Bangladesh EPI Coverage Evaluation Survey 2010

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Expanded Programme on Immunization (EPI)
Directorate General of Health Services
Mohakhali, Dhaka 1212, Bangladesh

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Bangladesh
EPI Coverage Evaluation Survey
2010

Expanded Programme on Immunization
Directorate General of Health Services
Mohakhali, Dhaka 1212, Bangladesh

EPI Coverage Evaluation Survey 2010

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Contributors to the Study	:	Khalid Hasan, PhD Prof. Syed Shahadat Hossain, PhD Dr. Yasmin Siddiqua Anwarul Hoque
Technical Reviewers	:	Dr. Md. Abdul Jalil Mondal, Ex.PM-EPI, DGHS Dr. Md. Tawheed Hassan, DPM-EPI, DGHS Dr. Md. Zahurul Hoque, Assistant Director, EPI Surveillance Dr. Md. Quamrul Islam MO, EPI Dr. Tajul Islam A Bari MO, EPI Dr. Serguei Diorditsa, MO-IVD, WHO Dr. A S M Mainul Hasan, WHO Dr. Md. Hasanuzzaman, WHO Dr. Md. Mizanur Rahman, WHO Md. Sharifuzzaman, WHO Dr. Jucy Merina Adhikari, UNICEF

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UN award for Bangladesh

Hon'ble Prime Minister Sheikh Hasina received a UN award for Bangladesh's outstanding achievements in achieving the Millennium Development Goals (MDG) particularly in reducing child mortality at a colourful function on 19 September 2010 at New York.

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

Message

It is my great pleasure to see the completion of Coverage Evaluation Survey (CES) report 2010 of Expanded Programme on Immunization (EPI).

EPI is the gateway to primary health care. Routine 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 success of EPI is highly praised in country and abroad. Bangladesh acquired United Nations Millennium Development Goal Award 2010 for her successful 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.

EPI programme in Bangladesh was started in April 1979 with prevention against six conventional diseases and by 2009 with the introduction of Hib in the form of pentavalent vaccine, EPI covers protection against 8 diseases.

The vaccination coverage has been increased in recent years. The CES 2010 shows that the coverage of BCG is 99%, which reflects the accessibility of the vaccination service. The Fully Vaccination Coverage (FVC) with in one year is 79%.

I must congratulate all the government and non-government staff, field workers, development partners, parents of children, volunteers and all walks of people for their contribution to achieve this tremendous achievement. We have to work more to reach the un-reached children and to achieve the national target of 90% FVC by the year 2015. Let us work together for the betterment of our children and women and build a healthy nation.

Joy Bangla, Joy Bangabandhu.
Long live Bangladesh.

Dr. A. F. M. Ruhal Haque

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)

Message

I am indeed pleased to see that "Coverage Evaluation Survey (CES) report 2010" of Expanded Programme on Immunization (EPI), Directorate General of Health Services is going to be published. 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 accordingly and undertake necessary steps for improving the coverage of those districts.

The Coverage Evaluation Survey (CES) conducted in 2010 shows that the coverage of BCG is 99% which reflects the accessibility of the community to vaccination service. The CES 2010 revealed that the percentage for Fully Vaccinated Children (FVC) by 12 months of age increased from 75% in 2009 to 79% in 2010. In fact all children should be vaccinated with all antigens in right interval before one year of age. I believe as the accessibility rate to vaccination with first contact is 99%, we need to put all of our resources 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 2010. 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

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

Message

I am pleased to see that the Expanded Programme on Immunization (EPI) of Directorate General of Health services is going to publish its "Coverage Evaluation Survey (CES) report 2010". In Bangladesh EPI has been recognized for its sustained high coverage level which is also contributing to reduction in childhood morbidity and mortality rates. Now EPI services are available at the door-steps of the community at 130000 fixed and outreach centers and Community Clinics.

As immunization is one of the cornerstones of health and well-being, it contributes to improvement in 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 to reduction of childhood morbidity and mortality by 'two thirds between 1990 and 2015'.

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

Joy Bangla,
Joy Bangabandhu.

(Dr. Capt. (Rtd.) Mozibur Rahman Fakir)

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

Message

The mission of the Expanded Programme on Immunization (EPI) in Bangladesh is to reduce morbidity and mortality from vaccine-preventable diseases to levels where they are no longer a public health concern by providing high-quality EPI services to all children. The Government of the People's Republic of Bangladesh is committed to providing basic health services to all with special attention to children and women.

On 7th April, 1979 implementation of immunization program was initiated with 6 conventional vaccines against six diseases. With the support from Global Alliance for Vaccines and Immunization (GAVI), Government later introduced the HepB vaccine and Haemophilus influenza type b vaccine into EPI program in 2009 thus preventing eight diseases. These 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 in order to establish a comparison with administrative estimates (to verify administrative coverage data), and other information, which is usually not available through routine monitoring systems. It also provides 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 find out problems and limitations for not reaching every child and design program accordingly 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 highly committed to provide basic health services to all with special emphasis on 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 2% up to that period. 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 to 1989 eventually covering 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 give 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, given the 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 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) 2010 revealed that the percentage for Fully Vaccinated Children (FVC) increased from a plateau, between 52% - 64% for some years to 79%.

In 2002, for the first time in Bangladesh, district wise CES was conducted. This 17th survey report also gives area specific reasons for not availing the service at all or on 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 plan accordingly and undertake necessary steps for improving the coverage 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 2010.

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 their valuable time with required information for the survey without which this study would not have been possible.

10/04/11

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

FOREWARD

It is certainly a great pleasure for me to write forwarding note for EPI National Coverage Evaluation Survey (CES) 2010.

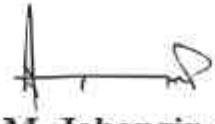
CES established as monitoring tool to assess performances, achievements and progress of the Bangladesh Expanded Program on Immunization (EPI).

EPI is considered a success story in Bangladesh because of its remarkable progress made during the past 25 years. It provides almost universal access to immunization services as measured by the percentage of children under the age of one receiving BCG, which has increased a mere 2% in 1985 to over 99% in 2010. 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 79% during the same period due to dropout rate and invalid doses.

EPI Coverage Evaluation Survey (CES) 2010 was carried out by Nielsen Bangladesh in collaboration with EPI, WHO and UNICEF. The purpose of conducting 2010 CES is to assess (a) the routine childhood vaccination coverage; (b) TT vaccination coverage among women with children 0-11 months; (c) OPV, Vitamin A and Albendazole coverage during 18th NID and Measles Follow-up Campaign; (d) TT vaccination coverage among the women of 18-49 years age; (e) Measles coverage during Measles follow-up Campaign; and (e) immunization program quantity coverage (valid and crude). The survey was carried out between the periods of May-July 2010. The survey was conducted in all 64 districts, 6 City Corporations (CC) and 2 slums. This survey results will give us a better picture of districts and CC situation and enable us to analyze the coverage of each district and CC to identify the performances and also to take special activities to improve the situations.

I would like to thank all experts of EPI HQ specially Ex. Program Manager, Child Health and Limited Curative Care for his valuable contributions to the CES 2010. I would like to appreciate Ex. DPM-EPI and Medical Officers, EPI who had taken active participation in different stages of this survey. My sincere thanks to Nielsen Bangladesh who had supported the government of Bangladesh to conduct the study and prepared this report. My sincere thanks to WHO for arranging necessary fund for carrying out this important survey. Finally, National Consultant-RED and Data Manager of WHO and Immunization Specialist of UNICEF deserve thanks for their valuable contributions.

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 the widespread use of the CES 2010 in the country.



(Dr. A.B.M. Jahangir Alam)
Director PHC & Line Director, ESD
Directorate General of Health ServicesMohakhali, Dhaka

ACKNOWLEDGEMENT

Bangladesh has been conducting National Coverage Evaluation Survey (CES) from 1991 onwards. The survey would provide us national along with divisional and district level performance of EPI activities. In 2010 we have conducted survey for all 64 districts, 6 city corporations, 2 slums in Dhaka and Chittagong City Corporations, the survey results give us a better picture of district situation and it would be possible for us to analyze the coverage of each district to identify the poorly performing district and also to take special initiatives to improve the situations.

Prof. Dr. A. F. M. Ruhal Haque MP, Hon'ble Minister, Ministry of Health and Family Welfare attended the GAVI Fourth Partners Forum Meeting in Hanoi, Vietnam from 18-20 November 2009 and received the GAVI Alliance Award 2009 for outstanding performance of Bangladesh in improving child health immunization. With this award the GAVI acknowledges the great work in extremely challenging circumstances to provide immunization services to mothers and children in Bangladesh.

I must congratulate our officers at EPI Head Quarter for giving support in planning, organizing and conducting such a huge assignment. I must acknowledge Dr. Md. Abdul Jalil Mondal, Ex. Deputy Director, EPI & Surveillance and Program Manager, CH&LCC who had taken leadership in this survey. I also appreciate Dr. Md. Zahurul Haque, Ex. Deputy Program Manager, EPI for his great contribution in this endeavor.

I also express my gratitude to Dr Serguei Diorditsa, Medical Officer, WHO-IVD for his 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) in conducting the survey and preparing this report. And I want also to expreccs my thanks in recognition to contribution for this survey by European Union to Bangladesh.

Hope this report would be useful for all concern personnel.

(Dr. Md. Shamsul Ashraf Khan)
Deputy Director-EPI & Surveillance
and
Program Manager, CH&LCC
Directorate General of Health Services
Mohakhali, Dhaka

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ACRONYMS

BBS	Bangladesh Bureau of Statistics
BCG	Bacillus Calmette Guerin
BCC	Barisal City Corporation
CCC	Chittagong City Corporation
CES	Coverage Evaluation Survey
COSAS	Coverage Survey Analysis System
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
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 an 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 sites / hospital
Fully Vaccinated	If a child receive doses of the "standard seven" antigens - BCG, diphtheria- pertussis -tetanus- (DPT) (3 doses), polio (3 doses), HepB (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 Expanded Programme on Immunization (EPI) started its journey in Bangladesh on 7th April, 1979, with a view to reduce child mortality and morbidity from the 6 vaccine preventable diseases (tuberculosis, diphtheria, pertussis, i.e whooping cough, tetanus, polio, and measles) through vaccinating the target group with these 6 antigens. In 2003, Hepatitis B and hib as pentavalent dose in 2009 was incorporated in the child vaccination schedule under the support from Global Alliance for Vaccines and Immunization (GAVI). Initially, more focus was given for increasing the vaccination coverage, i.e. the quantitative aspects of its service delivery. With the passing of time, EPI got the momentum both in quantitative and qualitative aspects of its service delivery. In course of time, EPI has fixed its objectives in two dimensions: (a) coverage objectives: to increase coverage at least 90 percent nationally, and at least 80 percent in all districts by 2010, and (b) disease reduction objectives: polio eradication, elimination of Maternal and Neonatal Tetanus (MNT), reduction of measles morbidity, and mortality, and reduction of Hepatitis-B prevalence.

Now EPI is considered as a success story of the health services in Bangladesh because of its remarkable progress during the last 20 years. It provides almost a universal access to immunization services as measured by the percentage of under-one children receiving BCG, which has increased from a mere 2 percent in 1985 to 98 percent in 2006. However, the percentage of the under-one year children receiving all doses of vaccines at the right time and right interval has reached 79 percent nationally.

With a view to weigh up the improvement in terms of coverage, fulfillment of the requirement of GAVI annual report as well as to make strategic plans to achieve the coverage objective, Coverage Evaluation Survey (CES) is an important means. The government of Bangladesh, in collaboration with WHO and UNICEF, has been conducting EPI CES since 1991. Since then, a total of 16 CESs were conducted. In 2010, the 17th CES was conducted by Nielsen with the financial support from WHO Bangladesh.

The objectives of the CES 2010 were to assess: a) Childhood vaccination coverage (seven antigens: BCG, DPT, OPV, Hep-B, and Measles) through routine EPI; b) TT vaccination coverage among women with children aged 0-11 months to assess the status of protection at birth; C) TT5 coverage among 18-49- year old women to evaluate the progress of TT5 programme; D) OPV, Vitamin-A and Anthelmentic (Albendazol) coverage during 18th NIDs which was held between January 10-14, 2010, and during measles follow-up campaign E) Measles coverage during measles follow-up campaign held between 14-28 February, 2010.

ROUTINE CHILDHOOD VACCINATION COVERAGE

Across the country, 79 percent of the surveyed children aged between 12-23 months were found to be fully vaccinated before observing their first birthday along with the highest coverage for BCG at 99 percent, DPT3 89 percent, and measles 85 percent. Compared to BCG, a marked declination (14 percent lower) in measles coverage was observed in CES 2010. Over the period between 2005 and 2010, DPT3 coverage increased by 12 percent while the measles coverage increased by 14 percent. A remarkable increase in DPT3 and measles vaccination coverage attributed to 4 percent increase in the national coverage. Moreover, compared to that in CES 2009, increase in the coverage rate of all other antigens except BCG also contributed to the higher improvement in vaccination coverage in 2010. In CES 2010, antigen-specific coverage was found 99 percent for BCG, 98 percent for DPT1, OPV1, Hep-B1, 97 percent for DPT2, OPV2, Hep-B2, and 89 percent, 94 percent, 89 percent for DPT3, OPV3, Hep-B3, respectively. Compared to that in CES 2009, Fully Vaccination Coverage (FVC) rate increased by 4 percent in CES 2010 (75 percent in 2009, and 79 percent in 2010).

As regards to area type fully vaccination coverage following the exact vaccination schedule, which is termed as valid coverage, by the age of 12 months was found to be almost similar both in rural and urban areas. Seventy nine percent of the urban children were found to be fully vaccinated as against 80 percent of the children residing in rural areas. No difference in BCG coverage was observed between rural and urban areas. However, DPT3 and measles coverage were 89 and 84 percents, respectively, in urban areas as against 89 percent coverage of DPT3 and 85 percent coverage of measles in rural areas.

Crude vaccination coverage has been specified as coverage without following the exact vaccination schedule recommended by EPI. In CES 2010, the crude fully vaccination coverage rate was found to be 93 percent in the country. Compared to that in CES 2006, crude coverage rate increased by 4 percent in 2010. By antigen, crude coverage rate was found to be 99 percent for BCG, 99 percent for DPT1, 97 percent for DPT3, and 93 percent for measles. However, a small dropout in the subsequent doses was observed among all antigens. The coverage rate of DPT1 was 99 percent which dropped down to 97 percent in DPT3 and 93 percent in measles. Thus, the dropout among the subsequent doses/antigens is limited to crude vaccination coverage upto 93 percent nationally. Conversely, the rural-urban analysis shows no difference in the crude coverage between urban and rural areas.

By division, annual trend in valid vaccination coverage by the age of 12 months was found to be the highest in Rajshahi division (83 percent) and the lowest (74 percent) in Sylhet division, which was being followed by Chittagong (76 percent), Dhaka (78 percent), Khulna, and Barisal (81 percent). However, a separate analysis for Rangpur division is done through the data derived from Rajshahi division. The analysis shows that 78 percent of the children of Rangpur division received all valid doses by the age of 12 months.

Similarly, annual trend in crude vaccination coverage was the highest in Rajshahi division (96 percent) and the lowest in Sylhet division (88 percent). Barisal, Khulna, and Rangpur divisions

achieved the second highest position with 95 percent coverage. However, crude vaccination coverage was 91 percent in Chittagong and 92 percent in Dhaka divisions.

As regards to specific antigen, crude coverage rate was found to be varying slightly among the divisions. BCG coverage was almost similar in all divisions except in Chittagong and Sylhet divisions. It was 97 percent in Sylhet and 96 percent in Chittgaong divisions. Likewise, DPT3 coverage was found to be 99 percent in Rajshahi, 98 percent in Barisal, Khulna, and Rangpur, 97 percent in Dhaka, and the lowest in Chittagong and Sylhet divisions (94 percent).

In terms of valid vaccination coverage by the age of 12 months, difference in the coverage by antigen was less pronounced for BCG and DPT3 among the divisions. However, the difference was more pronounced for measles vaccine. DPT3 coverage was found to be the highest in Rajshahi (91 percent), which was being followed by Khulna, and Barisal (90 percent), Dhaka and Rangpur (88 percent), Sylhet (86 percent), and Chittagong divisions (85 percent). As regards to measles, it was 88 percent for Rajshahi, 87 percent for Barisal, 86 percent for Khulna, 85 percent for Rangpur, 84 percent for Dhaka, 83 percent for Chittagong, and 79 percent for Sylhet divisions.

Among the city corporations, children from Rajshahi City Corporation (RCC) were more likely to receive vaccines before observing their first birthday following the EPI- recommended vaccination schedule (95 percent). However, the fully vaccination coverage was the lowest in Dhaka and Sylhet City Corporations (70 percent). Valid coverage in other city corporations was intermediary that ranged from 78 percent in Chittagong City Corporation (CCC) to 81 percent in Barisal City Corporation (BCC). Likewise, crude vaccination coverage was the highest in RCC (99 percent) and the lowest in SCC (87 percent), which was being followed by BCC (94 percent), CCC (93 percent), DCC and KCC (91 percent).

The survey findings revealed that marked variation between the valid and crude coverage rates was due to the dropout rate as well as administering invalid doses. Higher dropout rate contributes to the lower vaccination coverage. DPT1-measles dropout rate was the highest in Sylhet division (9 percent) and the lowest in Rajshahi division (3 percent), which attributed to the lower vaccination coverage rate in Sylhet division (74 percent) and higher coverage rate in Rajshahi division (83 percent).

It is to be noted here that the data of CES 2010 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 vaccination cards was 53 percent and that based on history was 27 percent. Therefore, the overall coverage from cards and history revealed that 79 percent of the children aged between 12-23 months received all the recommended vaccines before observing their first birthday. Compared to that in CES 2006, the fully valid vaccination coverage was 8 percent higher in 2010. The extensive intervention and involvement of the program needed contributed towards the increase in vaccination coverage in 2010.

Coverage in 23 LAUNCH (Large Number of Unimmunized Children) Districts

With an aim to contribute to the national coverage, EPI has taken a special initiative, with the financial and technical assistance from WHO, to improve the coverage of 23 DPT3 missed out districts at least up to 90 percent. In the year 2006, EPI conducted a coverage evaluation survey (CES) in 70 units (64 districts and 6 city corporations). The number of children vaccinated with DTP1-3 was calculated to be 3,175,567, which was based on the coverage percentage against the national target of 3,798,525. Based on target children and coverage percentage, it reveals that a total number of 622,958 = (3,798,525 - 3,175,567) children were missed from DTP-3 i.e. dropout in 2006. To minimize the missed out as well as to increase vaccination coverage to the national level, WHO has been providing financial and technical support to the 23 LAUNCH districts through EPI since 2007.

To assess the impact of special support provided by WHO to the LAUNCH districts, CES 2010 made a separate analysis of the data derived. The analysis shows that the overall trend in the vaccination coverage in 23 LAUNCH districts was increasing except in Bagerhat (72 percent in 2006, 71 percent in 2009, and 69 percent in 2010) compared to that in CES 2006. 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 (see Table A7)

Coverage in 15 Low Performing Districts

With an aim to contribute to the national coverage, EPI has taken a special initiative along with the financial and technical assistance from UNICEF for improving the coverage of 15 low performing districts at least up to the national level (CES 2006 71 percent). After one year of intervention, EPI conducted CES 2007 which highlighted the 15 low performing districts. The findings revealed 69 percent coverage in all the 15 districts.

This coverage was 19 percent higher compared to that in CES 2005 and 9 percent higher than that in 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, the fully vaccination coverage by the age of 12 months increased by 5 percent (69 percent in 2007, and 74 percent in 2009). However, compared to CES 2009, fully valid vaccination coverage by 12 months increased by 2 percent in 2010 (74 percent in 2009, and 76 percent in 2010).

Program Quality

Incidence of invalid dose: Vaccines should be administered as per the recommended national EPI vaccination schedule. Figure C5 shows that a certain percentage of vaccines were being administered without following the recommended vaccination schedule. Nationally, 4 percent of the total DPT1 doses, 6 percent of the total DPT2 doses, 8 percent of the total DPT3 doses, and 5 percent of measles doses were found to be "invalid" (Figure C5-C6). Incidences of invalid DPT1 and measles doses were found to be similar both in urban and rural areas. Incidence in invalid DPT1 doses was found to be 4 percent and measles 5 percent in both rural and urban areas (Figure C5).

Dropout: A child should receive all the antigens as per the EPI-recommended schedule before observing his/her first birthday for being fully vaccinated. S/he is considered as a dropout when s/he misses any doses of the recommended antigens (three doses of DPT and Hepatitis- B, 3 doses of OPV, and one dose of measles vaccine). Overall, DPT1-DPT3 dropout rate was found to be 2 percent and DPT1-measles 6 percent (Figure C11). The urban-rural analysis shows no marked variation in DPT1- DPT3 and DPT1-measels dropout rates between the rural and the 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 2 percent of the children who received vaccines have had an abscess (see Figure C21). Occurrence of abscesses was less prevalent among the children in urban areas (1 percent) compared to those residing in rural areas (2 percent).

Card retention rate: Seventy three percent of the surveyed children were found to have retained the vaccination card. Rural mothers/caregivers were more likely to retain the vaccination card than urban mothers/caregivers (Figure C1). Card retention rate was found 74 percent in rural areas as against 68 percent in urban areas. However, the card retention rate in CES 2010 (73 percent) was found 6 percent higher than that in CES 2006 (67 percent).

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 (Figure D1), 24 percent of the mothers/caregivers reported about the distance of the vaccination center from their villages and 18 percent of them

mentioned that they didn't know that their children should be vaccinated. Another 18 percent of them mentioned that they were scared of the side- effects following the vaccination. However, 9 percent of them commented that they don't believe in the usefulness of vaccination. Eight percent of them were not aware of the vaccination center. Besides, they were busy with their household work. Further, 3 percent of the mothers/caregivers reported that the vaccination session time was inconvenient for them. The survey findings revealed that compared to those who reside in rural areas urban mothers were more unaware of the childhood vaccination service.

Regarding partial vaccination (see Figure D1), about one-fourth (24 percent) of the mothers reported that they were unaware of measles vaccination schedule. Sixteen percent of them mentioned that they were busy with their household work. Thirteen percent of the mothers/caregivers reported that "the child was sick, so they couldn't vaccinate him/her". This was being followed by the following agruments: "mothers/caregivers didn't know when to go for second/third dose" (7 percent), "mothers/caregivers forgot to vaccinate their children" (7 percent), "they were scared of the side-effects" (6 percent), "the child was sick" (3 percent), "vaccination time was inconvenient for them" (3 percent), and "they didn't know where to go for vaccination" (3 percent).

