the lowest in Kishoreganj district.

In Chittagong division, the coverage increased by 2 percentage points, compared to that in CES 2010. Among all the districts there, it increased in 8 districts and decreased in Brahmanbaria, Chittagong, and Comilla districts. The highest coverage was observed in Chandpur (85 percent) and the lowest in Bandarban, Brahmanbaria, and Khagrachhari districts (73 percent). In Chittagong division, the left out was found to be the highest (6 percent) in Bandarban district, and the dropout in Noakhali district (15 percent). Despite improvement in the coverage in some of the districts of Chittagong division, incidence of invalid doses is a concern. Invalid Penta3 was 14 percent in Chittagong and Brahmanbaria, 12 percent in Comilla, 11 percent in Khagrachhari, and less than 9 percent in other districts. The act of administering invalid measles dose was also found to be the highest (9 percent) in Brahmanbaria.

Analysis of CES 2011 data shows that Rajshahi division achieved the highest (86 percent) valid vaccination coverage in 2011. Moreover, valid coverage of each district of Rajshahi division is higher than the national coverage (80 percent). Compared to that in CES 2010, valid overage increased in 4 districts and marginally decreased in 4 districts: Naogaon (7 percentage points), Rajshahi (4 percentage points), Bogra and Natore (2 percentage points). Sirajganj achieved the highest position with 87 percent coverage among the districts. A very small proportion of left-out was observed in Bogra, Naogaon, Natore, Pabna, and Sirajganj districts (0.5 percent). No left out was observed in Chapai Nawabganj, Joypurhat, and Rajshahi districts. However, Incidence of invalid dose of Penta3 was the highest (10 percent) in Naogaon, and measles in Rajshahi district (3 percent). In case of Penta1-measles dropout rate, it was found to be 9 percent in Bogra, 8 percent in Natore, 6 percent in Chapai Nawabganj and Pabna, 5 percent in Sirajganj and Naogaon, and 4 percent in Joypurhat and Rajshahi.

As a new administrative unit, performance of Rangpur division is better. It achieved the second highest position along with Khulna division in terms of access to vaccination service (99.6 percent). Compared to that in CES 2010, valid coverage increased by 3 percentage points in 2011 (78 percent in 2010 and 81 percent in 2011). Among the 8 districts, valid coverage increased in six districts and

marginally decreased in 2 districts: Kurigram and Nilphamari (2 percentage points). The highest (5 percentage points) improvement in coverage was observed in Gaibandha district and the lowest (0.5 percentage point) in Rangpur district. Access to vaccination service was universal in Kurigram, Nilphamari, Panchagarh, and Rangpur districts. It was the lowest (98.6 percent) in Lalmonirhat, which was being followed by Dinajpur, Gaibandha, and Thakurgaon districts (0.5 percent). Besides, incidence of invalid Penta3 was found to be the highest (10 percent) in Thakurgaon and the lowest (3.2 percent) in Lalmonirhat. In contrast, the act of administering invalid measles was the highest (5 percent) in Nilphamari and the lowest (1 percent) in Gaibandha. No invalid dose of measles was administered in Lalmonirhat. As regards to Penta1-measles dropout rate, it was the highest (10 percent) in Nilphamari and the lowest (2 percent) in Thakurgaon. It was 9 percent in Lalmonirhat, Gaibandha, and Rangpur, 8 percent in Dinajpur, 6 percent in Kurigram, and 5 percent in Panchagarh districts.

In terms of valid coverage, Khulna division achieved the second highest position. And, the valid coverage was the highest (94 percent) in Khulna district across all over the country. Overall, valid coverage increased by 2 percentage points, compared to that in CES 2010. Among the districts, the coverage marginally decreased in Magura (84 percent in 2010 and 83 percent in 2011), Narail (80 percent in 2010 and 79 percent in 2011), Jessore (86 percent in 2010 and 83 percent in 2011), and Kushtia (83 percent in 2010 and 78 percent in 2011). The coverage was at or over 80 percent in all the districts excepting Bagerhat, Kushtia and Narail. Across the districts of Khulna division, BCG coverage was universal in Jessore, Jhenaidah, Kushtia, and Meherpur. The analysis shows that access to vaccination service was the lowest (98 percent) in Bagerhat district. And, the gap between crude and valid coverage was the lowest in Khulna district (Crude coverage 96 percent and valid coverage 94 percent) across the country. The analysis shows that the lowest gap between crude and valid coverage is the result of administering vaccine at the exact age and interval. The incidence of invalid Penta3 was 1 percent, which was the lowest across the country and no invalid measles dose was observed in the findings. This achievement in program quality may replicate in other districts. Incidence of invalid Penta3 was 10 percent in Kushtia, 9 percent in Magura, and Jessore, 8 percent in Bagerhat, Chuadanga, and Satkhira, 7 percent in Meherpur, Narail, and Jhenaidah. On the contrary, the act of administering invalid dose of measles vaccine was found to be the highest (6 percent) in Chuadanga and Narail districts and the lowest (2 percent) in KCC. Moreover, Penta1-measles dropout rate was the highest (9 percent) in Kushtia and Narail districts and the lowest (0.5 percent) in Jhenaidah district. Incidence of invalid Penta3, measles, and the dropout rates attributed to the low vaccination coverage in Bagerhat, and Kushtia.

Compared to the findings of CES 2010, full vaccination coverage in Barisal division decreased by 5 percentage points in CES 2011. The declining trend in valid coverage was observed in all the districts of Barisal division. Valid coverage was 76 percent in Pirojpur, 75 percent in Jhalokati and Bhola, 74 percent in Patuakhali and Barguna, and the lowest (73 percent) in Barisal district. Crude coverage was also found less than 90 percent in Patuakhali (82 percent), Pirojpur (88 percent), and Bhola (89 percent). It was 90 percent in Barisal, 93 percent in Barguna, and 96 percent in Jhalokati. The analysis shows that access to vaccination service was 99.5 percent in Barisal division. But, the gap was about 10 percentage points between BCG and crude coverage, and 15 percentage points between crude and valid coverage (valid coverage 75 percent, and crude coverage 90). This large gap between crude and valid coverages indicates towards the higher incidence of invalid doses. In Barisal division, incidence of invalid Penta3 was 9 percent, and measles was more than 5 percent. Incidence of invalid Penta3 was the highest (12 percent) in Barguna and Jhalokati districts, and the lowest (6 percent) in Pirojpur district. Moreover, Penta1- measles dropout rate was found 9 percent in Barisal division. And, it was 16 percent in Patuakhali, 12 percent in Pirojpur, 11 percent in Bhola, 9 percent in Barisal, 7 percent in Barguna, and 4 percent in Jhalokati. Higher incidence of invalid dose and dropout may be attributed to lower coverage in Barisal division as well as in districts. Supervision and monitoring need to be strengthened in Barisal division to upsurge the valid vaccination coverage at least to the national level.

A gradual continuous improvement in the coverage was observed in Sylhet division since 2003, although it is still 5 percent below the level of national coverage (80 percent). Compared to the findings of CES 2010, the coverage increased in Sunamganj and Maulvibazar districts and marginally decreased in Habiganj and Sylhet districts. The highest improvement in coverage was observed in Maulvibazar (74 percent in 2010 and 80 percent in 2011). The finding shows that except Maulvibazar the valid coverage of other districts is still below the national coverage. Valid coverage of Maulvibazar was 80 percent, Habiganj 76 percent, Sylhet 75 percent, and Sunamganj 77 percent. The geographical features of Sylhet division are different from those of other divisions- here low-lying and hilly areas exit. Performances of socio-demographic indicators are also low in Sylhet division; and it is considered as a conservative area, where women's' mobility is restricted. Along with geographical and socio-demographic factors, performance of EPI program added as an influencing factor for low coverage. Across the country, no immunization was found to be the highest (2 percent) in Sylhet division. And, Sylhet district was revealed as the second highest area where 4 percent of the children didn't receive any vaccine. Besides, Penta1-Measles dropout rate was found to be the highest -17 percent- across the country. It was 11 percent in Sylhet district, 10 percent in Maulvibazar and Sunamganj districts, and 3 percent in Habiganj. As regards the incidence of invalid doses, invalid Penta3 was the highest (15 percent) in Habiganj across the country. It was 8 percent in Sylhet City Corporation, 4 percent in Maulvibazar and Sunamganj, and 3 percent in Sylhet district. Similarly, incidence rate of invalid measles dose was the highest (6 percent) in SCC and the lowest (3.5 percent) in Maulvibazar.

The findings of CESs show that the crude coverage decreased by one percentage point in 2011. Although valid coverage increased by 1 percentage point in 2011 but it become almost stagnant for the last 3 years. The Valid coverage was 79 percent in 2009, 79.4 percent in 2010 and it was revealed 80 percent in 2011. Maintaining coverage without the support of GAVI fund was challenge for EPI program. However, financial and technical support of UNICEF in 15 low performing districts may contribute to improve the coverage by 1 percentage point in 2011. The coverage in 15 low performing districts increased by 3 percentage points from 76 percent in 2010 to 79 percent in 2011.

A question may arise despite tremendous progress in the vaccination service as to why the coverage is lower than the previous CES in some of the districts. Is it due to the high dropout rates or, because of the act of administering vaccines without following the EPI- recommended vaccination schedule or, is it due to the poor performance of the field workers in the process of service delivery. The survey analysis puts stress on the first two causes and analyzes the causes by using the CES 2011 data. The analysis has identified three main causes - a) dropouts, b) the act of administering vaccines before the EPI-recommended interval between the doses, and c) the act of administering the measles vaccine beyond 12 months of age.

Dropout resulted from the mothers'/caregivers' lack of awareness of the importance of vaccination, distance of the vaccination center and the vaccine-recipient's home, lack of proper information about the vaccination day by the field workers, and migration. In order to achieve the coverage target, all these issues should be given due attention. Higher dropout rates also attributed to lower vaccination coverage rate. The dropout (Penta1-measles) rate was observed to be the highest -17 percent- in SCC, which attributed to the lowest vaccination coverage in that survey unit (61 percent).

Furthermore, the act of administering invalid dose is an important factor for low vaccination coverage. An analysis of this issue among the low performing districts suggests that administering higher invalid doses was also responsible for the coverage of Dhaka, Chittagong, Barisal, and Sylhet divisions below the national coverage. The incidence of invalid doses of Penta3 and measles were 14 percent in Barisal division, and 11 percent in Dhaka, Chittagong, and Sylhet divisions. In contrast, Rajshahi division achieved the highest valid vaccination coverage with 6 percent invalid Penta3 and 3 percent invalid measles doses.

EPI program should ensure EPI-recommended vaccination schedule all over the country, irrespective of the residences of the target population.

Finally, there is a large difference between the overall vaccination coverage and the valid coverage rates in almost all the administrative divisions in Bangladesh. In some divisions, the situation is worth considering. Difference in crude and valid coverages by the age of 12 months was found to be the highest (15 percent) in Barisal division. It was 14 percent in Chittagong, 13 percent in Sylhet, 12 percent in Dhaka, 11 percent in Khulna, and Rangpur, and 9 percent in Rajshahi divisions. Now the major questions are: How can this gap are minimized? What are the strategies to be taken for the purpose? All these questions require a detailed discussion.

As regards the TT survey, it should be mentioned here that mothers with 0-11 months old children were considered as the subjects of the survey. Survey findings show that 58 percent of the mothers received 5 doses of TT. But, in terms of valid coverage, the coverage of TT5 was found to be 42 percent. There is a large gap between the valid coverage and crude TT5 coverages. The cause might be the receiving of TT in each pregnancy, irrespective of their previous TT status. In most cases, mothers lost their vaccination cards so, the health workers could not be sure about the TT status of the mothers. As a result, they administered vaccines to those mothers who actually did not need those at all. Also, for estimation of PAB, card was the most important document. The survey findings show that 40 percent of the mothers all over the country retained their vaccination cards. However, there was 7 percentage points variation between the rural (41 percent) and the urban areas (34 percent).

TT2 coverage is mostly related to PAB. Among the surveyed mothers, valid TT2 coverage was found to be 96 percent while the PAB status was 93 percent in CES 2011. The analysis indicated that 7 percent of the children were not protected against tetanus while they were born. Although TT2 coverage was 96 percent, PAB was 93 percent, which meant that 3 percent of the children were not protected at birth against tetanus although their mothers received 2 doses of TT. This was due to the fact that the time of delivery of these children did not match the protection against tetanus induced by TT2 vaccination. In terms of PAB, the findings indicate that still 7 percent of the newborns are at risk of tetanus although Bangladesh has achieved the NT elimination status. In order to maintain this NT elimination status supervision and monitoring activities should be enhanced by the program personnel.

Similarly, TT survey among the women who are 18-49 years old shows that overall 50 percent women received TT5 doses. Among them, 32 percent received valid TT5. Across the country, a large proportion of women might have inadequate level of antibody against tetanus for their whole reproductive period because of not following the EPI- recommended TT vaccination schedule. The urban-rural analysis shows almost no difference in this regard.

Furthermore, knowledge about the number of TT doses is an important issue to avoid administering the doses not necessary for a person. In the country, 42 percent of the mothers didn't know about the number of doses. The urban-rural analysis shows 3 percent difference regarding the knowledge of number of TT doses. In contrast, TT vaccination card helps the health workers to decide the eligibility of the dose required by the recipient. Since TT vaccination card is an important tool to determine the eligibility of TT dose(s), it can help one avoid administering unnecessary doses and save huge quantities of TT vaccine. CES 2011 shows that 58 percent of the women lost their vaccination cards. The survey results revealed that card retention rate is 35 percent. Rural mothers were found to be more likely to retain TT vaccination card, compared to their urban counterparts (36 in rural and 27 percent in urban areas). Lack of knowledge about the importance of TT vaccination card is one of the most important causes for not retaining it. So, just like childhood vaccination card retention, TT vaccination card retention should be highlighted with equal importance.

NID is one of the Supplementary Immunization Activities (SIA) of EPI programme which is usually held twice a year. According to the survey findings, 96 percent of the children aged between 0-59 months received OPV in the first round of 19th NID while 95 percent received it during the 2nd round. However, 93 percent of the children received OPV in both the rounds. It has been noticed in the findings that there is no such variation in the coverage between the urban and rural areas. By place of vaccination, 98 percent of the children received OPV from the fixed site during the 19th NID. Despite the high coverage of OPV in the 1st round of 19th NID (96 percent), the coverage decreased by 2 percentage points during the second round. This may be due to the lack of awareness about the campaign. Among the mothers/caregivers whose children didn't receive OPV during the second round, 37 percent reported about their lack of awareness about it. Fourteen percent of the mothers/caregivers reported that they were not at home during the NID. More communication campaign through mosque-miking, Inter-Personal Communication (IPC), and health workers' visit should be increased, specially in the remote areas, in order to achieve 100 percent coverage through eliminating the left-outs and dropouts in either round.

As a part of reintegrated strategy, Vitamin A plus Campaign was held on 29th May, 2011. CES 2011 assessed the coverage and found that 92 percent of children received Vitamin A capsule nationally. The coverage was 93 percent in urban and 92 percent in rural areas. However, for the new target group (6-11 months) it was 87 percent nationally. Among the mothers who didn't feed vitamin A to their children, more than half (53 percent) of them reported that they were unaware of the campaign. More effective communication campaign, including the involvement of the local elites, should be ensured throughout the country to achieve 100 percent coverage.

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

- How the child vaccination card can be preserved since 23 percent of the children's vaccination cards are lost by mothers? This is more important in the natural disaster prone zones, such as cyclone and flood-prone areas.
- How to preserve TT vaccination card?
- How to minimize the dropouts from Penta1 to Penta3? Missing Penta2 or Penta 3 will discourage mothers not to visit EPI center for the next vaccination because they do not give importance to it.
- Dropout rates from Penta1 to Penta3 are also high in the low performing divisions. These divisions need regular supervision and monitoring to minimize the dropout rates.
- Dropout rate from Penta1 to measles is also high among the children which require strong supervision and monitoring targeting to eliminate the dropouts. This can ensure improvement of EPI vaccination coverage rate automatically.
- There is a large gap between the overall vaccination coverage and the valid coverage. The main challenging question to the EPI program management is what strategy should be considered to reduce the gap so that valid coverage can be increased significantly.
- Overall, the success of EPI Program depends on three important factors: preservation of the vaccination card; minimizing the dropout rates in case of multi-doses vaccines; strict maintenance of the recommended dose schedule of vaccines to avoid invalid doses, thus ensuring reduction of the gap between overall/total coverage and valid coverage. If EPI program management could improve this situation, valid coverage will increase significantly.

- EPI program management may increase its supervision and monitoring activities in the low performing districts quite often in order to improve the vaccination coverage. If it does not deal with it seriously, vaccination coverage will not increase as expected.
- EPI program should ensure access of vaccination to all the migrant children irrespective of their locality. In this regard, special attention needs to be given to the urban slum dwellers. Proper information should be given to the mothers/caregivers wherever they come from. Vaccination services should be made available to them at the vaccination centers, which they find convenient for them.

The immediate step of the EPI management is to visit the low performing divisions/districts and identify the real causes for such failures. Appropriate measures should be taken on the basis of facts and findings to improve the EPI coverage. Only discussions with local management may not be of any help. The management may need to discuss the matter with the EPI workers, mothers, and community members for finding out the reasons for losing vaccination cards and for their failure to bring the child for the next vaccination. Furthermore, health workers should follow strictly the EPI -recommended vaccination schedule so that incidence of invalid dose doesn't occur at all. The national and local level workshops with district and upazila level manager might be helpful to find out the appropriate strategies aiming at reducing the incidence of invalid doses. Reaching Every District (RED) strategy could be one of the options to achieve the vaccination target in EPI. Moreover, the most effective strategies or interventions adapted in the high performing districts, towards achieving the high vaccination coverage should be replicated in other districts, particularly in the low performing districts, while taking into account the geographical and other area-specific issues.

APPENDIX
LIST OF TABLES & FIGURES

C. Program Quality

E. Sources of Childhood Vaccination

F. Tetanus Toxoid Vaccination Coverage among Mothers 0-11 Months Old Children

G. Program Quality

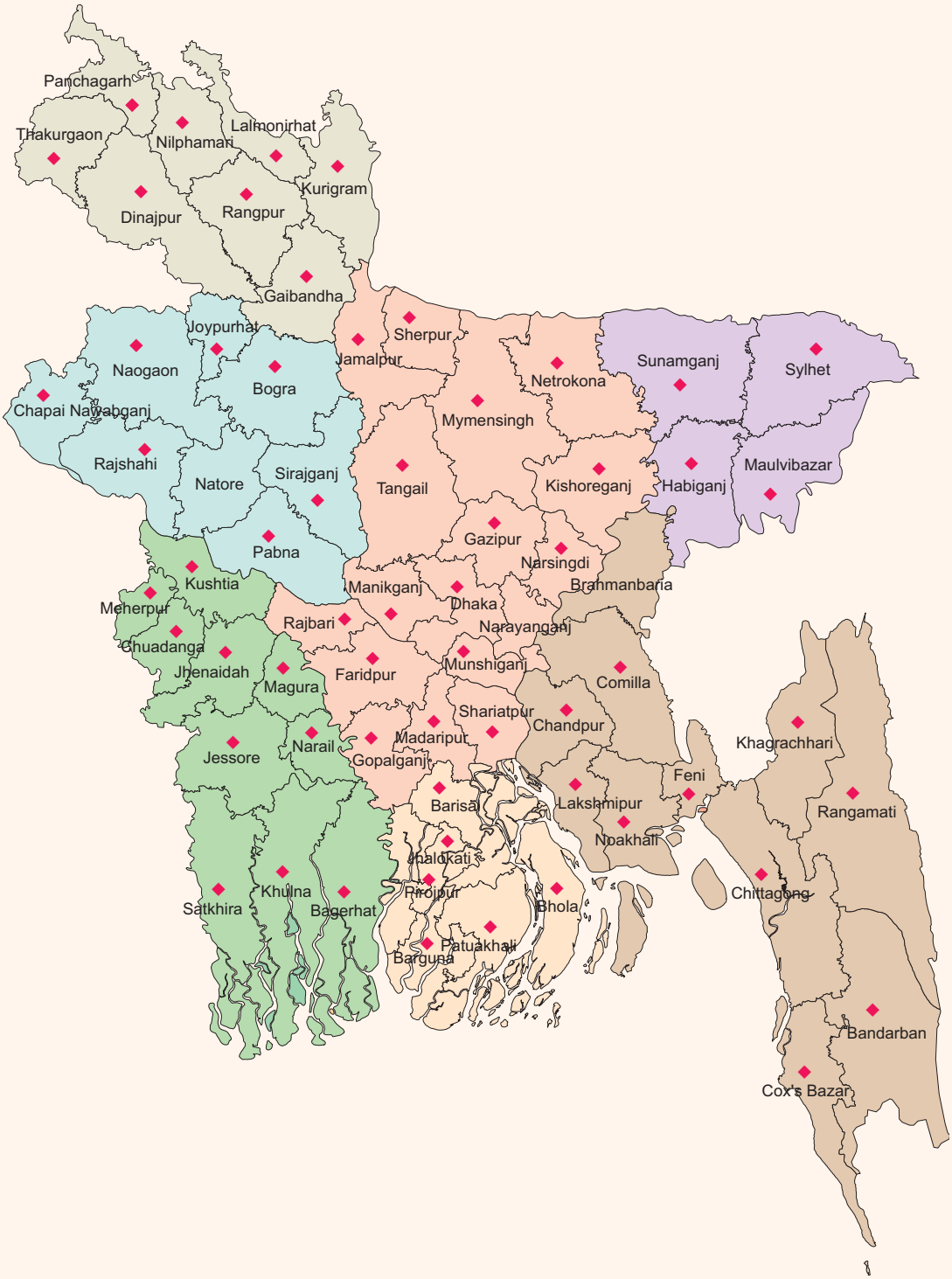
H. Mothers' Knowledge of TT Vaccination

I. Sources of TT Vaccination

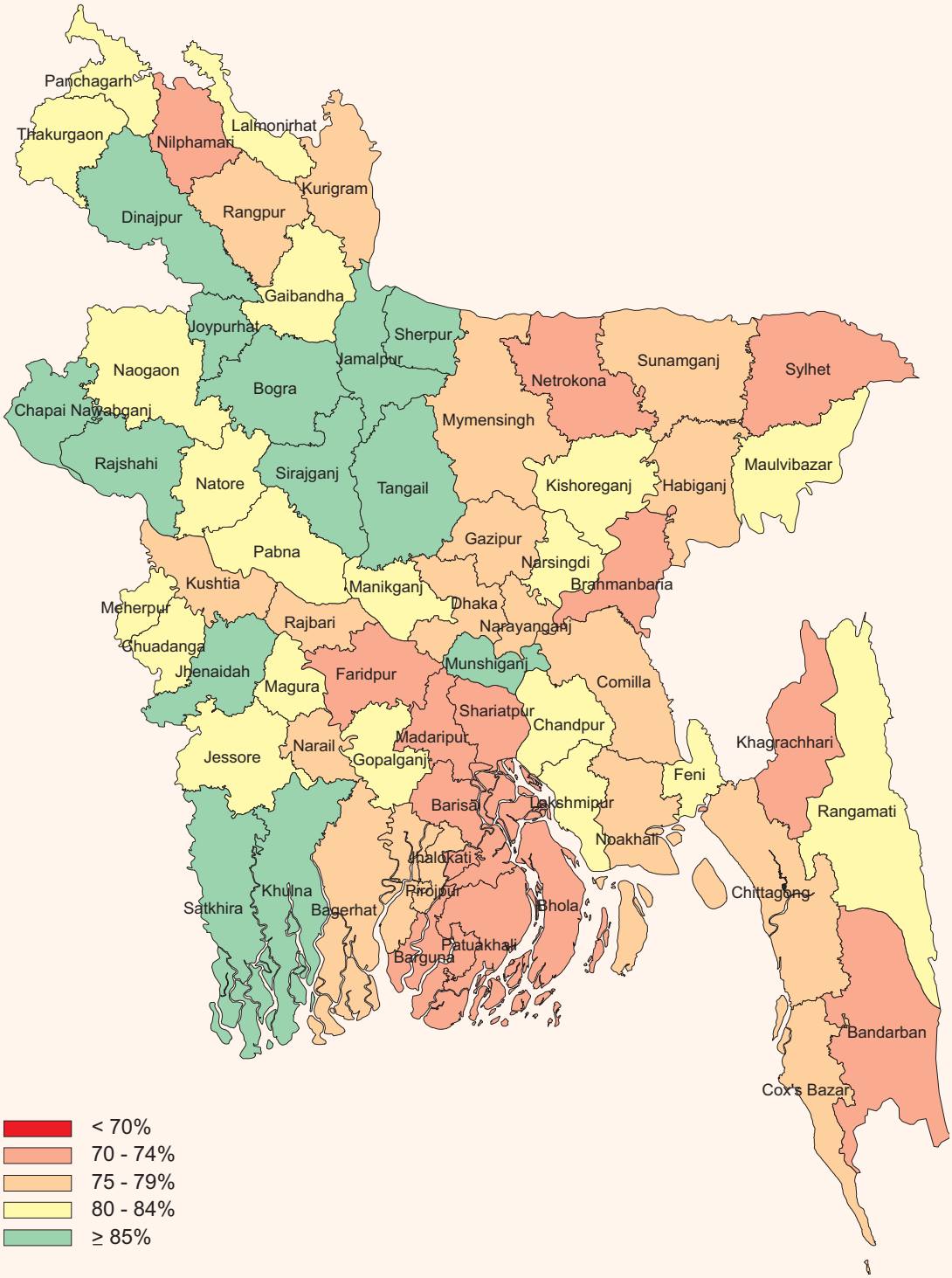
J. Tetanus Toxoid (TT5) Vaccination Coverage