Knowledge about the common side-effects of vaccination: Many children experience common side-effects due to vaccination. Mothers/caregivers' knowledge regarding the side-effects was assessed in CES 2010. Eighty percent of them reported fever as a common side-effect of vaccination. A small proportion of them (2 percent) mentioned about abscess (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

More than one-third (39 percent) of the surveyed mothers received 5 doses of TT vaccination nationally, with slight difference between urban and rural areas. The coverage of TT2 was 95 percent- 95 percent in rural and 96 percent in urban areas. As it was expected, TT vaccination coverage was found to be lower between the subsequent doses. Eighty two percent of the surveyed mothers received TT3 and 61 percent TT4 nationally. For TT3, there was no variation in the coverage between urban and rural areas. However, for TT4 the difference was 3 percent (61 percent in rural and 58 percent in urban areas) (Figure F2).

By rural division, TT5 coverage was found to be the highest in Rajshahi division (45 percent) and the lowest in Barisal division (31 percent). It was 43 percent in Sylhet, 40 percent in Khulna, 39 percent in Dhaka, and 38 percent in Chittagong divisions, respectively. Among the city corporations, the highest coverage of TT5 was found in RCC (50 percent) and the lowest in DCC (27 percent). In contrast, TT5 coverage was 32 percent in SCC, 30 percent in CCC, BCC, and KCC, respectively.

Crude TT Vaccination Coverage

Fifty-five percent of the mothers received 5 doses of TT vaccine without following proper vaccination schedule while 95 percent received TT2, 87 percent TT3, and 71 percent TT4. Similar to valid vaccination coverage, crude coverage rate was found to be lower for each subsequent dose. TT3 vaccination coverage was found 8 percent lower than that of TT2 and 16 percent higher than that of TT4 (see Figure F1).

By vicinity, TT5 coverage was found lower in urban areas (53 percent) than that of in rural areas (55 percent). Difference in the coverage of TT2 was 1 percentage point between urban (96 percent) and rural (95 percent) areas. TT3 coverage was found to be 87 percent in urban areas as against 86 percent in rural areas while TT4 coverage was found 70 percent in urban and 72 percent in rural areas, respectively (see Figure F1).

Among the rural divisions, TT5 coverage was found to be the highest in Rajshahi (59 percent) and the lowest in Barisal divisions (49 percent). In contrast, the coverage in Chittagong and Khulna divisions was 55 percent. However, TT5 coverage was 58 percent in Dhaka and 53 percent in Sylhet divisions (see Figure F10).

Retention of TT vaccination card: TT vaccination card retention rate among the surveyed women was found to be 40 percent. Card retention rate was 6 percent higher in rural areas (41 percent) compared to that in urban areas (35 percent) (Figure G1). By rural division, card retention rate was found to be the highest in Rajshahi (50 percent) and the lowest in Dhaka and Barisal divisions (34 percent). However, by city corporation, it was found to be the highest in KCC (43 percent) and the lowest in SCC (27 percent).

Incidence of "invalid" dose: Invalid dose refers to the vaccination that is administered without following the proper vaccination schedule. Incidence of invalid doses was the highest for TT3. Nationally, 14 percent of TT3 doses was found invalid, which was being followed by TT4 (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 (14 percent both in urban and rural areas). However, regarding TT4 doses the difference was 1 percent (13 percent in rural and 14 percent in urban areas), and for TT5 incidence of invalid doses was found similar both in urban and rural areas (13 percent) (see Figure G4).

Among the divisions, incidence of invalid TT3 was found to be the highest in Barisal (20 percent) and the lowest in Sylhet and Rangpur divisions (9 percent), while that of TT4 was the highest in Barisal (19 percent) and the lowest in Rangpur divisions (9 percent). However, for TT5 the highest incidence of invalid dose was revealed in Barisal division (18 percent) and the lowest in Sylhet division (7 percent) (see Figure G5).

Likewise, among the city corporations incidence of invalid doses of TT3 were found to be the highest in CCC (33 percent) and the lowest in RCC (4 percent). Incidence of invalid TT4 was found to be the highest in BCC (21 percent) and the lowest in RCC (8 percent) (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, 92 percent of the children born between 1 January, 2009, and 31 December, 2009, 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 (93 percent) compared to that in rural areas (92 percent) (see Figure G10).

In rural areas by division, PAB against tetanus was the highest in Rajshahi division (95 percent), which was being followed by Khulna (94 percent), Dhaka and Barisal (91 percent), and Sylhet divisions (88 percent) (see Figure G12).

However, among the city corporations, PAB against tetanus was found to be the highest in DCC and RCC (96 percent) and the lowest in SCC (88 percent). PAB was 95 percent in CCC, 93 percent in BCC, and 89 percent in KCC, respectively (see Figure G13).

TT VACCINATION COVERAGE AMONG WOMEN AGED BETWEEN 18-49 YEARS

Nationally, 33 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 (33 percent). In the coverage, a trend of gradual decrease in the subsequent doses was observed. Among the surveyed women, 92 percent received TT1, 89 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 coverage was 47 percent. The urban-rural analysis shows a slight difference between rural (46 percent) and urban (47 percent) areas (see Figure J1).

By rural division, the highest valid TT5 coverage was in Rajshahi division (42 percent), which was being followed by Sylhet (37 percent), Dhaka (33 percent), Chittagong (32 percent), Khulna (29 percent) and Barisal divisions (26 percent) (see Figure J4).

Among the city corporations, the valid TT5 coverage rate was found to be the highest in RCC (49 percent), which was being followed by KCC (48 percent), SCC (30 percent), DCC (29 percent), BCC (23 percent) and CCC (21 percent) (see Figure J6).

OPV COVERAGE DURING 18th NID

In the 18th NIDs, the national OPV coverage was 97 percent. Ninety six percent of the children received OPV at fixed sites, and the remaining 1 percent received it at home during the child-to-child search program. The rural-urban coverage was almost similar to the national findings. However, during the measles campaign, the national OPV coverage was 93 percent. There was no marked difference between the coverage of urban and that of rural areas. Ninety four percent of the children in urban areas received it as against 92 percent of them who reside in rural areas.

Overall, 91 percent of the children received OPV in both the rounds with a slight variation between rural and urban areas. Ninety one percent of the surveyed children in rural areas received OPV in both the rounds as against 93 percent residing in urban areas (see Figure N2).

By rural division, 91 percent of the rural children received OPV in both the rounds of 18th NIDs. OPV coverage in both the rounds was the highest in Rajshahi (95 percent) and the lowest in Chittagong divisions (87 percent). OPV coverage in Dhaka, Khulna, and Rangpur divisions was 92 percent (see Figure N5). However, in the city corporation areas, the highest OPV coverage in both the rounds was revealed in Rajshahi City Corporation (98 percent), which was being followed by KCC (95 percent), SCC (95 percent), DCC (93 percent), CCC (92 percent), and BCC (84 percent) (see Figure N6).

VITAMIN A SUPPLEMENTATION COVERAGE AMONG THE INFANTS, 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 93 percent nationally. The coverage of VAS among the infants who were 9-11 months old was similar in both urban and rural areas (93 percent) (see Figure P1). It is important to mention here that VAS is given while the child visits the vaccination site for measles vaccine. As it was expected, coverage of measles was almost similar to that of VAS. Nationally, 93 percent of the children received Vitamin A as against 93 percent measles coverage. There was no difference between measles and Vitamin A supplementation coverage nationally.

In rural areas by division, coverage of Vitamin A supplementation among the infants was found to be the highest in Rajshahi division (97 percent) and the lowest in Sylhet division (89 percent). VAS coverage in other divisions ranged from 90 percent in Chittagong to 95 percent in Barisal, Khulna, and Rangpur divisions (Figure P2). However, in the city corporations, the coverage ranged from the lowest in SCC (87 percent) to the highest in RCC (99 percent) (see Figures P2 and P3).

Children aged between 12-59 months: The national coverage of Vitamin A Supplementation among the children aged between 12-59 months during the 18th NIDs held on 10th January, 2010 was 96 percent. The coverage in urban areas (97 percent) was 1 percentage point higher than those residing in rural areas (96 percent) (see Figure P1).

Among the rural divisions, the coverage was found to be the highest in Dhaka (97 percent) and the lowest in Chittagong divisions (94 percent) (see Figure P2). In urban areas by city corporation, RCC had the highest coverage (100 percent), which was being followed by DCC (99 percent), SCC (97 percent), CCC and KCC (96 percent), and BCC (94 percent) (see Figure P3).

Postpartum women: Vitamin A Supplementation coverage among the postpartum women within 6 weeks of delivery through routine EPI sessions was 39 percent across the country - 43 percent in urban and 38 percent in rural areas (see Figure P1).

By rural division, VAS coverage among the postpartum women ranged from 24 percent in Sylhet division to 47 percent in Rangpur division. VAS coverage was 32 percent in Dhaka division,

35 percent in Khulna, 41 percent in Rajshahi, and 43 percent in Chittagong and Barisal divisions (see Figure P2). However, among the city corporations, VAS coverage was the highest in Rajshahi City Corporation (54 percent) and the lowest in Sylhet City Corporation (26 percent). The coverage in other city corporations ranged from 34 percent in Chittagong City Corporation to 49 percent in Khulna City Corporation (see Figure P3).

MEASLES FOLLOW UP CAMPAIGN AND COVERAGE

In the EPI Coverage Evaluation Survey 2010, information about the measles vaccination was collected from the children who were born between 16-02-2005 and 20-5-2009. The information collected in this respect suggests that overall, in Bangladesh, 88 percent of the eligible children were covered by measles vaccination under measles follow-up campaign 2010. There was a little variation in the coverage by urban and rural areas, i.e. 89 percent in urban areas as opposed to 88 percent in rural areas (see Figure R2). Among all the rural divisions, measles coverage was found to be the highest (92 percent) in Rajshahi, which was being followed by Rangpur (90 percent), Khulna and Sylhet (89 percent), Dhaka (88 percent), Barisal (85 percent) and Chittagong (84 percent). As has been mentioned above, there was a little difference between rural areas by divisions and urban areas by city corporations and municipalities in respect of measles coverage (see Figures R3- R4).

In the urban areas by city corporations, the coverage was the highest in RCC (96 percent) and the lowest in BCC (80 percent). However, for the other city corporations, the coverage rate varied between 83 percent in CCC and 91 percent in SCC.

Reasons for not receiving Measles Vaccine by Urban and Rural areas

Mothers/caregivers of the children who did not receive measles vaccines during the period mentioned above were asked to provide reasons for not receiving measles. The information is presented in Figure R5. About one-third of the parents (33 percent) mentioned that they did not know about the measles campaign. This statement was followed by some other agruments: the child was given measles earlier (32 percent); mothers/caregivers were not at home (7 percent); mothers/caregivers were travelling (4 percent); the child was sick, so the parents did not take him/her to the vaccination site (4 percent); the vaccination center was too far (4 percent); and mothers/caregivers were busy with their household work (3 percent). More or less, similar patterns were observed in both urban and rural areas.

In both the rural and urban areas, the most common causes were mothers'/caregivers' lack of awareness about the campaign, and the fact that the child was vaccinated with measles vaccine earlier.

Sources of Receiving Information for Measles Campaign

CES 2010 investigated the sources of receiving information about measles campaign Which was being followed by. Overall, in Bangladesh the significant sources of information were field workers (28 percent), which was being followed by mosque miking (25 percent), mobile miking (22 percent), television (19 percent), neighbors (14 percent), volunteers (7 percent), NGO workers (12 percent), and GoB workers (10 percent). The pattern of receiving information in the rural and urban areas is almost similar to the national pattern except TV (see Figure R6).

CHAPTER 1

INTRODUCTION

INTRODUCTION

1.1 Background

Expanded Programme on Immunization (EPI) is considered as a success story in Bangladesh because of its outstanding progress during the last 20 years. The government of Bangladesh along with the technical and financial assistance from WHO and UNICFE made the programme a success. In Bangladesh EPI programme was launched in 1979, and vigorous efforts were taken after 1985 when the government made its commitment at the United States to reach universal child immunization by 1990. As part of intensification, in 1985 the first phase of EPI was launched in 8 thanas; it was expanded to 190 thanas in 1988, and nearly universal access to immunization service was achieved by end of 1989.

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

Since the initiation of this programme, it provides almost a universal access to immunization services as measured by the percentage of under- one children receiving BCG, which has increased from a mere 2 (two percent) in 1985 to 98 percent in 2006. However, the percentage of under- one- year children receiving all the doses of vaccines at the right time and right interval did not reach over 71 percent in CES 2006, nationally.

With a view to weigh the improvement in terms of coverage, fulfill the requirement of GAVI annual report as well as make strategic plans to achieve coverage objectives, Coverage Evaluation Survey (CES) 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 Surveys, also known as CES, which were conducted every year, except in 1996 and 2004. Since then, a total of 16 CESs have been conducted so far. In 2010, the 17th CES was conducted with the financial support from WHO Bangladesh.

1.2 Objectives of EPI Coverage Evaluation Survey

The objectives of CES 2010 were to assess: a) Childhood vaccination coverage (seven antigens: BCG,DPT, OPV, 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 assess the progress of TT5 programme; D) OPV, Vitamin-A & Anthelmintic (Albendazole) coverage in 18th NIDs held in January 2010, and OPV and measles coverage during measles follow-up campaign.

Specific objectives of CES 2010:

- To assess the routine EPI coverage among 12-23 months old children (date of birth: from 01-01-2008 to 31-12-2008)
- To assess the TT vaccination coverage among women who delivered children between 01-01-2009 and 31-12-2009
- 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 drop-out, 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 18th NID and measles follow-up campaign
- To measure Vitamin A coverage among the children who were 12-59 months old during 18th NID held on 10th January, 2010
- To measure Anthelmintic coverage among the children who were 24-59 months old during 18th NID held on 10th January, 2010
- To measure measles coverage among 9-59 months old children during measles follow-up campaign held on 14th -28th February, 2010
- To provide information as a basis for making concrete recommendations, and planning for improving routine immunization activities

CES 2010 was commissioned for the government (EPI-DGHS) with financial support from WHO Bangladesh and technical collaboration with WHO and UNICEF. 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, WHO, and UNICEF; 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 2010 was conducted following the WHO 30 clusters sampling design with an aim 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 2010 was also intended to provide separate estimates for each of the 72 survey units, which covered the whole population. The 72 survey units worked in sixty-four (64) districts and six (6) city corporations, namely, 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 obtain the result as per the study objectives, CES 2010 introduced four types of individual survey by study subjects. The surveys were:

- Childhood Vaccination Coverage Survey, or the Child Survey
- Tetanus Toxoid (TT) Vaccination Coverage among Mothers with 0-11 Months Old Children
- Tetanus Toxoid Vaccination Coverage Survey among the Women who were 18-49 Years Old (TT5 Survey)
- OPV Coverage Survey in the 18th NIDs and Measles follow-up Campaign, which also includes Vitamin A and Anthelmintic Coverage
- Measles Coverage among 9-59 Months Old Children during Measles follow-up Campaign, 2010

1.5 Survey Subjects

As has been mentioned above, CES 2010 consisted of four types of survey. However, the survey included 7 types of subjects:

Childhood Vaccination Coverage Survey: Children aged between 12-23 months and were born between 01 January, 2008 and 31 December, 2008.
TT Survey: Mothers having 0-11 months old children (who delivered child between 01 January, 2009 and 31 December, 2009).
TT5 Survey: Women who were 18-49 years old.
OPV Coverage: Children aged between 0-59 months and were born between 16 February, 2005 and 10 January, 2010.
Vitamin A Coverage: Children aged between 12-59 months and were born between 12 January, 2005 and 10 January, 2009.
Anthelmintic Coverage: Children aged between 24-59 months and were born between 12 January, 2005 and 11 January, 2008.
Measles Coverage: Children aged between 9-59 months and were born between 16 February, 2005 and 20 May, 2009.

1.6 Sample Size

The sample size of CES was determined by the survey units separately 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 mohallahs 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 15120 samples were covered for each survey. Overall, 105840 subjects were selected for four survey types, which comprised CES 2010 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 ofMothers 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 18th NIDs)	Number of 12 - 59 Months Old Children (Vitamin A Coverage in 18th NIDs)	Number of 24 - 59 Months Old Children (Anthelmintic Coverage in 18th NIDs)	Number of 9 - 59 Months Old Children (Measles coverage during Measles follow-up campaign)
Dhaka	17	510	3570	3570	3570	3570	3570	3570	3570
Rajshahi	16	480	3360	3360	3360	3360	3360	3360	3360
	11	330	2310	2310	2310	2310	2310	2310	2310
Khulna	10	300	2100	2100	2100	2100	2100	2100	2100
Barisal	6	180	1260	1260	1260	1260	1260	1260	1260
Sylhet	4	120	840	840	840	840	840	840	840
City Corporations	6	180	1260	1260	1260	1260	1260	1260	1260
Slums	2	60	420	420	420	420	420	420	420
Total	**72**	**2160**	**15120**	**15120**	**15120**	**15120**	**15120**	**15120**	**15120**

1.6.1 Selection of Samples

The samples for CES 2010 were selected using the following procedure.

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

Step-2: Mouzas/Mahallas were used to define a cluster. Each defined cluster has on an average 120 households; a sketch map of each cluster was drawn that 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 four 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 2010 were selected at two stages following the systematic random sampling technique and using PPS method. A list of all mouzas/mahallahs with households of a district was made, and 30 mouzas/mohallahs 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/mahalla having more than 120 households was segmented into two or required number. Each segment consists of 120 households. One segment was selected randomly. This selected segment within the mouza/mahalla was considered as a sample cluster in CES 2010.

1.6.3 Selection of Sample Households

Sample households of CES 2010 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 were obtained. Using the information gathered, children aged between 12-23 months, mothers having children between 0-11 months, women aged between 18-49 years irrespective of marital status, and children aged between 0-59 months, 9-59 months, 12-59 months, and 24-59 months were identified. A separate sampling frame with eligible respondent was prepared for each target population. 7 target samples for each survey were randomly selected from each sampling frame.

1.7 Questionnaires

CES 2010 used four types of questionnaire to gather information separately from seven survey subjects. Draft questionnaires were developed and shared with EPI, WHO, and UNICEF. Pre-testing was done in the field. Pre-test findings were incorporated and finalized in consultation with EPI, WHO, and UNICEF. 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 four questionnaires and forms were used:

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

All questionnaires used in CES 2010 are included in the appendix of this report.

1.8 Implementation of the Survey

1.8.1 Recruitment

The field staff for CES 2010 was recruited in April, 2010. They 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 light of her/his performance in the 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 26th April, 2010, to 2 May, 2010. Nielsen Bangladesh trained the interviewers in six batches each of which comprised 35 trainees. The training methods included classroom lectures 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, and key members of the Survey Team imparted the training. Technical Officer, National Consultant-RED, Data Manager from WHO, and Immunization Specialist from UNICEF also took part as resource persons in the training program.

1.8.3 Fieldwork

The fieldwork was carried out from 8 May, 2010 to 12 July, 2010 with a total of 60 interviewing teams. Nielsen Bangladesh deployed 60 interviewing teams for data collection, each consisting of two Field Interviewers and one Supervisor. Besides, 20 interviewers worked as the reserve resource. Thus, in total 200 field personnel were involved in CES 2010. Moreover, there were 5 quality control teams, each of which comprised two people to check the quality of the fieldwork. Moreover, quality controller and researchers' high management and consultant monitored and checked the quality of the fieldwork. In addition, representatives from the partner agencies - EPI-DGHS, WHO and UNICEF - 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. The 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, data processing and, finally, the analysis to facilitate the required output. Data of CES 2010 has been entered using data base software FOXPRO version 2.6 and cleaned 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 2010, a national report, Pre- identified 15 low performing districts' report, 23 LAUNCH 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 the CES 2010,

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, Vitamin A, and Anthelmintic coverage,

Chapter 6: discloses measles coverage during measles follow-up campaign and

Chapter 7: presents discussions and programmatic implications.

CHAPTER 2

CHILDHOOD VACCINATION COVERAGE SURVEY

This chapter presents the coverage of routine immunization throughly CES 2010 conducted among the children aged between 12-23 months. It also presents the findings on the status of vaccination card, number of visits required to complete all doses, sources of vaccination, adverse events following immunization, common side-effects of vaccination, program quality, and reasons for not receiving vaccines. The discussion in this chapter starts with the objectives, profile of the parents as well as the importance and childhood vaccination schedule.

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 2010 provided a separate comparative analysis of the previously identified 23 LAUNCH districts supported by WHO and 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 not having children 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 22 percent mothers of the surveyed children were illiterate, while 30 percent of them completed their primary education, and 35 percent had at least 6 to 9 years of education. However, 8 percent of the mothers completed 10 years of education and about 5 percent of them had more than 12 years of education.

As has been expected, more urban mothers were literate (85 percent) than their rural counterparts (76 percent). The analysis of the fathers' level of education shows that they were comparatively less educated than mothers. For instance, 28 percent of the children got illiterate fathers compared to 22 percent having illiterate mothers.

The proportion of children with illiterate fathers is high in rural areas (30 percent), compared to that in urban areas (16 percent). The analysis further shows that the percentage of the fathers who completed more than 10 years of education was higher in urban areas (13 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	12.0	10.3	11.7
19 - 24	88.0	89.7	88.3
Mean age (in months)	23.1	23.04	23 .09
Gender			
Male	51.9	52.3	52
Female	48.1	47.7	48
Profile Of Parents			
Mother's Education			
Illiterate	23.6	15.1	22.2
Literate	76.4	85	77.8
Primary	31.6	23.9	30.4
Secondary	35.2	35.6	35.3
SSC/Dakhil/'O' Level	6.4	13	7.5
HSC/Alim/'A' Level	2	7.1	2.8
Degree/Fazil	0.8	3.2	1.2
Masters/Kamil	0.4	2.2	0.6
Father's Education			
Illiterate	30.2	16	28
Literate	69.8	83.9	72
Primary	31.2	23.1	29.9
Secondary	24.3	25.5	24.5
SSC/Dhakil/'O' Level	7.2	12.8	8.1
HSC/Alim/'A' Level	3.6	8.4	4.3
Degree/Fazil	2.1	7.5	3
Masters/Kamil	1.4	6.6	2.2

2.2 Childhood Vaccination

Vaccination is a cost-effective intervention for protecting the children against vaccine preventable diseases. Once children are vaccinated successfully, their bodies become immunized to fight against those diseases if they come into contact with those pathogens. 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 new 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[1]. 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 has been mentioned earlier, Expanded Programme on Immunization (EPI) is implemented in Bangladesh, with an aim to vaccinate all children before one reaches his/her first birthday by following 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.