APPENDIX
VACCINATION COVERAGE BY SURVEY UNIT

EPI COVERAGE SURVEY 2011
SURVEY UNITS



VALID FULL VACCINATION COVERAGE BY 12 MONTHS OF AGE IN BANGLADESH BY DISTRICT 2011



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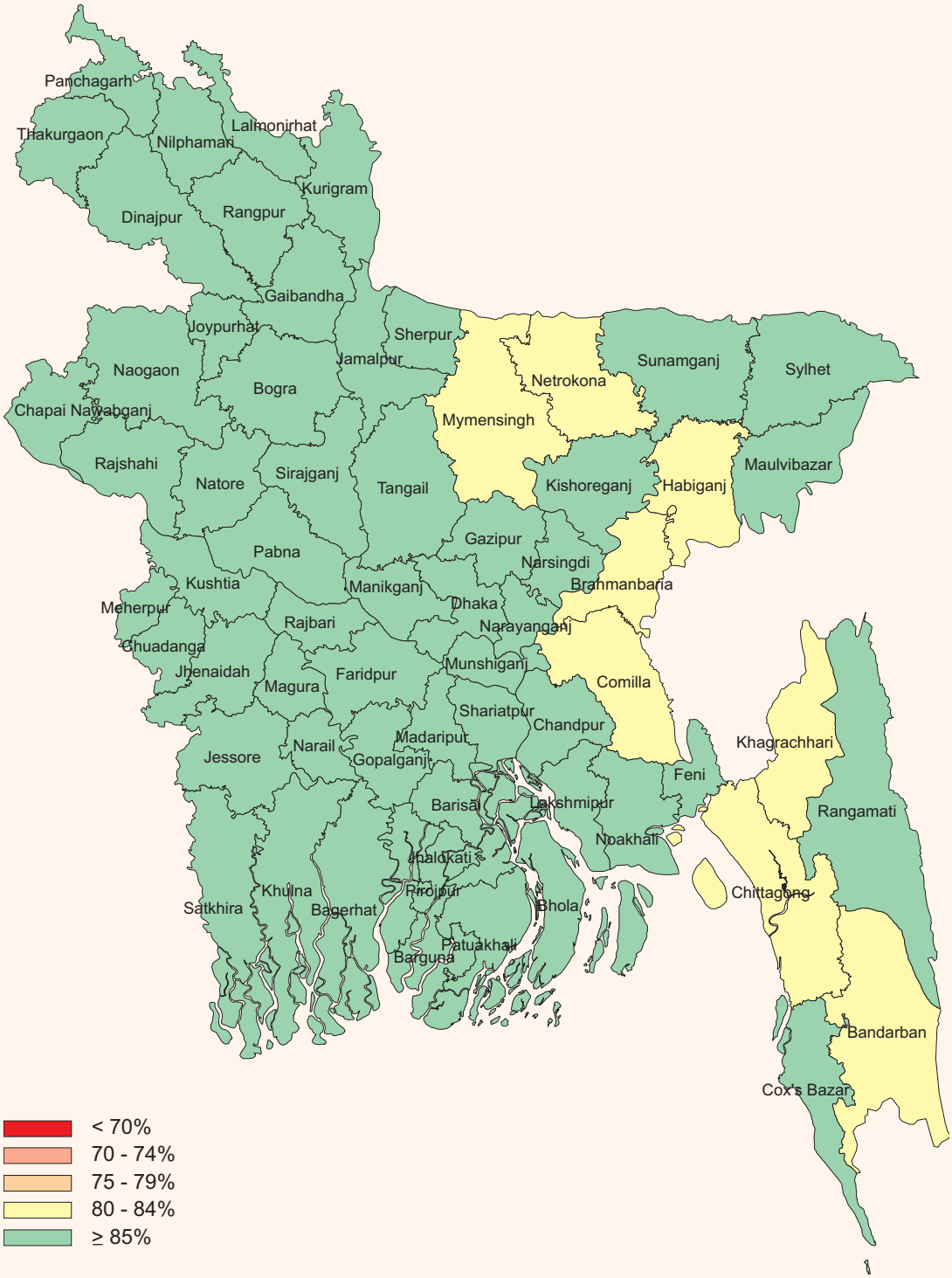


VALID MEASLES VACCINATION COVERAGE BY 12 MONTHS OF AGE IN BANGLADESH BY DISTRICT 2011

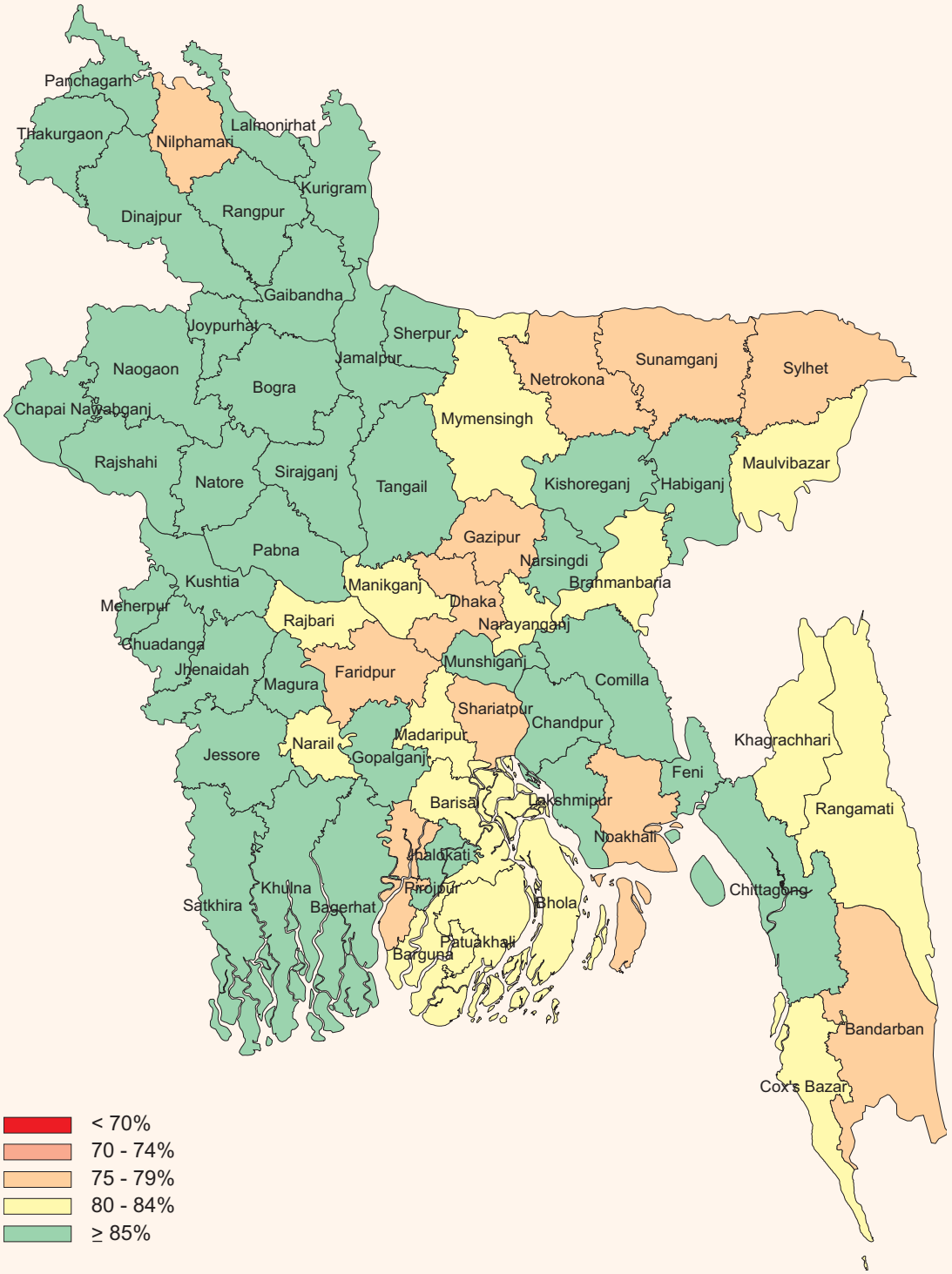


Table 1: Valid Immunization Coverage by Age 12 Months among 12-23 Months Old Children According to Survey Units by District, City Corporation

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Dhaka	97.6	97.6	97.6	94.5	94.5	92.6	91.1	76.5	75
Faridpur	99.5	97.9	98.8	97.6	97.6	90.8	88	78.3	74.7
Gazipur	99.5	99.5	99.5	98.6	97.2	91.9	89.9	79.3	75.9
Gopalganj	99	99	99	98.6	97.8	94.3	91.1	88.6	84.5
Jamalpur	99	99	99	98.1	98.1	97.4	94.1	89.1	85.8
Kishoreganj	96.2	96.2	96.2	95.7	95.7	95.2	87.6	90.3	82.5
Madaripur	98.1	98.1	98.1	96.4	96.4	93.9	87.9	80.1	74
Manikganj	99.5	99.5	99.5	99.5	99	94.4	91.6	83.3	80.9
Munshiganj	98.9	98.9	98.9	98.9	98.2	97.6	95.7	93.6	89.2
Mymensingh	99.5	99.5	99.5	95.2	95.2	89.9	83.3	81.8	75.3
Narayanganj	97.9	97.9	97.9	96.9	96.2	92.9	88.7	81.2	77.2
Narsingdi	99.5	99.5	99.5	99.5	98.9	96.4	92.4	88.6	82.9
Netrokona	95.8	95.8	95.8	92	92	86	84.2	76.7	72.2
Rajbari	99.5	99.5	99.5	98.4	98.4	94.2	91.2	81.2	78.2
Shariatpur	99.5	99	99.5	93.8	93.1	88.3	85.2	76.7	72.7
Sherpur	99.5	98.9	98.9	98.6	99	97.9	94.2	92.6	88.9
Tangail	99.5	99.5	99.5	98.6	98.6	97.6	92.7	91.1	86.2
DCC	99	99	99	99	98.3	91.4	84.5	82.5	74.9
Dhaka Slum	98.6	98.1	98.6	95.4	95.4	93.1	88.8	70.9	66.9
Dhaka Division	**98.7**	**98.6**	**98.7**	**97.2**	**96.9**	**93.5**	**89.7**	**84**	**79.6**
Bagerhat	98.1	98.1	98.1	96	96	93.3	85.6	86.7	78.3
Chuadanga	99.5	99	99	98.1	97.5	94.7	89.3	86.9	81
Jessore	99.4	99.4	99.4	99	99	97.3	90.2	90.1	83
Jhenaidah	100	100	100	99.5	99.5	98.3	92.1	95.8	89.6
Khulna	99.5	99.5	99.5	98.6	98.6	98.6	97.5	95.1	93.9
Kushtia	100	100	100	100	100	97.1	89	85.9	78.1
Magura	99.5	99.5	99.5	99	98.5	95.3	89.4	89.4	82.9
Meherpur	100	100	100	99.5	98.8	96.3	91.7	88.8	83.5
Narail	98.9	98.9	98.9	97.9	97.9	91	87.7	83	79.2
Satkhira	99.5	99.5	99.5	98.9	98.9	97.3	90.7	92.1	85.1
KCC	100	99.5	100	98.6	97.9	95.9	92.1	86.4	79.3
Khulna Division	**99.5**	**99.4**	**99.5**	**98.7**	**98.4**	**95.9**	**90.6**	**89.2**	**83.2**
Bogra	99.5	99.5	99.5	96.5	96.5	94.4	93.8	86.1	85.5
Chapai Nawabganj	100	100	100	98.6	98.6	95.7	91.3	89.9	85.4
Joypurhat	100	100	100	99.4	99.4	98.5	93.5	93.4	88.4
Naogaon	99.5	99.5	99.5	99	99	96.3	88.4	90.6	82.2
Natore	99.5	99.5	99.5	98.6	98.6	94.1	90.2	87.4	83.6
Pabna	99.5	99.5	99.5	96.9	96.9	94.1	91.3	88.3	84.8
Rajshahi	100	100	100	98.6	99	96	90.9	91.7	86
RCC	100	100	100	100	99.4	97.6	94.5	93.1	88.8
Sirajganj	99.5	99.5	99.5	99.5	98.8	97.9	93.1	92.3	86.9
Rajshahi Division	**99.7**	**99.7**	**99.7**	**98.6**	**98.5**	**96.1**	**91.9**	**90.3**	**85.8**
Dinajpur	99.5	99.5	99.5	97.9	97.9	98.1	94.8	89.7	86.4
Gaibandha	99.5	99.5	99.5	97.6	97	97	93.1	87.3	82.9

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Kurigram	100	100	100	99.5	99.5	95.1	92.3	85.2	79.5
Lalmonirhat	98.6	98.6	98.6	97.3	97.3	94.9	94.3	85.1	84.5
Nilphamari	100	100	100	98	98	92.2	87.1	77	71.4
Panchagarh	100	100	100	100	100	97.8	92.7	89	84
Rangpur	100	99.5	99.5	98.5	98.5	97.5	90.9	85	78.5
Thakurgaon	99.5	99.5	99.5	99	98.5	96.3	88.8	91.4	83.4
Rangpur Division	**99.6**	**99.6**	**99.6**	**98.5**	**98.3**	**96.1**	**91.7**	**86.2**	**81.2**
Habiganj	99.5	99.5	99.5	96.5	96.5	95	82.8	88.4	75.9
Maulvibazar	97.6	97.6	97.6	94.8	94.8	91.6	88.5	83.9	80.3
Sunamganj	98.4	98.4	98.4	96.5	96.5	93	90.4	79.8	77.3
Sylhet	95.6	95.6	95.6	92.6	92.6	89.4	88.1	76.2	74.9
SCC	97.1	97.1	97.1	93.8	93.8	90	83.6	69.3	62.4
Sylhet Division	**97.6**	**97.6**	**97.6**	**94.9**	**94.9**	**91.9**	**87.4**	**79.5**	**74.8**
Barisal	98.6	98.6	98.6	98.1	98.1	94.5	86.9	82.6	73.4
Bhola	100	99	100	96.5	95.8	93	86.3	83	74.7
Barguna	100	99.5	100	98.6	98.6	94.7	87.3	82.6	74.4
Jhalokati	99.5	99.5	99.5	99	99.5	97.1	87.1	85.6	75.4
Patuakhali	98.6	97.4	97.4	96.2	96.2	93.4	88.4	80.4	74.3
Pirojpur	100	100	100	98.1	98.1	93.8	90.2	79.1	75.5
BCC	99.5	98.6	98.6	98.1	97.3	94.7	87.9	85.1	77.9
Barisal Division	**99.5**	**98.9**	**99.2**	**97.8**	**97.7**	**94.4**	**87.8**	**82.6**	**75.2**
Bandarban	94.3	93.8	94.3	90.8	90.2	88.8	83.8	79.2	73.1
B.Baria	98.3	98.3	98.3	97.5	97.5	92	83.3	81.3	72.6
Chandpur	100	99.4	99.4	98.3	98.3	95.1	92	88	84.8
Chittagong	99.5	99.5	99.5	99.5	98.9	98.4	84.9	92.7	78.6
Comilla	100	100	100	99.5	99.5	96.1	84.7	88.6	76.9
Cox's Bazar	99.5	98.4	98.4	97.6	96.9	93.6	88.1	83.9	77.8
Feni	99.5	99	99.5	99	99	95.8	93.7	86.1	84
Khagrachhari	95.2	95.2	95.2	94.1	93.5	91.9	83.7	82.1	73.4
Lakshmipur	99.5	99.5	99.5	98.1	98.1	93.6	89.4	86.8	82.6
Noakhali	97.1	97.1	97.1	93.3	93.3	87.7	86.9	76.7	75.3
Rangamati	98.6	98.6	98.6	97.6	97.6	93.2	90.1	83.8	80.8
CCC	98.1	97.6	98.1	95.7	95.7	92	88.1	77.3	73.5
Chittagong Slum	98.6	95	96.9	90.8	90.8	88.8	84.6	71.8	67.6
Division	**98.3**	**98**	**98.2**	**96.8**	**96.5**	**93.2**	**87.5**	**84**	**77.9**
National	**99**	**98.9**	**98.9**	**97.6**	**97.4**	**94.5**	**89.6**	**85.5**	**80.2**
Urban	**98.9**	**98.7**	**98.8**	**97.5**	**97.3**	**94**	**89.2**	**83.5**	**78**
Rural	**99**	**98.9**	**99**	**97.6**	**97.4**	**94.6**	**89.7**	**85.9**	**80.6**

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

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
SCC	97.1	97.1	97.1	93.8	93.8	90	83.6	69.3	62.4
Dhaka Slum	98.6	98.1	98.6	95.4	95.4	93.1	88.8	70.9	66.9
Chittagong Slum	98.6	95	96.9	90.8	90.8	88.8	84.6	71.8	67.6
Nilphamari	100	100	100	98	98	92.2	87.1	77	71.4
Netrokona	95.8	95.8	95.8	92	92	86	84.2	76.7	72.2
B.Baria	98.3	98.3	98.3	97.5	97.5	92	83.3	81.3	72.6
Shariatpur	99.5	99	99.5	93.8	93.1	88.3	85.2	76.7	72.7
Bandarban	94.3	93.8	94.3	90.8	90.2	88.8	83.8	79.2	73.1
Barisal	98.6	98.6	98.6	98.1	98.1	94.5	86.9	82.6	73.4
Khagrachhari	95.2	95.2	95.2	94.1	93.5	91.9	83.7	82.1	73.4
CCC	98.1	97.6	98.1	95.7	95.7	92	88.1	77.3	73.5
Madaripur	98.1	98.1	98.1	96.4	96.4	93.9	87.9	80.1	74
Patuakhali	98.6	97.4	97.4	96.2	96.2	93.4	88.4	80.4	74.3
Barguna	100	99.5	100	98.6	98.6	94.7	87.3	82.6	74.4
Faridpur	99.5	97.9	98.8	97.6	97.6	90.8	88	78.3	74.7
Bhola	100	99	100	96.5	95.8	93	86.3	83	74.7
DCC	99	99	99	99	98.3	91.4	84.5	82.5	74.9
Sylhet	95.6	95.6	95.6	92.6	92.6	89.4	88.1	76.2	74.9
Dhaka	97.6	97.6	97.6	94.5	94.5	92.6	91.1	76.5	75
Mymensingh	99.5	99.5	99.5	95.2	95.2	89.9	83.3	81.8	75.3
Noakhali	97.1	97.1	97.1	93.3	93.3	87.7	86.9	76.7	75.3
Jhalokati	99.5	99.5	99.5	99	99.5	97.1	87.1	85.6	75.4
Pirojpur	100	100	100	98.1	98.1	93.8	90.2	79.1	75.5
Gazipur	99.5	99.5	99.5	98.6	97.2	91.9	89.9	79.3	75.9
Habiganj	99.5	99.5	99.5	96.5	96.5	95	82.8	88.4	75.9
Comilla	100	100	100	99.5	99.5	96.1	84.7	88.6	76.9
Narayanganj	97.9	97.9	97.9	96.9	96.2	92.9	88.7	81.2	77.2
Sunamganj	98.4	98.4	98.4	96.5	96.5	93	90.4	79.8	77.3
Cox's Bazar	99.5	98.4	98.4	97.6	96.9	93.6	88.1	83.9	77.8
BCC	99.5	98.6	98.6	98.1	97.3	94.7	87.9	85.1	77.9
Kushtia	100	100	100	100	100	97.1	89	85.9	78.1
Rajbari	99.5	99.5	99.5	98.4	98.4	94.2	91.2	81.2	78.2
Bagerhat	98.1	98.1	98.1	96	96	93.3	85.6	86.7	78.3
Rangpur	100	99.5	99.5	98.5	98.5	97.5	90.9	85	78.5
Chittagong	99.5	99.5	99.5	99.5	98.9	98.4	84.9	92.7	78.6
Narail	98.9	98.9	98.9	97.9	97.9	91	87.7	83	79.2
KCC	100	99.5	100	98.6	97.9	95.9	92.1	86.4	79.3
Kurigram	100	100	100	99.5	99.5	95.1	92.3	85.2	79.5
Maulvibazar	97.6	97.6	97.6	94.8	94.8	91.6	88.5	83.9	80.3
Rangamati	98.6	98.6	98.6	97.6	97.6	93.2	90.1	83.8	80.8
Manikganj	99.5	99.5	99.5	99.5	99	94.4	91.6	83.3	80.9
Chuadanga	99.5	99	99	98.1	97.5	94.7	89.3	86.9	81
Naogaon	99.5	99.5	99.5	99	99	96.3	88.4	90.6	82.2

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Kishoreganj	96.2	96.2	96.2	95.7	95.7	95.2	87.6	90.3	82.5
Lakshmipur	99.5	99.5	99.5	98.1	98.1	93.6	89.4	86.8	82.6
Narsingdi	99.5	99.5	99.5	99.5	98.9	96.4	92.4	88.6	82.9
Magura	99.5	99.5	99.5	99	98.5	95.3	89.4	89.4	82.9
Gaibandha	99.5	99.5	99.5	97.6	97	97	93.1	87.3	82.9
Jessore	99.4	99.4	99.4	99	99	97.3	90.2	90.1	83
Thakurgaon	99.5	99.5	99.5	99	98.5	96.3	88.8	91.4	83.4
Meherpur	100	100	100	99.5	98.8	96.3	91.7	88.8	83.5
Natore	99.5	99.5	99.5	98.6	98.6	94.1	90.2	87.4	83.6
Panchagarh	100	100	100	100	100	97.8	92.7	89	84
Feni	99.5	99	99.5	99	99	95.8	93.7	86.1	84
Gopalganj	99	99	99	98.6	97.8	94.3	91.1	88.6	84.5
Lalmonirhat	98.6	98.6	98.6	97.3	97.3	94.9	94.3	85.1	84.5
Pabna	99.5	99.5	99.5	96.9	96.9	94.1	91.3	88.3	84.8
Chandpur	100	99.4	99.4	98.3	98.3	95.1	92	88	84.8
Satkhira	99.5	99.5	99.5	98.9	98.9	97.3	90.7	92.1	85.1
Chapai Nawabganj	100	100	100	98.6	98.6	95.7	91.3	89.9	85.4
Bogra	99.5	99.5	99.5	96.5	96.5	94.4	93.8	86.1	85.5
Jamalpur	99	99	99	98.1	98.1	97.4	94.1	89.1	85.8
Rajshahi	100	100	100	98.6	99	96	90.9	91.7	86
Tangail	99.5	99.5	99.5	98.6	98.6	97.6	92.7	91.1	86.2
Dinajpur	99.5	99.5	99.5	97.9	97.9	98.1	94.8	89.7	86.4
Sirajganj	99.5	99.5	99.5	99.5	98.8	97.9	93.1	92.3	86.9
Joypurhat	100	100	100	99.4	99.4	98.5	93.5	93.4	88.4
RCC	100	100	100	100	99.4	97.6	94.5	93.1	88.8
Sherpur	99.5	98.9	98.9	98.6	99	97.9	94.2	92.6	88.9
Munshiganj	98.9	98.9	98.9	98.9	98.2	97.6	95.7	93.6	89.2
Jhenaidah	100	100	100	99.5	99.5	98.3	92.1	95.8	89.6
Khulna	99.5	99.5	99.5	98.6	98.6	98.6	97.5	95.1	93.9

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

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Dhaka Slum	98.6	98.1	98.6	95.4	95.4	93.1	88.8	70.9	66.9
Netrokona	95.8	95.8	95.8	92	92	86	84.2	76.7	72.2
Shariatpur	99.5	99	99.5	93.8	93.1	88.3	85.2	76.7	72.7
Madaripur	98.1	98.1	98.1	96.4	96.4	93.9	87.9	80.1	74
Faridpur	99.5	97.9	98.8	97.6	97.6	90.8	88	78.3	74.7
DCC	99	99	99	99	98.3	91.4	84.5	82.5	74.9
Dhaka	97.6	97.6	97.6	94.5	94.5	92.6	91.1	76.5	75
Mymensingh	99.5	99.5	99.5	95.2	95.2	89.9	83.3	81.8	75.3
Gazipur	99.5	99.5	99.5	98.6	97.2	91.9	89.9	79.3	75.9
Narayanganj	97.9	97.9	97.9	96.9	96.2	92.9	88.7	81.2	77.2
Rajbari	99.5	99.5	99.5	98.4	98.4	94.2	91.2	81.2	78.2
Manikganj	99.5	99.5	99.5	99.5	99	94.4	91.6	83.3	80.9
Kishoreganj	96.2	96.2	96.2	95.7	95.7	95.2	87.6	90.3	82.5
Narsingdi	99.5	99.5	99.5	99.5	98.9	96.4	92.4	88.6	82.9
Gopalganj	99	99	99	98.6	97.8	94.3	91.1	88.6	84.5
Jamalpur	99	99	99	98.1	98.1	97.4	94.1	89.1	85.8
Tangail	99.5	99.5	99.5	98.6	98.6	97.6	92.7	91.1	86.2
Sherpur	99.5	98.9	98.9	98.6	99	97.9	94.2	92.6	88.9
Munshiganj	98.9	98.9	98.9	98.9	98.2	97.6	95.7	93.6	89.2
Dhaka Division	**98.7**	**98.6**	**98.7**	**97.2**	**96.9**	**93.5**	**89.7**	**84**	**79.6**
Kushtia	100	100	100	100	100	97.1	89	85.9	78.1
Bagerhat	98.1	98.1	98.1	96	96	93.3	85.6	86.7	78.3
Narail	98.9	98.9	98.9	97.9	97.9	91	87.7	83	79.2
KCC	100	99.5	100	98.6	97.9	95.9	92.1	86.4	79.3
Chuadanga	99.5	99	99	98.1	97.5	94.7	89.3	86.9	81
Magura	99.5	99.5	99.5	99	98.5	95.3	89.4	89.4	82.9
Jessore	99.4	99.4	99.4	99	99	97.3	90.2	90.1	83
Meherpur	100	100	100	99.5	98.8	96.3	91.7	88.8	83.5
Satkhira	99.5	99.5	99.5	98.9	98.9	97.3	90.7	92.1	85.1
Jhenaidah	100	100	100	99.5	99.5	98.3	92.1	95.8	89.6
Khulna	99.5	99.5	99.5	98.6	98.6	98.6	97.5	95.1	93.9
Khulna Division	**99.5**	**99.4**	**99.5**	**98.7**	**98.4**	**95.9**	**90.6**	**89.2**	**83.2**
Naogaon	99.5	99.5	99.5	99	99	96.3	88.4	90.6	82.2
Natore	99.5	99.5	99.5	98.6	98.6	94.1	90.2	87.4	83.6
Pabna	99.5	99.5	99.5	96.9	96.9	94.1	91.3	88.3	84.8
Chapai Nawabganj	100	100	100	98.6	98.6	95.7	91.3	89.9	85.4
Bogra	99.5	99.5	99.5	96.5	96.5	94.4	93.8	86.1	85.5
Rajshahi	100	100	100	98.6	99	96	90.9	91.7	86
Sirajganj	99.5	99.5	99.5	99.5	98.8	97.9	93.1	92.3	86.9
Joypurhat	100	100	100	99.4	99.4	98.5	93.5	93.4	88.4
RCC	100	100	100	100	99.4	97.6	94.5	93.1	88.8
Rajshahi Division	**99.7**	**99.7**	**99.7**	**98.6**	**98.5**	**96.1**	**91.9**	**90.3**	**85.8**
Nilphamari	100	100	100	98	98	92.2	87.1	77	71.4

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Rangpur	100	99.5	99.5	98.5	98.5	97.5	90.9	85	78.5
Kurigram	100	100	100	99.5	99.5	95.1	92.3	85.2	79.5
Gaibandha	99.5	99.5	99.5	97.6	97	97	93.1	87.3	82.9
Thakurgaon	99.5	99.5	99.5	99	98.5	96.3	88.8	91.4	83.4
Panchagarh	100	100	100	100	100	97.8	92.7	89	84
Lalmonirhat	98.6	98.6	98.6	97.3	97.3	94.9	94.3	85.1	84.5
Dinajpur	99.5	99.5	99.5	97.9	97.9	98.1	94.8	89.7	86.4
Rangpur Division	**99.6**	**99.6**	**99.6**	**98.5**	**98.3**	**96.1**	**91.7**	**86.2**	**81.2**
SCC	97.1	97.1	97.1	93.8	93.8	90	83.6	69.3	62.4
Sylhet	95.6	95.6	95.6	92.6	92.6	89.4	88.1	76.2	74.9
Habiganj	99.5	99.5	99.5	96.5	96.5	95	82.8	88.4	75.9
Sunamganj	98.4	98.4	98.4	96.5	96.5	93	90.4	79.8	77.3
Maulvibazar	97.6	97.6	97.6	94.8	94.8	91.6	88.5	83.9	80.3
Sylhet Division	**97.6**	**97.6**	**97.6**	**94.9**	**94.9**	**91.9**	**87.4**	**79.5**	**74.8**
Barisal	98.6	98.6	98.6	98.1	98.1	94.5	86.9	82.6	73.4
Patuakhali	98.6	97.4	97.4	96.2	96.2	93.4	88.4	80.4	74.3
Barguna	100	99.5	100	98.6	98.6	94.7	87.3	82.6	74.4
Bhola	100	99	100	96.5	95.8	93	86.3	83	74.7
Jhalokati	99.5	99.5	99.5	99	99.5	97.1	87.1	85.6	75.4
Pirojpur	100	100	100	98.1	98.1	93.8	90.2	79.1	75.5
BCC	99.5	98.6	98.6	98.1	97.3	94.7	87.9	85.1	77.9
Barisal Division	**99.5**	**98.9**	**99.2**	**97.8**	**97.7**	**94.4**	**87.8**	**82.6**	**75.2**
Chittagong Slum	98.6	95	96.9	90.8	90.8	88.8	84.6	71.8	67.6
B.Baria	98.3	98.3	98.3	97.5	97.5	92	83.3	81.3	72.6
Bandarban	94.3	93.8	94.3	90.8	90.2	88.8	83.8	79.2	73.1
Khagrachhari	95.2	95.2	95.2	94.1	93.5	91.9	83.7	82.1	73.4
CCC	98.1	97.6	98.1	95.7	95.7	92	88.1	77.3	73.5
Noakhali	97.1	97.1	97.1	93.3	93.3	87.7	86.9	76.7	75.3
Comilla	100	100	100	99.5	99.5	96.1	84.7	88.6	76.9
Cox's Bazar	99.5	98.4	98.4	97.6	96.9	93.6	88.1	83.9	77.8
Chittagong	99.5	99.5	99.5	99.5	98.9	98.4	84.9	92.7	78.6
Rangamati	98.6	98.6	98.6	97.6	97.6	93.2	90.1	83.8	80.8
Lakshmipur	99.5	99.5	99.5	98.1	98.1	93.6	89.4	86.8	82.6
Feni	99.5	99	99.5	99	99	95.8	93.7	86.1	84
Chandpur	100	99.4	99.4	98.3	98.3	95.1	92	88	84.8
CHITTAGONG Division	**98.3**	**98**	**98.2**	**96.8**	**96.5**	**93.2**	**87.5**	**84**	**77.9**
National	99	98.9	98.9	97.6	97.4	94.5	89.6	85.5	80.2
Urban	98.9	98.7	98.8	97.5	97.3	94	89.2	83.5	78
Rural	99	98.9	99	97.6	97.4	94.6	89.7	85.9	80.6

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

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Dhaka	97.6	97.6	97.6	94.5	94.5	93.3	91.8	84.2	82.7
Faridpur	99.5	97.9	98.8	97.6	97.6	92.9	88.7	83.9	79.7
Gazipur	99.5	99.5	99.5	98.6	97.2	93.9	91.2	81.3	77.3
Gopalganj	99	99	99	98.6	97.8	94.3	91.1	91.1	87
Jamalpur	99	99	99	98.1	98.1	97.4	94.1	91.7	88.4
Kishoreganj	96.2	96.2	96.2	95.7	95.7	95.2	87.6	90.3	82.5
Madaripur	98.1	98.1	98.1	96.4	96.4	95.4	88.6	87.7	80.8
Manikganj	99.5	99.5	99.5	99.5	99	95.2	92.4	85.6	83.3
Munshiganj	99.5	99.5	99.5	99.5	98.9	98.9	97	94.9	90.5
Mymensingh	99.5	99.5	99.5	95.9	95.9	90.6	84	84	77.5
Narayanganj	98.6	98.6	98.6	97.6	96.9	92.9	88.7	83.2	79.2
Narsingdi	99.5	99.5	99.5	99.5	98.9	96.4	92.4	89.9	84.2
Netrokona	96.7	96.7	96.7	92.9	92.9	86	84.2	81.3	76.7
Rajbari	99.5	99.5	99.5	98.4	98.4	94.2	91.2	84.7	81.8
Shariatpur	99.5	99	99.5	94.6	93.8	89.1	85.2	84.6	79.9
Sherpur	99.5	99.5	99.5	98.6	99	98.6	94.8	95.1	91.4
Tangail	99.5	99.5	99.5	98.6	98.6	97.6	92.7	93.5	88.6
DCC	99	99	99	99	98.3	91.4	84.5	85.6	77.9
Dhaka Slum	98.6	98.1	98.6	97.1	97.1	93.9	89.6	78.1	74.1
Dhaka Division	**98.9**	**98.7**	**98.8**	**97.4**	**97.1**	**94.1**	**90.1**	**87.4**	**82.8**
Bagerhat	98.1	98.1	98.1	96	96	93.3	85.6	88.1	79.7
Chuadanga	99.5	99	99	98.1	97.5	95.3	89.9	89.9	83.9
Jessore	100	100	100	99	99	98.5	90.2	91.3	83
Jhenaidah	100	100	100	99.5	99.5	98.9	92.7	96.4	90.2
Khulna	99.5	99.5	99.5	98.6	98.6	98.6	97.5	96.2	95.1
Kushtia	100	100	100	100	100	98.6	89	88.1	78.8
Magura	99.5	99.5	99.5	99	98.5	95.9	89.4	91.1	84.1
Meherpur	100	100	100	99.5	98.8	96.3	91.7	91.9	86.5
Narail	99.5	99.5	99.5	98.6	98.6	91.7	88.4	85.7	81.8
Satkhira	99.5	99.5	99.5	99.5	99.5	97.9	91.4	93.4	86.4
KCC	100	99.5	100	98.6	97.9	96.5	92.8	91.4	84.2
Khulna Division	**99.6**	**99.5**	**99.6**	**98.8**	**98.5**	**96.5**	**90.9**	**91.3**	**85**
Bogra	99.5	99.5	99.5	96.5	96.5	94.4	93.8	88.5	87.9
Chapai Nawabganj	100	100	100	98.6	98.6	96.4	91.9	91.8	87.3
Joypurhat	100	100	100	100	100	98.5	93.5	94.5	89.5
Naogaon	99.5	99.5	99.5	99	99	96.3	88.4	92.4	84
Natore	99.5	99.5	99.5	98.6	98.6	94.7	90.2	89.4	85.5
Pabna	99.5	99.5	99.5	96.9	96.9	94.1	91.3	91	87.6
Rajshahi	100	100	100	98.6	99	96	90.9	93	87.3
RCC	100	100	100	100	99.4	98.8	94.5	97.4	92.5
Sirajganj	99.5	99.5	99.5	99.5	98.8	97.9	93.1	92.9	87.6
Rajshahi Division	**99.7**	**99.7**	**99.7**	**98.6**	**98.6**	**96.3**	**92**	**92.3**	**87.7**
Dinajpur	99.5	99.5	99.5	98.4	98.4	98.1	94.8	90.3	87
Gaibandha	99.5	99.5	99.5	97.6	97	97	93.1	89.8	85.4

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Kurigram	100	100	100	99.5	99.5	97.4	94.6	89.8	83.9
Lalmonirhat	98.6	98.6	98.6	97.3	97.3	96.2	94.3	89.5	87.6
Nilphamari	100	100	100	98.6	98.6	95.5	88.2	86	78.2
Panchagarh	100	100	100	100	100	97.8	92.7	91.6	86.5
Rangpur	100	99.5	99.5	99	99	98.6	92	88.8	82.3
Thakurgaon	99.5	99.5	99.5	99	98.5	96.9	88.8	94.3	85.7
Rangpur Division	**99.6**	**99.6**	**99.6**	**98.7**	**98.5**	**97.2**	**92.3**	**90**	**84.5**
Habiganj	99.5	99.5	99.5	97.6	97.6	96.1	83.8	92.5	80
Maulvibazar	97.6	97.6	97.6	94.8	94.8	92.2	89.1	84.5	81
Sunamganj	99	99	99	97.1	97.1	93.6	91.1	86.3	83.2
Sylhet	96.2	96.2	96.2	93.8	93.8	90.6	89.4	81.3	80
SCC	97.1	97.1	97.1	93.8	93.8	91.4	84.3	75.6	68
Sylhet Division	**97.9**	**97.9**	**97.9**	**95.5**	**95.5**	**92.9**	**88.2**	**84**	**79.1**
Barisal	98.6	98.6	98.6	98.1	98.1	94.5	86.9	86.8	77.4
Bhola	100	99	100	96.5	95.8	93	86.3	85	76.7
Barguna	100	99.5	100	98.6	98.6	95.4	87.9	88.1	79.9
Jhalokati	99.5	99.5	99.5	99	99.5	97.1	87.1	88.5	78.3
Patuakhali	98.6	97.4	97.4	96.2	96.2	93.4	88.4	81	75
Pirojpur	100	100	100	98.1	98.1	95	90.8	80.9	76.7
BCC	99.5	98.6	98.6	98.1	97.3	94.7	87.9	88.1	80.9
Barisal Division	**99.5**	**98.9**	**99.2**	**97.8**	**97.7**	**94.7**	**88**	**85.5**	**77.9**
Bandarban	94.3	93.8	94.3	90.8	90.2	89.4	84.4	82.3	76.2
B.Baria	99	99	99	98.3	98.3	93.5	84.1	84.5	75
Chandpur	100	100	100	98.9	98.9	96.4	93.2	91.1	88
Chittagong	99.5	99.5	99.5	99.5	98.9	98.4	84.9	95.2	81
Comilla	100	100	100	99.5	99.5	96.1	84.7	91.7	79.9
Cox's Bazar	99.5	98.4	98.4	97.6	96.9	93.6	88.1	84.5	78.5
Feni	99.5	99	99.5	99	99	96.5	94.4	90.3	88.2
Khagrachhari	95.2	95.2	95.2	94.1	93.5	91.9	83.7	85.8	77.1
Lakshmipur	99.5	99.5	99.5	98.1	98.1	93.6	89.4	88.9	84.7
Noakhali	97.1	97.1	97.1	93.3	93.3	89.2	88.4	80.6	79.1
Rangamati	98.6	98.6	98.6	97.6	97.6	94.5	91.3	88.8	85.7
CCC	98.1	97.6	98.1	95.7	95.7	92.7	88.1	81.1	76.5
Chittagong Slum	98.6	95	96.9	91.7	90.8	88.8	84.6	76.9	71.8
CHITTAGONG Division	**98.4**	**98.2**	**98.3**	**96.9**	**96.6**	**93.8**	**88**	**87.2**	**81**
National	99.1	99	99	97.7	97.6	95.1	90	88.5	82.9
Urban	99	98.7	98.8	97.6	97.4	94.9	89.5	87.6	81.7
Rural	99.1	99	99.1	97.8	97.6	95.1	90.1	88.7	83.2

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

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
SCC	97.1	97.1	97.1	93.8	93.8	91.4	84.3	75.6	68
Ctg Slum	98.6	95	96.9	91.7	90.8	88.8	84.6	76.9	71.8
Dhaka Slum	98.6	98.1	98.6	97.1	97.1	93.9	89.6	78.1	74.1
Patuakhali	98.6	97.4	97.4	96.2	96.2	93.4	88.4	81	75
B.Baria	99	99	99	98.3	98.3	93.5	84.1	84.5	75
Bandarban	94.3	93.8	94.3	90.8	90.2	89.4	84.4	82.3	76.2
CCC	98.1	97.6	98.1	95.7	95.7	92.7	88.1	81.1	76.5
Netrokona	96.7	96.7	96.7	92.9	92.9	86	84.2	81.3	76.7
Bhola	100	99	100	96.5	95.8	93	86.3	85	76.7
Pirojpur	100	100	100	98.1	98.1	95	90.8	80.9	76.7
Khagrachhari	95.2	95.2	95.2	94.1	93.5	91.9	83.7	85.8	77.1
Gazipur	99.5	99.5	99.5	98.6	97.2	93.9	91.2	81.3	77.3
Barisal	98.6	98.6	98.6	98.1	98.1	94.5	86.9	86.8	77.4
Mymensingh	99.5	99.5	99.5	95.9	95.9	90.6	84	84	77.5
DCC	99	99	99	99	98.3	91.4	84.5	85.6	77.9
Nilphamari	100	100	100	98.6	98.6	95.5	88.2	86	78.2
Jhalokati	99.5	99.5	99.5	99	99.5	97.1	87.1	88.5	78.3
Cox's Bazar	99.5	98.4	98.4	97.6	96.9	93.6	88.1	84.5	78.5
Kushtia	100	100	100	100	100	98.6	89	88.1	78.8
Noakhali	97.1	97.1	97.1	93.3	93.3	89.2	88.4	80.6	79.1
Narayanganj	98.6	98.6	98.6	97.6	96.9	92.9	88.7	83.2	79.2
Faridpur	99.5	97.9	98.8	97.6	97.6	92.9	88.7	83.9	79.7
Bagerhat	98.1	98.1	98.1	96	96	93.3	85.6	88.1	79.7
Shariatpur	99.5	99	99.5	94.6	93.8	89.1	85.2	84.6	79.9
Barguna	100	99.5	100	98.6	98.6	95.4	87.9	88.1	79.9
Comilla	100	100	100	99.5	99.5	96.1	84.7	91.7	79.9
Habiganj	99.5	99.5	99.5	97.6	97.6	96.1	83.8	92.5	80
Sylhet	96.2	96.2	96.2	93.8	93.8	90.6	89.4	81.3	80
Madaripur	98.1	98.1	98.1	96.4	96.4	95.4	88.6	87.7	80.8
BCC	99.5	98.6	98.6	98.1	97.3	94.7	87.9	88.1	80.9
Maulvibazar	97.6	97.6	97.6	94.8	94.8	92.2	89.1	84.5	81
Chittagong	99.5	99.5	99.5	99.5	98.9	98.4	84.9	95.2	81
Rajbari	99.5	99.5	99.5	98.4	98.4	94.2	91.2	84.7	81.8
Narail	99.5	99.5	99.5	98.6	98.6	91.7	88.4	85.7	81.8
Rangpur	100	99.5	99.5	99	99	98.6	92	88.8	82.3
Kishoreganj	96.2	96.2	96.2	95.7	95.7	95.2	87.6	90.3	82.5
Dhaka	97.6	97.6	97.6	94.5	94.5	93.3	91.8	84.2	82.7
Jessore	100	100	100	99	99	98.5	90.2	91.3	83
Sunamganj	99	99	99	97.1	97.1	93.6	91.1	86.3	83.2
Manikganj	99.5	99.5	99.5	99.5	99	95.2	92.4	85.6	83.3
Chuadanga	99.5	99	99	98.1	97.5	95.3	89.9	89.9	83.9
Kurigram	100	100	100	99.5	99.5	97.4	94.6	89.8	83.9
Naogaon	99.5	99.5	99.5	99	99	96.3	88.4	92.4	84

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Magura	99.5	99.5	99.5	99	98.5	95.9	89.4	91.1	84.1
Narsingdi	99.5	99.5	99.5	99.5	98.9	96.4	92.4	89.9	84.2
KCC	100	99.5	100	98.6	97.9	96.5	92.8	91.4	84.2
Lakshmipur	99.5	99.5	99.5	98.1	98.1	93.6	89.4	88.9	84.7
Gaibandha	99.5	99.5	99.5	97.6	97	97	93.1	89.8	85.4
Natore	99.5	99.5	99.5	98.6	98.6	94.7	90.2	89.4	85.5
Thakurgaon	99.5	99.5	99.5	99	98.5	96.9	88.8	94.3	85.7
Rangamati	98.6	98.6	98.6	97.6	97.6	94.5	91.3	88.8	85.7
Satkhira	99.5	99.5	99.5	99.5	99.5	97.9	91.4	93.4	86.4
Meherpur	100	100	100	99.5	98.8	96.3	91.7	91.9	86.5
Panchagarh	100	100	100	100	100	97.8	92.7	91.6	86.5
Gopalganj	99	99	99	98.6	97.8	94.3	91.1	91.1	87
Dinajpur	99.5	99.5	99.5	98.4	98.4	98.1	94.8	90.3	87
Chapai Nawabganj	100	100	100	98.6	98.6	96.4	91.9	91.8	87.3
Rajshahi	100	100	100	98.6	99	96	90.9	93	87.3
Pabna	99.5	99.5	99.5	96.9	96.9	94.1	91.3	91	87.6
Sirajganj	99.5	99.5	99.5	99.5	98.8	97.9	93.1	92.9	87.6
Lalmonirhat	98.6	98.6	98.6	97.3	97.3	96.2	94.3	89.5	87.6
Bogra	99.5	99.5	99.5	96.5	96.5	94.4	93.8	88.5	87.9
Chandpur	100	100	100	98.9	98.9	96.4	93.2	91.1	88
Feni	99.5	99	99.5	99	99	96.5	94.4	90.3	88.2
Jamalpur	99	99	99	98.1	98.1	97.4	94.1	91.7	88.4
Tangail	99.5	99.5	99.5	98.6	98.6	97.6	92.7	93.5	88.6
Joypurhat	100	100	100	100	100	98.5	93.5	94.5	89.5
Jhenaidah	100	100	100	99.5	99.5	98.9	92.7	96.4	90.2
Munshiganj	99.5	99.5	99.5	99.5	98.9	98.9	97	94.9	90.5
Sherpur	99.5	99.5	99.5	98.6	99	98.6	94.8	95.1	91.4
RCC	100	100	100	100	99.4	98.8	94.5	97.4	92.5
Khulna	99.5	99.5	99.5	98.6	98.6	98.6	97.5	96.2	95.1

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

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Dhaka Slum	98.6	98.1	98.6	97.1	97.1	93.9	89.6	78.1	74.1
Netrokona	96.7	96.7	96.7	92.9	92.9	86	84.2	81.3	76.7
Gazipur	99.5	99.5	99.5	98.6	97.2	93.9	91.2	81.3	77.3
Mymensingh	99.5	99.5	99.5	95.9	95.9	90.6	84	84	77.5
DCC	99	99	99	99	98.3	91.4	84.5	85.6	77.9
Narayanganj	98.6	98.6	98.6	97.6	96.9	92.9	88.7	83.2	79.2
Faridpur	99.5	97.9	98.8	97.6	97.6	92.9	88.7	83.9	79.7
Shariatpur	99.5	99	99.5	94.6	93.8	89.1	85.2	84.6	79.9
Madaripur	98.1	98.1	98.1	96.4	96.4	95.4	88.6	87.7	80.8
Rajbari	99.5	99.5	99.5	98.4	98.4	94.2	91.2	84.7	81.8
Kishoreganj	96.2	96.2	96.2	95.7	95.7	95.2	87.6	90.3	82.5
Dhaka	97.6	97.6	97.6	94.5	94.5	93.3	91.8	84.2	82.7
Manikganj	99.5	99.5	99.5	99.5	99	95.2	92.4	85.6	83.3
Narsingdi	99.5	99.5	99.5	99.5	98.9	96.4	92.4	89.9	84.2
Gopalganj	99	99	99	98.6	97.8	94.3	91.1	91.1	87
Jamalpur	99	99	99	98.1	98.1	97.4	94.1	91.7	88.4
Tangail	99.5	99.5	99.5	98.6	98.6	97.6	92.7	93.5	88.6
Munshiganj	99.5	99.5	99.5	99.5	98.9	98.9	97	94.9	90.5
Sherpur	99.5	99.5	99.5	98.6	99	98.6	94.8	95.1	91.4
Dhaka Division	**98.9**	**98.7**	**98.8**	**97.4**	**97.1**	**94.1**	**90.1**	**87.4**	**82.8**
Kushtia	100	100	100	100	100	98.6	89	88.1	78.8
Bagerhat	98.1	98.1	98.1	96	96	93.3	85.6	88.1	79.7
Narail	99.5	99.5	99.5	98.6	98.6	91.7	88.4	85.7	81.8
Jessore	100	100	100	99	99	98.5	90.2	91.3	83
Chuadanga	99.5	99	99	98.1	97.5	95.3	89.9	89.9	83.9
Magura	99.5	99.5	99.5	99	98.5	95.9	89.4	91.1	84.1
KCC	100	99.5	100	98.6	97.9	96.5	92.8	91.4	84.2
Satkhira	99.5	99.5	99.5	99.5	99.5	97.9	91.4	93.4	86.4
Meherpur	100	100	100	99.5	98.8	96.3	91.7	91.9	86.5
Jhenaidah	100	100	100	99.5	99.5	98.9	92.7	96.4	90.2
Khulna	99.5	99.5	99.5	98.6	98.6	98.6	97.5	96.2	95.1
Khulna Division	**99.6**	**99.5**	**99.6**	**98.8**	**98.5**	**96.5**	**90.9**	**91.3**	**85**
Naogaon	99.5	99.5	99.5	99	99	96.3	88.4	92.4	84
Natore	99.5	99.5	99.5	98.6	98.6	94.7	90.2	89.4	85.5
Chapai Nawabganj	100	100	100	98.6	98.6	96.4	91.9	91.8	87.3
Rajshahi	100	100	100	98.6	99	96	90.9	93	87.3
Pabna	99.5	99.5	99.5	96.9	96.9	94.1	91.3	91	87.6
Sirajganj	99.5	99.5	99.5	99.5	98.8	97.9	93.1	92.9	87.6
Bogra	99.5	99.5	99.5	96.5	96.5	94.4	93.8	88.5	87.9
Joypurhat	100	100	100	100	100	98.5	93.5	94.5	89.5
RCC	100	100	100	100	99.4	98.8	94.5	97.4	92.5
Rajshahi Division	**99.7**	**99.7**	**99.7**	**98.6**	**98.6**	**96.3**	**92**	**92.3**	**87.7**
Nilphamari	100	100	100	98.6	98.6	95.5	88.2	86	78.2