Besides, along with measles vaccination, a high potency Vitamin A (100,000 IU) capsule is given against night blindness to the child after s/he becomes 9 months old. As per EPI guideline, a child should be vaccinated with all the doses of each antigen by the age of 12 months.

[1]This is new childhood vaccination schedule, EPI Bangladesh. New schedule is introduced in all over Bangladesh from June 2009. CES 2010 included the children who received vaccine as per old vaccination schedule that included the vaccine BCG, three doses of OPV, three doses of DPT, three doses of Hep-B, and measles.

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.

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), Hepatitis-B	Pentavalent (DPT + Hep-B + Hib)	3	4 weeks	6 weeks
Poliomyelitis	OPV	4*	4 weeks	6 weeks
Measles	Measles	1**	-	9 months (270 days)

* 4th dose of OPV is given with measles dose

** Vitamin A (100,000 IU) capsule is given with measles dose

2.3 Childhood Vaccination Coverage

The childhood vaccination coverage was assessed by using the information gathered from EPI CES 2010. There were two sources of information; a) Vaccination Card, and b) Mother's/Caregiver's history. 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, mother's/caregiver's history was considered to record the vaccination status.

In the light of the vaccination schedule, 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 in terms of the dose(s) of any antigen-both valid and invalid-that a child received, regardless of whether s/he received these by or after one year of his/her age. An invalid dose was the dose given 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 valid doses(s) of any antigen administered to a child by one year. A valid dose is a recommended dose of an antigen administered at the recommended age and during the appropriate interval. Both valid coverage and crude coverage of vaccination were assessed for each specific antigen and all together. Crude coverage, against valid coverage, indicates how much more valid coverage could have been gained if all antigens were given to the target children at the appropriate time within the first year of his/her life. In other words, comparison between the crude coverage and the valid coverage shows how much coverage was lost due to the failure to provide antigens to children at the appropriate time. Full vaccination 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.

2.4 Coverage Rates from Card and History

It has been already mentioned earlier that there are two types of sources from which information about the vaccination status can be obtained. Estimates of vaccination coverage were done using both the sources of information - card and history- taken from mothers/caregivers in case of the non-availability of card. Therefore, this section deals with the vaccination coverage rates derived from vaccination cards of the children and history of the mothers/caregivers.

2. 4.1 Levels of Crude Vaccination Coverage

Crude vaccination coverage is defined as the coverage obtained irrespective of the maintenance of the vaccination schedule. Table A3 presents the crude vaccination coverage rate computed from both the sources - card and history. It shows that 93 percent of the children received all the antigens irrespective of the maintenance of vaccination schedule. Coverage for BCG was found to be higher than the percentage of fully vaccinated children. Coverage of the 1st dose of DPT, OPV, and Hep-B (98.7 percent) was slightly lower than that of BCG (98.9 percent). Likewise, a small drop in the coverage was observed for the subsequent doses. DPT2 coverage decreased down to 1 percentage point from DPT1, and DPT3 coverage decreased down to 1 percentage point from DPT2. Moreover, among the antigens, much higher dropout was observed for measles. Crude coverage of measles was 93 percent as against 99 percent coverage of DPT1. Thus, the national rate of crude coverage for full vaccination was found to be only 93 percent among the 12-23 months old children.

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

(Figure in %)

Sources	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Card	70.7	70.5	70.5	70.5	69.7	69.7	69.7	68.2	68.2	68.2	61.8	61.8
History	28.2	28.2	28.2	28.2	28.3	28.3	28.3	28.7	28.7	28.7	31.4	31.4
Both (C+H)	98.9	98.7	98.7	98.7	97.9	97.9	97.9	96.9	96.9	96.9	93.2	93.2

By area, crude coverage rate was found similar both in rural and urban areas (93 percent). Likewise, by antigen no such differentiation was found among the antigens between rural and urban areas (Figure A1).

2.4.2 Levels of Valid Vaccination Coverage by 23 Months

As per EPI 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 fully valid vaccination coverage of the children at the age of 23 months, which was calculated from card+history.

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

(Figure in %)

Sources	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Card	70.7	70.5	70.5	70.5	69.5	69.4	69.4	66.7	63.0	63.0	59.2	55.3
History	28.2	28.2	28.2	28.2	28.2	28.1	28.1	28.0	26.5	26.5	30.0	28.1
Both (C+H)	98.9	98.7	98.7	98.7	97.6	97.5	97.5	94.7	89.4	89.4	89.2	83.4

Nationally, 83 percent of the children received all the vaccines by the age of 23 months maintaing exact interval/age between the consecutive doses. The percentage of children who received BCG was much higher than that of the percentage of DPT3 and measles. Ninety nine percent of the children received BCG as against 89 percent who received DPT3 and measles. The difference in the coverage of the first dose of OPV/DPT/Hep-B with BCG was very close since most of the children received BCG with the first dose of OPV/ DPT/Hep-B (BCG was 98.9 percent and DPT1 was 98.7 percent).

However, a trend of slow decrease in the vaccination coverage is observed in the subsequent doses. The difference in the coverage between DPT1 and DPT2 was found to be 1 percent. It decreased by 9 percent - from DPT2 to DPT3. It is to be mentioned here that dropout and the act of administering the vaccine without following EPI- recommended vaccination schedule contributed to make such differences between the doses as well as specific antigen.

The urban-rural analysis shows no difference between the children residing in rural and 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, the target population should follow the proper vaccination guideline for specific antigen. Under the EPI in Bangladesh, it has been recommended that every child receives all the available antigens following EPI- recommended vaccination schedule within his/her first year of life, i.e. by 12 months of age. Table A5 shows the valid vaccination coverage by the age of 12 months among the children aged between 12-23 months by specific antigen as well as fully vaccination coverage, which were derived from vaccination cards and history given by the mothers/caregivers.

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

(Figure in %)

Sources	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Card	70.5	70.3	70.3	70.3	69.1	69.0	69.0	65.9	62.4	62.4	56.3	52.7
History	28.5	28.1	28.1	28.1	28.0	28.0	28.0	27.7	26.2	26.2	28.5	26.7
Both (C+H)	98.6	98.4	98.4	98.4	97.1	97.0	97.0	93.6	88.7	88.7	84.8	79.4

The table above shows that nationally 79 percent of the surveyed children aged between 12-23 months received all the doses of each antigen following the recommended age and interval by the age of 12 months. Ninety nine percent of the children received BCG as against 98 percent of DPT1, 97 percent of DPT2, and 89 percent of DPT3. The difference is much higher between DPT1 and measles (13 percent) and much lower between BCG and DPT2 (2 percent). Likewise, the difference was a little between DPT1 and DPT2 and higher between DPT2 and DPT3. The gap between DPT1 and DPT2 was 1 percent while it was 8 percent between DPT2 (97 percent) and DPT3 (89 percent).

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

Table A6 presents fully 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 as well as by sex. By division, the highest coverage was found in Rajshahi division (82.5 percent). Variation in the coverage was very small between Khulna (81.3 percent) and Barisal (81.0 percent) divisions. Compared to the coverage in Rajshahi division, the highest variation was observed in Sylhet division (9 percent), which was being followed by Rangpur (5 percent) and Dhaka (5 percent) divisions.

However, in terms of the educational status of mothers the survey found variation regarding their educational attainment. The more the educational attainment of the mother was, the higher the valid vaccination coverage of her child was by the age of 12 months. Valid coverage of the children whose mothers attained 10 years of education (82 percent) was found to be 8 percent higher than that of the children whose mothers had no education (74 percent). This difference was found to be higher for each higher educational attainment; and the highest difference (12 percent) was revealed with the children whose mothers had more than 18 years of education (the coverage was 86 percent).

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

The urban-rural analysis indicates 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 were found in a parallel position with the urban mothers. More than three-fourth (80 percent) of the children in rural areas were vaccinated before observing their first birthday as against 79 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	DPT			OPV			Hepatitis B			Measles	FVC
		1	2	3	1	2	3	1	2	3		
Sex												
Male	98.6	98.3	97.0	88.9	98.3	97.1	93.6	98.3	97.0	88.9	84.9	79.8
Female	98.6	98.4	96.9	88.4	98.4	97.0	93.6	98.4	96.9	88.4	84.7	79.1
Residence												
Rural	98.6	98.4	97.0	88.7	98.4	97.1	93.6	98.4	97.0	88.7	84.9	79.5
Urban	98.9	98.5	96.7	88.7	98.5	96.7	93.7	98.5	96.7	88.7	84.3	79.0
Division												
Dhaka	99.3	99.1	97.5	88.3	99.1	97.8	93.2	99.1	97.5	88.3	83.7	78.3
Chittagong	96.0	95.9	94.7	85.3	95.9	94.7	91.5	95.9	94.7	85.3	82.7	76.2
Rajshahi Old	99.6	99.4	98.5	90.9	99.4	98.5	95.7	99.4	98.5	90.9	87.7	82.5
Khulna	99.2	98.9	96.8	90.0	98.9	97.0	93.9	98.9	96.8	90.0	85.7	81.3
Barisal	99.3	98.9	97.6	89.8	98.9	97.7	95.0	98.9	97.6	89.8	86.6	81.0
Sylhet	97.2	96.7	94.6	85.7	96.7	94.7	90.3	96.7	94.6	85.7	79.4	74.3
Rangpur	99.5	99.3	98.2	88.3	99.3	98.3	94.7	99.3	98.2	88.3	84.7	77.8
Mothers education												
Illiterate	96.3	95.9	94.0	84.8	95.9	94.1	89.9	95.9	94.0	84.8	79.6	74.1
Primary	99.1	98.9	97.2	88.3	98.9	97.3	93.3	98.9	97.2	88.3	83.6	78.2
Secondary	99.4	99.2	97.9	90.5	99.2	98.1	95.2	99.2	97.9	90.5	87.4	82.3
SSC	99.6	99.6	98.8	90.8	99.6	99.0	96.4	99.6	98.8	90.8	88.9	82.8
HSC	99.6	99.3	99.3	93.4	99.3	99.3	97.3	99.3	99.3	93.4	91.1	87.0
Graduate and Above	99.0	99.0	97.9	89.6	99.0	97.9	96.9	99.0	97.9	89.6	88.9	81.3
Post graduate	100.0	100.0	98.2	89.1	100.0	98.2	96.4	100.0	98.2	89.1	93.3	85.9
Monthly Family Income												
Up to 3000	97.5	97.1	95.0	86.9	97.1	95.0	91.7	97.1	95.0	86.9	81.5	97.5
3001-5000	98.3	98.0	96.8	88.0	98.0	96.8	92.9	98.0	96.8	88.0	84.1	98.3
5001-7000	98.6	98.3	96.5	88.8	98.3	96.7	93.2	98.3	96.5	88.8	84.2	98.6
7001-10000	99.3	99.2	97.8	89.5	99.2	98.0	95.0	99.2	97.8	89.5	86.4	99.3
10000+	99.7	99.6	98.8	90.8	99.6	98.8	95.8	99.6	98.8	90.8	88.3	99.7
Bangladesh	**98.6**	**98.4**	**97.0**	**88.7**	**98.4**	**97.1**	**93.6**	**98.4**	**97.0**	**88.7**	**84.8**	**79.4**

2.4.5 Trends in the Vaccination Coverage

Trends in the 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. The trends indicate a significant improvement in the vaccination coverage (crude coverage, valid coverage by the age of 23 months, and valid coverage by the age of 12 months). However, 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 shows valid vaccination coverage by the age of 23 months, and Figure A6 shows valid vaccination coverage by the age of 12 months.

Crude coverage: Figure A4 presents the trend in crude fully vaccination coverage over the past 18 years. During this period, crude vaccination coverage increased by 31 percent - 62 percent in 1991 to 93 percent in 2010. In the last decade (1991-2000), crude vaccination coverage rate increased along with fluctuations by 7 percent. However, the crude coverage rate was almost plateau from 2001 to 2003. A rapid increase in the crude coverage was noticed between 2003 and 2007. It increased from 74 percent in 2003 to 89 percent in 2007. Compared to CES 2006, crude coverage increased by 4 percent during CES 2010 (89 percent in 2006 and 93 percent in 2010).

By antigen, BCG coverage was almost stagnant 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 stagnant till 2007. However, it rose upto 99 percent in 2010. A similar upward trend with fluctuation was observed in the coverage of OPV3 and measles.

Valid vaccination coverage by the age of 23 months: CES 2010 assessed the trend of valid full vaccination coverage by the age of 23 months by using the data derived from the last 4 CESs and the present one. Data on the valid vaccination coverage by the age of 23 months is available since 2005. An analysis of the previous CES data suggests similar trends in the valid vaccination coverage by the age of 23 months. Valid coverage was 69 percent in 2005. It gradually increased upto 79 percent in 2007. The latest CES (CES 2010) shows further improvement in the vaccination coverage, which has increased from 79 percent in 2007 to 83 percent in 2010 nationally (Figure A5). This upward trend might be caused by the influences of the rising trend of measles and OPV3 coverage. Measles coverage rate increased from 78 percent in 2005 to 89 percent in 2010; and OPV3 rose from 84 percent in 2005 to 95 percent in 2010.

Valid vaccination coverage by the age of 12 months: Although there were upward and downward trends in the coverage over the period between 1991 and 2000, a trend of the continuous increase 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. It increased by 19 percent - from 52 percent in 2001 to 71 percent in 2006. Compared to the CESs during the years between 2006 and 2010,

vaccination coverage increased by 8 percent- from 71 percent in 2006 to 79 percent in 2010 (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 DPT1- DPT3 significantly decreased from 21 percent in 2003 to 2 percent in 2010, and DPT1- measles rate decreased from 15 percent in 2005 to 6 percent in 2010 (Figure C12) . It is to be noted here that the coverage of OPV3 increased by 22 percent during the years between 2003-2010 (72 percent in 2003 and 94 percent in 2010) and, similarly, measles coverage increased from 69 percent in 2003 to 85 percent in 2010 (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 of 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 - have been shown in Figures A7-A24. 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 declination 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, 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 the crude coverage was observed since 2003. It increased from 60 percent in 2003 to 95 percent in 2010 (Figure A7).

Likewise, trend in the valid vaccination coverage by the child's age of 23 months was found to be increasing since 2005. In 2005, it was 69 percent which increased upto 85 percent in 2010. (Figure A8).

Figure A9 shows much elevated trend in the coverage by the age of 12 months since 2003. Before that year, valid coverage rate was found to be fluctuating with the exception in 1994-1995. A sharp declination 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 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 2009, the coverage rate increased by 3 percent (78 percent in 2009 to 81 percent in 2010).

Chittagong Division

Trends in fully 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. A continuous upward trend with fluctuations in crude vaccination coverage started in 2000. Crude coverage rate increased by 15 percent between the year 1999 and 2010. Compared to CES 2009, there was no difference in coverage observed (91 percent in 2009 and 91 percent in 2010) (Figure A10).

Similarly, the trend in full valid vaccination coverage by the age of 23 months also increased from 65 percent in 2005 to 80 percent in 2010. Improvement of the vaccination coverage between 2009 and 2010 was 2 percent (78 percent in 2009 and 80 percent in 2010) (see Figure A11).

Likewise, the trend in fully 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 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 76 percent in 2010. Compared to the CES 2009, valid coverage rate increased by 2 percent (74 percent in 2009 to 76 percent in 2010) (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. Between the years 2003 and 2010, crude vaccination coverage rate increased by 21 percent (see Figure A13).

Similarly, full valid vaccination coverage by the age of 23 months also increased by 19 percent - from 63 percent in 2005 to 82 percent in 2010 (see Figure A14).

A fluctuating but upward trend started in the valid coverage by the age of 12 months since 1993, except in 1995. A sharp decline in the coverage was observed in 1997. 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 percents - from 73 percent in 2009 to 78 percent in 2010 (see Figure A15).

Khulna Division

Figure A16 shows a slow escalating trend in the crude vaccination coverage with fluctuations, since 2000 in Khulna division. The crude coverage rate was 75 percent in 2000; it increased upto 88 percent in 2003 and 95 percent in 2010 (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 85 percent while it was 75 percent in 2005. Compared to that in CES 2009, the coverage increased by 4 percent (81 percent in 2009 to 85 percent in 2010) (see Figure A17).

Likewise, trend in the valid vaccination coverage by the age of 12 months in Khulna division was characterized as fluctuating but improving. A much elevated increase in the coverage occurred between 2002 and 2003. The coverage rate increased from 67 percent in 2002 to 77 percent in 2003. The fluctuation trend again began with the commencement of 2003 having variations of 5 percent in 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 increased by 3 percent in CES 2010 (78 percent in 2009 and 81 percent in 2010) (see Figure A18).

Rajshahi Division

The trend of crude vaccination coverage in Rajshahi division is shown in Figure A19. The crude coverage rate was plateau from 1997 to 2003. However, a remarkable upward trend was observed since 2003. The coverage increased by 21 percent - from 75 percent in 2003 to 96 percent in 2010 (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 percent (72 percent in 2005, and 86 percent in 2010) (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 percent during the period 2002-2009. The coverage rate was 54 percent in 2002 which increased upto 78 percent in 2009. Compared to that in CES 2009, the coverage rate increased by 5 percent (78 percent in 2009 and 83 percent in 2010) (see Figure A21).

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 (see Figure A22).

Similar to the crude coverage, 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 2005 and 80 percent in 2010) the coverage rate improved by 21 percent in 2010 (see Figure A23).

However, 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 percent during the period 2001-2010. The highest improvement occurred in 2002 which was 17 percent more than the coverage rate in 2001(see Figure A24). This sort of improvement might be the effect of higher OPV3 and measles coverage as well as of administering vaccines at the exact age and interval. Besides, the reduction of dropout rates resulted in higher vaccination coverage . By this period (2001-2010), DPT1-DPT3 dropout rate decreased by 30 percent- from 33 percent in 2001 to 3 percent in 2010 (see Figure C13).

2.4.7 Levels of the Rural Coverage by Division*

Levels of rural vaccination coverage are presented in Figures A 25-A27. Rural vaccination coverage indicates the vaccination coverage among the residents of rural areas. 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, 93 percent of the children in the 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 in Rajshahi (97 percent) and the lowest in Sylhet (89 percent) division. In other divisions, it ranged between 90 percent in Chittagong division and 95 percent in Rangpur, Khulna, and Barisal divisions. Crude coverage in Dhaka division was found to be 92 percent (see Figure A25).

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 A26 shows that the coverage in Rajshahi division was much higher (88 percent) than those in other divisions. However, a much lower percentage of the children from Chittagong division (79 percent) received all the vaccines following the correct interval by the age of 23 months. The coverage in other divisions was 86 percent in Khulna, 85 percent in Barisal, 84 percent in Rangpur, 83 percent in Dhaka, and 82 percent in Sylhet divisions (see Figure A26).

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 80 percent in rural Bangladesh. It was found to be the highest in Rajshahi (86 percent) and the lowest in Chittagong divisions (75 percent). Coverage in other divisions was intermediary that ranged between 77 percent in Sylhet division and 82 percent in Khulna division. Coverage in Barisal division was 81 percent, which was being followed by Dhaka (79 percent) and Rangpur divisions (78 percent) (see Figure A27).

* Rajshahi and Rangpur division are discussed separately as those are now two different amnistrative areas

Antigen-wise vaccination coverage by the age of 12 months was almost similar for BCG in all divisions except in Chittagong. On an average, the coverage is 99 percent. Differential to other antigens are also less pronounced for OPV3. However, differential of measles antigen is more pronounced in Sylhet (81 percent), compared to those in Rajshahi (90 percent), Barisal and Khulna (87 percent), Rangpur (85 percent), and Dhaka divisions (84 percent) (see Figure A27).

2.4.8 Levels of the Urban Coverage by City Corporation

Vaccination coverage in the 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 A28 shows the analysis of crude vaccination coverage by city corporation. The analysis shows that crude vaccination coverage was the highest (99 percent) in RCC and the lowest (87 percent) in SCC. Crude coverage in other city corporations was 94 percent in BCC, 93 percent in CCC, and 91 percent in DCC and KCC 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 also the highest in RCC (95 percent) and the lowest in SCC (75 percent). The coverage rate in KCC was 86 percent, which was being followed by CCC and BCC (84 percent), and DCC (75 percent) (see Figure A29).

Valid vaccination coverage by the age of 12 months: In regard to the valid vaccination coverage by the age of 12 months, the coverage was found to be the highest in Rajshahi City Corporation (95 percent) and the lowest in Sylhet City Corporation and Dhaka City Corporation (70 percent). Valid vaccination coverage in other city corporations was intermediary that ranged from 78 percent in Chittagong City Corporation to 81 percent in Barisal City Corporation. Valid coverage in Khulna City Corporation was 79 percent (see Figure A30). RCC achieved the highest coverage due to the higher accessibility to the vaccination service as well as lower incidence of invalid DPT1- measles doses. As opposed to Rajshahi City Corporation, a higher dropout rate was attributed to the lower valid vaccination coverage in Sylhet and Dhaka City Corporations.

2.4.9 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 90 percent. In the year 2006, EPI conducted coverage evaluation survey (CES) in 70 units (64 districts and 6 city corporations). The number of children vaccinated with DTP1-3 was calculated 3,175,567 based on the coverage percentage against the national target of 3,798,525. Based on target children and coverage percentage it reveals that a total number of (3,798,525 - 3,175,567) 622,958 children were missed from DPT-3, i.e. dropout in 2006.

The coverage analysis showed that the number of missed children was not proportionately same as the coverage in percentage. In both Dhaka City Corporation (DCC) and Barisal City Corporation (BCC) the coverage is 86%. But the number of missed children was 187,728 in DCC and it was 988 in BCC.

As Bangladesh is one of the countries with Large Number of Un-immunized Children (CLUC), it is WHO's objective to vaccinate the maximum number of children. For that reason, WHO ranked all the 70 survey units. 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 35 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 (Reach Every District) 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 2010 made a separate analysis derived from data CES 2010. The analysis shows that overall trend in the vaccination coverage of 23 LAUNCH districts was increasing except in Bagerhat (72 percent in 2006, 71 percent in 2009, and 69 percent in 2010) compared to that in CES 2006. 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), Lakshimpur (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 (see Table A7).