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Rangpur	100	99.5	99.5	99	99	98.6	92	88.8	82.3
Kurigram	100	100	100	99.5	99.5	97.4	94.6	89.8	83.9
Gaibandha	99.5	99.5	99.5	97.6	97	97	93.1	89.8	85.4
Thakurgaon	99.5	99.5	99.5	99	98.5	96.9	88.8	94.3	85.7
Panchagarh	100	100	100	100	100	97.8	92.7	91.6	86.5
Dinajpur	99.5	99.5	99.5	98.4	98.4	98.1	94.8	90.3	87
Lalmonirhat	98.6	98.6	98.6	97.3	97.3	96.2	94.3	89.5	87.6
Rangpur Division	**99.6**	**99.6**	**99.6**	**98.7**	**98.5**	**97.2**	**92.3**	**90**	**84.5**
SCC	97.1	97.1	97.1	93.8	93.8	91.4	84.3	75.6	68
Habiganj	99.5	99.5	99.5	97.6	97.6	96.1	83.8	92.5	80
Sylhet	96.2	96.2	96.2	93.8	93.8	90.6	89.4	81.3	80
Maulvibazar	97.6	97.6	97.6	94.8	94.8	92.2	89.1	84.5	81
Sunamganj	99	99	99	97.1	97.1	93.6	91.1	86.3	83.2
Sylhet Division	**97.9**	**97.9**	**97.9**	**95.5**	**95.5**	**92.9**	**88.2**	**84**	**79.1**
Patuakhali	98.6	97.4	97.4	96.2	96.2	93.4	88.4	81	75
Bhola	100	99	100	96.5	95.8	93	86.3	85	76.7
Pirojpur	100	100	100	98.1	98.1	95	90.8	80.9	76.7
Barisal	98.6	98.6	98.6	98.1	98.1	94.5	86.9	86.8	77.4
Jhalokati	99.5	99.5	99.5	99	99.5	97.1	87.1	88.5	78.3
Barguna	100	99.5	100	98.6	98.6	95.4	87.9	88.1	79.9
BCC	99.5	98.6	98.6	98.1	97.3	94.7	87.9	88.1	80.9
Barisal Division	**99.5**	**98.9**	**99.2**	**97.8**	**97.7**	**94.7**	**88**	**85.5**	**77.9**
Chittagong Slum	98.6	95	96.9	91.7	90.8	88.8	84.6	76.9	71.8
B.Baria	99	99	99	98.3	98.3	93.5	84.1	84.5	75
Bandarban	94.3	93.8	94.3	90.8	90.2	89.4	84.4	82.3	76.2
CCC	98.1	97.6	98.1	95.7	95.7	92.7	88.1	81.1	76.5
Khagrachhari	95.2	95.2	95.2	94.1	93.5	91.9	83.7	85.8	77.1
Cox's Bazar	99.5	98.4	98.4	97.6	96.9	93.6	88.1	84.5	78.5
Noakhali	97.1	97.1	97.1	93.3	93.3	89.2	88.4	80.6	79.1
Comilla	100	100	100	99.5	99.5	96.1	84.7	91.7	79.9
Chittagong	99.5	99.5	99.5	99.5	98.9	98.4	84.9	95.2	81
Lakshmipur	99.5	99.5	99.5	98.1	98.1	93.6	89.4	88.9	84.7
Rangamati	98.6	98.6	98.6	97.6	97.6	94.5	91.3	88.8	85.7
Chandpur	100	100	100	98.9	98.9	96.4	93.2	91.1	88
Feni	99.5	99	99.5	99	99	96.5	94.4	90.3	88.2
CHITTAGONG Division	**98.4**	**98.2**	**98.3**	**96.9**	**96.6**	**93.8**	**88**	**87.2**	**81**
National	99.1	99	99	97.7	97.6	95.1	90	88.5	82.9
Urban	99	98.7	98.8	97.6	97.4	94.9	89.5	87.6	81.7
Rural	99.1	99	99.1	97.8	97.6	95.1	90.1	88.7	83.2

Table 3: Crude Immunization Coverage among 12-23 Months Old Children According to Survey Units by District, City Corporation

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Dhaka	97.6	97.6	97.6	95.2	95.2	93.3	93.3	85.7	85.7
Faridpur	99.5	98.6	99.5	97.6	97.6	95.7	95.7	91	91
Gazipur	99.5	99.5	99.5	98.6	98.6	95.2	95.2	83.3	83.3
Gopalganj	99	99	99	98.6	98.6	97.6	97.6	97.6	97.6
Jamalpur	99	99	99	98.1	98.1	98.1	98.1	94.3	94.3
Kishoreganj	96.2	96.2	96.2	95.7	95.7	95.2	95.2	92.9	92.9
Madaripur	98.1	98.1	98.1	97.1	97.1	96.2	96.2	90	90
Manikganj	99.5	99.5	99.5	99.5	99	99	98.6	91.9	91.9
Munshiganj	99.5	99.5	99.5	99.5	99.5	99.5	99.5	98.1	98.1
Mymensingh	99.5	99.5	99.5	96.7	96.7	95.7	95.7	89	89
Narayanganj	98.6	98.6	98.6	97.6	97.6	95.7	95.7	88.6	88.6
Narsingdi	99.5	99.5	99.5	99.5	99.5	99	99	95.7	95.7
Netrokona	96.7	96.7	96.7	93.8	93.8	91.4	91.4	86.7	86.7
Rajbari	99.5	99.5	99.5	99	99	96.7	96.7	91.9	91.9
Shariatpur	99.5	99	99.5	96.2	96.2	91.4	91.4	86.2	86.2
Sherpur	99.5	99.5	99.5	98.6	99	98.6	98.6	95.7	95.7
Tangail	99.5	99.5	99.5	98.6	98.6	97.6	97.6	94.3	94.3
DCC	99	99	99	99	99	99	99	98.6	98.6
Dhaka Slum	98.6	98.1	98.6	97.1	97.1	94.8	94.8	86.2	86.2
Dhaka Division	**98.9**	**98.8**	**98.9**	**97.7**	**97.7**	**96.4**	**96.4**	**91.7**	**91.7**
Bagerhat	98.1	98.1	98.1	96.7	96.7	93.3	93.3	91	91
Chuadanga	99.5	99	99	98.1	98.1	97.1	97.1	95.2	95.2
Jessore	100	100	100	99	99	99	99	94.3	94.3
Jhenaidah	100	100	100	99.5	99.5	99.5	99.5	99.5	99.5
Khulna	99.5	99.5	99.5	98.6	98.6	98.6	98.6	96.2	96.2
Kushtia	100	100	100	100	100	98.6	98.6	91	91
Magura	99.5	99.5	99.5	99	99	97.6	97.6	95.2	95.2
Meherpur	100	100	100	99.5	99.5	98.6	98.6	95.7	95.7
Narail	99.5	99.5	99.5	98.6	98.6	94.3	94.3	91	91
Satkhira	99.5	99.5	99.5	99.5	99.5	98.6	98.6	96.7	96.2
KCC	100	99.5	100	98.6	98.6	97.1	97.1	93.3	93.3
Khulna Division	**99.6**	**99.5**	**99.6**	**98.8**	**98.8**	**97.5**	**97.5**	**94.5**	**94.4**
Bogra	99.5	99.5	99.5	97.1	97.1	96.2	96.2	91	91
Chapai Nawabganj	100	100	100	98.6	98.6	97.6	97.6	94.3	94.3
Joypurhat	100	100	100	100	100	99	99	96.2	96.2
Naogaon	99.5	99.5	99.5	99	99	98.1	98.1	94.8	94.8
Natore	99.5	99.5	99.5	98.6	98.6	96.7	96.7	91.9	91.9
Pabna	99.5	99.5	99.5	97.6	97.6	96.2	96.2	93.8	93.8
Rajshahi	100	100	100	98.6	99	98.6	98.6	96.2	96.2
RCC	100	100	100	100	100	100	100	98.6	98.6
Sirajganj	99.5	99.5	99.5	99.5	99.5	98.6	98.6	94.3	94.3
Rajshahi Div	**99.7**	**99.7**	**99.7**	**98.8**	**98.8**	**97.9**	**97.9**	**94.6**	**94.6**
Dinajpur	99.5	99.5	99.5	99.5	99.5	98.1	98.1	91.9	91.9
Gaibandha	99.5	99.5	99.5	97.6	97.6	97.6	97.6	90.5	90.5
Kurigram	100	100	100	99.5	99.5	98.6	98.6	93.8	93.8

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Lalmonirhat	98.6	98.6	98.6	98.6	98.6	96.2	96.2	89.5	89.5
Nilphamari	100	100	100	98.6	98.6	96.7	96.7	90	90
Panchagarh	100	100	100	100	100	99	99	94.8	94.8
Rangpur	100	99.5	99.5	99	99	98.6	98.6	90.5	90.5
Thakurgaon	99.5	99.5	99.5	99	99	98.6	98.6	97.1	97.1
Rangpur Division	**99.6**	**99.6**	**99.6**	**99**	**99**	**97.9**	**97.9**	**92.3**	**92.3**
Habiganj	99.5	99.5	99.5	98.6	98.6	98.1	98.1	96.7	96.7
Maulvibazar	97.6	97.6	97.6	94.8	94.8	92.9	92.9	87.6	87.1
Sunamganj	99	99	99	97.1	97.1	94.3	94.3	89.5	89
Sylhet	96.2	96.2	96.2	93.8	93.8	91.9	91.9	85.7	85.7
SCC	97.1	97.1	97.1	93.8	93.8	91.4	91.4	80.5	80.5
Sylhet Division	**97.9**	**97.9**	**97.9**	**95.6**	**95.6**	**93.7**	**93.7**	**88**	**87.8**
Barisal	98.6	98.6	98.6	98.1	98.1	95.2	95.2	89.5	89.5
Bhola	100	99	100	97.1	97.1	95.7	95.7	89	88.6
Barguna	100	99.5	100	98.6	98.6	98.1	98.1	92.9	92.9
Jhalokati	99.5	99.5	99.5	99	99.5	98.6	98.6	95.7	95.7
Patuakhali	98.6	98.1	98.1	96.2	96.2	96.2	96.2	82.4	82.4
Pirojpur	100	100	100	98.1	98.1	96.2	96.2	88.1	88.1
BCC	99.5	98.6	98.6	98.1	98.1	96.2	96.2	93.3	92.9
Barisal Division	**99.5**	**99**	**99.3**	**97.9**	**98**	**96.6**	**96.6**	**90.1**	**90**
Bandarban	94.3	93.8	94.3	91.4	91.4	90	90	84.8	84.8
B.Baria	99	99	99	99	99	96.7	96.7	92.4	92.4
Chandpur	100	100	100	99.5	99.5	97.6	97.6	92.4	92.4
Chittagong	99.5	99.5	99.5	99.5	99.5	99	99	97.6	97.6
Comilla	100	100	100	99.5	99.5	97.1	97.1	94.8	94.3
Cox's Bazar	99.5	99	99	97.6	97.6	95.7	95.7	88.6	88.6
Feni	99.5	99	99.5	99	99	98.6	98.6	95.2	95.2
Khagrachhari	95.2	95.2	95.2	94.8	94.8	93.8	93.8	87.6	87.6
Lakshmipur	99.5	99.5	99.5	98.1	98.1	94.3	94.3	91	91
Noakhali	97.1	97.1	97.1	93.3	93.3	90	90	82.9	82.9
Rangamati	98.6	98.6	98.6	97.6	97.6	95.7	95.7	90	90
CCC	98.1	97.6	98.1	95.7	95.7	94.3	94.3	85.7	85.7
Chittagong Slum	98.6	96.7	98.6	93.3	93.3	90.5	90.5	78.6	78.6
CHITTAGONG Division	**98.4**	**98.2**	**98.3**	**97.1**	**97.1**	**95.2**	**95.2**	**90.2**	**90.2**
National	99.1	99	99	97.9	98	96.6	96.6	91.9	91.9
Urban	99	98.7	98.8	97.7	97.7	96.4	96.4	91.4	91.3
Rural	99.1	99	99.1	98	98	96.6	96.6	92	92

Table 3a: Crude Immunization Coverage among 12-23 Months Old Children According to Survey Units by District, City Corporation (Fully Immunized arranged in ascending order by all districts)

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Chittagong Slum	98.6	96.7	98.6	93.3	93.3	90.5	90.5	78.6	78.6
SCC	97.1	97.1	97.1	93.8	93.8	91.4	91.4	80.5	80.5
Patuakhali	98.6	98.1	98.1	96.2	96.2	96.2	96.2	82.4	82.4
Noakhali	97.1	97.1	97.1	93.3	93.3	90	90	82.9	82.9
Gazipur	99.5	99.5	99.5	98.6	98.6	95.2	95.2	83.3	83.3
Bandarban	94.3	93.8	94.3	91.4	91.4	90	90	84.8	84.8
Dhaka	97.6	97.6	97.6	95.2	95.2	93.3	93.3	85.7	85.7
Sylhet	96.2	96.2	96.2	93.8	93.8	91.9	91.9	85.7	85.7
CCC	98.1	97.6	98.1	95.7	95.7	94.3	94.3	85.7	85.7
Shariatpur	99.5	99	99.5	96.2	96.2	91.4	91.4	86.2	86.2
Dhaka Slum	98.6	98.1	98.6	97.1	97.1	94.8	94.8	86.2	86.2
Netrokona	96.7	96.7	96.7	93.8	93.8	91.4	91.4	86.7	86.7
Maulvibazar	97.6	97.6	97.6	94.8	94.8	92.9	92.9	87.6	87.1
Khagrachhari	95.2	95.2	95.2	94.8	94.8	93.8	93.8	87.6	87.6
Pirojpur	100	100	100	98.1	98.1	96.2	96.2	88.1	88.1
Narayanganj	98.6	98.6	98.6	97.6	97.6	95.7	95.7	88.6	88.6
Bhola	100	99	100	97.1	97.1	95.7	95.7	89	88.6
Cox's Bazar	99.5	99	99	97.6	97.6	95.7	95.7	88.6	88.6
Mymensingh	99.5	99.5	99.5	96.7	96.7	95.7	95.7	89	89
Sunamganj	99	99	99	97.1	97.1	94.3	94.3	89.5	89
Lalmonirhat	98.6	98.6	98.6	98.6	98.6	96.2	96.2	89.5	89.5
Barisal	98.6	98.6	98.6	98.1	98.1	95.2	95.2	89.5	89.5
Madaripur	98.1	98.1	98.1	97.1	97.1	96.2	96.2	90	90
Nilphamari	100	100	100	98.6	98.6	96.7	96.7	90	90
Rangamati	98.6	98.6	98.6	97.6	97.6	95.7	95.7	90	90
Gaibandha	99.5	99.5	99.5	97.6	97.6	97.6	97.6	90.5	90.5
Rangpur	100	99.5	99.5	99	99	98.6	98.6	90.5	90.5
Faridpur	99.5	98.6	99.5	97.6	97.6	95.7	95.7	91	91
Bagerhat	98.1	98.1	98.1	96.7	96.7	93.3	93.3	91	91
Kushtia	100	100	100	100	100	98.6	98.6	91	91
Narail	99.5	99.5	99.5	98.6	98.6	94.3	94.3	91	91
Bogra	99.5	99.5	99.5	97.1	97.1	96.2	96.2	91	91
Lakshmipur	99.5	99.5	99.5	98.1	98.1	94.3	94.3	91	91
Manikganj	99.5	99.5	99.5	99.5	99	99	98.6	91.9	91.9
Rajbari	99.5	99.5	99.5	99	99	96.7	96.7	91.9	91.9
Natore	99.5	99.5	99.5	98.6	98.6	96.7	96.7	91.9	91.9
Dinajpur	99.5	99.5	99.5	99.5	99.5	98.1	98.1	91.9	91.9
B.Baria	99	99	99	99	99	96.7	96.7	92.4	92.4
Chandpur	100	100	100	99.5	99.5	97.6	97.6	92.4	92.4
Kishoreganj	96.2	96.2	96.2	95.7	95.7	95.2	95.2	92.9	92.9
Barguna	100	99.5	100	98.6	98.6	98.1	98.1	92.9	92.9
BCC	99.5	98.6	98.6	98.1	98.1	96.2	96.2	93.3	92.9
KCC	100	99.5	100	98.6	98.6	97.1	97.1	93.3	93.3
Pabna	99.5	99.5	99.5	97.6	97.6	96.2	96.2	93.8	93.8

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Kurigram	100	100	100	99.5	99.5	98.6	98.6	93.8	93.8
Jamalpur	99	99	99	98.1	98.1	98.1	98.1	94.3	94.3
Tangail	99.5	99.5	99.5	98.6	98.6	97.6	97.6	94.3	94.3
Jessore	100	100	100	99	99	99	99	94.3	94.3
Chapai Nawabganj	100	100	100	98.6	98.6	97.6	97.6	94.3	94.3
Sirajganj	99.5	99.5	99.5	99.5	99.5	98.6	98.6	94.3	94.3
Comilla	100	100	100	99.5	99.5	97.1	97.1	94.8	94.3
Naogaon	99.5	99.5	99.5	99	99	98.1	98.1	94.8	94.8
Panchagarh	100	100	100	100	100	99	99	94.8	94.8
Chuadanga	99.5	99	99	98.1	98.1	97.1	97.1	95.2	95.2
Magura	99.5	99.5	99.5	99	99	97.6	97.6	95.2	95.2
Feni	99.5	99	99.5	99	99	98.6	98.6	95.2	95.2
Narsingdi	99.5	99.5	99.5	99.5	99.5	99	99	95.7	95.7
Sherpur	99.5	99.5	99.5	98.6	99	98.6	98.6	95.7	95.7
Meherpur	100	100	100	99.5	99.5	98.6	98.6	95.7	95.7
Jhalokati	99.5	99.5	99.5	99	99.5	98.6	98.6	95.7	95.7
Khulna	99.5	99.5	99.5	98.6	98.6	98.6	98.6	96.2	96.2
Satkhira	99.5	99.5	99.5	99.5	99.5	98.6	98.6	96.7	96.2
Joypurhat	100	100	100	100	100	99	99	96.2	96.2
Rajshahi	100	100	100	98.6	99	98.6	98.6	96.2	96.2
Habiganj	99.5	99.5	99.5	98.6	98.6	98.1	98.1	96.7	96.7
Thakurgaon	99.5	99.5	99.5	99	99	98.6	98.6	97.1	97.1
Gopalganj	99	99	99	98.6	98.6	97.6	97.6	97.6	97.6
Chittagong	99.5	99.5	99.5	99.5	99.5	99	99	97.6	97.6
Munshiganj	99.5	99.5	99.5	99.5	99.5	99.5	99.5	98.1	98.1
DCC	99	99	99	99	99	99	99	98.6	98.6
RCC	100	100	100	100	100	100	100	98.6	98.6
Jhenaidah	100	100	100	99.5	99.5	99.5	99.5	99.5	99.5

Table 3b: Crude Immunization Coverage among 12-23 Months Old Children According to Survey Units by District, City Corporation (Fully Immunized arranged in ascending order by all divisions)

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Gazipur	99.5	99.5	99.5	98.6	98.6	95.2	95.2	83.3	83.3
Dhaka	97.6	97.6	97.6	95.2	95.2	93.3	93.3	85.7	85.7
Shariatpur	99.5	99	99.5	96.2	96.2	91.4	91.4	86.2	86.2
Dhaka Slum	98.6	98.1	98.6	97.1	97.1	94.8	94.8	86.2	86.2
Netrokona	96.7	96.7	96.7	93.8	93.8	91.4	91.4	86.7	86.7
Narayanganj	98.6	98.6	98.6	97.6	97.6	95.7	95.7	88.6	88.6
Mymensingh	99.5	99.5	99.5	96.7	96.7	95.7	95.7	89	89
Madaripur	98.1	98.1	98.1	97.1	97.1	96.2	96.2	90	90
Faridpur	99.5	98.6	99.5	97.6	97.6	95.7	95.7	91	91
Manikganj	99.5	99.5	99.5	99.5	99	99	98.6	91.9	91.9
Rajbari	99.5	99.5	99.5	99	99	96.7	96.7	91.9	91.9
Kishoreganj	96.2	96.2	96.2	95.7	95.7	95.2	95.2	92.9	92.9
Jamalpur	99	99	99	98.1	98.1	98.1	98.1	94.3	94.3
Tangail	99.5	99.5	99.5	98.6	98.6	97.6	97.6	94.3	94.3
Narsingdi	99.5	99.5	99.5	99.5	99.5	99	99	95.7	95.7
Sherpur	99.5	99.5	99.5	98.6	99	98.6	98.6	95.7	95.7
Gopalganj	99	99	99	98.6	98.6	97.6	97.6	97.6	97.6
Munshiganj	99.5	99.5	99.5	99.5	99.5	99.5	99.5	98.1	98.1
DCC	99	99	99	99	99	99	99	98.6	98.6
Dhaka Division	**98.9**	**98.8**	**98.9**	**97.7**	**97.7**	**96.4**	**96.4**	**91.7**	**91.7**
Bagerhat	98.1	98.1	98.1	96.7	96.7	93.3	93.3	91	91
Kushtia	100	100	100	100	100	98.6	98.6	91	91
Narail	99.5	99.5	99.5	98.6	98.6	94.3	94.3	91	91
KCC	100	99.5	100	98.6	98.6	97.1	97.1	93.3	93.3
Jessore	100	100	100	99	99	99	99	94.3	94.3
Chuadanga	99.5	99	99	98.1	98.1	97.1	97.1	95.2	95.2
Magura	99.5	99.5	99.5	99	99	97.6	97.6	95.2	95.2
Meherpur	100	100	100	99.5	99.5	98.6	98.6	95.7	95.7
Khulna	99.5	99.5	99.5	98.6	98.6	98.6	98.6	96.2	96.2
Satkhira	99.5	99.5	99.5	99.5	99.5	98.6	98.6	96.7	96.2
Jhenaidah	100	100	100	99.5	99.5	99.5	99.5	99.5	99.5
Khulna Division	**99.6**	**99.5**	**99.6**	**98.8**	**98.8**	**97.5**	**97.5**	**94.5**	**94.4**
Bogra	99.5	99.5	99.5	97.1	97.1	96.2	96.2	91	91
Natore	99.5	99.5	99.5	98.6	98.6	96.7	96.7	91.9	91.9
Pabna	99.5	99.5	99.5	97.6	97.6	96.2	96.2	93.8	93.8
Chapai Nawabganj	100	100	100	98.6	98.6	97.6	97.6	94.3	94.3
Sirajganj	99.5	99.5	99.5	99.5	99.5	98.6	98.6	94.3	94.3
Naogaon	99.5	99.5	99.5	99	99	98.1	98.1	94.8	94.8
Joypurhat	100	100	100	100	100	99	99	96.2	96.2
Rajshahi	100	100	100	98.6	99	98.6	98.6	96.2	96.2
RCC	100	100	100	100	100	100	100	98.6	98.6
Rajshahi Div	**99.7**	**99.7**	**99.7**	**98.8**	**98.8**	**97.9**	**97.9**	**94.6**	**94.6**
Lalmonirhat	98.6	98.6	98.6	98.6	98.6	96.2	96.2	89.5	89.5
Nilphamari	100	100	100	98.6	98.6	96.7	96.7	90	90