Table A7: Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in 23 LAUNCH Districts from 2005 to 2010

Survey Units	2005	2006	2009	2010
Dhaka	70.5	75.6	76.2	78.9
Faridpur	68.2	67.7	67.7	74.7
Gazipur	62.3	69.8	63.8	77.1
Kishoreganj	67.1	78.5	76.8	82.9
Na rayanganj	60.1	74.2	69.1	85.6
Norsingdhi	58.3	70.5	73.2	79.7
Tangail	60.8	81.2	76.2	79.2
Bagerhat	71.8	72.2	71.0	69.4
Jessore	74.4	75.2	76.1	85.6
Bogra	73.7	80.8	76.7	87.6
Kurigram	58.9	70.5	65.1	81.3
Nartore	70.4	64.8	80.6	86.0
Nilphamari	58.7	63. 7	78.5	73.4
Pabna	62.9	78.4	87.4	83.5
Rangpur	63.8	75.4	70.8	78.0
Habiganj	55.1	67.3	60.6	78.5
Sylhet	54.4	74.7	74.1	75.9
Barisal	64.4	71.4	76.6	78.1
Bhola	67.9	65.5	71.2	84.3
Chandpur	78.0	77.0	76.0	79.9
Chittagong	69.6	71.7	75.6	78.9
Comilla	57.8	65.9	75.0	79.6
Lakshmipur	61.5	69.4	72.6	79.3

2.4.10 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 special initiatives. Its focus was to improve the coverage of 15 low performing districts at least up to the national level (CES 2006 71 percent). After one year of intervention, EPI conducted CES 2007 which covered the said 15 low performing districts. The findings revealed 69 percent coverage in all these 15 districts. It was 19 percent higher, compared to that in CES 2005 and 9 percent higher from that in CES 2006. Furthermore, 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 fully vaccination coverage by the age of 12 months increased by 5 percent (69 percent in 2007 and 74 percent in 2009). In CES 2010, Fully Valid Vaccination (FVC) Coverage by the age of 12 months was found to be 76 percent, which was 2 percent higher than that in CES 2009. Besides, compared to that in CES 2009 Fully Vaccination Coverage (FVC) increased in 10 districts and decreased in 6 districts (Bandarban, Khagrachhari, Rangamati, Noakhali, Sunamganj, and Mymensingh) (see Table A8).

Table A8: 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
Lalmonirhat	56.3	74.4	75.2	82.6
Gaibandha	59.7	67.4	74.7	78.1
Sirajganj	70.4	73.6	79.6	83.5
Mymensingh	74.2	71.5	80.6	79.3
Jamalpur	68.3	69.2	71.8	77.2
Netrokona	60.6	62.0	66	76.2
Sherpur	67.1	78.6	79.1	85.6
Bandarban	60.3	48.3	74.6	65.3
B. Baria	48.5	69.7	67.0	84.7
Coxsbazar	60.6	72.4	65.7	72.6
Khagrachai	64.5	73.6	77.6	73.2
Noakhali	48.3	76	75.2	63.9
Rangamati	60.5	69	76.2	74.6
Moulvibazar	57.1	66.2	66.8	73.7
Sunamganj	44.6	64.4	79.9	73.6
Total	60	69	74	76.4

2.4.11 Sex Differentials in the Vaccination Coverage

In Bangladesh, in all the areas culturally boys are more privileged than girls regarding fulfilling of their basic needs. CES 2010 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 A31 shows that a higher number of males than females received all the vaccines. Nationally, 93 percent females and 94 percent of males received all the vaccines. In terms of place of residence, crude vaccination coverage rate was 1 percent higher for males (94 percent) than that for females (93 percent) in rural areas. However, similar findings were observed in urban areas (see Figure A32-A33).

By antigen, there was no difference in the coverage between males and females except in the cases of OPV3/HepB3/DPT3 and measles. And, there was a little difference in the measles coverage between the males and females (see Figure A31).

Valid vaccination coverage by the age of 23 months: In terms of the act of administering vaccines through maintaining the exact interval by the age of 23 months, the survey findings show a slight difference between males (84 percent) and females (83 percent). The rural-urban analysis shows a little difference in the coverage in urban areas. In urban areas, 82 percent females received valid doses of all vaccines as against 85 percent males. Similarly, the difference in the coverage was found to be 1 percent between

the males and females who reside in rural areas (84 percent for males and 83 percent for females). However, by antigen, a lower difference was noticed in the vaccination coverage of HepB3/DPT3 and measles. The coverage was 1 percent higher for the males compared to that for females for these antigens (see Figures A34-A36).

Although, compared to that in OPV3 the coverage of measles vaccine was found to be slightly lower for both the males and females (see Figure A34), the decrease in the coverage for measles vaccine was higher for the females (6 percent), compared to that for males (5 percent) (see Figure A34).

Valid vaccination coverage by the age of 12 months: Valid vaccination coverage by the age of 12 months is an important means to understand the sex differential in the coverage. Figure A37 shows the sex differential in the vaccination coverage by the age of 12 months. It shows that 80 percent of the males and 79 percent of the females received all the valid doses by the age of 12 months. By place of residence, a slightly higher percentage of the males (80 percent) in rural areas received all the valid doses as against 79 percent of the females (see Figure A39). However, the picture of urban areas was almost similar - 80 percent of the males received all the valid doses as against 78 percent of the females (see Figure A38).

By antigen, the difference of coverage between males and females is slightly lower for DPT3 and HepB3. The difference in coverage for DPT3/Hep-B3 between males and females was 1 percentage point (see Figure A37).

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 of age among the 12-23 months' old children, by divisions/city corporation are given in Table 1 of the Appendix. Full vaccination coverage by the age of 12 months by division /city corporation is also presented graphically in 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 2010 (Card+History)

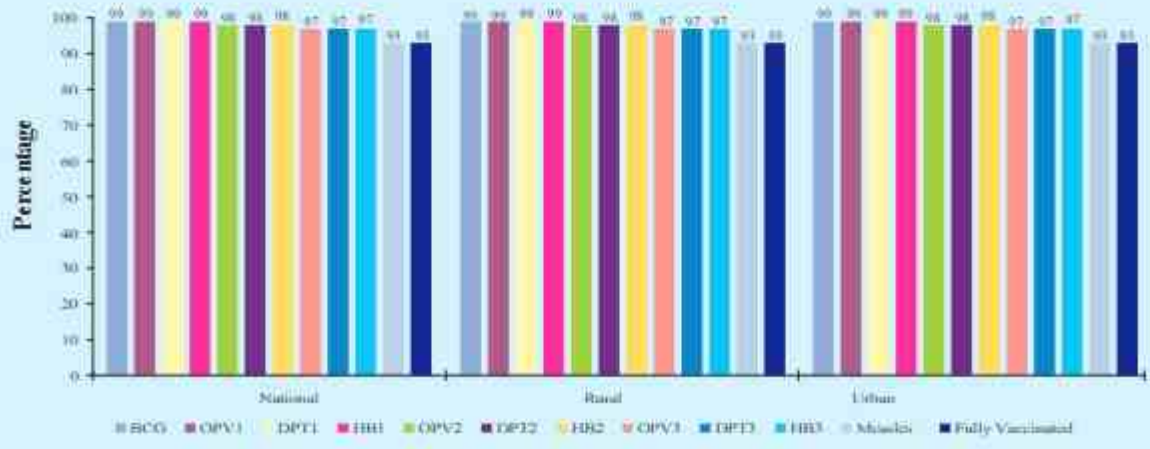


Figure A2. Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2010 (Card+History)

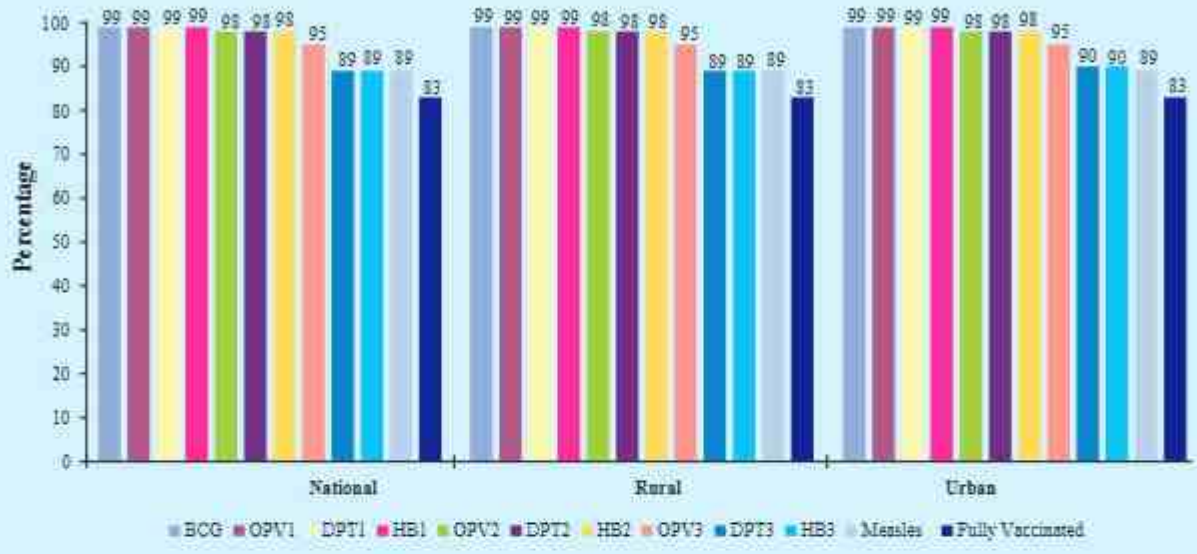


Figure A3. Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2010 (Card+History)

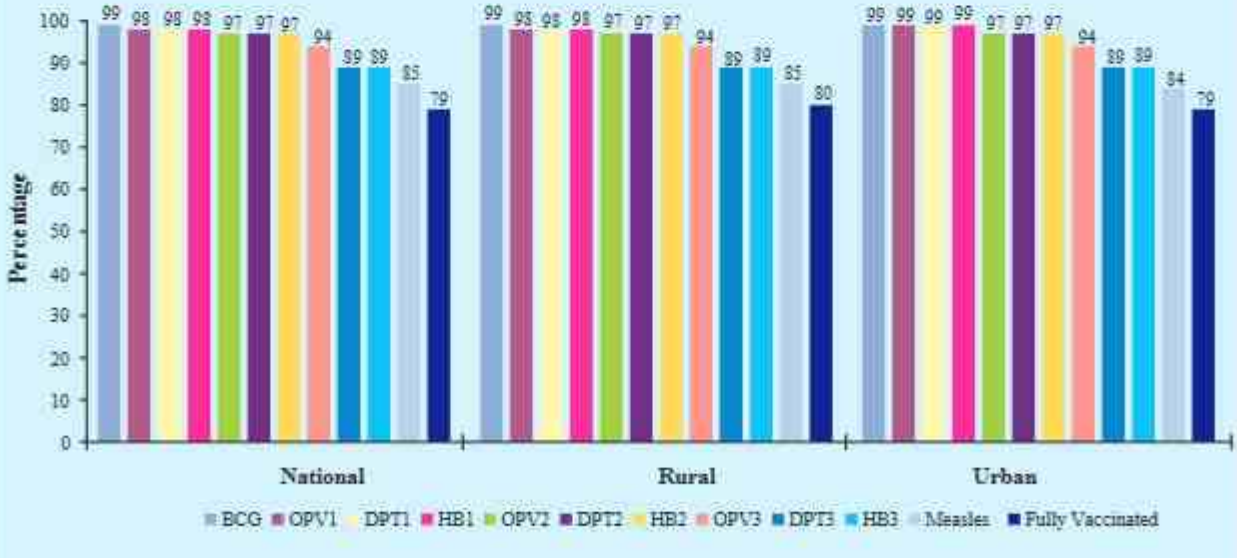
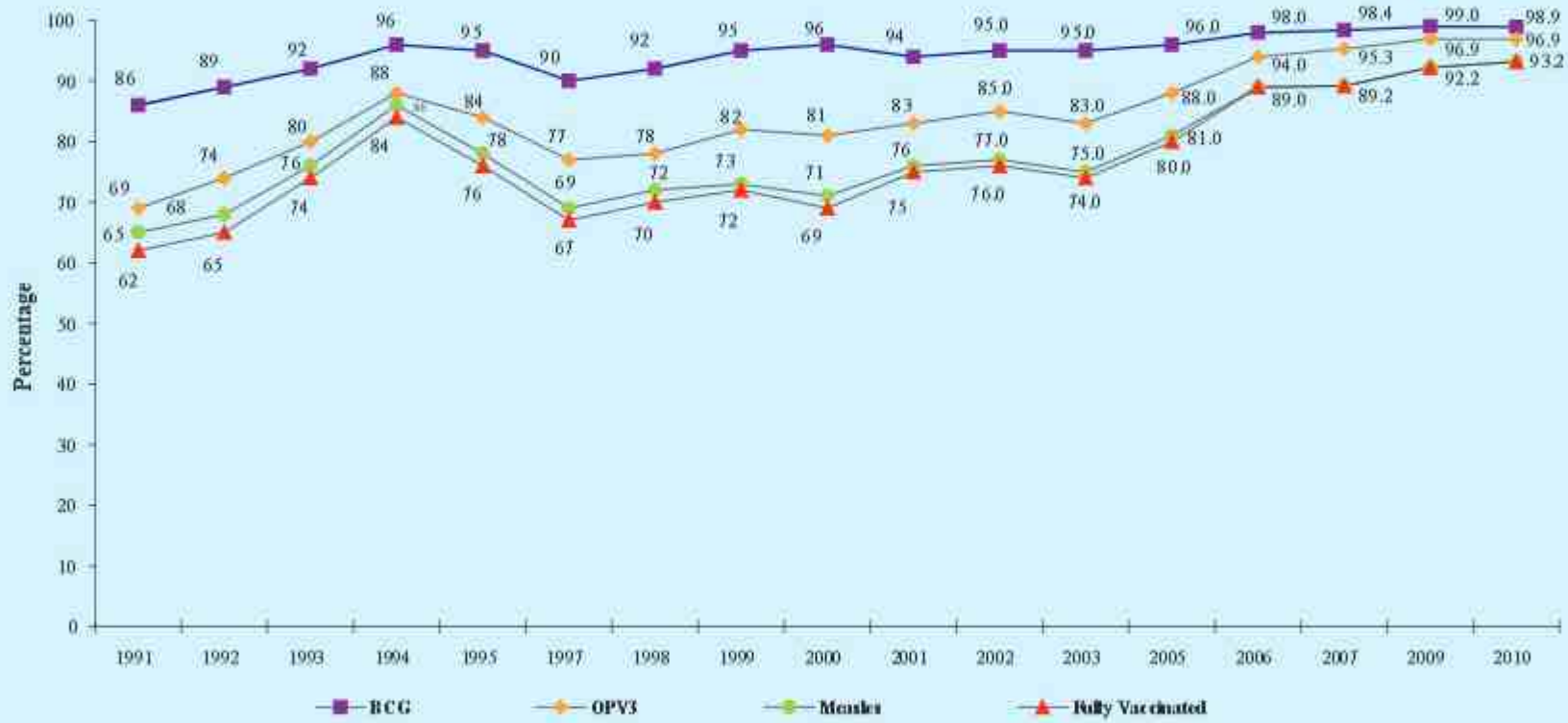
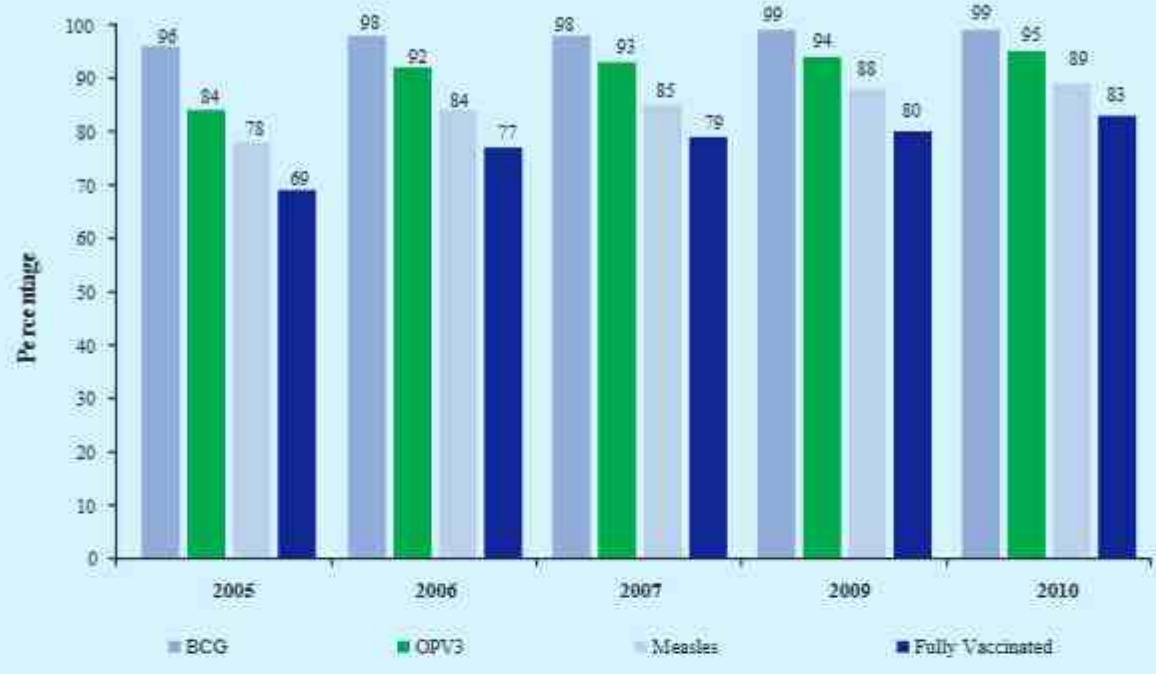


Figure A4. Annual Trend in National Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children from 1991 to 2010 (Card+History)



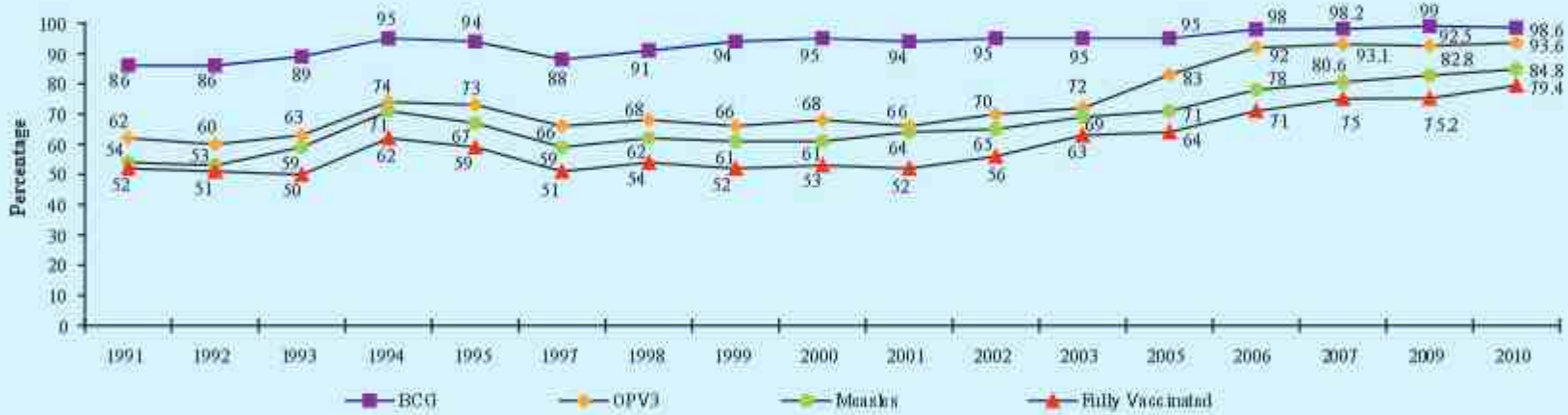
Source: Coverage Evaluation Survey 1991-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009 and 2010

Figure A5. Annual Trend in National Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children from 2005 to 2010 (Card+History)



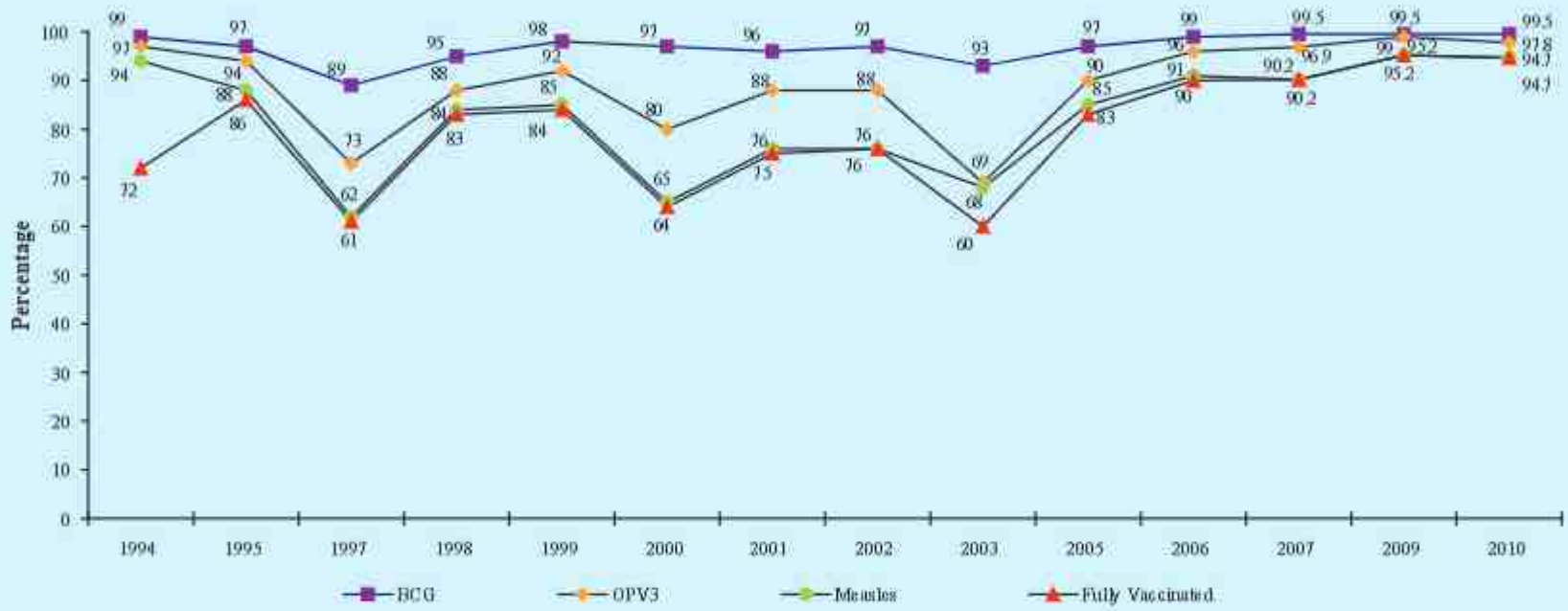
Source: CES 2010

Figure A6. Annual Trend in National Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children from 1991 to 2010 (Card+History)



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

Figure A7. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Barisal Division from 1994 to 2010 (Card+History)

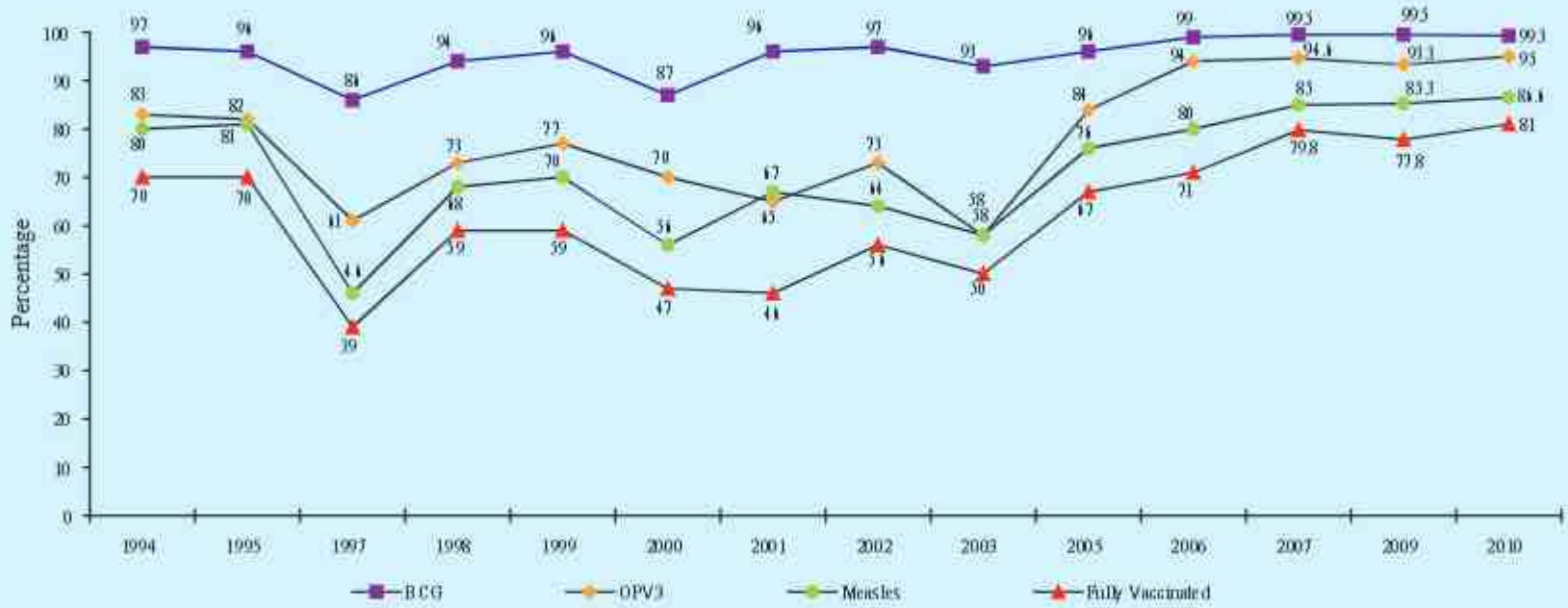


Source: Coverage Evaluation Survey 1994-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009 and 2010

Figure A8. Annual Trend in Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children in Barisal Division from 2005 to 2010 (Card+History)

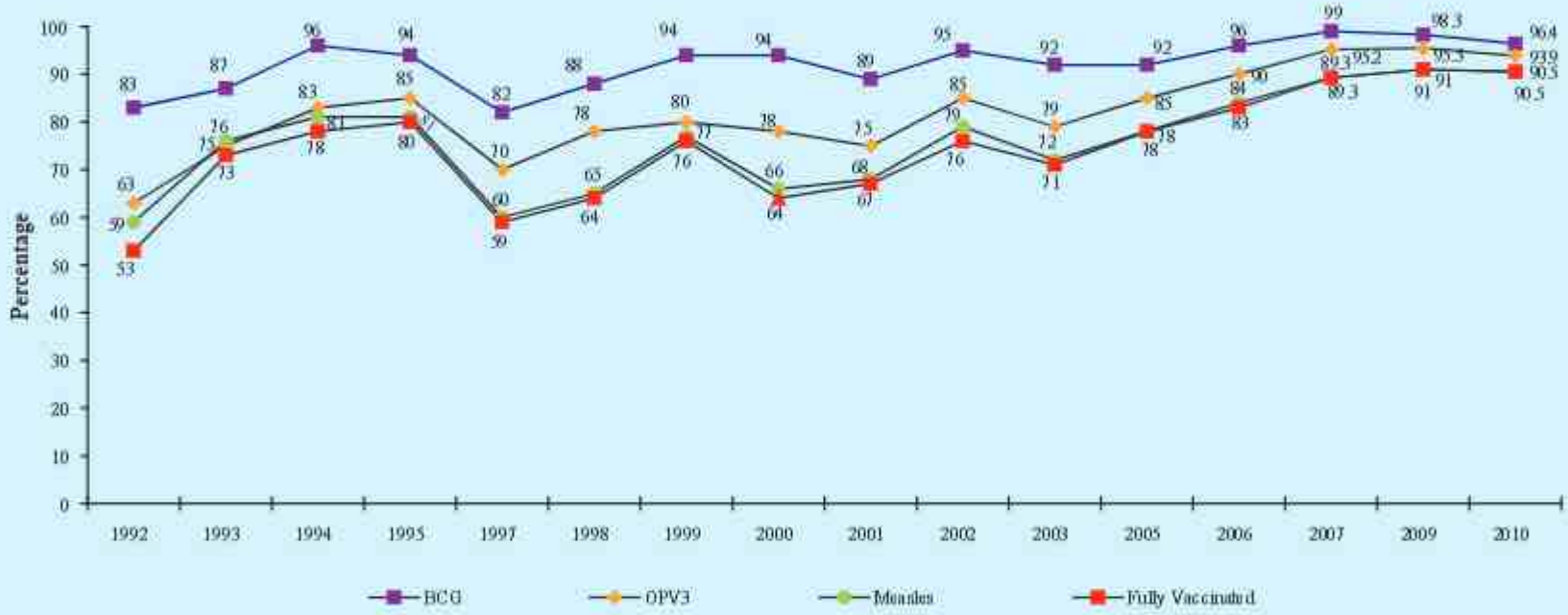
Source: CES 2010

Figure A9. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Barisal Division from 1994 to 2010 (Card+History)



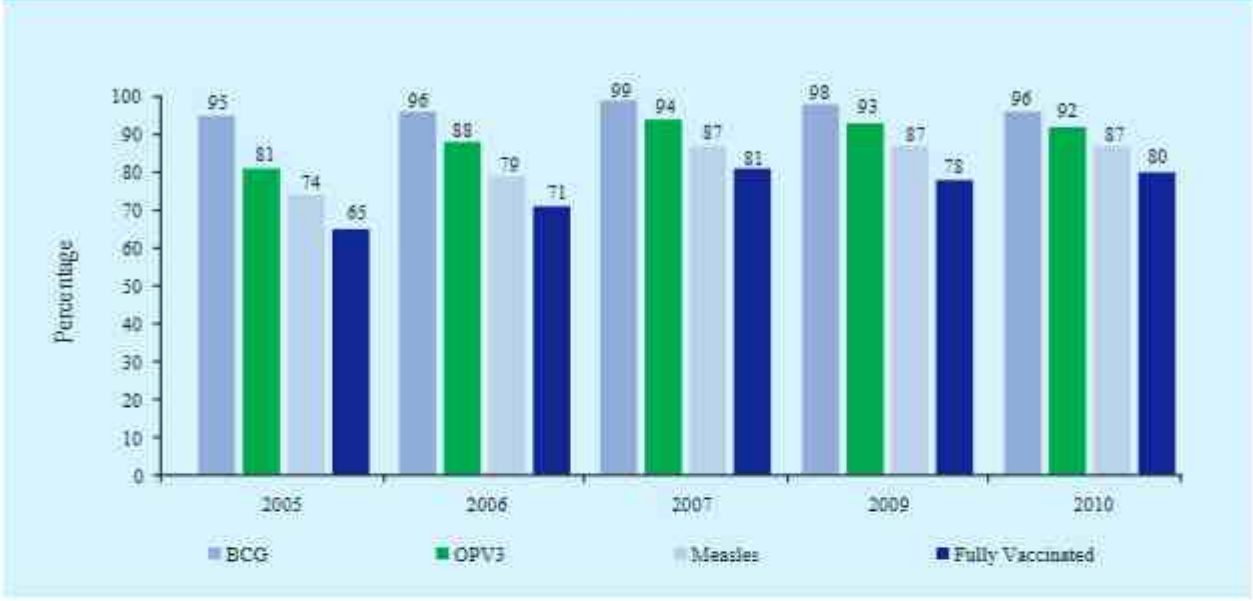
Source: Coverage Evaluation Surveys (CESs) 1994-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009 and 2010

Figure A10. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Chittagong Division from 1992 to 2010 (Card+History)



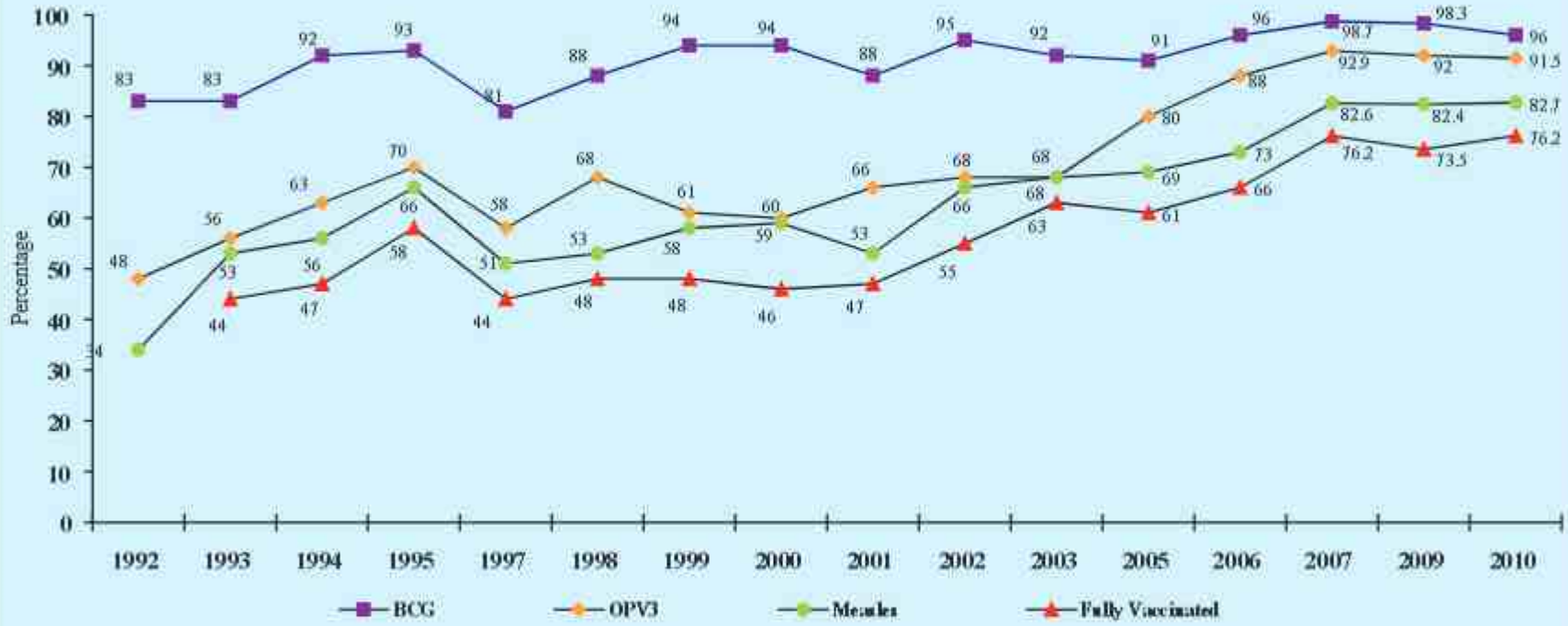
Source: Coverage Evaluation Surveys (CESs) 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009 and 2010

Figure A11. Annual Trend in Valid Vaccination Coverage by age 23 months among 12-23 Months Old Children in Chittagong Division from 2005 to 2010 (Card+History)



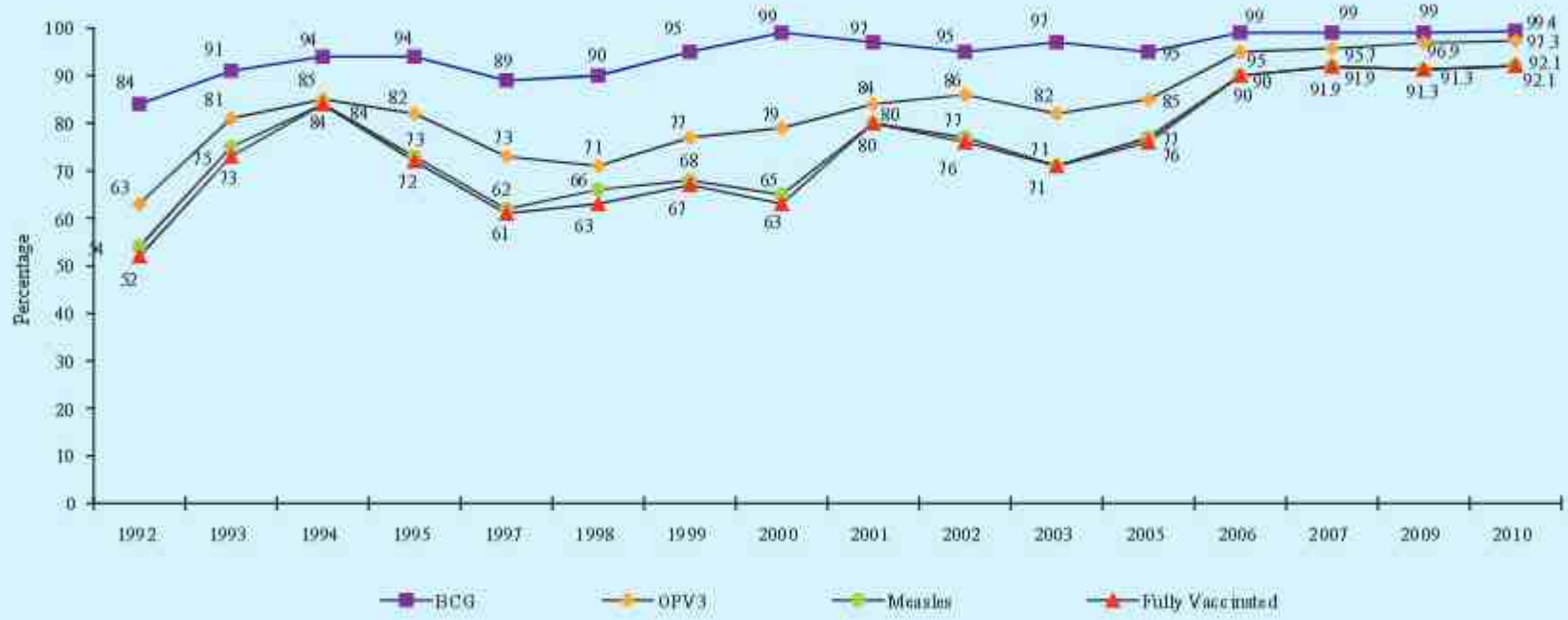
Source: CES 2010

Figure A12. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Chittagong Division from 1992 to 2010 (Card+History)



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

Figure A13. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Dhaka Division from 1992 to 2010 (Card+History)

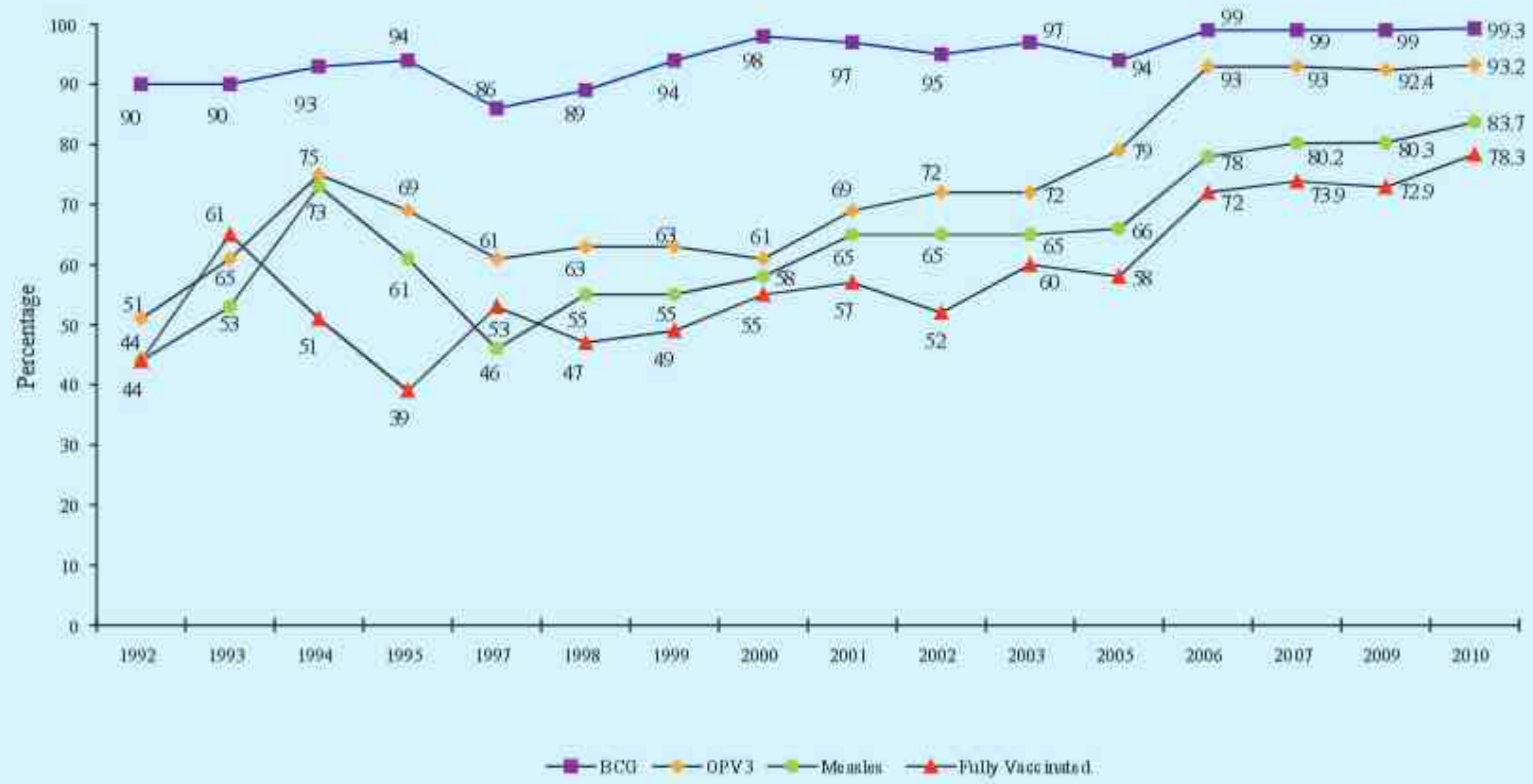


Source: Coverage Evaluation Surveys (CES) 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009 and 2010

Figure A14. Annual Trend in Valid Vaccination Coverage by age 23 months among 12-23 Months Old Children in Dhaka Division from 2005 to 2010 (Card+History)

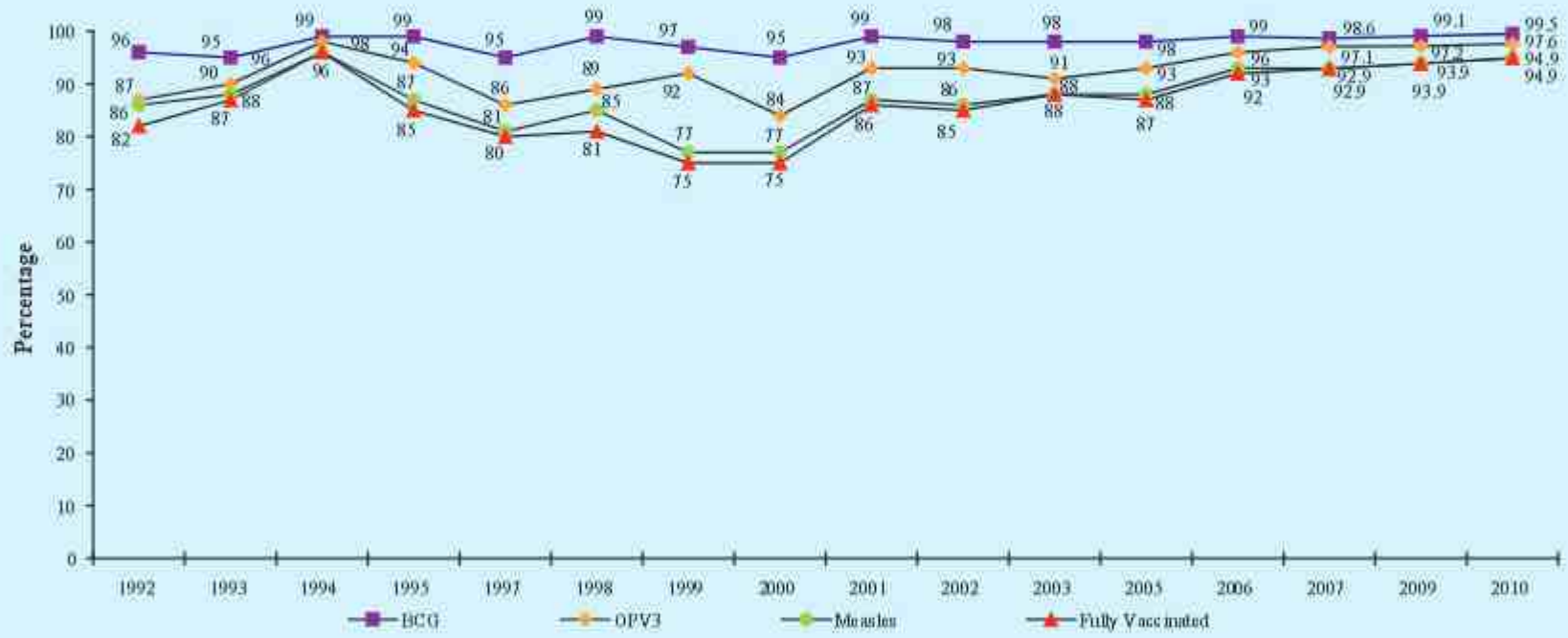
Source: CES 2010

Figure A15. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Dhaka Division from 1992 to 2010 (Card+History)