Survey Units	BCG	OPV1	PENTA1	OPV2	PENTA2	OPV3	PENTA3	MSL	FVC
Gaibandha	99.5	99.5	99.5	97.6	97.6	97.6	97.6	90.5	90.5
Rangpur	100	99.5	99.5	99	99	98.6	98.6	90.5	90.5
Dinajpur	99.5	99.5	99.5	99.5	99.5	98.1	98.1	91.9	91.9
Kurigram	100	100	100	99.5	99.5	98.6	98.6	93.8	93.8
Panchagarh	100	100	100	100	100	99	99	94.8	94.8
Thakurgaon	99.5	99.5	99.5	99	99	98.6	98.6	97.1	97.1
Rangpur Division	**99.6**	**99.6**	**99.6**	**99**	**99**	**97.9**	**97.9**	**92.3**	**92.3**
SCC	97.1	97.1	97.1	93.8	93.8	91.4	91.4	80.5	80.5
Sylhet	96.2	96.2	96.2	93.8	93.8	91.9	91.9	85.7	85.7
Maulvibazar	97.6	97.6	97.6	94.8	94.8	92.9	92.9	87.6	87.1
Sunamganj	99	99	99	97.1	97.1	94.3	94.3	89.5	89
Habiganj	99.5	99.5	99.5	98.6	98.6	98.1	98.1	96.7	96.7
Sylhet Division	**97.9**	**97.9**	**97.9**	**95.6**	**95.6**	**93.7**	**93.7**	**88**	**87.8**
Patuakhali	98.6	98.1	98.1	96.2	96.2	96.2	96.2	82.4	82.4
Pirojpur	100	100	100	98.1	98.1	96.2	96.2	88.1	88.1
Bhola	100	99	100	97.1	97.1	95.7	95.7	89	88.6
Barisal	98.6	98.6	98.6	98.1	98.1	95.2	95.2	89.5	89.5
Barguna	100	99.5	100	98.6	98.6	98.1	98.1	92.9	92.9
BCC	99.5	98.6	98.6	98.1	98.1	96.2	96.2	93.3	92.9
Jhalokati	99.5	99.5	99.5	99	99.5	98.6	98.6	95.7	95.7
Barisal Division	**99.5**	**99**	**99.3**	**97.9**	**98**	**96.6**	**96.6**	**90.1**	**90**
Chittagong Slum	98.6	96.7	98.6	93.3	93.3	90.5	90.5	78.6	78.6
Noakhali	97.1	97.1	97.1	93.3	93.3	90	90	82.9	82.9
Bandarban	94.3	93.8	94.3	91.4	91.4	90	90	84.8	84.8
CCC	98.1	97.6	98.1	95.7	95.7	94.3	94.3	85.7	85.7
Khagrachhari	95.2	95.2	95.2	94.8	94.8	93.8	93.8	87.6	87.6
Cox's Bazar	99.5	99	99	97.6	97.6	95.7	95.7	88.6	88.6
Rangamati	98.6	98.6	98.6	97.6	97.6	95.7	95.7	90	90
Lakshmipur	99.5	99.5	99.5	98.1	98.1	94.3	94.3	91	91
B.Baria	99	99	99	99	99	96.7	96.7	92.4	92.4
Chandpur	100	100	100	99.5	99.5	97.6	97.6	92.4	92.4
Comilla	100	100	100	99.5	99.5	97.1	97.1	94.8	94.3
Feni	99.5	99	99.5	99	99	98.6	98.6	95.2	95.2
Chittagong	99.5	99.5	99.5	99.5	99.5	99	99	97.6	97.6
CHITTAGONG Division	**98.4**	**98.2**	**98.3**	**97.1**	**97.1**	**95.2**	**95.2**	**90.2**	**90.2**
National	99.1	99	99	97.9	98	96.6	96.6	91.9	91.9
Urban	99	98.7	98.8	97.7	97.7	96.4	96.4	91.4	91.3
Rural	99.1	99	99.1	98	98	96.6	96.6	92	92

Figure 1. **Annual Trend in National Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children from 1991 to 2011 (Card + History)**

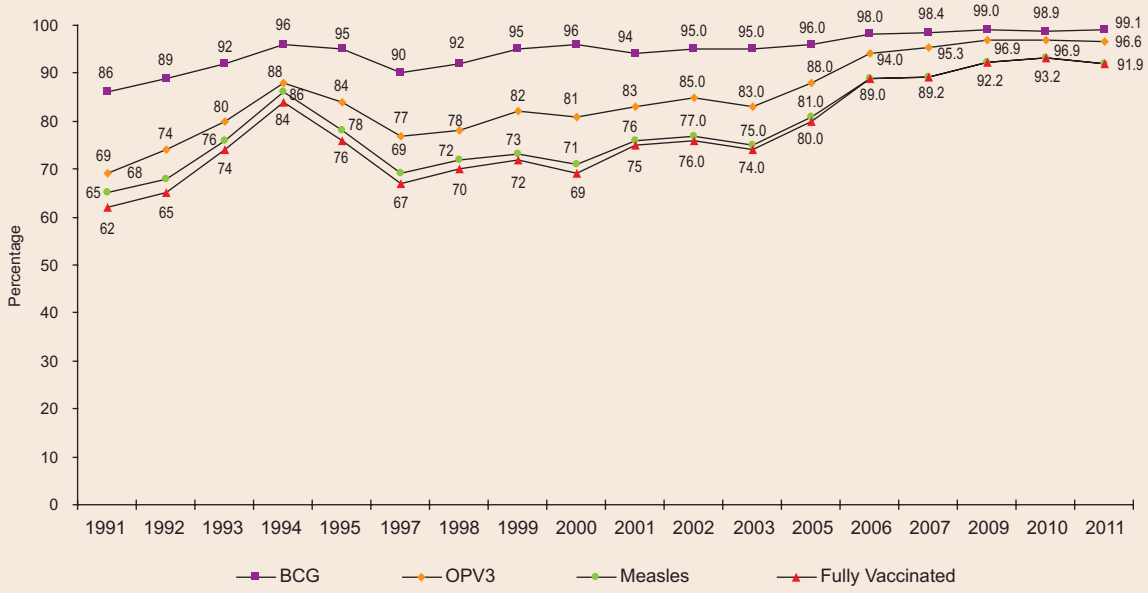


Figure 2. **Annual Trend in National Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children from 2005 to 2011 (Card + History)**

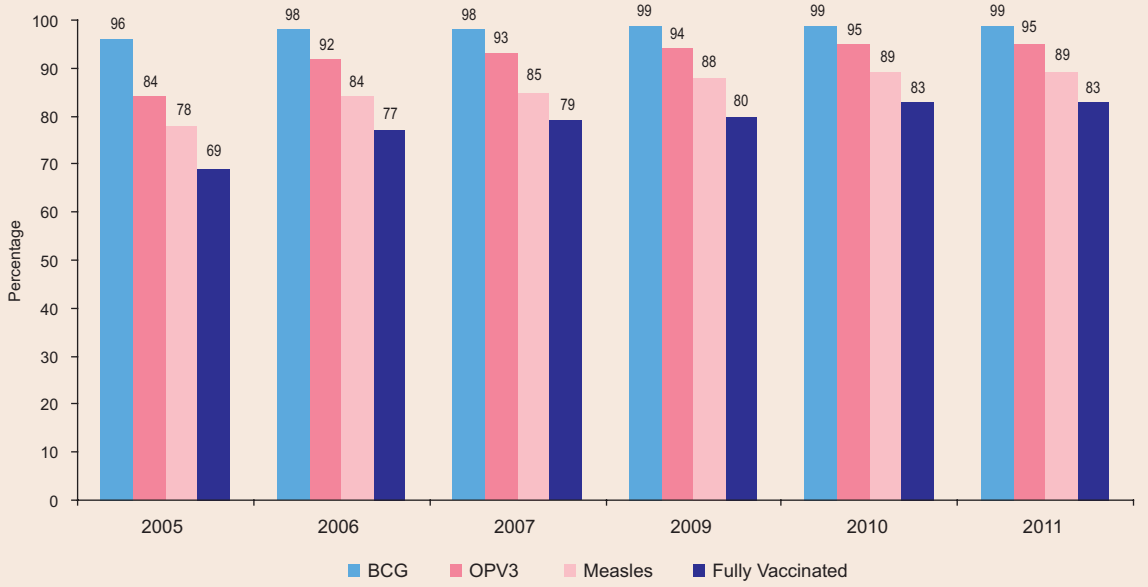
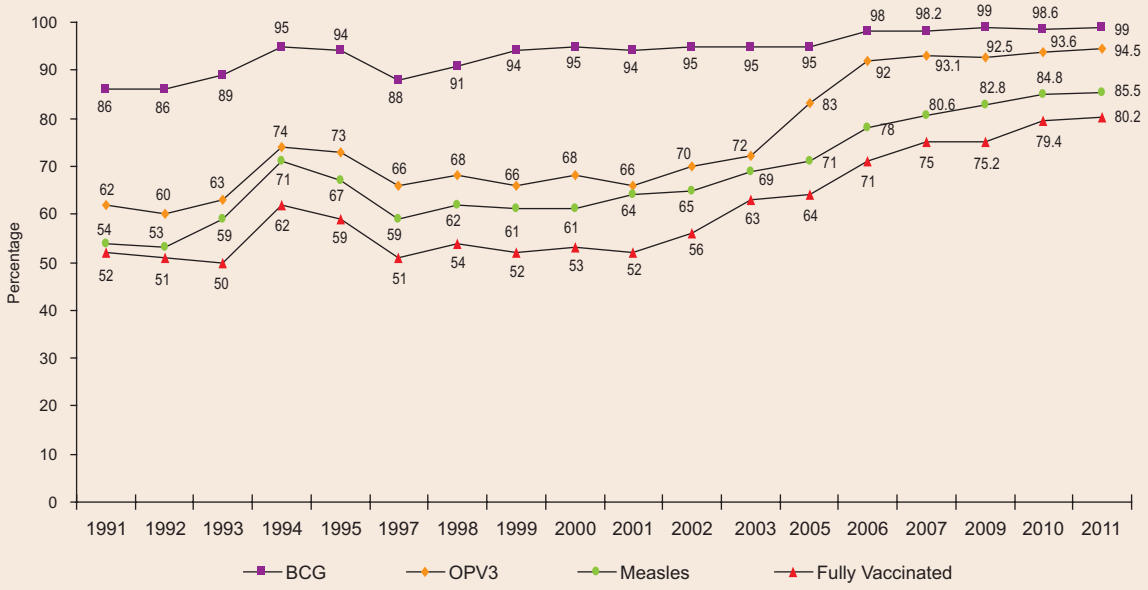


Figure 3. **Annual Trend in National Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children from 1991 to 2011 (Card + History)**



PERCENTAGE OF NEWBORN PROTECTED AT BIRTH AGAINST TETANUS BY DISTRICT 2011

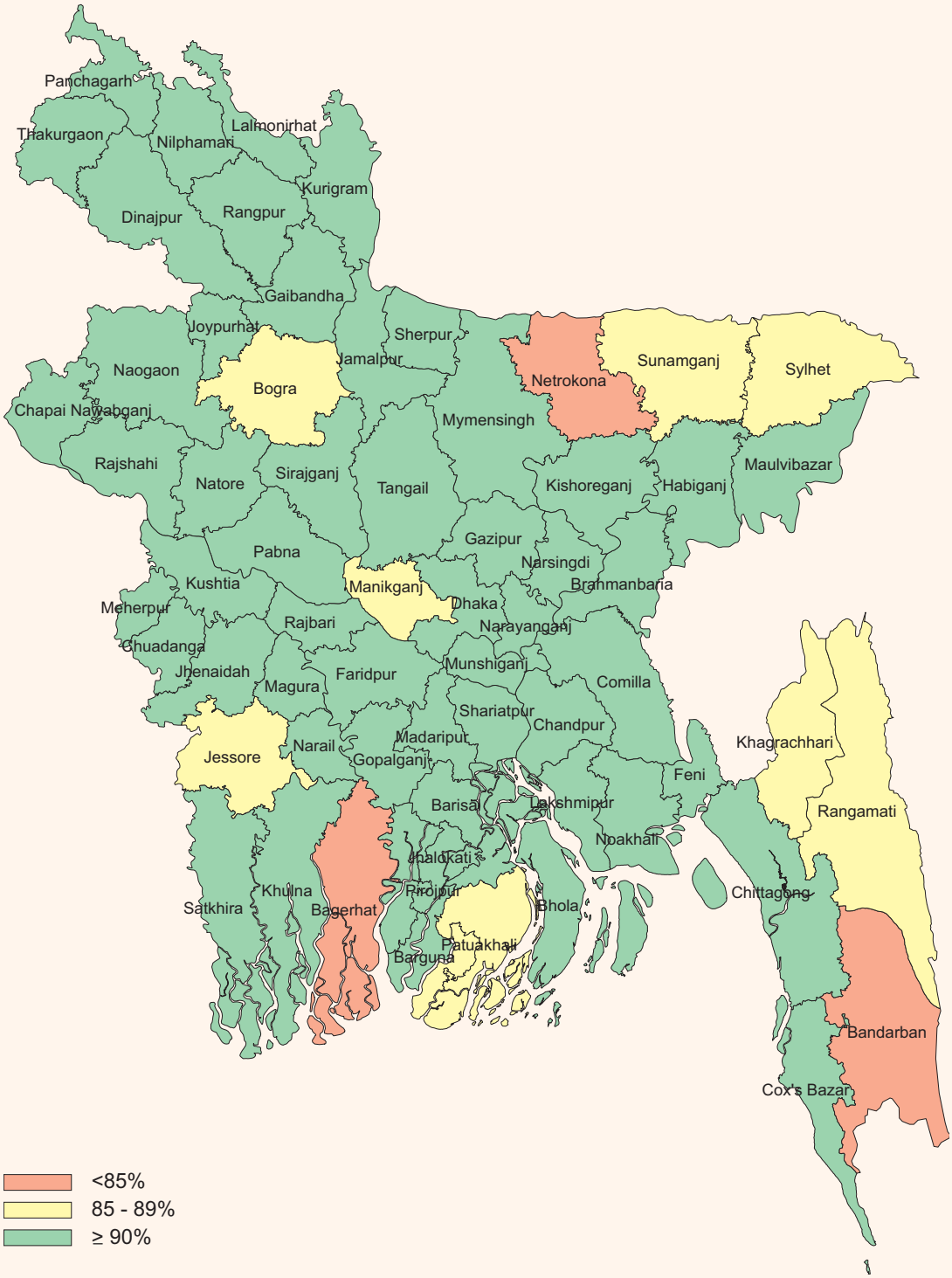


Table 4: Valid TT Coverage among Mothers with 0-11 Months Old Children by Survey Units, According to Survey Units

Survey Units	TT1	TT2	TT3	TT4	TT5
Dhaka Division	**97.5**	**95.8**	**83.2**	**65**	**44.5**
Dhaka	97.1	95.7	76.7	57.1	30.5
Faridpur	97.1	96.2	88.1	69	45.7
Gazipur	97.6	96.7	83.3	60	41.9
Gopalganj	96.7	93.8	80.5	67.1	48.1
Jamalpur	99	97.6	88.1	79	61.4
Kishoreganj	98.1	95.7	86.7	68.1	50.5
Madaripur	96.7	94.3	86.7	69.5	51
Manikganj	96.7	92.9	77.1	59	41.4
Munshiganj	98.1	97.6	89	74.8	58.1
Mymensingh	99.5	99.5	86.7	68.6	44.8
Narayanganj	97.6	96.7	81	56.7	34.3
Narsingdi	99	97.6	90.5	74.8	50.5
Netrokona	94.8	91	74.8	52.4	30.5
Rajbari	98.1	94.8	76.2	52.4	27.6
Shariatpur	98.6	97.1	83.3	68.1	49.5
Sherpur	96.7	95.7	82.4	61.4	40.5
Tangail	98.1	97.6	84.3	63.3	40.5
DCC	95.2	94.8	81.9	69	53.8
Dhaka Slum	92.9	88.1	72.9	50	37.1
Khulna Division	**97.8**	**95.8**	**82.9**	**61.7**	**40.1**
Bagerhat	90	86.2	71.4	52.9	31.9
Chuadanga	99	97.6	83.8	64.3	36.2
Jessore	99	97.1	81.4	57.1	38.1
Jhenaidah	99.5	98.6	87.1	66.7	43.8
Khulna	98.6	97.1	88.1	68.6	50
Kushtia	98.6	94.3	82.9	60.5	42.4
Magura	99.5	96.7	83.3	64.3	41.4
Meherpur	98.6	96.2	83.8	55.7	35.7
Narail	96.7	95.2	85.2	71.4	49
Satkhira	98.1	97.6	80.5	56.7	32.4
KCC	98.6	97.1	83.8	61	40.5
Rajshahi New Div	**98.9**	**97.2**	**87.6**	**66.2**	**41.4**
Bogra	98.6	95.7	81	59	40
Chapai Nawabganj	98.6	96.2	88.1	73.8	50.5
Joypurhat	100	99	92.4	69.5	41
Naogaon	98.1	97.6	88.6	66.7	41.4
Natore	99	97.6	89	61.9	38.6
Pabna	99	98.1	87.1	62.9	36.2
Rajshahi	99.5	96.7	87.1	61	35.7
Sirajganj	97.6	96.2	79.5	63.8	38.1
RCC	99.5	98.1	95.2	77.1	51

Sylhet Division	**95.9**	**94**	**83.2**	**64**	**42.5**
Survey Units	TT1	TT2	TT3	TT4	TT5
Habiganj	97.6	97.1	92.4	71	50
Maulvibazar	97.1	96.7	85.2	70.5	48.6
Sunamganj	95.7	91.9	80	60	33.3
Sylhet	94.3	92.4	82.9	62.9	46.2
SCC	94.8	91.9	75.7	55.7	34.3
Barisal Division	**97.6**	**95.9**	**78.2**	**55.8**	**34.6**
Barisal	97.1	94.8	77.1	52.4	31
Bhola	98.6	96.2	85.7	67.6	41
Barguna	99	98.6	72.4	47.6	27.6
Jhalokati	99	98.6	85.7	68.1	51.9
Patuakhali	95.7	94.8	61.4	33.3	16.7
Pirojpur	95.7	91.9	78.6	58.1	37.1
BCC	97.6	96.7	86.7	63.3	37.1
Chittagong Division	**96.5**	**94.8**	**83.4**	**64.5**	**45**
Bandarban	89	85.2	72.4	54.3	38.6
B.Baria	96.7	95.7	86.7	71.9	53.8
Chandpur	98.6	96.2	85.2	61	42.4
Chittagong	98.6	98.6	93.3	76.7	57.1
Comilla	99	98.1	86.2	62.9	40.5
Cox's Bazar	99	98.6	92.4	80.5	60.5
Feni	99.5	97.6	87.6	75.2	54.3
Khagrachhari	93.3	90.5	69.5	51	31.4
Lakshmipur	97.1	95.2	84.3	63.3	39.5
Noakhali	95.2	94.3	83.3	63.8	46.2
Rangamati	94.3	92.9	77.6	58.1	39.5
CCC	97.1	95.2	81.9	55.7	35.7
Chittagong Slum	97.6	94.3	76.2	43.8	21.4
Rangpur Division	**98.6**	**97.3**	**86.4**	**67.7**	**43.9**
Dinajpur	99	99	93.8	77.1	53.8
Gaibandha	97.6	96.7	85.2	67.1	43.8
Kurigram	99	97.1	78.1	55.7	34.8
Lalmonirhat	99.5	98.6	90	69	40
Nilphamari	98.1	96.2	84.3	61.9	40
Panchagarh	97.6	95.7	86.7	73.8	53.8
Rangpur	99.5	99	87.6	71	44.3
Thakurgaon	98.1	95.7	85.2	66.2	41
Low performing area	**96.3**	**94.7**	**82.3**	**64.8**	**43.4**
Launch District	98.1	96.5	84.7	63.3	41.6
National	**97.6**	**95.9**	**83.6**	**63.9**	**42.3**
Rural	**97.6**	**95.9**	**83.4**	**63.7**	**42**
Urban	**97.5**	**95.9**	**84.7**	**65**	**43.8**

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

Survey Units	TT1	TT2	TT3	TT4	TT5
Dhaka Division	**97.5**	**95.9**	**86.7**	**73.9**	**59.3**
Dhaka	97.1	95.7	80	66.2	44.3
Faridpur	97.1	96.7	90	77.1	59
Gazipur	97.6	96.7	87.1	71	60
Gopalganj	96.7	93.8	83.8	73.3	62.9
Jamalpur	99	98.1	89	81	67.6
Kishoreganj	98.1	95.7	88.1	75.2	62.9
Madaripur	96.7	94.3	87.1	75.7	64.3
Manikganj	96.7	92.9	81.4	65.2	55.7
Munshiganj	98.1	97.6	91.4	81.9	69.5
Mymensingh	99.5	99.5	90.5	81	65.7
Narayanganj	97.6	97.1	89	71.4	50.5
Narsingdi	99	97.6	95.2	87.1	74.3
Netrokona	94.8	91	80.5	64.8	50.5
Rajbari	98.1	94.8	79	61.9	42.9
Shariatpur	98.6	97.1	90	76.7	67.6
Sherpur	96.7	95.7	85.7	73.8	55.2
Tangail	98.1	97.6	88.6	71.4	56.7
DCC	95.2	94.8	83.8	75.2	57.6
Dhaka Slum	92.9	88.1	76.2	64.8	51.9
Khulna Division	**97.8**	**95.8**	**86.2**	**71.4**	**53.4**
Bagerhat	90	86.2	73.3	60.5	40.5
Chuadanga	99	97.6	90.5	75.7	54.3
Jessore	99	97.1	86.7	67.1	52.9
Jhenaidah	99.5	98.6	91.9	75.2	59.5
Khulna	98.6	97.1	89	75.7	56.2
Kushtia	98.6	94.3	86.2	73.8	61.9
Magura	99.5	96.7	87.6	75.7	57.6
Meherpur	98.6	96.7	86.2	66.2	48.6
Narail	96.7	95.2	87.1	74.8	58.6
Satkhira	98.1	97.6	84.8	71	48.1
KCC	98.6	97.1	85.2	69.5	49.5
Rajshahi New Div	**98.9**	**97.2**	**91.1**	**77**	**58**
Bogra	98.6	95.7	86.7	71.9	56.2
Chapai Nawabganj	98.6	96.2	92.4	79.5	59.5
Joypurhat	100	99	92.4	78.6	55.2
Naogaon	98.1	97.6	90.5	75.7	57.1
Natore	99	97.6	93.8	81.9	64.3
Pabna	99	98.1	91.4	72.9	55.7
Rajshahi	99.5	96.7	89.5	76.7	54.3

Survey Units	TT1	TT2	TT3	TT4	TT5
Sirajganj	97.6	96.2	87.6	73.8	60.5
RCC	99.5	98.1	95.7	82.4	59.5
Sylhet Division	**95.9**	**94.1**	**87.7**	**77.5**	**61**
Habiganj	97.6	97.1	95.2	90.5	75.2
Maulvibazar	97.1	96.7	87.1	79	64.8
Sunamganj	95.7	91.9	85.7	71	50
Sylhet	94.3	92.9	84.8	70.5	55.2
SCC	94.8	91.9	85.7	76.7	59.5
Barisal Division	**97.6**	**96**	**83.7**	**69.3**	**52.7**
Barisal	97.1	94.8	84.3	71	55.2
Bhola	98.6	96.7	91.4	81.9	66.7
Barguna	99	98.6	81	61.9	47.1
Jhalokati	99	98.6	86.2	69	55.2
Patuakhali	95.7	94.8	69.5	56.7	34.8
Pirojpur	95.7	91.9	81.9	69.5	52.9
BCC	97.6	96.7	91.4	74.8	57.1
Chittagong Division	**96.5**	**94.9**	**87.9**	**75.7**	**61.1**
Bandarban	89	85.7	76.2	64.3	51
B.Baria	96.7	95.7	89	78.1	63.3
Chandpur	98.6	96.2	89	73.8	58.6
Chittagong	98.6	98.6	96.2	86.7	71.9
Comilla	99	98.1	93.3	80	67.1
Cox's Bazar	99	98.6	94.3	87.6	71.9
Feni	99.5	97.6	91	83.8	69.5
Khagrachhari	93.3	90.5	76.7	60.5	44.3
Lakshmipur	97.1	95.2	90	76.2	59.5
Noakhali	95.2	94.3	90	76.2	65.7
Rangamati	94.3	92.9	81.4	68.6	52.9
CCC	97.1	95.2	87.6	72.4	57.6
Chittagong Slum	97.6	95.7	86.2	64.8	49.5
Rangpur Division	**98.6**	**97.3**	**89.6**	**75.7**	**59.3**
Dinajpur	99	99	96.2	80	65.2
Gaibandha	97.6	96.7	87.6	71.4	50
Kurigram	99	97.1	80.5	60.5	42.9
Lalmonirhat	99.5	98.6	94.8	83.3	67.1
Nilphamari	98.1	96.2	87.1	71.9	59.5
Panchagarh	97.6	95.7	91.4	80	68.6
Rangpur	99.5	99	89	77.6	61.4
Thakurgaon	98.1	95.7	90.5	80.5	60
Low performing area	**96.3**	**94.8**	**86.4**	**74.3**	**58.7**
Launch District	98.1	96.6	88.9	75.1	59.6
National	**97.6**	**95.9**	**87.5**	**74.2**	**58**
Rural	**97.6**	**95.9**	**87.3**	**74**	**58**
Urban	**97.5**	**95.9**	**88.4**	**75.2**	**58.1**

Table 6: Valid TT Coverage among Women Age 18-49 Years by Survey Units, according to Division