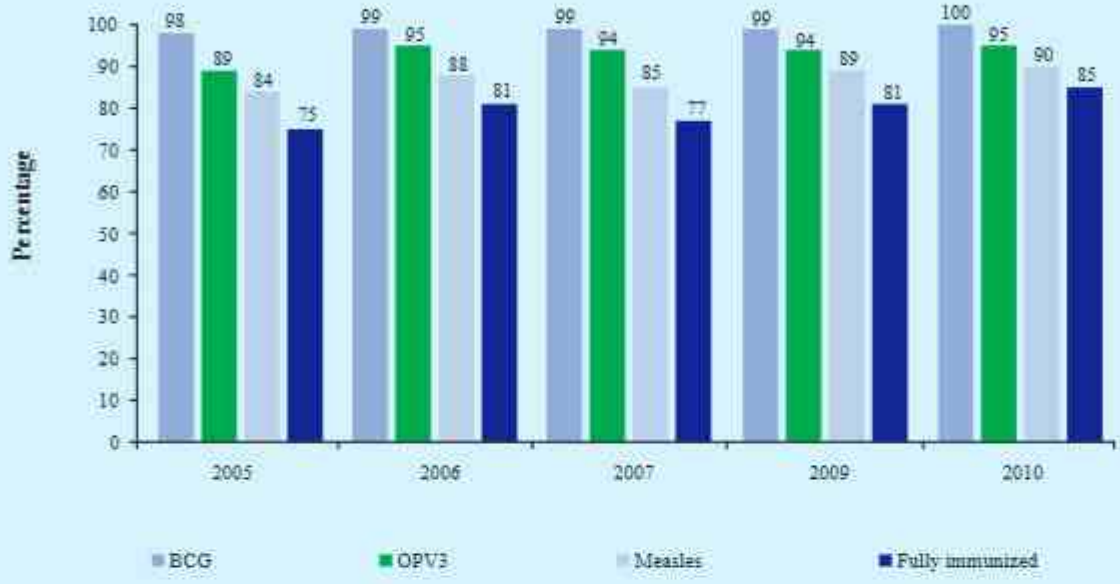
Source: Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009 and 2010

Figure A16. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Khulna Division from 1992 to 2010 (Card+History)



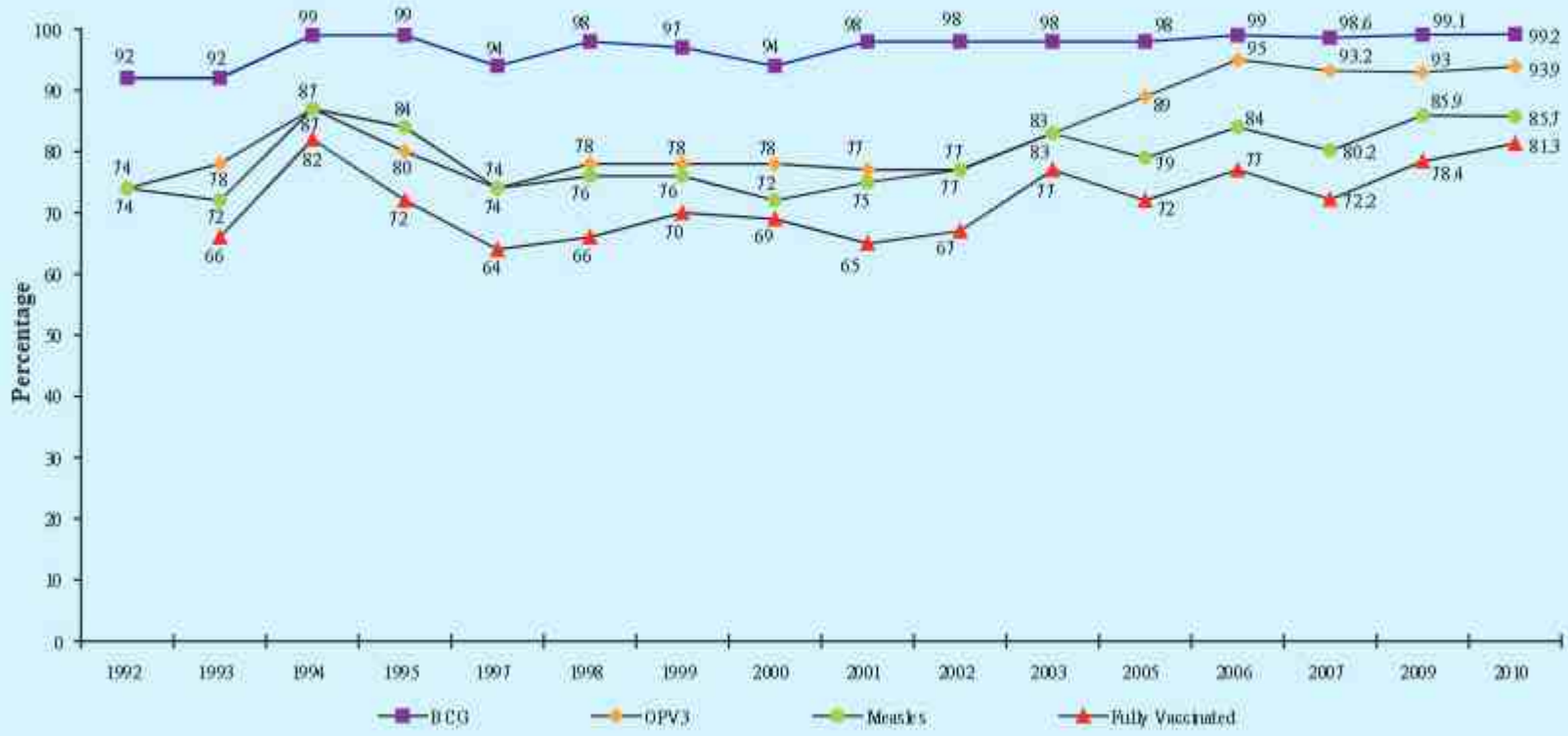
Source: Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009 and 2010

Figure A17. Annual Trend in Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children in Khulna Division from 2005 to 2010 (Card+History)



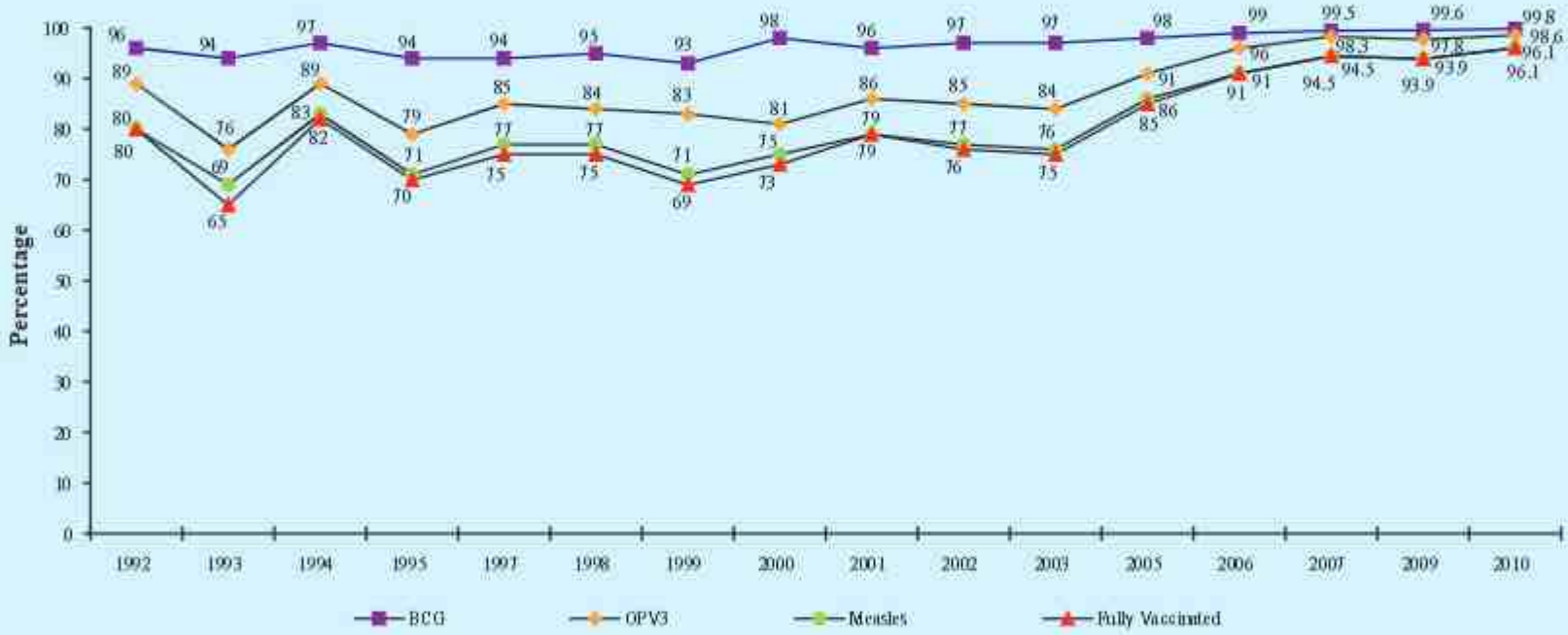
Source: CES 2010

Figure A18. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Khulna Division from 1992 to 2010 (Card+History)



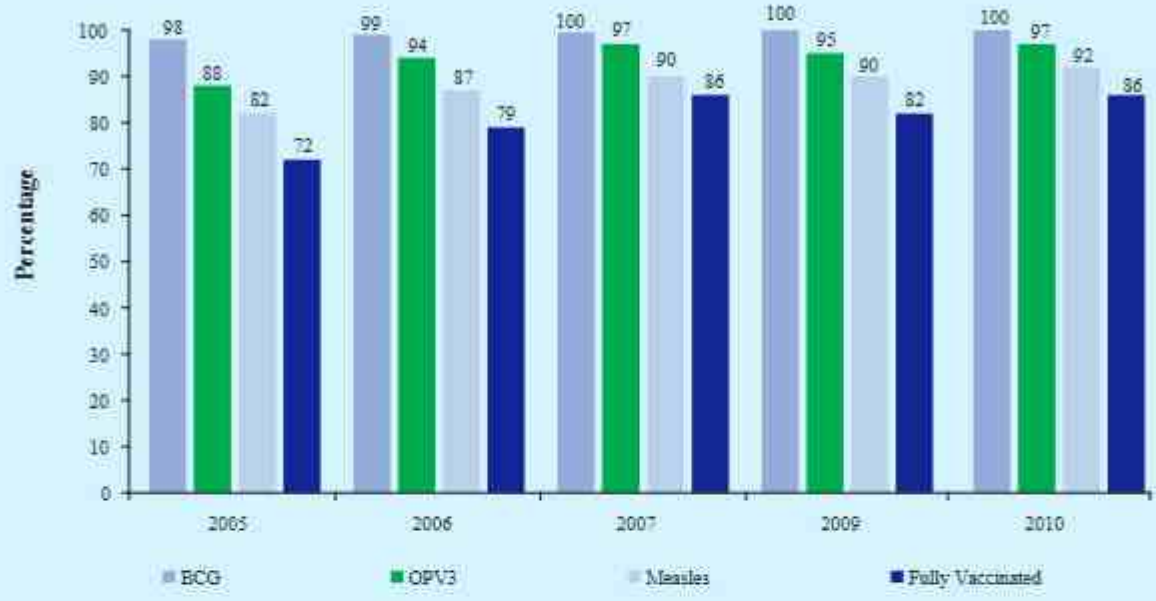
Source: Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009 and 2010

Figure A19. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rajshahi Division from 1992 to 2010 (Card+History)



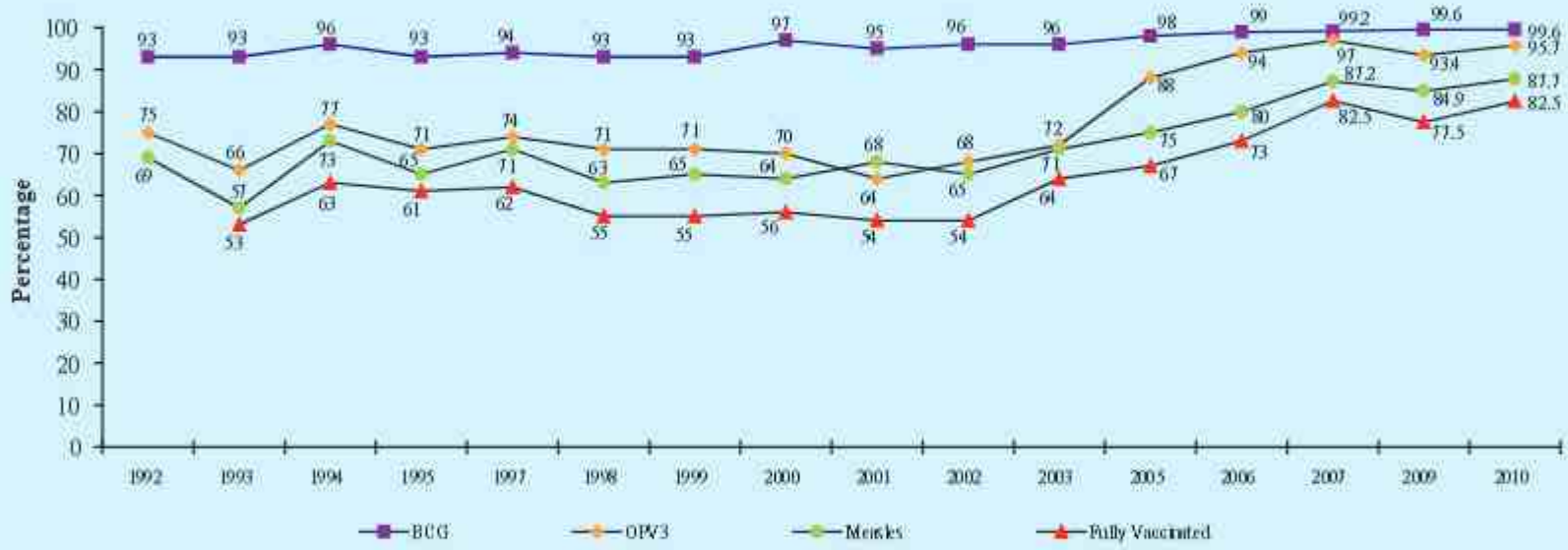
Source: Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009 and 2010

Figure A20. Annual Trend in Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children in Rajshahi Division from 2005 to 2010 (Card+History)



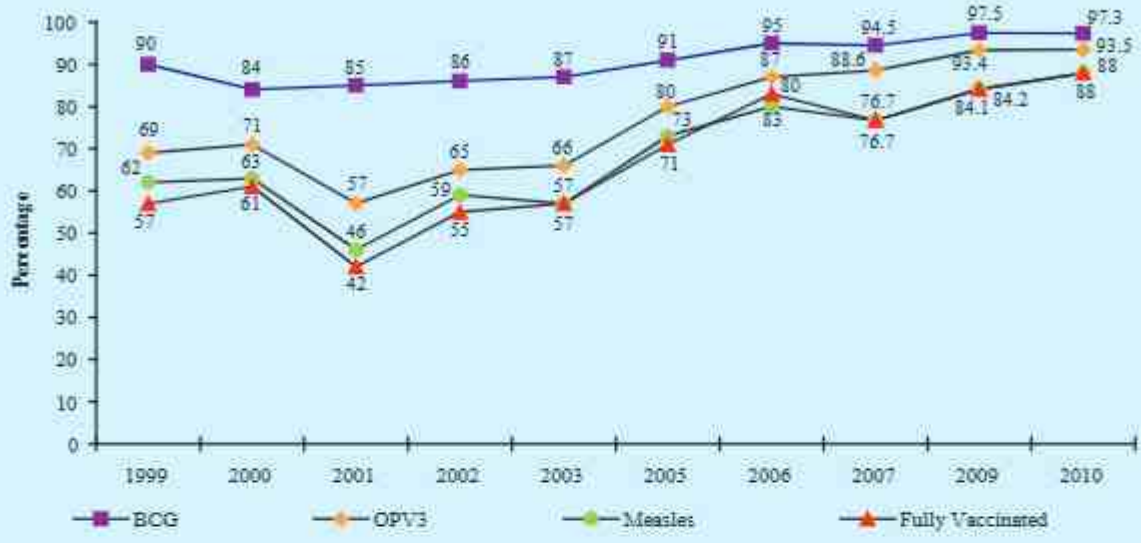
Source: CES 2010

Figure A21. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Rajshahi Division from 1992 to 2010 (Card+History)



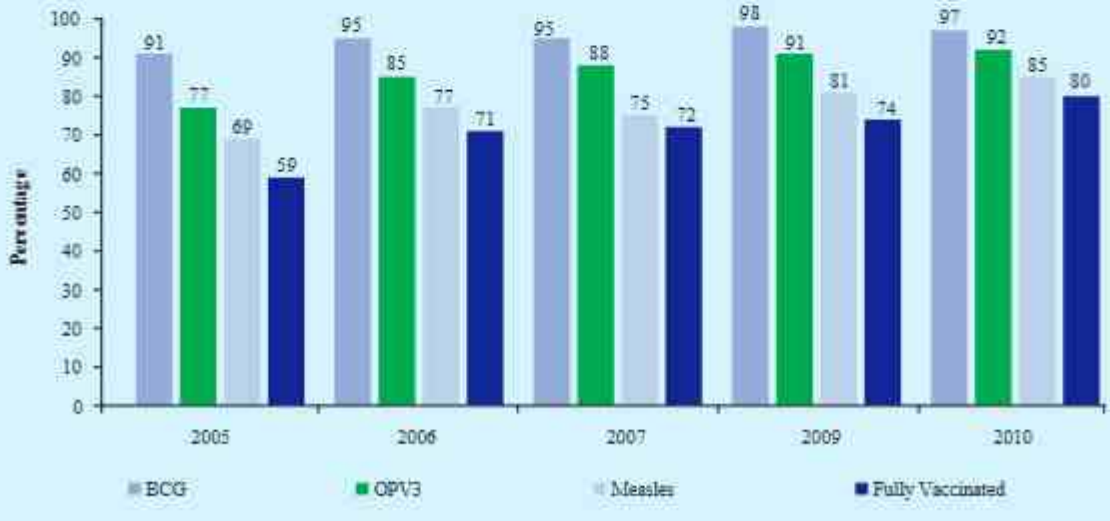
Source: Coverage Evaluation Survey 1992-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009 and 2010

Figure A22. Annual Trend in Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Sylhet Division* from 1999 to 2010 (Card+History)



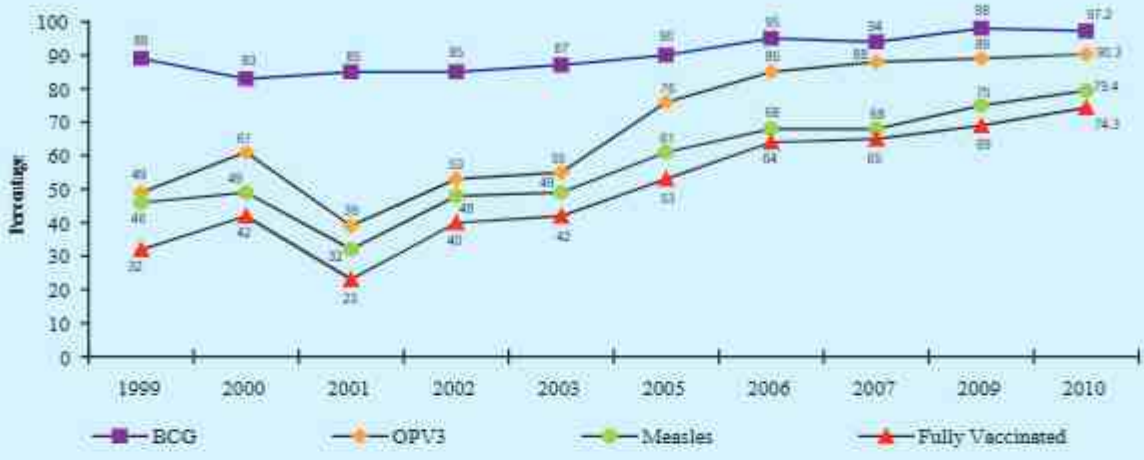
** Before 1999, Sylhet division was a part of Chittagong division*
Source: Coverage Evaluation Survey 1999-2002, 2003, 2005, 2006, 2007, 2009 and 2010

Figure A23 Annual Trend in Valid Vaccination Coverage by age 23 Months among 12-23 Months Old Children in Sylhet Division from 2005 to 2010 (Card+History)



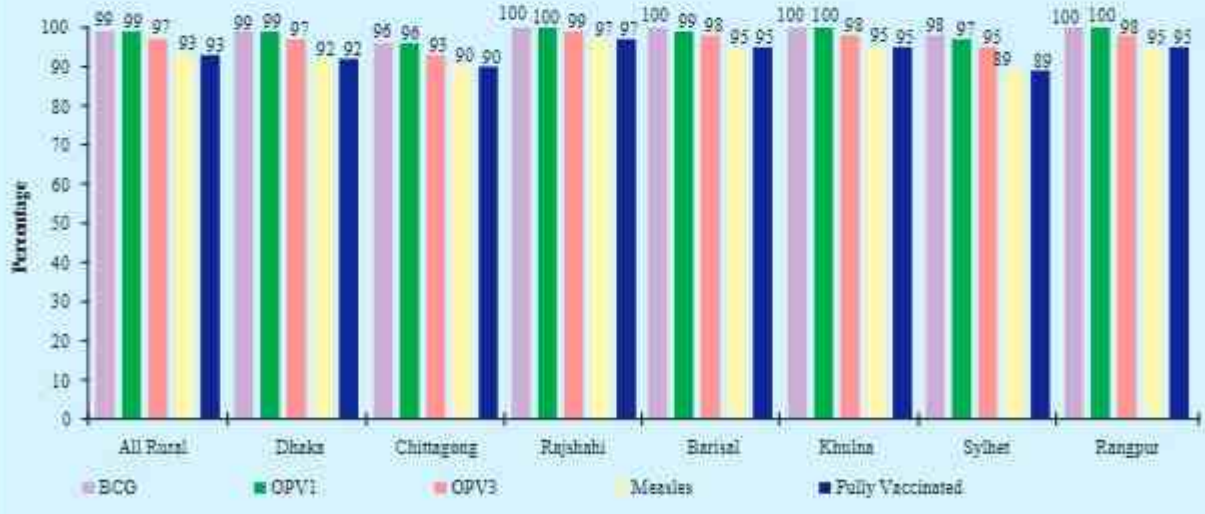
Source: CES 2010

Figure A24. Annual Trend in Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Sylhet Division from 1999 to 2010 (Card+History)