Survey Units	TT1	TT2	TT3	TT4	TT5
Dhaka Division	**91.9**	**89.7**	**76.9**	**54**	**34.8**
Dhaka	85.7	83.3	69.5	42.4	25.2
Faridpur	94.8	92.4	81	61.9	38.6
Gazipur	94.8	92.4	74.3	45.2	25.7
Gopalganj	91.4	89.5	76.7	59.5	42.9
Jamalpur	96.7	94.8	84.3	58.6	36.7
Kishoreganj	84.8	82.9	72.4	62.4	50.5
Madaripur	85.2	84.3	74.8	58.1	43.8
Manikganj	90.5	88.1	71	46.2	29
Munshiganj	92.4	91.9	83.8	71.9	44.3
Mymensingh	93.8	91.9	76.2	47.1	26.2
Narayanganj	93.3	91.4	74.3	51	32.9
Narsingdi	93.8	89.5	80	59	38.6
Netrokona	85.2	81	69	45.7	21.9
Rajbari	91.4	87.6	69	40	23.3
Shariatpur	92.4	90	77.6	61.9	45.2
Sherpur	98.1	97.6	87.6	58.1	38.6
Tangail	94.3	90.5	79.5	50.5	30
DCC	96.2	96.2	83.3	51.9	33.8
Dhaka Slum	81.4	81	72.4	51	37.1
Khulna Division	**93**	**90.1**	**76.4**	**52.6**	**31.7**
Bagerhat	83.8	77.1	63.8	43.3	27.1
Chuadanga	96.2	93.8	81.9	52.9	25.2
Jessore	91	86.7	77.1	57.6	41.9
Jhenaidah	98.1	95.7	82.9	62.4	40
Khulna	95.7	93.3	86.7	67.6	45.7
Kushtia	91	88.1	70.5	43.8	27.1
Magura	96.2	94.8	83.8	58.6	38.1
Meherpur	89.5	87.1	69	38.1	21.4
Narail	92.4	90.5	74.8	55.2	32.4
Satkhira	91.4	87.6	64.8	46.2	18.1
KCC	98.1	96.2	85.2	53.3	31.9
Rajshahi New Div	**93.4**	**90.3**	**75**	**50.5**	**29.5**
Bogra	88.1	84.3	64.3	41.9	30
Chapai Nawabganj	94.8	85.7	71.4	53.8	27.6
Joypurhat	92.4	91.4	77.1	50	30
Naogaon	90	89.5	76.2	51	29.5
Natore	94.8	90	74.8	41	23.8
Pabna	95.7	92.4	81.4	56.2	33.8
Rajshahi	94.3	92.9	76.2	51	28.1
Sirajganj	93.3	92.4	70	41	17.1
RCC	97.1	94.3	83.8	68.6	45.7

Survey Units	TT1	TT2	TT3	TT4	TT5
Sylhet Division	**91.6**	**89.3**	**79.3**	**62.3**	**41.2**
Habiganj	97.6	97.6	94.8	81.4	51.4
Maulvibazar	92.4	91.9	82.4	69	49.5
Sunamganj	85.7	80	66.7	48.1	25.2
Sylhet	93.3	90.5	82.9	67.6	49.5
SCC	89	86.7	70	45.2	30.5
Barisal Division	**90.9**	**88.4**	**72.7**	**46**	**25**
Barisal	93.8	90.5	78.1	51.9	29
Bhola	93.3	91.9	77.6	51.4	27.6
Barguna	86.7	82.4	65.2	35.7	14.3
Survey Units	TT1	TT2	TT3	TT4	TT5
Jhalokati	94.8	94.3	85.2	62.4	39
Patuakhali	84.3	81.4	56.2	24.8	9.5
Pirojpur	91	86.7	65.7	41.9	24.8
BCC	92.4	91.9	80.5	53.8	30.5
Chittagong Division	**91.1**	**89**	**78.5**	**55.8**	**34**
Bandarban	87.6	81	71.4	54.3	35.7
B.Baria	93.8	92.9	86.7	64.3	41.4
Chandpur	93.8	93.3	84.3	58.1	35.7
Chittagong	87.1	84.3	71.4	54.8	38.1
Comilla	92.9	91	79.5	50.5	25.2
Cox's Bazar	95.2	93.8	83.8	70	46.2
Feni	88.6	87.6	79	60.5	36.7
Khagrachhari	91.4	90.5	80	60	34.3
Lakshmipur	91	88.6	75.7	41.9	21.4
Noakhali	86.7	85.2	73.8	50	32.4
Rangamati	93.3	90	77.6	57.1	36.2
CCC	91.9	90	79	47.6	24.8
Chittagong Slum	89	84.3	69	39.5	19.5
Rangpur Division	**93**	**89.6**	**71.9**	**48.4**	**26.6**
Dinajpur	97.1	95.2	86.2	73.8	44.8
Gaibandha	92.9	91	64.3	38.6	21.4
Kurigram	91.4	83.8	64.8	41.9	22.9
Lalmonirhat	96.7	94.8	75.2	53.3	27.6
Nilphamari	91.4	86.2	67.6	42.4	25.2
Panchagarh	90.5	87.6	72.4	48.6	30
Rangpur	91.4	90.5	77.1	49.5	22.9
Thakurgaon	92.4	88.1	67.6	39	18.1
Low performing area	**92.2**	**89.9**	**76.6**	**54.3**	**32.7**
Launch District	92.1	89.2	76.2	52.4	32.5
National	92.1	89.6	76	52.8	32.1
Urban	94.2	92.6	79.9	55.7	33.7
Rural	91.7	89	75.3	52.2	31.7

Table 7: Crude TT Coverage among Women Age 18-49 years by Survey Units, According to Survey Units

Survey Units	TT1	TT2	TT3	TT4	TT5
Dhaka Division	**91.9**	**89.8**	**81.3**	**66.5**	**51**
Dhaka	85.7	83.3	72.4	61.4	43.3
Faridpur	94.8	92.9	86.2	72.9	55.2
Gazipur	94.8	92.4	77.6	59	41.4
Gopalganj	91.4	89.5	81	63.3	52.4
Jamalpur	96.7	94.8	87.6	70.5	53.8
Kishoreganj	84.8	82.9	75.2	68.1	62.4
Madaripur	85.2	84.3	75.7	65.2	52.4
Manikganj	90.5	88.1	75.2	60	44.8
Munshiganj	92.4	91.9	88.6	76.2	60.5
Mymensingh	93.8	91.9	81.9	71	53.3
Narayanganj	93.3	91.9	83.3	69.5	56.2
Narsingdi	93.8	89.5	81.4	71.4	57.6
Netrokona	85.2	81.4	73.8	59	48.1
Rajbari	91.4	87.6	71.9	49.5	29
Shariatpur	92.4	90	83.8	72.4	61
Sherpur	98.1	98.1	90.5	65.2	45.2
Tangail	94.3	90.5	83.8	65.7	46.2
DCC	96.2	96.2	94.3	76.2	54.8
Dhaka Slum	81.4	81	75.2	62.9	52.4
Khulna Division	**93**	**90.1**	**80.3**	**64.5**	**46.3**
Bagerhat	83.8	77.1	65.7	48.6	32.9
Chuadanga	96.2	93.8	87.1	71	52.4
Jessore	91	86.7	79.5	64.8	52.4
Jhenaidah	98.1	95.7	86.2	72.4	54.8
Khulna	95.7	93.3	88.6	76.2	61
Kushtia	91	88.1	77.6	60	42.4
Magura	96.2	94.8	87.6	70.5	50.5
Meherpur	89.5	87.1	74.3	60	38.1
Narail	92.4	90.5	81.9	66.7	55.2
Satkhira	91.4	87.6	65.2	48.6	23.3
KCC	98.1	96.2	89.5	70.5	46.2
Rajshahi New Div	**93.4**	**90.5**	**80.1**	**63.6**	**47.1**
Bogra	88.1	84.3	72.4	57.1	46.7
Chapai Nawabganj	94.8	87.1	78.1	63.8	43.8
Joypurhat	92.4	91.4	80.5	58.6	41.4
Naogaon	90	89.5	77.1	53.8	36.7
Natore	94.8	90	81	68.6	53.3
Pabna	95.7	92.4	84.8	72.4	55.7
Rajshahi	94.3	92.9	83.8	66.7	51
Sirajganj	93.3	92.4	75.2	55.7	36.7
RCC	97.1	94.3	88.1	75.7	58.6

Survey Units	TT1	TT2	TT3	TT4	TT5
Sylhet Division	**91.6**	**89.3**	**83**	**73.4**	**61.5**
Habiganj	97.6	97.6	96.7	95.2	86.2
Maulvibazar	92.4	91.9	84.8	75.2	62.4
Sunamganj	85.7	80	72.4	60	46.7
Sylhet	93.3	90.5	83.8	73.3	60
SCC	89	86.7	77.1	63.3	52.4
Barisal Division	**90.9**	**88.4**	**77.7**	**62.9**	**46.9**
Barisal	93.8	90.5	82.9	70.5	63.3
Bhola	93.3	91.9	83.3	68.6	54.8
Barguna	86.7	82.4	71.9	56.2	37.6
Jhalokati	94.8	94.3	89	70	43.8
Patuakhali	84.3	81.4	61.9	44.8	27.1
Pirojpur	91	86.7	73.3	56.7	43.8
BCC	92.4	91.9	81.4	73.8	57.6
Chittagong Division	**91.1**	**89**	**82.3**	**69**	**54.2**
Bandarban	87.6	81	74.8	61	43.8
B.Baria	93.8	92.9	87.6	70	48.6
Chandpur	93.8	93.3	85.7	75.7	56.2
Chittagong	87.1	84.3	78.1	68.6	54.3
Comilla	92.9	91	85.2	70.5	57.1
Cox's Bazar	95.2	93.8	87.1	75.2	64.8
Feni	88.6	87.6	81.9	73.8	61.4
Khagrachhari	91.4	90.5	84.8	67.6	48.6
Lakshmipur	91	88.6	79	62.4	46.7
Noakhali	86.7	85.2	79	64.3	53.3
Rangamati	93.3	90	80.5	67.6	54.8
CCC	91.9	90	83.3	71.9	61
Chittagong Slum	89	84.8	72.9	57.6	43.8
Rangpur Division	**93**	**89.6**	**77.8**	**59.7**	**41.7**
Dinajpur	97.1	95.2	88.1	79.5	61
Gaibandha	92.9	91	71	48.1	29
Kurigram	91.4	83.8	71	48.6	35.7
Lalmonirhat	96.7	94.8	79.5	59.5	41.9
Nilphamari	91.4	86.2	73.8	55.2	40
Panchagarh	90.5	87.6	81	62.9	45.2
Rangpur	91.4	90.5	80.5	66.7	41.4
Thakurgaon	92.4	88.1	77.6	57.1	39.5
Low performing area	**92.2**	**90**	**80.7**	**64.7**	**48.7**
Launch District	92.1	89.3	80.7	67.2	52.5
National	92.1	89.6	80.5	65.6	49.6
Urban	94.2	92.6	84.6	70.9	53.6
Rural	91.7	89	79.7	64.6	48.8

Table 8: PAB Status among Mothers with 0-11 Months Old Children

Survey Units	Protected at birth
Dhaka Division	**92.4**
Dhaka	92.9
Faridpur	91
Gazipur	94.8
Gopalganj	90
Jamalpur	96.2
Kishoreganj	91
Madaripur	92.4
Manikganj	88.1
Munshiganj	96.2
Mymensingh	91.4
Narayanganj	94.3
Narsingdi	94.8
Netrokona	83.8
Rajbari	92.4
Shariatpur	91.4
Sherpur	92.9
Tangail	95.2
DCC	94.8
Dhaka Slum	83.8
Khulna Division	**92.2**
Bagerhat	84.8
Chuadanga	92.9
Jessore	88.1
Jhenaidah	94.8
Khulna	91
Kushtia	93.3
Magura	93.8
Meherpur	93.8
Narail	92.4
Satkhira	96.2
KCC	93.3
Rajshahi New Div	**93.7**
Bogra	86.2
Chapai Nawabganj	93.8
Joypurhat	96.7
Naogaon	91.4
Natore	94.8
Pabna	95.2
Rajshahi	93.3
Sirajganj	93.8
RCC	97.6

Survey Units	Protected at birth
Sylhet Division	**90.5**
Habiganj	97.1
Maulvibazar	90
Sunamganj	86.7
Sylhet	87.1
SCC	91.4
Barisal Division	92.5
Barisal	91
Bhola	93.8
Barguna	93.3
Jhalokati	96.2
Patuakhali	88.6
Pirojpur	91
BCC	93.8
Chittagong Division	**92.4**
Bandarban	79.5
B.Baria	94.3
Chandpur	95.7
Chittagong	96.2
Comilla	95.2
Cox's Bazar	97.6
Feni	94.3
Khagrachhari	88.1
Lakshmipur	92.9
Noakhali	91.9
Rangamati	88.6
CCC	94.3
Chittagong Slum	93.8
Rangpur Division	**94.5**
Dinajpur	95.2
Gaibandha	93.3
Kurigram	99
Lalmonirhat	94.8
Nilphamari	92.9
Panchagarh	96.7
Rangpur	90
Thakurgaon	93.8
Low performing area	**90.9**
Launch District	93.1
National	92.6
Rural	92.3
Urban	94.1

Table 9: OPV Coverage among 0-59 Months Children in the 19th NIDS by District and City Corporation

Survey Units	Received 1st round	Received 2nd round	Received both round
Dhaka Division	**96.6**	**95.2**	**94**
Dhaka	98.6	99	98.6
Faridpur	96.7	94.8	94.8
Gazipur	97.6	92.9	92.9
Gopalganj	99.5	99.5	99
Jamalpur	98.6	93.8	93.8
Kishoreganj	91	87.1	84.8
Madaripur	96.2	95.7	95.7
Manikganj	99.5	99.5	99.5
Munshiganj	99.5	98.1	98.1
Mymensingh	96.2	94.8	94.8
Narayanganj	98.1	98.6	98.1
Narsingdi	89	90.5	82.4
Netrokona	97.6	96.7	95.7
Rajbari	97.6	97.6	96.2
Shariatpur	91	91.9	87.6
Sherpur	96.7	88.6	88.1
Tangail	98.6	98.6	98.1
DCC	96.7	95.7	94.8
Dhaka Slum	95.2	95.7	95.2
Khulna Division	**98.3**	**98.1**	**97.6**
Bagerhat	98.1	98.6	98.1
Chuadanga	97.1	98.6	97.1
Jessore	99	98.6	98.6
Jhenaidah	99	99	99
Khulna	99	99.5	99
Kushtia	96.2	92.4	91.9
Magura	98.6	100	98.6
Meherpur	97.6	97.6	97.1
Narail	98.6	98.6	98.1
Satkhira	99.5	97.6	97.6
KCC	98.6	99	98.6
Rajshahi Div-New	**96**	**94**	**93.2**
Bogra	95.7	92.4	92.4
Chapai Nawabganj	95.7	94.8	93.8
Joypurhat	100	97.6	97.6
Naogaon	94.8	92.4	91
Natore	88.1	84.8	83.8
Pabna	98.6	96.2	95.7
Rajshahi	97.6	96.2	95.2
Sirajganj	94.8	93.3	91.9
RCC	99	98.6	97.6

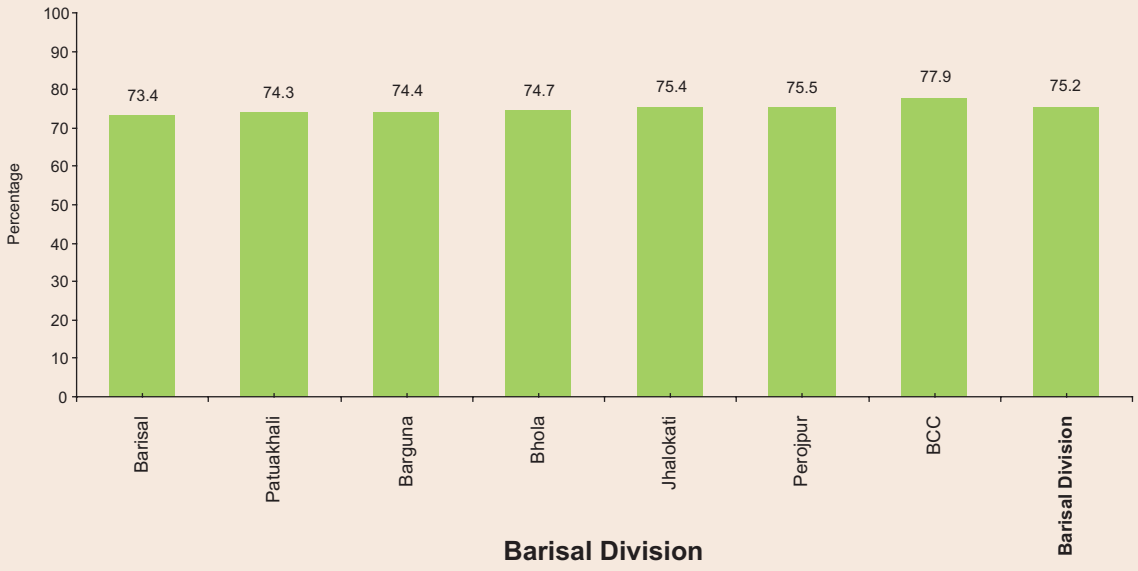
Survey Units	Received 1st round	Received 2nd round	Received both round
Rangpur Division	**95**	**94.9**	**92.6**
Dinajpur	94.3	94.3	93.3
Gaibandha	91.4	91	87.1
Kurigram	98.6	98.1	97.6
Lalmonirhat	99.5	100	99.5
Nilphamari	93.3	92.4	90.5
Panchagarh	96.7	96.2	93.8
Rangpur	97.1	94.8	93.3
Thakurgaon	89	92.4	85.2
Sylhet Division	97	95.5	94.5
Habiganj	99.5	99.5	99
Maulvibazar	96.2	93.3	91.9
Sunamganj	96.2	94.8	93.3
Sylhet	98.1	99	97.6
SCC	94.8	91	90.5
Barisal Division	**92.7**	**91**	**89.2**
Barisal	91	87.1	85.7
Bhola	91	89.5	87.1
Barguna	98.1	98.6	98.1
Jhalokati	96.7	97.6	95.7
Patuakhali	84.3	79.5	74.8
Pirojpur	94.8	91.9	91
BCC	93.3	92.9	91.9
Chittagong Division	**94.3**	**92.4**	**91.3**
Bandarban	83.3	75.7	74.8
B.Baria	91.9	93.3	90.5
Chandpur	97.1	97.1	96.2
Chittagong	97.1	95.2	94.3
Comilla	96.7	91.4	91
Cox's Bazar	98.6	98.6	98.1
Feni	96.7	95.2	94.3
Khagrachhari	97.1	98.1	97.1
Lakshmipur	89	85.2	81.9
Noakhali	92.9	91.4	91
Rangamati	97.1	96.7	96.7
CCC	94.3	91	90.5
Chittagong Slum	91	92.4	89.5
Low performing area	**95.2**	**93.3**	**92.3**
Launch District	95.5	93.7	92.4
National	95.9	94.6	93.4
Rural	95.8	94.6	93.3
Urban	96.1	94.8	93.8

Table 10: Vitamin A Supplementation Coverage among Postpartum Women, Infants 9-11 Months and Children 12-59 Months and Anthelmintic Coverage among Children 24-59 Months by Districts and City Corporations

Survey Units	Infant	Children	Postpartum Women	Anthelmintic
Dhaka Division	**83.8**	**92.5**	**34.5**	**91**
Dhaka	76.1	97.1	15.2	96.7
Faridpur	77.7	87.6	29.5	88.1
Gazipur	78.3	78.1	45.7	72.9
Gopalganj	88.5	99.5	63.3	98.6
Jamalpur	89.1	78.6	71.4	75.2
Kishoreganj	90.2	88.6	37.6	86.2
Madaripur	80.0	96.7	28.1	93.8
Manikganj	83.3	97.6	18.1	96.7
Munshiganj	93.5	98.1	23.3	96.7
Mymensingh	80.7	83.3	31	82.4
Narayanganj	81.2	91.9	23.3	86.7
Narsingdi	88.0	91	27.6	90.5
Netrokona	76.7	93.3	23.3	94.8
Rajbari	81.1	94.3	16.7	94.3
Shariatpur	76.1	95.7	34.8	92.4
Sherpur	92.6	99.5	54.3	99.5
Tangail	91.1	96.7	28.1	96.7
DCC	82.4	97.1	49.5	95.7
Dhaka Slum	70.5	94.3	21.9	88.1
Khulna Division	**89.1**	**95.3**	**29.4**	**93.8**
Bagerhat	86.6	96.7	22.4	95.7
Chuadanga	86.6	95.2	11.9	94.3
Jessore	90.1	98.1	21.9	97.6
Jhenaidah	95.8	97.1	20.5	93.3
Khulna	95.1	94.3	46.7	93.3
Kushtia	85.2	94.3	19	85.7
Magura	89.4	98.6	61.4	99.5
Meherpur	88.8	96.7	30.5	93.8
Narail	82.9	94.8	15.2	98.1
Satkhira	92.7	91	11.4	89
KCC	85.9	91.4	62.9	91
Rajshahi Div-New	**90.0**	**91.2**	**36**	**87.8**
Bogra	84.7	85.7	29	87.1
Chapai Nawabganj	89.4	91.9	23.3	88.1
Joypurhat	93.4	96.2	38.6	96.7
Naogaon	90.6	95.7	50.5	94.3
Natore	87.4	84.3	30	81
Pabna	88.2	86.2	26.7	80.5
Rajshahi	91.1	95.2	39	87.1
Sirajganj	92.3	89.5	29	87.6
RCC	93.1	96.2	58.1	88.1

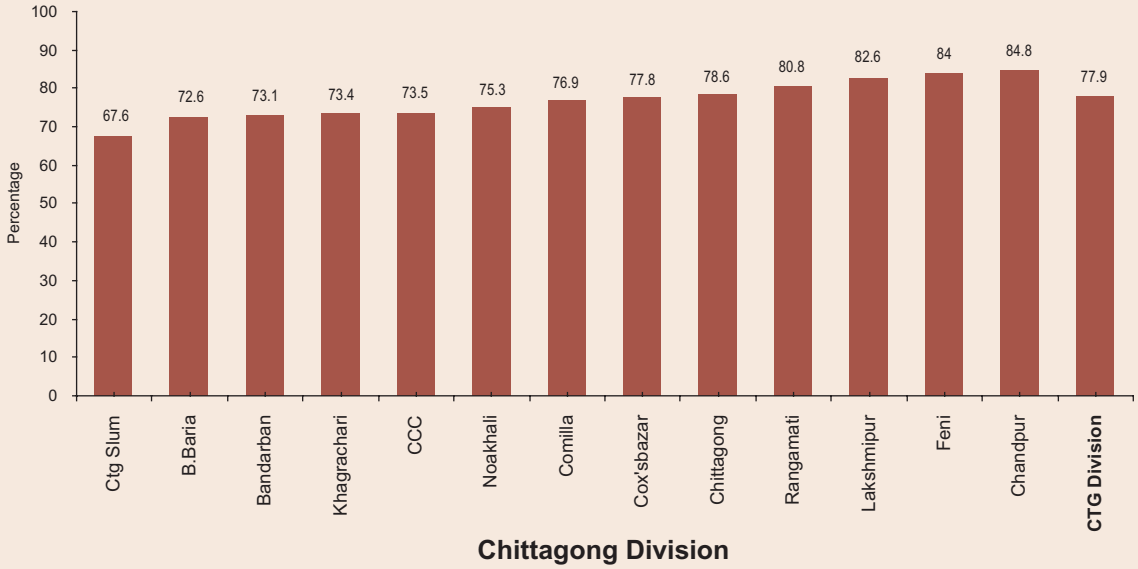
Survey Units	Infant	Children	Postpartum Women	Anthelmintic
Rangpur Division	**85.9**	**93.1**	**47**	**87.6**
Dinajpur	88.7	91.4	42.9	88.1
Gaibandha	87.3	91.4	61	89.5
Kurigram	85.8	96.2	38.1	95.2
Lalmonirhat	85.1	99.5	52.4	97.6
Nilphamari	76.9	83.3	56.2	71
Panchagarh	89.0	95.7	34.8	96.2
Rangpur	83.1	93.8	62.9	81.4
Thakurgaon	91.0	93.3	28.1	81.4
Sylhet Division	**79.1**	**93.5**	**39.1**	**91.4**
Habiganj	87.3	97.1	8.6	97.6
Maulvibazar	83.4	94.3	37.6	94.8
Sunamganj	79.3	92.4	65.2	88.1
Sylhet	76.1	93.8	51.9	91.4
SCC	68.9	90	32.4	85.2
Barisal Division	**82.2**	**89.6**	**44.3**	**87.2**
Barisal	82.5	79	36.2	74.8
Bhola	81.9	87.1	47.6	85.2
Barguna	82.5	96.7	56.7	95.2
Jhalokati	85.1	99.5	32.9	98.6
Patuakhali	80.4	83.8	40.5	79
Pirojpur	78.4	89.5	42.9	89.5
BCC	84.7	91.4	53.3	88.1
Chittagong Division	**83.9**	**89.9**	**35.8**	**86.9**
Bandarban	79.8	83.3	52.9	81
B.Baria	80.8	88.1	34.8	87.1
Chandpur	88.3	95.2	36.2	92.4
Chittagong	92.7	92.4	20.5	89
Comilla	88.6	91.4	21.4	87.1
Cox's Bazar	83.9	94.3	36.7	92.9
Feni	85.6	94.3	26.2	89
Khagrachhari	82.1	90	59.5	90
Lakshmipur	86.3	80	37.1	71.4
Noakhali	76.2	85.7	18.1	85.2
Rangamati	83.8	94.8	51.9	93.8
CCC	77.1	89	34.8	84.3
Chittagong Slum	71.8	85.2	36.7	80.5
Low performing area	**83.7**	**90.5**	**45.3**	**89.3**
Launch District	84.6	90	32.6	86.4
National	85.2	92.2	36.9	89.6
Rural	85.6	92	35.5	89.7
Urban	83.2	92.8	43.9	89.2

Figure 4. **Valid Full Immunization by Age 12 Months among 12-23 Months Old Children by Districts in Barisal Division (Fully Immunized arranged in ascending order by all districts)**



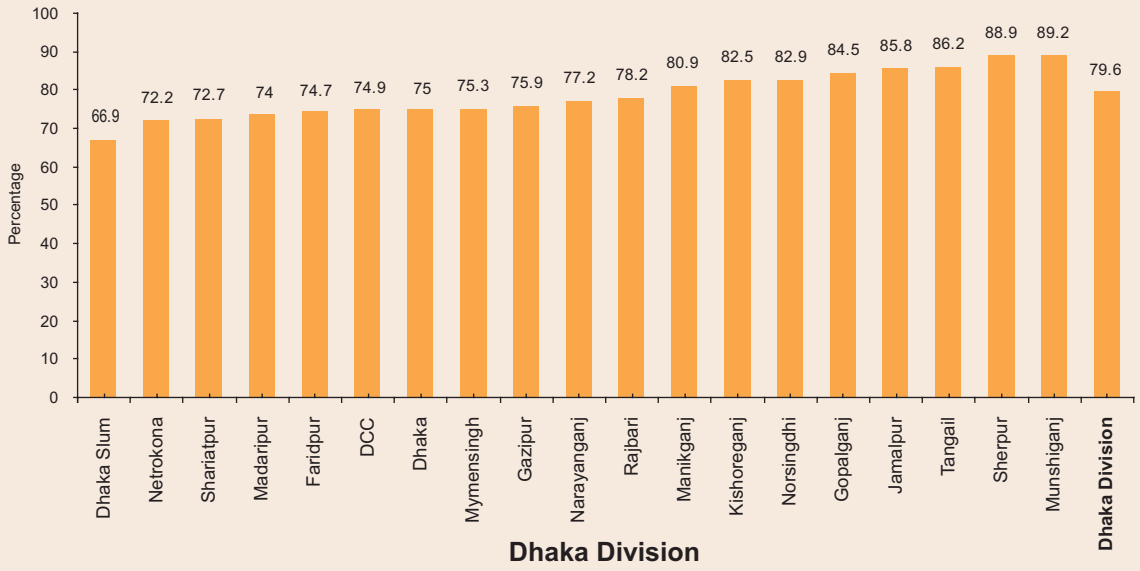
Source: CES 2011

Figure 5. **Valid Full Immunization by Age 12 Months among 12-23 Months Old Children by Districts in Chittagong Division (Fully Immunized arranged in ascending order by all districts)**



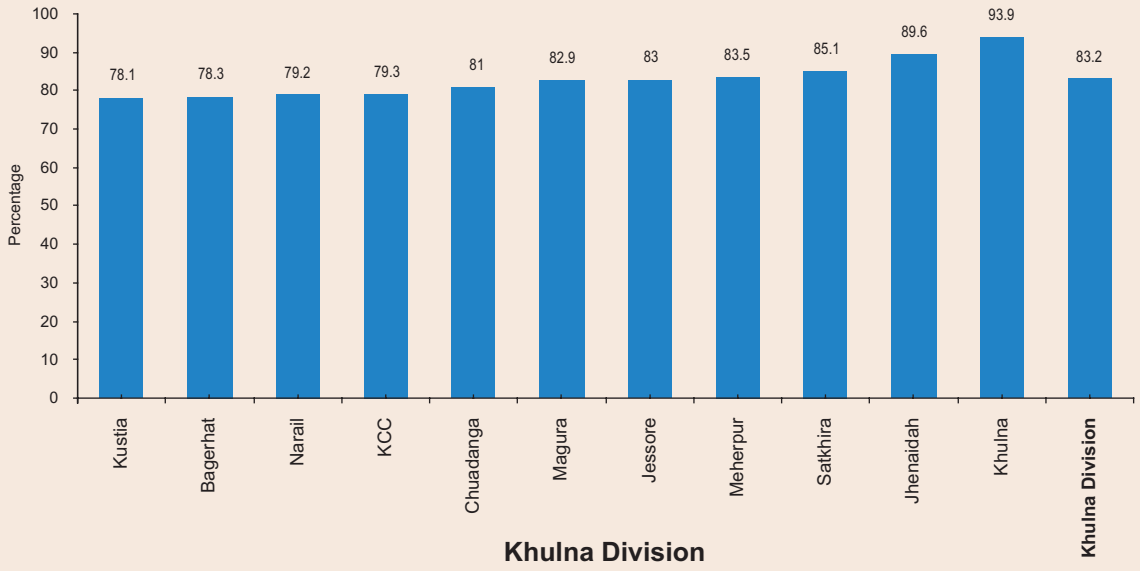
Source: CES 2011

Figure 6. Valid Full Immunization by Age 12 Months among 12-23 Months Old Children by Districts in Dhaka Division (Fully Immunized arranged in ascending order by all districts)



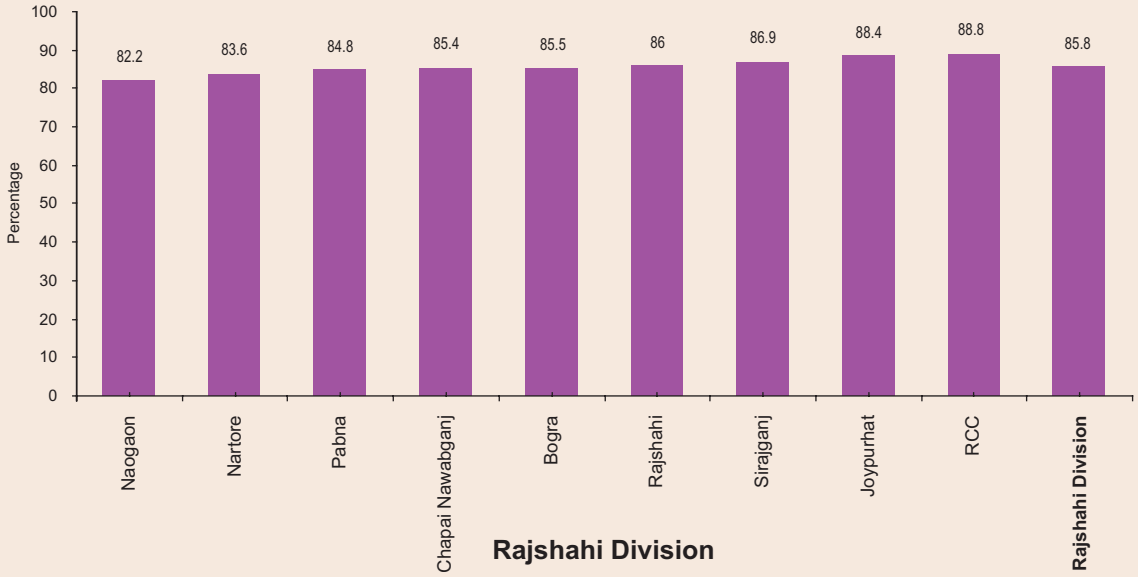
Source: CES 2011

Figure 7. Valid Full Immunization by Age 12 Months among 12-23 Months Old Children by Districts in Khulna Division (Fully Immunized arranged in ascending order by all districts)



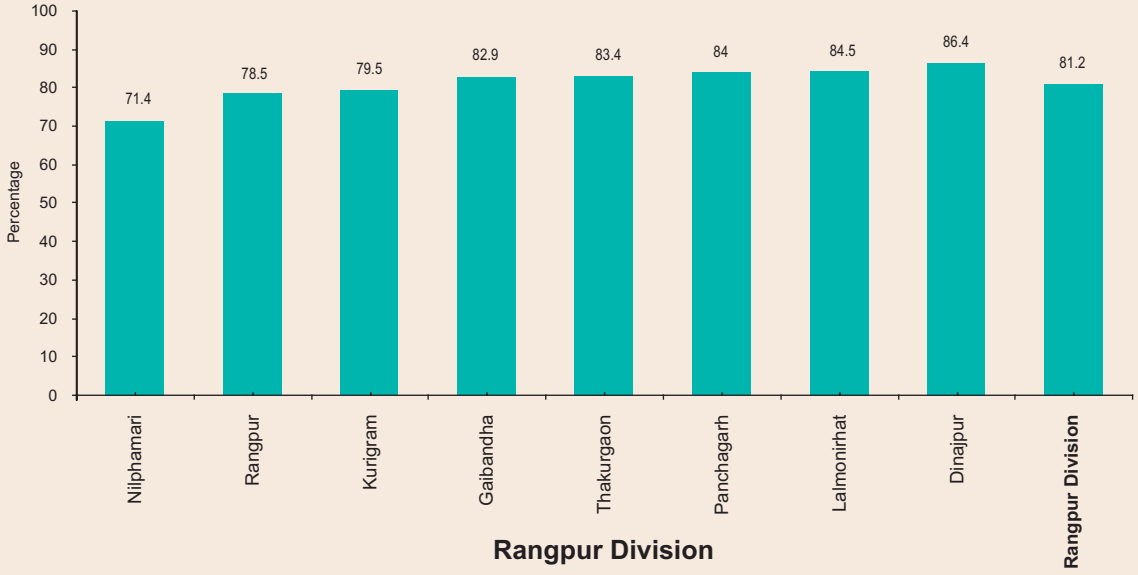
Source: CES 2011

Figure 8. Valid Full Immunization by Age 12 Months among 12-23 Months Old Children by Districts in Rajshahi Division (Fully Immunized arranged in ascending order by all districts)



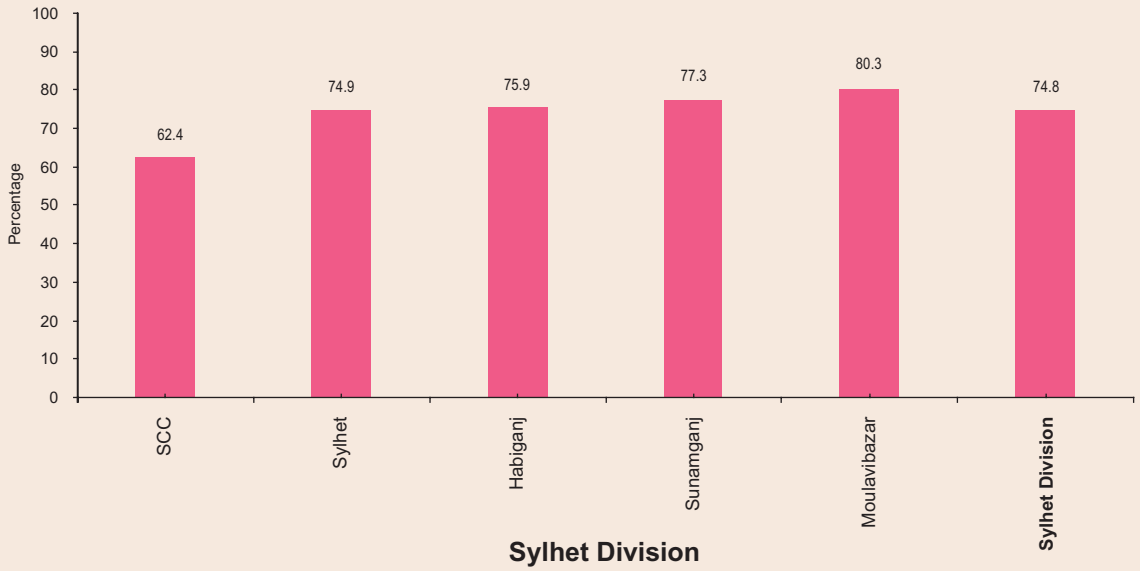
Source: CES 2011

Figure 9. Valid Full Immunization by Age 12 Months among 12-23 Months Old Children by Districts in Rangpur Division (Fully Immunized arranged in ascending order by all districts)



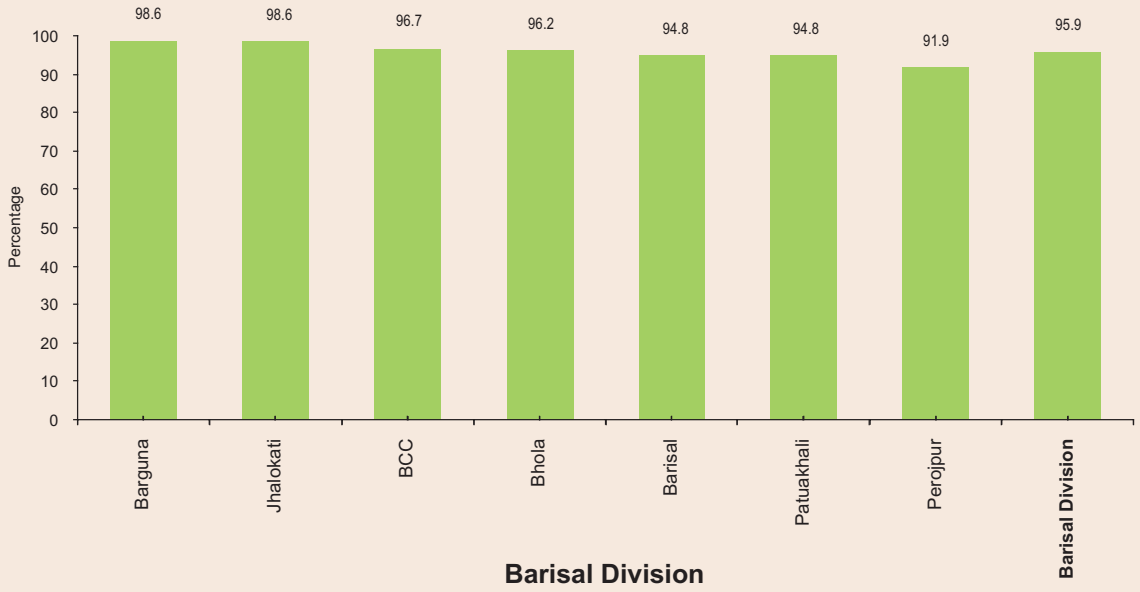
Source: CES 2011

Figure 10. Valid Full Immunization by Age 12 Months among 12-23 Months Old Children by Districts in Sylhet Division (Fully Immunized arranged in ascending order by all districts)



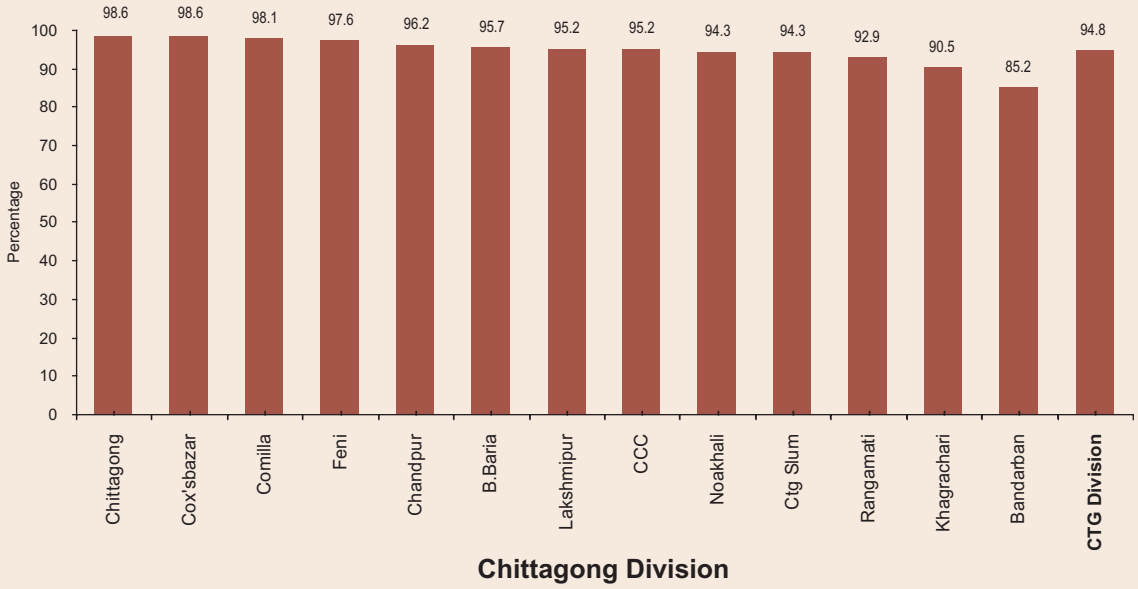
Source: CES 2011

Figure 11. Valid TT2 Coverage among 15-49 Years Old Mothers of 0-11 Months Old Children by Districts in Barisal Division (Arranged in descending order by all districts)



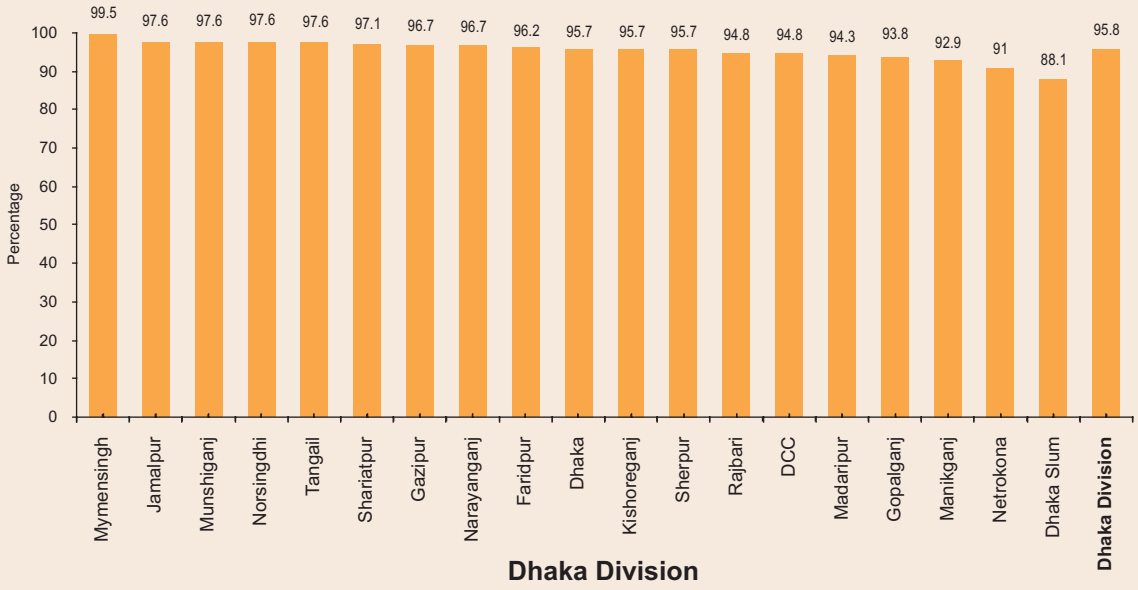
Source: CES 2011

Figure 12. Valid TT2 Coverage among 15-49 Years Old Mothers of 0-11 Months Old Children by Districts in Chittagong Division (Arranged in descending order by all districts)



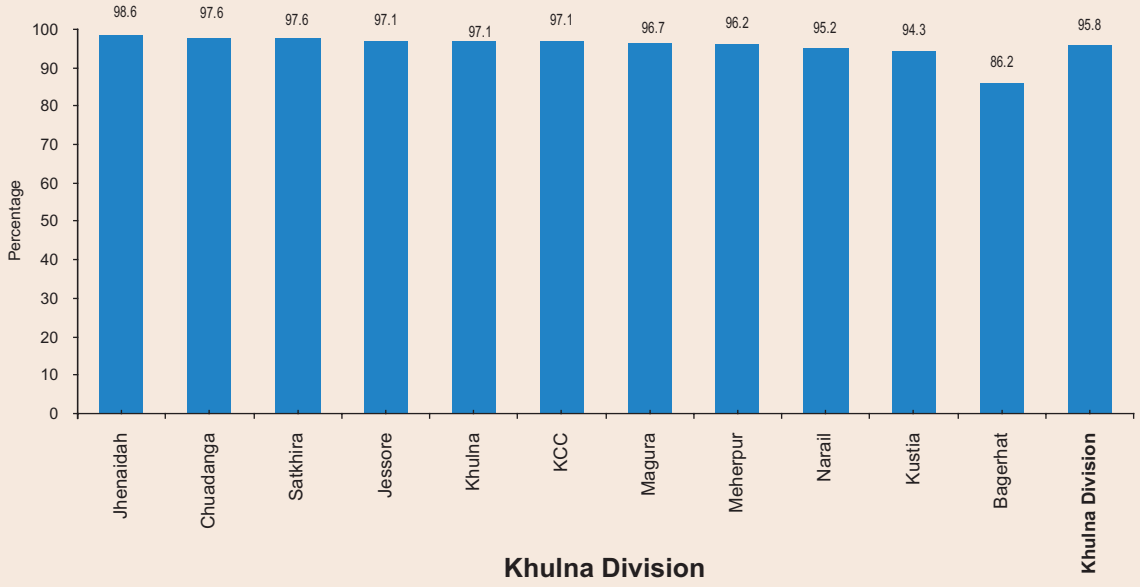
Source: CES 2011

Figure 13. Valid TT2 Coverage among 15-49 Years Old Mothers of 0-11 Months Old Children by Districts in Dhaka Division (Arranged in descending order by all districts)



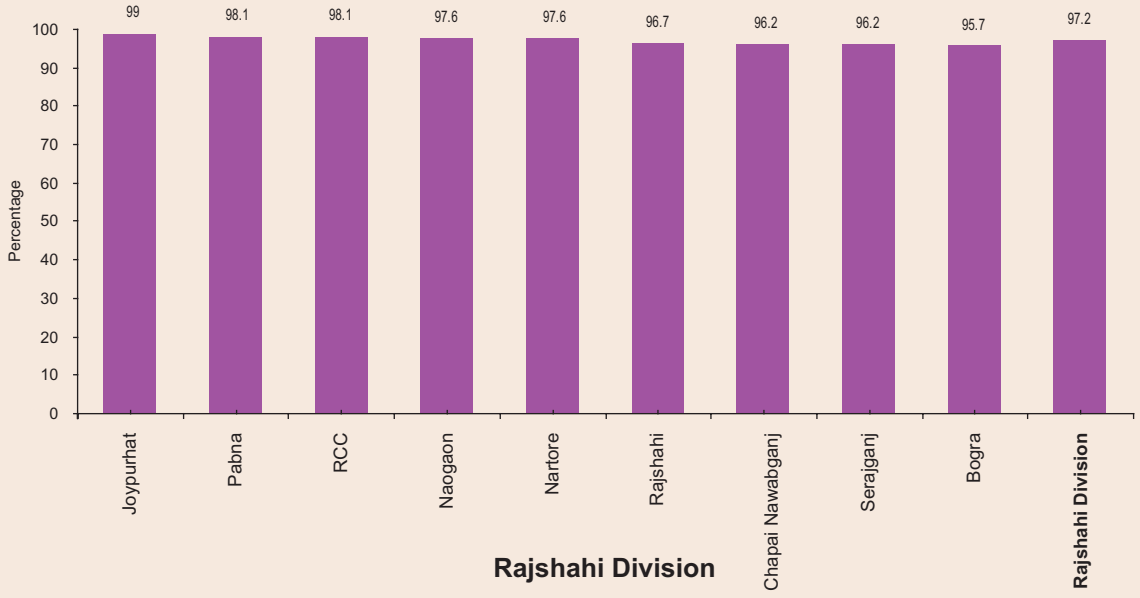
Source: CES 2011

Figure 14. Valid TT2 Coverage among 15-49 Years Old Mothers of 0-11 Months Old Children by Districts in Khulna Division (Arranged in descending order by all districts)