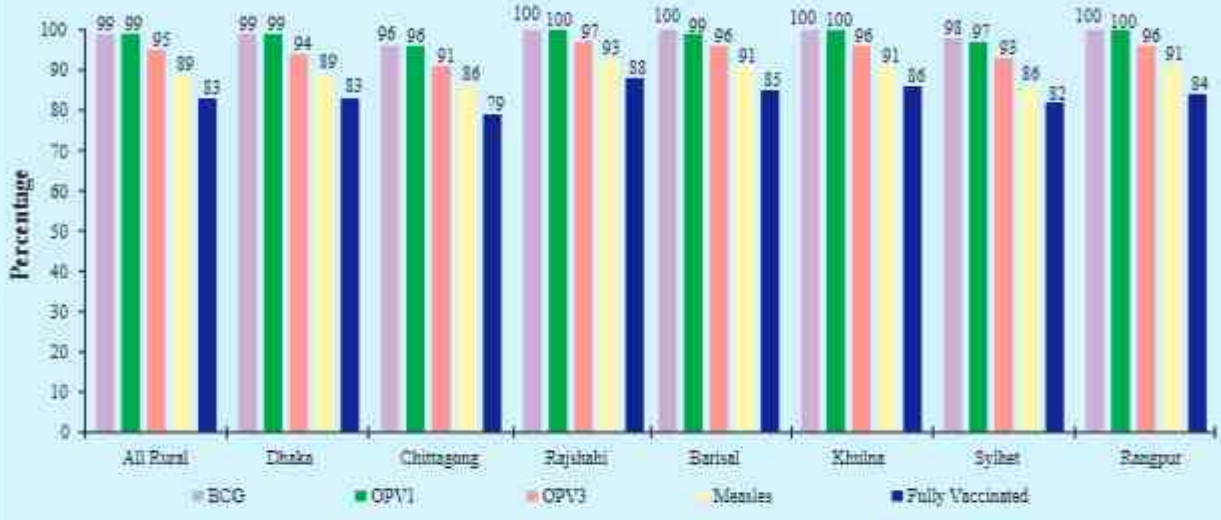
** Before 1999, Sylhet division was a part of Chittagong division*
Source: Coverage Evaluation Survey 1999-2002, 2003, 2005, 2006, 2007, 2009, and 2010

Figure A25. Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rural Areas by Division in 2010 (Card+History)



Source: CES 2010

Figure A26. Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rural Areas by Division in 2010 (Card+History)

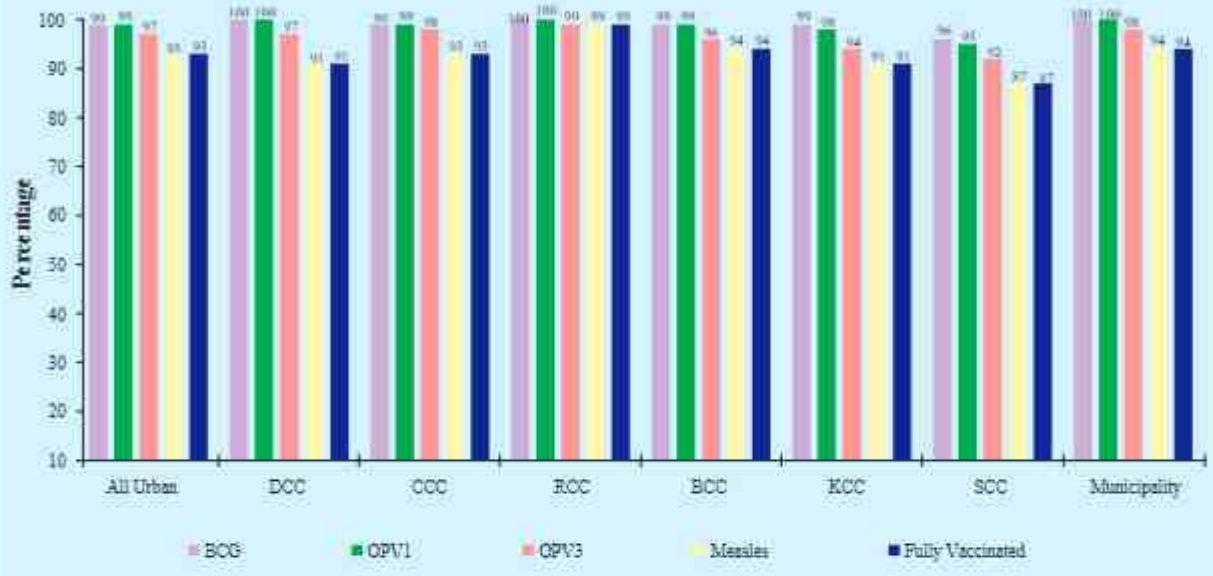


Source: CES 2010

Figure A27. Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Rural Areas by Division in 2010 (Card+History)

Source: CES 2010

Figure A28. Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Urban Areas by City Corporation / Municipality in 2010 (Card+History)



Source: CES 2010

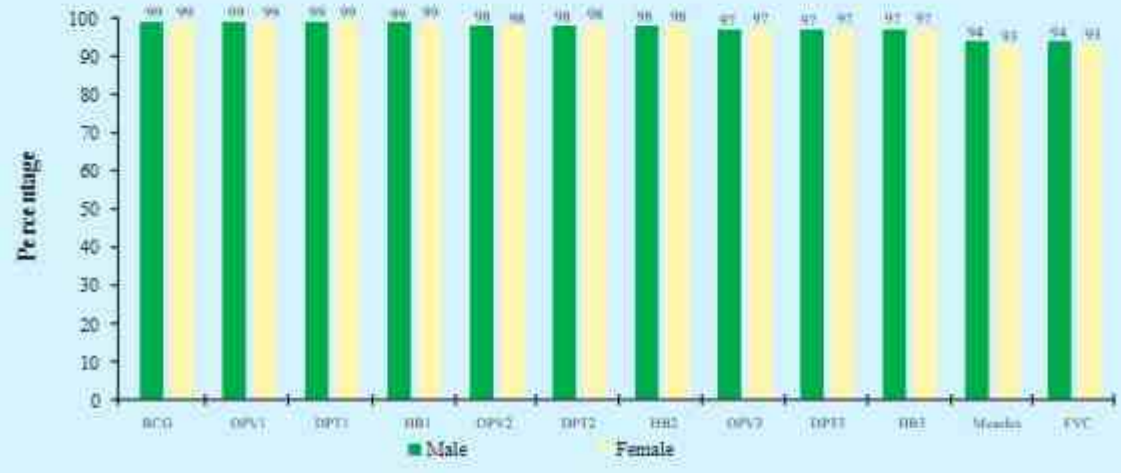
Figure A29 Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Urban Areas by City Corporation / Municipality in 2010 (Card+History)

Source: CES 2010

Figure A30. Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children in Urban Areas by City Corporation / Municipality in 2010 (Card+History)

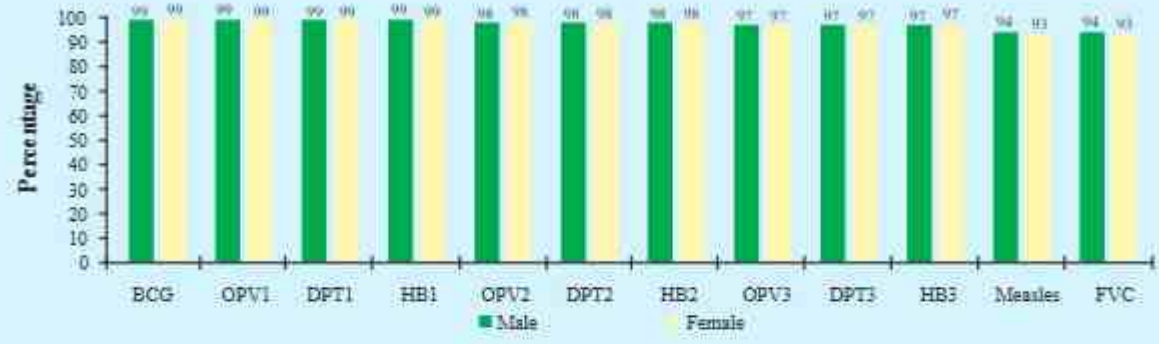
Source: CES 2010

Figure A31. National Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in 2010 (Card+History)



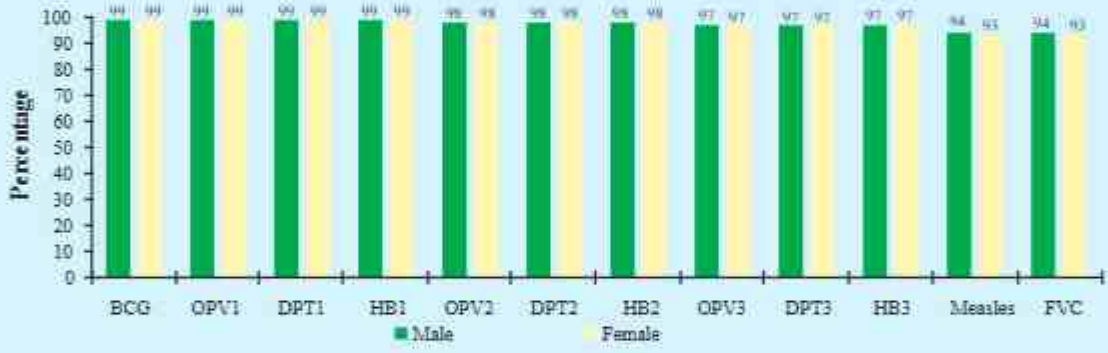
Source: CES 2010

Figure A32. National Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in Urban Areas in 2010 (Card+History)



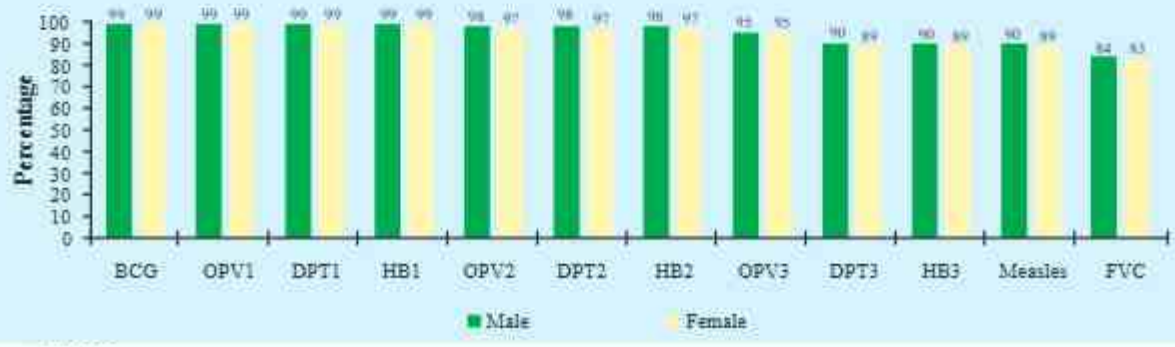
Source: CES 2010

Figure A33. National Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in Rural Areas in 2010 (Card+History)



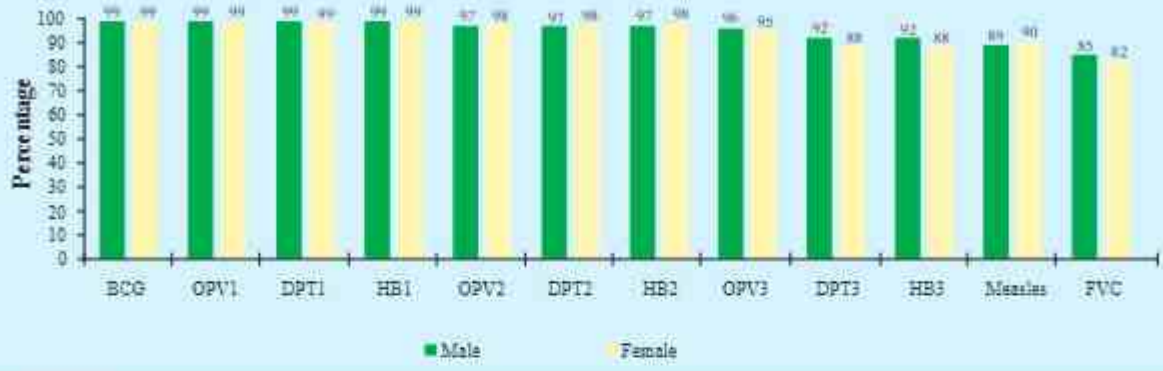
Source: CES 2010

Figure A34. National Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in 2010 (Card+History)



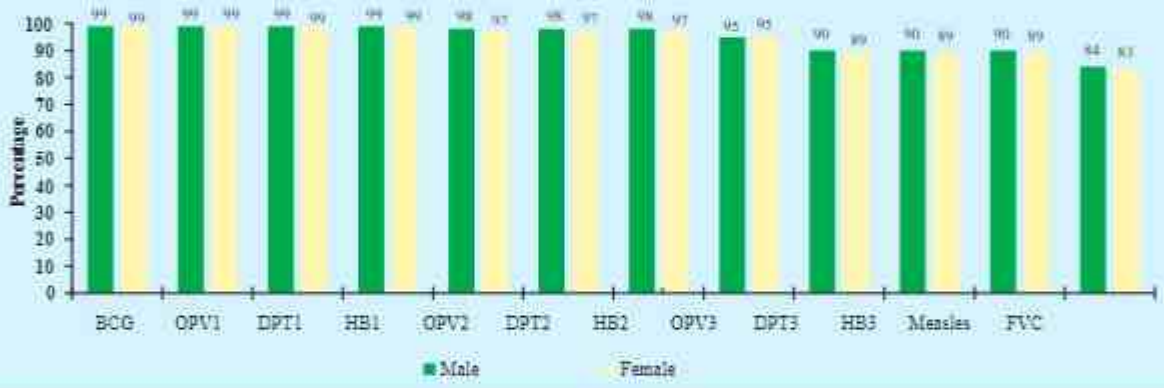
Source: CES 2010

Figure A35. National Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in Urban Areas in 2010 (Card+History)



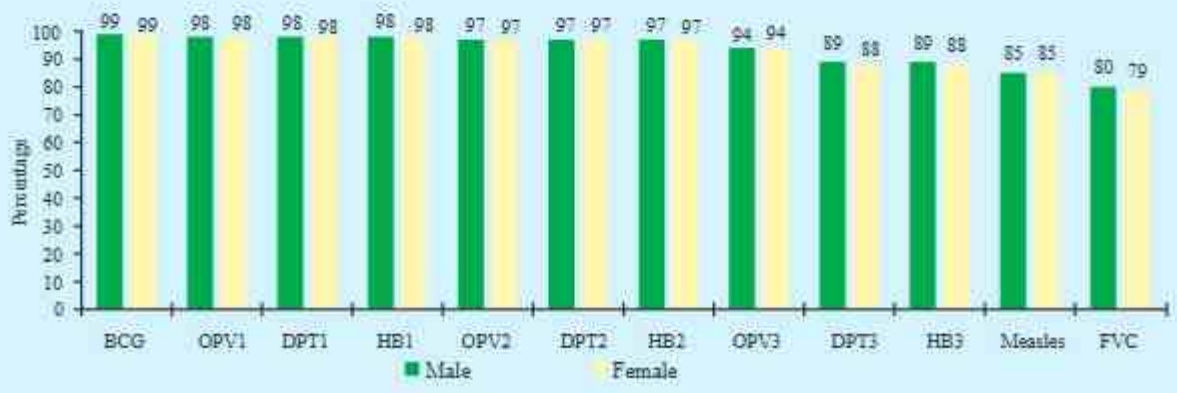
Source: CES 2010

Figure A36. National Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by Sex in Rural Areas in 2010 (Card+History)



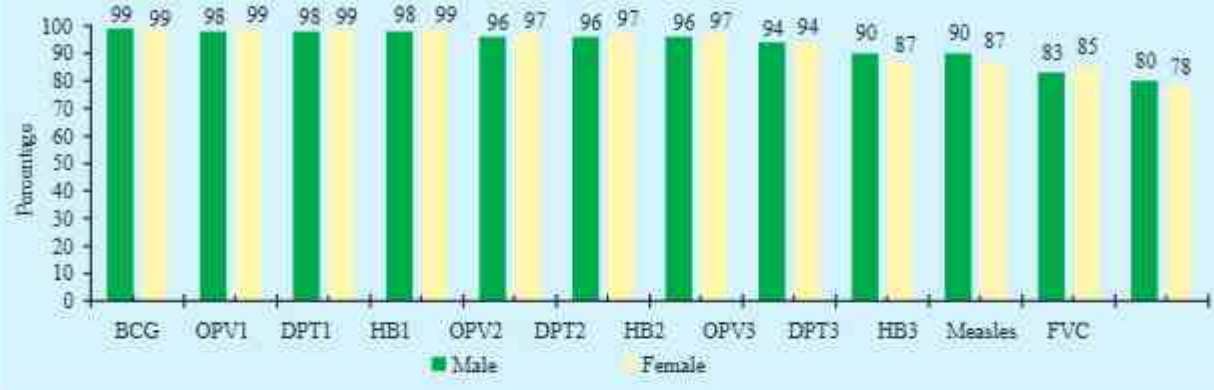
Source: CES 2010

Figure A37. National Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children by Sex in 2010 (Card+History)



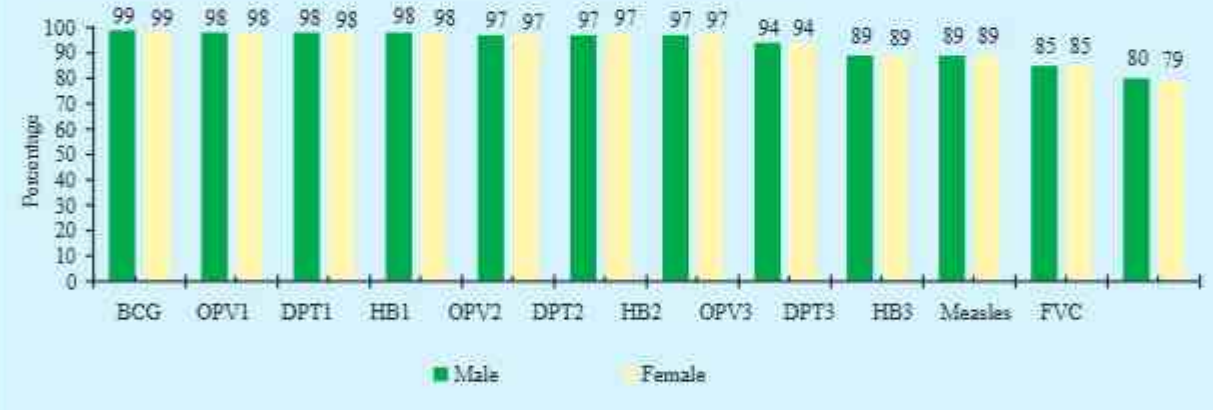
Source: CES 2010

Figure A38. National Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children by Sex in Urban Areas in 2010 (Card+History)



Source: CES 2010

Figure A39. National Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children by Sex in Rural Areas in 2010 (Card+History)



Source: CES 2010

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.