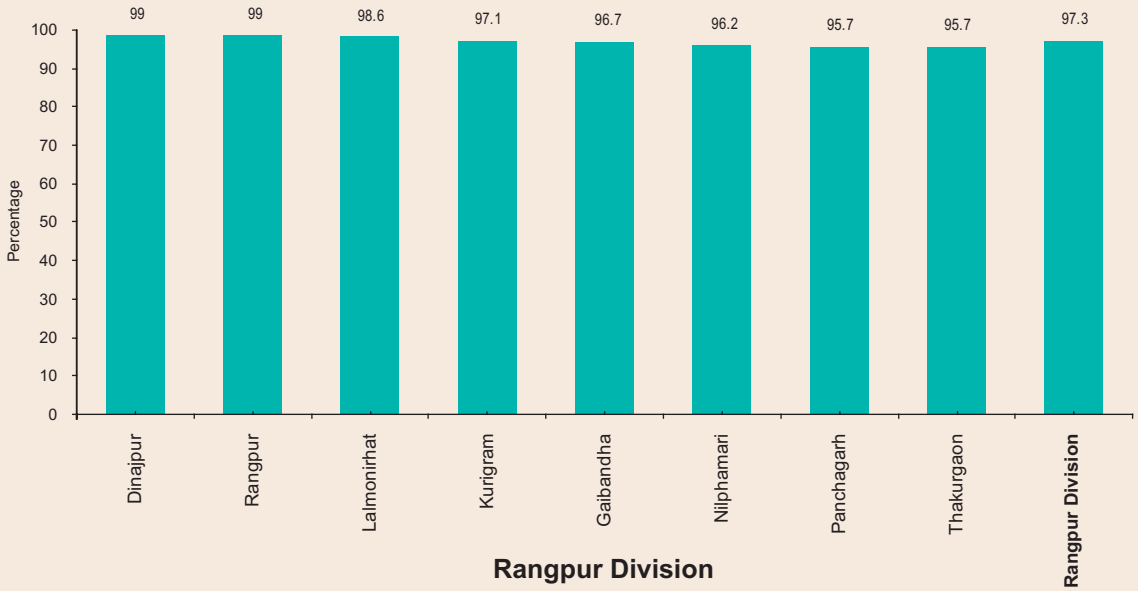
Source: CES 2011

Figure 15. Valid TT2 Coverage among 15-49 Years Old Mothers of 0-11 Months Old Children by Districts in Rajshahi Division (Arranged in descending order by all districts)



Source: CES 2011

Figure 16. Valid TT2 Coverage among 15-49 Years Old Mothers of 0-11 Months Old Children by Districts in Rangpur Division (Arranged in descending order by all districts)



Source: CES 2011

Figure 17. Valid TT2 Coverage among 15-49 Years Old Mothers of 0-11 Months Old Children by Districts in Sylhet Division (Arranged in descending order by all districts)

Source: CES 2011

APPENDIX
QUESTIONNAIRE

People's Republic of Bangladesh
Expanded Programme on Immunization (EPI)
Coverage Evaluation Survey 2011

		CENTRE									
PROJECT	**EPI Coverage Evaluation Survey 2011**				**Name of District:**		**Name of Upazila**				
Cluster No		**Type of Cluster**	**Urban = 1 Rural = 2**		**INTERVIEW TIME**						
District Code		**Upazila Code**									
Area	**Village/Para:** **Mouza/Mahallah:** **Union:**				**START**			**END**			
LANDMARKS											
NAME OF INTERVIEWER		**Code**									
CHECK DETAILS	**Code**	**Accompany**			**Back Check**			**Scrutiny**			
		Codee	**Sign**	**Date**	**Codee**	**Sign**	**Date**	**Code**	**Sign**	**Date**
NAME OF FS		**1**			**2**			**3**		
NAME OF FC		**1**			**2**			**3**		
NAME OF OTHER OFFICIAL		**1**			**2**			**3**		

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

Signature of the Interviewer

Introduction

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

Child Form

Applicable for those babies born in between July 1, 2009 and June 30, 2010 (Applicable for those babies born in between 17 Asar 1416 and 16 Asar, 1417)									
1. Cluster number									
2. Date									
3. Survey area									
4. Sl no. of sample (to be filled in by office)									
5. Sl no. of children in this cluster	Skip to	1	2	3	4	5	6	7
6.Household number/ G R number and name of house head								
7.Name of the child								
8. Sex of the child :Male –1 Female—2								
9. Name of the father of the child								
10. Name of the mother of the child								
11. Date of the birth of the child (Day/Month/Year)								
12. Academic qualification of the mother Illiterate -1, Primary-2, Secondary-3, SSC/Dakhil/ 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/Dakhil/ O level-4, HSC/Alim/ A level-5, Degree/Fazil-6, Masters/Kamil-7								
14. Occupation of the mother Housewife-1, Government employee-2, Non-government employee-3, Household works/day labour-4, Small business-5, Large business-6, Teacher-7, Professional -8, others								
15.Occupation of the father Agriculture-1, Government employee-2, Non-government employee-3, Day labor/rickshaw/van puller-4, Small business-5, Large business-6, Teacher-7, professional -8, driver (truck/bus/car)-9,others								
16. Number of family members								
		Skip to						
17. Has the baby ever received vaccine?	Yes: 1							
	No: 2	18						
17.1 Does the child have card for vaccination?	Yes: 1	18						
	No: 2							
17.2 If s/he doesn't have card, then ask, Were you ever given a card?	Yes: 1							
	No: 2	18						
17.3 If the answer for the question 17.2 is yes, then ask Why didn't you preserve the card? (please mention)								
18. Would you please tell me, at least how many times the child should be taken to the vaccination center to complete all the vaccines? (write the number or 'don't know')								
19. BCG	(Date/+/0)							
19.1. BCG Scar (notice the upper side of the left arm)	(Yes/No)							
19.2. BCG ~Source(from where BCG has taken)	(O/ H / N /P)							

		Skip to	1	2	3	4	5	6	7
20. Penta1	(Date/+/0)								
20.1 Penta 1 Source	(O/ H / N /P)								
21. OPV1	Date/+/0)								
22. Penta 2	(Date/+/0)								
23. OPV2	Date/+/0)								
24. Penta 3	Date/+/0)								
25. OPV 3	(Date/+/0)								
26. OPV 4	(Date/+/0)								
27. Measles	(Date/+/0)								
28. Vitamin A	(Date/+/0)								
29. Has the child received all the vaccines	Received all the vaccines	32.1							
	Received partial vaccines	33							
	Didn't receive any vaccine	33							
29.1. Has the child received all the vaccines within the 12 months	Yes								
	No								
30. What side effect may occur if the child is vaccinated?									
31. After giving vaccine to your child, has there been any abscess at the place of vaccine?	Yes : 1								
	No : 2	35							
31.1 if the answer is yes, then ask, Where did you have the abscess? (multiple answers can be recorded) (please code)	Right thigh : 1								
	Left thigh								
	Left arm								
	Others (specify)								
31.2 Did you feel discourage to give his/her rest vaccine due to abscess or any other problem?	Yes : 1								
	No : 2								
32. Have you ever given money for vaccination of your child? (please code)	Yes : 1								
	No	35.3							
	Not applicable : 3								
32.1 If yes, , how much money did you pay?									
32.2 (If yes, then ask) As you given money, did you abstain yourself from giving rest vaccine to your child?	Yes								
	No								
	Don't know								
33. What is the monthly income of your family? (include all sources)									

Vaccination Code

Date-Record date from vaccination

\+ - history that the child was vaccinated.

0 - The child was not vaccinated

Source codes

O = GOB Outreach, H = All GOB Hospital (e.g., District, UHC)

N = NGO (Hospital, Clinic, Outreach),

P = Private (chamber, clinic and hospital)

Reasons for Vaccination Failure

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

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

35.?	Source of drinking water? Pipe water inside the house- 01 Pipe water outside the house -02, Tube well-03 Deep Tube well - 04, Sallow well - 05, Well- 06, Pond/canal/lake -07, River/Fountain - 08, Tara Pump -09, Rain water -10		Skip to	1	2	3	4	5	6	7
76.	36. Type of latrine? Sanitary latrine- 1, Water seal/ slub latrine- 2, Pit latrine - 3, Open latrine - 4, Hanging latrine - 5, No latrine - 6									
37	Household durables?									
37.1	Almirah	Yes-1 No - 2								
37.2	Table	Yes-1 No - 2								
37.3	Chair/bench	Yes-1 No- 2								
37.4	Clock	Yes-1 No- 2								
37.5	Khat/Bed	Yes-1 No 2								
37.6	Radio	Yes-1 No- 2								
37.7	Television	Yes-1 No- 2								
37.8	Bicycle	Yes-1 No- 2								
37.9	Motor Cycle	Yes-1 No- 2								
37.10	Sewing Machine	Yes-1 No- 2								
37.11	Telephone	Yes-1 No- 2								
37.12	Mobile phone	Yes-1 No- 2								
37.13	Refrigerator	Yes-1 No- 2								
37.14	Car/Truck	Yes-1 No- 2								
37.15	Boat	Yes-1 No- 2								
37.16	Rickshaw/Van	Yes-1 No- 2								
37.17	Electricity	Yes-1 No- 2								
38	Materials of the floor concrete -1, soil-2, Bamboo-3, wood-4									
38.1	Materiasl of the wall concrete -1, soil-2, Bamboo-3, wood-4, Ply wood-5 Tin-6, Brick-7									
38.2	Materials of the roof Concrete-1, Tin-2, Bamboo/wood-3, straw-4, Tally-5, No roof-6									

Thank You

TT Form

Applicable for those women who gave birth to live or dead child between July 1, 2010 and June 30, 2011 (Who gave birth to live or dead child between 17 Asar 1417 and 16 Asar, 1418)	
1. cluster number	
2. Date	
3. Survey area	

4.Sl number of sample (to be filled in by office)								
5. Sl number of woman in this cluster	Skip to	1	2	3	4	5	6	7
6. Household number/GR number/Name of the house head								
7. Name of the respondent								
8. Name of the husband								
9. Date of birth of the child born at the latest (still or live)								
10. Age of the respondent (write in year)								
11.Academic qualification of the respondent Illiterate -1, Primary-2, Secondary-3, SSC/Dakhil/O level-4, HSC/Alim/A level-5, Degree/Fazil-6, Masters/Kamil-7								
12. Academic qualification of the husband: Illiterate -1, Primary-2, Secondary-3, SSC/Dakhil/ O level-4, HSC/Alim/A level-5, Degree/Fazil-6, Masters/Kamil-7								
13. Occupation of the respondent Housewife-1, Government employee-2, Non-government employee-3, Household works/day labour-4, Small business-5, Big business-6, Teacher-7, Professional -8, others								
14. Occupation of the husband Agriculture-1, Government employee-2, Non-government employee-3, Day labor/rickshaw/van puller-4, Small business-5, Big business-6, Teacher-7, professional -8, driver (truck/bus/car)-9,others								
15. Number of family members of the family								

		Skip to	1	2	3	4	5	6	7
16. How many times have you given birth to child? (live and dead)	Live:								
	Dead:								
	Total:								
16.1 The last born baby was alive or dead?	Alive: 1	17							
	Has died: 2	16.2							
	Still birth: 3	17							
16.2 Within how many days since birth, did the child die?									
17. Delivery place of the last child?	in the health complex : 1	18							
	at home : 2								
17.1 Who delivered the child?	SBA : 1								
	USBA : 2								

SBA= Skilled Birth Attendant USBA = Un-Skilled Birth Attendant

18. Have you ever received any TT injection?	Yes :1								
	No :2	33							
18.1 Do you have card for TT injection?	Yes :1	19							
	No :2								
18.2 (If the respondent does not have any card then ask) were you ever given a card for TT injection?	Yes :1								
	No :2	19							
18.3 If the answer for 18.2 is yes, then ask Why didn't you preserve the card?									

Instruction: Record the answers for Q 19-29 from a card or history									
19. TT 1	(Date/+/0)								
19.1 Source of TT1?	(O/H/N/P)								
20. TT2									
20.1 Source of TT2?	(O/H/N/P)								
20.2 Interval between TT-1 and TT-2?	(write in weeks)	..... weeks	..... weeks	..... weeks	..... weeks	..... weeks	..... weeks	..... weeks	..... weeks
21. TT 3	(Date/+/0)								
21.1 Interval between TT2 and TT3	(Write in months)	..... months	..... months	..... months	..... months	..... months	..... months	..... months	..... months
22. TT4	(Date/+/0)								
22.1 Interval between TT3 and TT4	(Write in months)	..... months	..... months	..... months	..... months	..... months	..... months	..... months	..... months
23. TT5	(Date/+/0)								
23.1 Interval between TT 4 and TT5	(Write in months)	..... months	..... months	..... months	..... months	..... months	..... months	..... months	..... months
24.TT6	(Date/+/0)								
24.1 Interval between TT5 and TT6	(Write in months)	..... months	..... months	..... months	..... months	..... months	..... months	..... months	..... months
25. TT 7	(Date/+/0)								
25.1 Interval between TT 6 and TT7	(Write in months)	..... months	..... months	..... months	..... months	..... months	..... months	..... months	..... months
26. TT8	(Date/+/0)								
26.1 Interval between TT 7 and TT8	(Write in months)	..... months	..... months	..... months	..... months	..... months	..... months	..... months	..... months
27. TT9	(Date/+/0)								
27.1 Interval between T8 and T9	(write in month)	..... months	..... months	..... months	..... months	..... months	..... months	..... months	..... months
28. TT10	(Date/+/0)								
28.1 Interval between TT9 and TT10	(write in month)	..... months	..... months	..... months	..... months	..... months	..... months	..... months	..... months
29. Last TT vaccination	(Date/+/0)								
29.1 Interval between TT 10 and last TT injection	(write in month)	..... months	..... months	..... months	..... months	..... months	..... months	..... months	..... months
30. Interval between latest TT injection and birth date of the child	(write in Weeks)	..... weeks	..... weeks	..... weeks	..... weeks	..... weeks	..... weeks	..... weeks	..... weeks
31. Question number of TT vaccination received in the last pregnancy									
31a. Was the child protected at birth	Yes : 1 No : 2								

		Skip to							
32. Have you ever had an abscess after receiving a Tetanus injection?	Yes : 1 No :2 Don't know/don't remember: 9	33							
32.1 Were you discouraged to take the following TT injection due to abscess or any other problem?	Yes :1 No : 2								
33. Did the health worker ask about your TT injection When you took your child to be vaccinated?	Yes :1 No : 2 Not applicable: 3 Don't know: 9								
34. (Those who did not receive TT injection, ask them) Why didn't you receive TT injection?				Z					
35. How many times must a woman receive TT injection to be protected for the rest of her life? (write number or 'don't know')									
36. Did you take vitamin A within six weeks/ 42 days of child delivery?	Yes :1 No : 2	Stop							
36.1 If yes, then tell us from where have you taken Vitamin A?	At home : 1 At vaccination centre : 2 At hospital : 3								
37. What is the monthly income of your family? (include all source)									

Vaccination code:	**Source codes:**
Date - Record date from vaccination card. + - history that the child was vaccinated. 0 - The child was not vaccinated	O = GOB Outreach (Community household, Community Clinics, Satellite Clinic, Club) H = All GOB Hospital (e.g., District, UHC) N = NGO (Hospital, Clinic, Outreach) P = Private (chamber, clinic and hospital)

Thank You

TT 5 Form
Applicable for 18-49 years old women

1. Cluster No.									
2. Household Number/GR number and name of house head									
3. Date									
4. Survey Area									
5. Name of respondent									
6. Father's Name/Husband's Name									
7. Sl number of sample (to be filled in by office)									
8. Sl number of woman in this cluster		Skip to	1	2	3	4	5	6	7
9. Age of the respondent? (in years)									
10.Marital Status	Married/ divorce/ separated - 1 Unmarried - 2								
11. Educational Qualification of the respondents: Illiterate -1, Primary-2, Secondary-3, SSC/ Dakhil / 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									
4. Have you ever received TT Injection?	Yes : 1								
	No : 2	28							
15. Do you have card for TT injection?	Yes : 1	16							
	No : 2	15.1							
15.1 (If the respondent does not have any card) were you ever given a card for TT injection?	Yes : 1	15.2							
	No : 2	16							
15.2 (if yes) Why did you not preserve the card?									

Instruction: 16-26 record the answer from card or history									
16. TT 1	(Date/+/0)								
16.1 Source of TT1?	(O/H/N/P)								
17. TT2	Date/+/0								
17.1 Source of TT2?	(O/H/N/P)								
17.2 Interval between TT-1 and TT-2?	(write in weeks)	..... Weeks	..... Weeks	..... Weeks	..... Weeks	..... Weeks	..... Weeks	..... Weeks	..... Weeks
18. TT 3	(Date/+/0)								
18.1 Interval between TT2 and TT3	(Write in months)	..... months	..... months	..... months	..... months	..... months	..... months	..... months	..... months
19. TT4	(Date/+/0)								
19.1 Interval between TT3 and TT4	(Write in months)	..... months	..... months	..... months	..... months	..... months	..... months	..... months	..... months
20. TT5	(Date/+/0)								

		Skip	1	2	3	4	5	6	7
20.1 Interval between TT 4 and TT5	(Write in months)		..... months	..... months	..... months	..... months	..... months	..... months	..... months
21.TT6	(Date/+/0)								.
21.1 Interval between TT5 and TT6	(Write in months)		..... months	..... months	..... months	..... months	..... months	..... months	..... months
22. TT 7	(Date/+/0)								
22.1 Interval between TT 6 and TT7	(Write in months)		..... months	..... months	..... months	..... months	..... months	..... months	..... months
23. TT8	(Date/+/0)								
23.1 Interval between TT 7 and TT8	(Write in months)		..... months	..... months	..... months	..... months	..... months	..... months	..... months
24. TT9	(Date/+/0)								
24.1 Interval between T8 and T9	(write in months)		..... months	..... months	..... months	..... months	..... months	..... months	..... months
25. TT10	(Date/+/0)								
25.1 Interval between TT9 and TT10	(write in months)		..... months	..... months	..... months	..... months	..... months	..... months	..... months
26. Last TT vaccine	(Date/+/0)								
26.1 Interval between TT 10 and last TT injection	(write in months)		..... months	..... months	..... months	..... months	..... months	..... months	..... months

		Skip	1	2	3	4	5	6	7
27. Have you ever had an abscess after receiving a Tetanus injection?	Yes : 1	27.1							
	No : 2	28							
27.1 Are you discouraged to take the rest TT injection due to abscess or any other problem?	Yes : 1								
	No : 2								
28. How many times must a woman receive TT injection to be protected for the rest of her life? (write number or 'don't know')									
29. Why did you not take any TT injection? (ask those who have never taken any TT injection)									
30. What is the monthly income of your family? (include all source)									

Vaccination Code: Date/+/0

Date - Record date from vaccination card.

\+ - History that the child was vaccinated.

0 - The child was not vaccinated

Source codes:

O = GOB Outreach (Community household, community clinic, Satellite clinic, Club)

H = All GOB Hospital (e.g., District, UHC)

N = NGO (Hospital, Clinic, Outreach), P = Private (chamber, clinic and hospital)

Thank you

NID Form

Applicable for those who were born in between 18/2/2006 and 12/01/2011

1.Cluster number										
2. Date										
3. Survey area										
4. Name of the child										
5.Name of the child's father										
6. Name of the child's mother										
7. Sl. no. of the child in this cluster			Skip to	1	2	3	4	5	6	7
8. Sex: Male –1 Female—2										
9. Date of birth of the child (Day/Month/Year)										
9a. Age in Month										
9b. Eligible for vaccine (/PM/PVM/PVAM)										
10. Ask mother/guardian:	Yes :	1	10.1							
	No :2	2	10..2							
10.1. If yes, ask, where was the child vaccinated?	At fixed site	1	11							
	Child to Child Search	2	10.2							
	Mobile center	3	10.2							

		Skip to							
10.2. If the child (0-59 months) was not vaccinated at the fixed site held on 8th January, 2011 ask "Why was not your child vaccinated at the fixed site"? If the response is more than one then ask "which of those is the most important reason and code accordingly?"	Didn't know : 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 /he was not taken : 05								
	The child was sick, so vaccine was not given : 6								
	No Vaccine ; 07								
	No Vaccinator : 08								
	There was a long queue : 09								
	The centre was too far								
	Session time was inconvenient :11								
	Fear of side effect								
	Waited for home visit :13								
	Religious/Social obstacles :14								
	Was not at home :15								
	Others (specify)								

11. Ask mother/guardian:	Yes :	1	11.1							
	No : 2		11..2							
11.1. If yes, ask, where was the child vaccinated?	At fixed site	1	12							
	Child to Child Search	2	11.2							
	Mobile center	3	11.2							

		Skip to							
11.2. If the child (0-59 months) was not vaccinated at the fixed site held on 12th February, 2011 ask "Why was not your child vaccinated at the fixed site"? If the response is more than one then ask "which of those is the most important reason and code accordingly?"	Didn't know : 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 /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)								

			1	2	3	4	5	6	7
12. Ask mother/guardian How did you learn about the 'Jatiya Tika Dibosh' held on 8th January, and 12th February, 2011 (Please code)	GOB/ City corporations FW visit :01								
	City Corporation's Health Worker :02								
	NGO worker Visit :03								
	Teacher visit :04								
	Other volunteers Visit :05								
	Family/neighbor/friends : 06								
	Television : 07								
	Radio : 08								
	Poster : 09								
	Newspaper : 10								
	Mobile Miking : 11								
	Mosque Miking : 12								
	Health Workers' home visit : 13								
	Told during first round : 14								
	Other (specify)								

Vitamin A*
Applicable for Children Aged 12-59 Months (except Comilla, Moulvibazar, Gopalganj, Satkhira, Barisal, Barisal City Corporation, and Rajshahi City Corporation)
Applicable for those children who born in between 31/5/2006 and 30/5/2010

1.Cluster number	
2. Date	
3. Survey area	

			12-59 Months (Applicable for all districts)							6-11 Months (Comilla, Moulvibazar, Gopalganj, Satkhira, Barisal, Barisal City Corporation, and Rajshahi City Corporation)						
7. Sl. no. of the child in this cluster		Skip to	1	2	3	4	5	6	7	8	9	10	11	12	13	14
4. Name of the child																
5.Name of the child's father																
6. Name of the child's mother																
8. Sex: Male –1 Female—2																
9. Date of birth of the child (Day/Month/Year)																
9a. Age in Month																
9b. Eligible for vaccine Vitamin A (VA)/Deworming Tablet (DT))																
10. **Ask mother/ guardian**: Was your child (12-59 months) fed vitamin A during the Vitamin A Plus Campaign held 29th May, 2011	Yes: 1															
	No: 2															

* **Comilla, Moulvibazar, Gopalganj, Satkhira, Barisal, Barisal City Corporation, and Rajshahi City Corporation information about Vitamin A would be collected from the children aged 6-59 Months. Applicable for those children who born in between 31/5/2006 and 30/11/2010**

			12-59 Months (Applicable for all districts)							6-11 Months (Comilla, Moulvibazar, Gopalganj, Satkhira, Barisal, Barisal City Corporation, and Rajshahi City Corporation)						
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
10.1 If the child (12-59 months) was not fed Vitamin A during the Vitamin A Plus Campaign held 29th May, 2011 then ask, Why the child wasn't fed Vitamin A during the Vitamin A Plus Campaign held 29th May, 2011) (If there come multiple answers, ask which one is more important and code accordingly)	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 time was not in favor	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														
	Others (specify)															

			12-59 Months (Applicable for all districts)							6-11 Months (Comilla, Moulvibazar, Gopalganj, Satkhira, Barisal, Barisal City Corporation, and Rajshahi City Corporation)						
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
11.How did you learn about the Vitamin A Plus Campaign held 29th May, 2011 (Multiple answer)	GOB/ City corporations FW visit	01														
	City Corporation's Health Worker:	02														
	NGO worker Visit	03														
	Teacher visit	04														
	Other volunteers Visit	05														
	Family/neighbor/ friends	06														
	Television	07														
	Radio	08														
	Poster	09														
	Newspaper	10														
	Mobile Miking	11														
	Mosque Miking	12														
	Health Workers' home visit	13														
	Told during first round	14														
	Others (specify)															

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

		Skip to	1	2	3	4	5	6	7
12. Name of the child									
13.Name of the child's father									
14. Name of the child's mother									
15. Sex: Male –1 Female—2									
16. Date of birth of the child (Day/Month/Year)									
17 Ask mother/guardian Was your child (24-59 months) fed anthelmintic tablet during Vitamin A Plus Campaign held on 29th May, 2011?	Yes :1	18							
	No :2	17.1							
17.1 If the child (24-59 months) was not fed Anthelmintic tablet during Vitamin A Plus Campaign held on 29th May, 2011 then ask, Why the child wasn't fed Anthelmintic tablet during Vitamin A Plus Campaign held on 29th May, 2011? (If there come multiple answers, ask which one is more important and code accordingly)	Didn't know :99								
	Was very busy								
	Went on traveling :02								
	Don't believe in Anthelmintic :03								
	The child was fed in the previous time : 04								
	The child was sick, so didn't take him to the vaccination centre :05								
	The child was sick , so the health worker didn't give vaccine : 06								
	Anthelmintic tablet was not available :07								
	Health worker was not available :08								
	There was a long queue :09								
	The centre was too far :10								
	The time was not in favor :11								
	Was afraid of side effects :12								
	Was waiting to come back home with Anthelmintic :13								
	Religious/Social obstacles :14								
	Was not at home :15								
	Others (specify)								

18. Ask mother/guardian How did you learn about the Vitamin A Plus Campaign held on 29th May, 2011 (Please code)			1	2	3	4	5	6	7
	GOB/ City corporations FW visit :01								
	City Corporation's Health Worker:02								
	NGO worker Visit :03								
	Teacher visit :04								
	Other volunteers Visit :05								
	Family/neighbor/friends : 06								
	Television : 07								
	Radio : 08								
	Poster : 09								
	Newspaper : 10								
	Mobile Miking : 11								
	Mosque Miking : 12								
	Health Workers' home visit : 13								
	Told during first round : 14								
	Other (specify)								

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