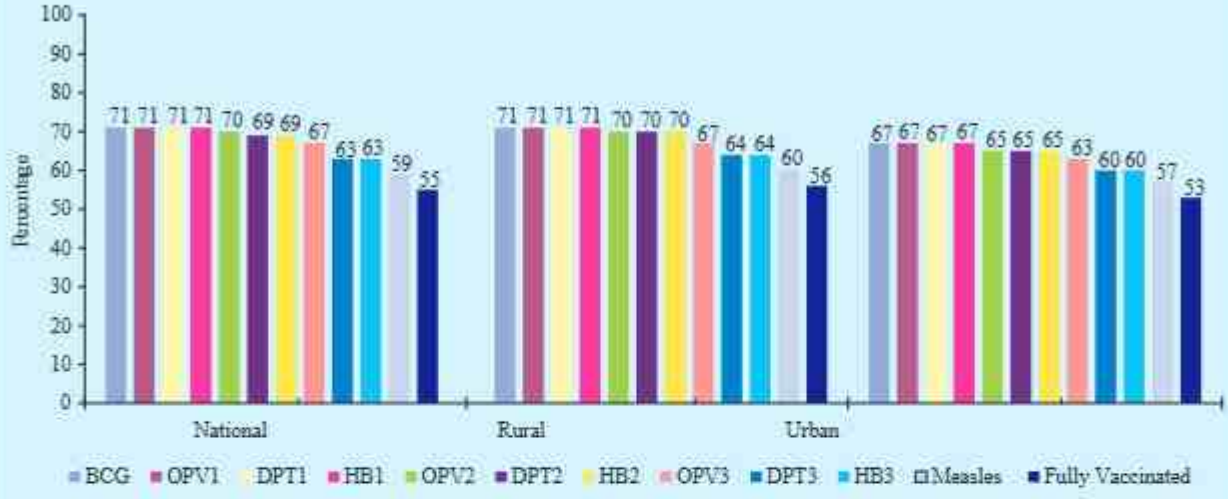
2.5.1 Levels of the Vaccination Coverage

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 coveragse: crude, valid coverage by the age of 23, 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 2010 (Card-Only)

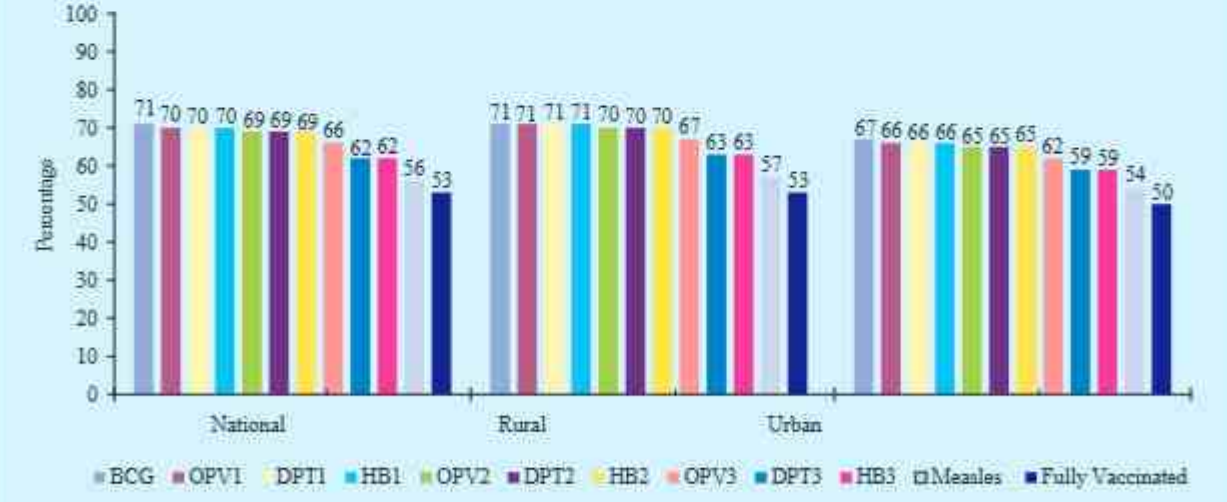
Source: CES 2010

Figure B2. Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2010 (Card-Only)



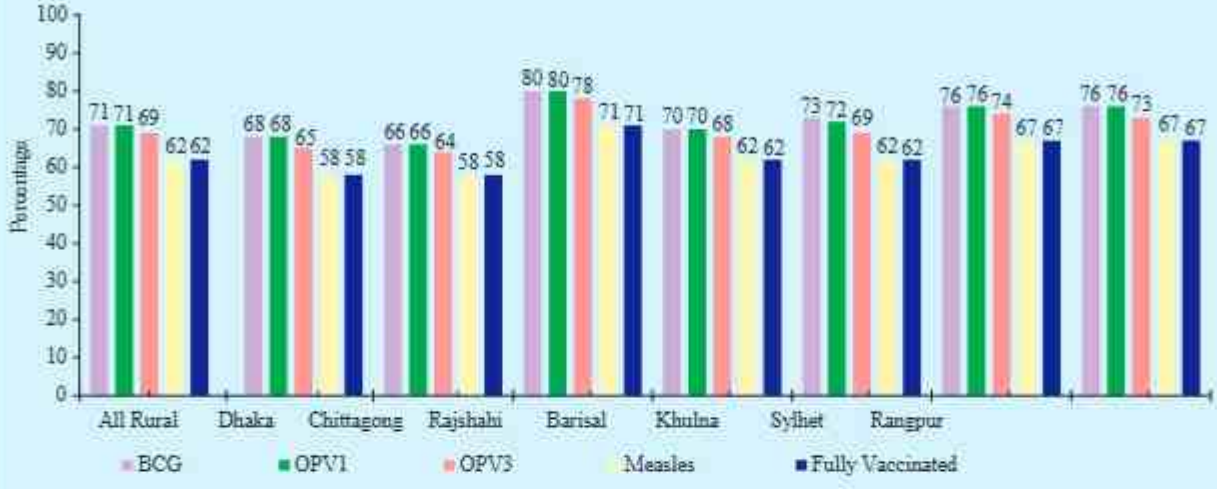
Source: CES 2010

Figure B3. Valid Vccination Coverage by Age 12 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2010 (Card-Only)



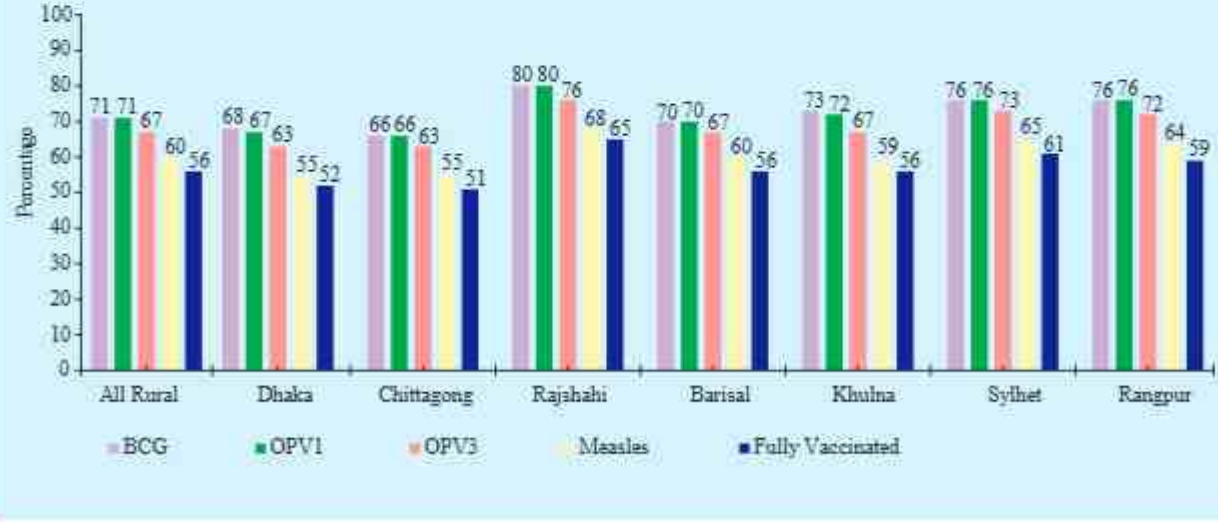
Source: CES 2010

Figure B4. Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rural Areas by Division in 2010 (Card-Only)



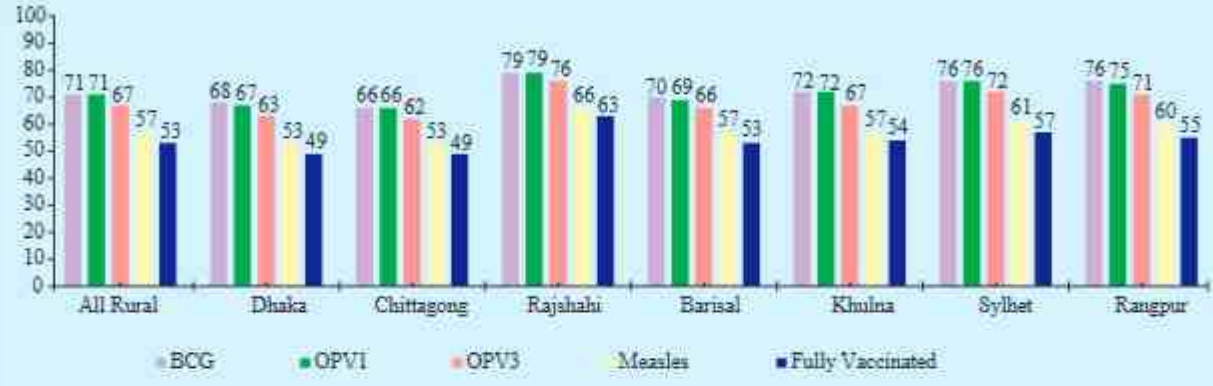
Source: CES 2010

Figure B5. Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Rural Areas by Division in 2010 (Card-Only)



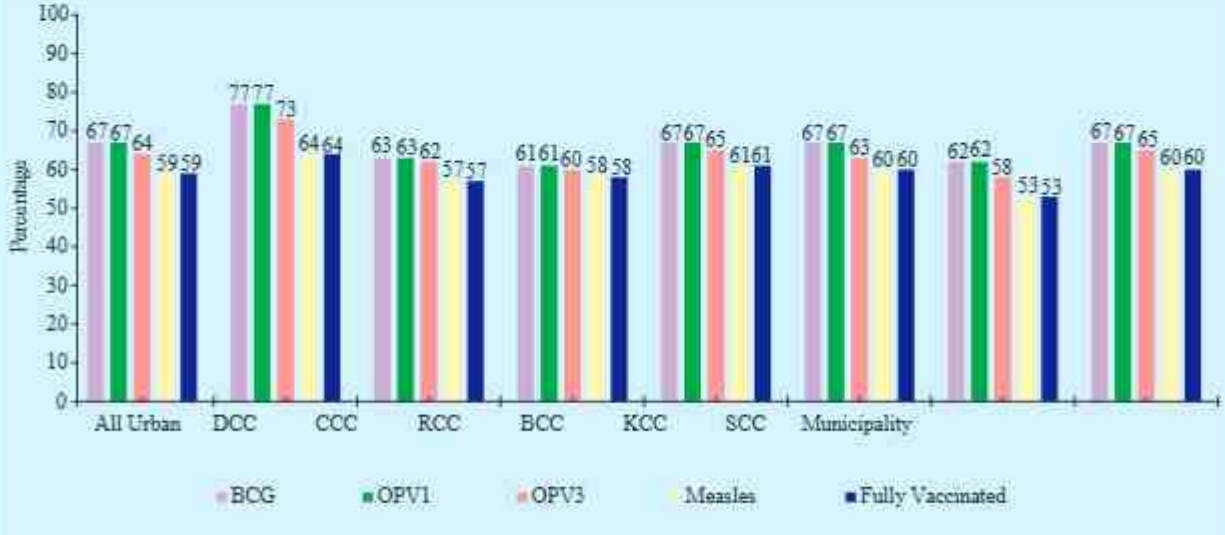
Source: CES 2010

Figure B6. Valid Vaccinaton Coverage by Age 12 Months among 12-23 Months Old Children in Rural Areas by Division in 2010 (Card-Only)



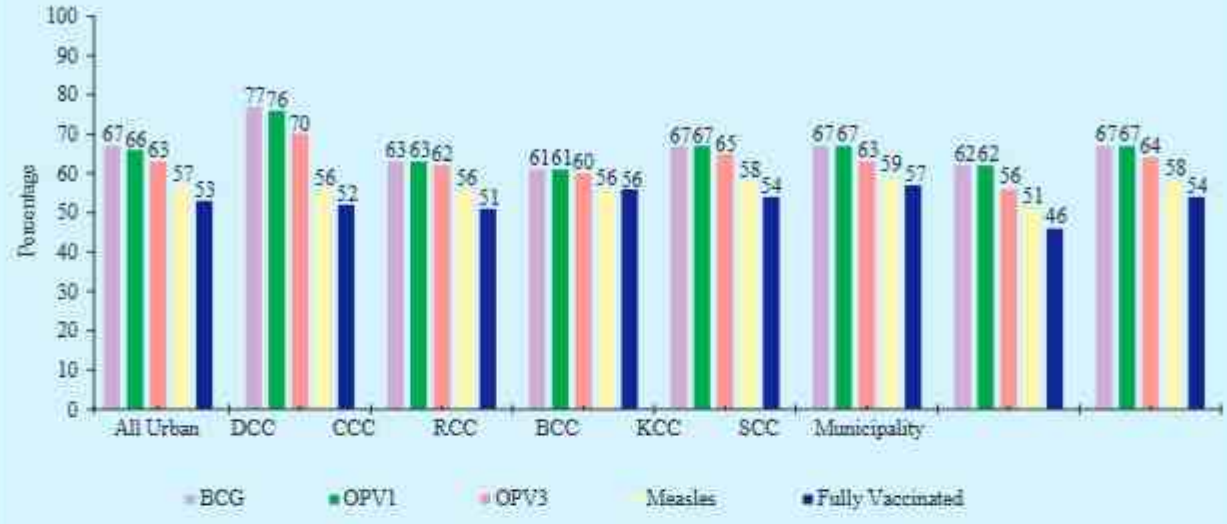
Source: CES 2010

Figure B7. Crude Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2010 (Card- Only)



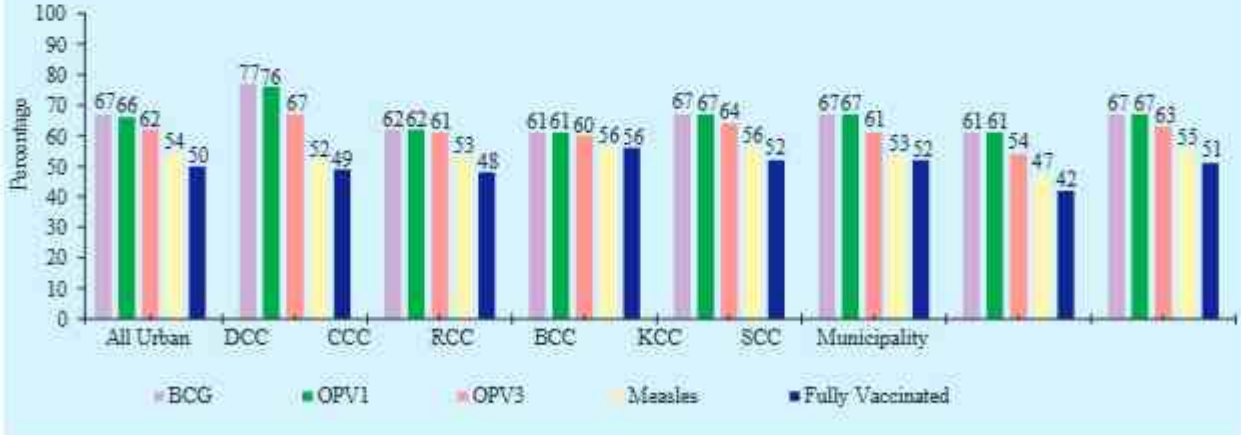
Source: CES 2010

Figure B8. Valid Vaccination Coverage by Age 23 Months among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2010 (Card-Only)



Source: CES 2010

Figure B9. Valid Vaccination Coverage by Age 12 months among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2010 (Card-Only)



Source: CES 2010

2.6 Program Quality

The act of maintaining the recommended vaccination schedule ensures better effectiveness of the vaccination. As per the aforesaid statement, 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 him/her with vaccine. The card contains the record of the dates of administering each and every vaccine. Mothers/caregivers are generally motivated by the health workers to preserve the card carefully. CES 2010 assessed the card retention rate among the surveyed children and presented the findings in Figure C1. It shows that overall, across the country, 73 percent of the mothers/caregivers retained the vaccination card. Card retention rate was much higher in rural areas (74 percent) compared to that in urban areas (68 percent) (see Figure C1). Compared to that in CES 2006, card retention rate was found to be 6 percent higher in CES 2010 (67 percent in 2006 and 73 percent in 2010).

In rural areas by division, relatively a higher card retention was revealed in Rajshahi and Sylhet (81 percent). However, it was found to be much lower in Dhaka division (69 percent). Card retention rate in other divisions ranged between 71 percent in Barisal and 77 percent in Rangpur divisions. It was 72 percent in Chittagong and 74 percent in Khulna divisions (see Figure C3).

Figure C4 shows the card retention rate by city corporation. Across the city corporations, it was found to be the highest in DCC (78 percent) and the lowest in RCC (61 percent). Card retention rate in BCC was 68 percent, which was being followed by KCC (69 percent), SCC (65 percent), and CCC (64 percent).

2.6.2 Incidence of Invalid Doses

As per EPI vaccination schedule, the child could be vaccinated with BCG after his/her birth. DPT1/OPV1/Hepatitis-B1 doses should be administered not before the age of six weeks, and DPT2/OPV2/Hepatitis-B2 doses should be administered at least four weeks after the administering of DPT1/Hepatitis B1 vaccination. DPT3/OPV3/Hepatitis-B3 doses should be administered at least four weeks after DPT2/OPV2/Hepatitis-B2 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 DPT1 doses and 5 percent of the total measles doses administered among the surveyed children were found to be invalid (see Figure C5). Urban-rural variation in the act of administering invalid DPT1 and measles doses did not exist. Four percent of the children in rural areas received invalid DPT1 and 5 percent invalid measles as against similar percentage of the children who received invalid DPT1 and measles in the urban areas (see Figure C5).

* Rajshahi and Rangpur divisions are discussed separately in the light of the new administrative set- up.

Figure C8 shows the incidence of invalid DPT1, DPT2, and DPT3 in rural areas by division. It shows that a higher percentage of children received invalid DPT1 dose in Rangpur, Dhaka, and Barisal (5 percent), which was being followed by Rajshahi, Chittagong, and Khulna (4 percent), and Sylhet divisions (3 percent).

The rate of invalid DPT2 doses was the highest in Rangpur and Dhaka divisions (7 percent), which was being followed by Chittagong, Barisal, and Khulna (6 percent), Rajshahi and Sylhet divisions (5 percent).

As regards to the incidence of invalid DPT3 doses, it was found to be the highest in Rangpur and Chittagong divisions (9 percent) and the lowest in Rajshahi and Sylhet divisions (6 percent). Incidence of invalid doses of DPT3 was intermediary that ranged between 7 percent in Khulna and 8 percent in Dhaka and Barisal divisions (see Figure C8).

Among the city corporations, 7 percent of the DPT1 doses administered were found to be invalid in DCC, which was being followed by 5 percent in SCC, 3 percent in BCC, 2 percent in CCC, and the lowest (1 percent) in KCC. No invalid dose of DPT1 was found to be administered in RCC. Similarly, incidence of invalid DPT2 was found to be the highest in DCC (9 percent) and the lowest in RCC (1 percent). Incidence of invalid DPT2 was intermediary that ranged between 3 percent in KCC and 7 percent in SCC. It was 5 percent in CCC, which was being followed by BCC (4 percent) (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 (5 percent) from Khulna, Rajshahi, Barisal, and Chittagong divisions received invalid doses of measles, i.e. measles vaccines before one's 270 days of birth. The percentage was slightly lower in Sylhet (3.2 percent), Dhaka and Rangpur divisions (4 percent).

Likewise, among the city corporations invalid dose of measles vaccination was found to be the highest in DCC (13 percent), which was being followed by BCC (5 percent), SCC (4 percent), KCC and RCC (3 percent). The lowest rate of invalid dose of measles was revealed in CCC (2 percent) (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 birth day. When a child fails to receive any dose of the recommended antigens (one dose of BCG, three doses of DPT, HepB, OPV, and one dose of measles vaccine), it is interpreted as a dropout case. Since most of the children received OPV and HepB along with DPT dose, the analysis highlights the dropout of DPT and measles doses.

Across the country, the dropout rate was found to be 2 percent for DPT1-DPT3 and 6 percent for DPT1-measles (see Figure C11). The urban-rural variation was absent for DPT1- DPT3. In rural areas, DPT1-DPT3 dropout rate was found to be 2 percent. However, DPT1-measles dropout rate was 6 percent in both in rural and urban areas.

Over the time, national dropout rates declined substantially, particularly since 2003. The dropout rate for DPT1-DPT3 declined from 21 percent in 2003 to 2 percent in 2010, and for DPT1-measles from 13 percent in 2003 to 6 percent in 2010 (see Figure C12).

The division-wise analysis by rural area shows that DPT1-DPT3 dropout rate was found to be the highest in Chittagong and Sylhet (3 percent) and the lowest in Rajshahi(1 percent). In contrast, DPT1-Measles dropout rate was the highest in Sylhet (9 percent) and the lowest in Rajshahi (3 percent). The dropout rate for DPT1-Measles in other divisions ranged between 4 percent in Khulna and 7 percent in Dhaka divisions (see Figure C13).

Likewise, among the city corporations, the dropout rate for DPT1-DPT3 was found to be the highest in KCC (4 percent), which was being followed by DCC, SCC and BCC (3 percent), CCC (1 percent), and RCC (1 percent). However, DPT1-Measles dropout rate was found to be the highest in DCC and SCC (9 percent) and the lowest in Rajshahi City Corporation (1 percent). The measles dropout rates in other city corporations were: 7 percent in KCC, 6 percent in CCC, and 5 percent in BCC (see Figure C14).

Trend in the Dropout Rates

Figure C15- C20 shows a trend in the dropout rates of DPT1-DPT3 and DPT1-Measles in all six divisions except in Sylhet since 1993. A trend of fluctuation in both the dropout rates- DPT1-DPT3 and DPT1-Measles-were observed in these all divisions during the years between 1994-2001.

A considerable declination in the dropout rate was noticed in almost every division since 2002. In Dhaka division, the dropout rate for DPT1-DPT3 went down from 10 percent in 2002 to 2 percent in 2010; in Chittagong division from 10 percent to 3 percent; in Sylhet division from 22 percent in 2002 to 3 percent in 2010; in Rajshahi division from 12 percent in 2002 to 1 percent in 2010; in Khulna division from 5 percent in 2002 to 2 percent in 2010; and, in Barisal division from 9 percent in 2002 to 1 percent in 2010.

Likewise, for DPT1-Measles, Dhaka division experienced a decrease in the dropout rate from 19 percent in 2002 to 7 percent in 2010; Chittagong division from 17 percent in 2002 to 6 percent in 2010; Rajshahi division from 20 percent in 2002 to 3 percent; Sylhet division from 30 percent in 2002 to 9 percent; Khulna division from 12 percent in 2002 to 4 percent; and, Barisal division from 21 percent in 2002 to 5 percent in 2010 (see Figures C15 -C20).

Although there was a declining trend in the dropout rates of both DPT1-DPT3 and DPT-Measles in all divisions, a noticeable improvement was also observed in the dropout rates of DPT1-DPT3 and DPT1-Measles in Chittagong division. In Chittagong, a gradual decreasing trend without any fluctuation was observed since 2002. DPT1-DPT3 dropout rate decreased from 10 percent in 2002 to 3 percent in 2010 (see Figure C16). The declining trend in the dropout rate may be attributed to the act of better monitoring and supervision by the EPI staff at all levels.

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 DPT/Hepatitis B or measles vaccination was calculated in order to assess the safety of injections for childhood vaccination. This rate was computed as the proportion of the recipients of DPT/Hepatitis B/measles vaccine, who had an abscess after receiving any of these antigens.

Overall, 2 percent of the children who received DPT/Hepatitis-B/measles vaccines were reported to have had an abscess after receiving a DPT/Hepatitis B or the measles vaccine (see Figure C21). Occurrence of abscesses following DPT, Hepatitis-B, or measles vaccination was almost similar in both urban and rural areas (2 percent in rural and 1 percent in urban areas).

In the rural areas by division, it was found that Chittagong division had the highest incidence of abscesses (3.4 percent), which was being followed by Sylhet (3 percent), Rangpur and Khulna (2 percent), Barisal and Dhaka (1 percent), and Rajshahi divisions (less than 1 percent) (see Figure C22).

Among the city corporations, incidence of abscesses was higher (2 percent) in BCC, which was being followed by CCC and KCC (1 percent). It is important to mention here that DCC, RCC, and SCC had no case of abscess (see Figure C23).

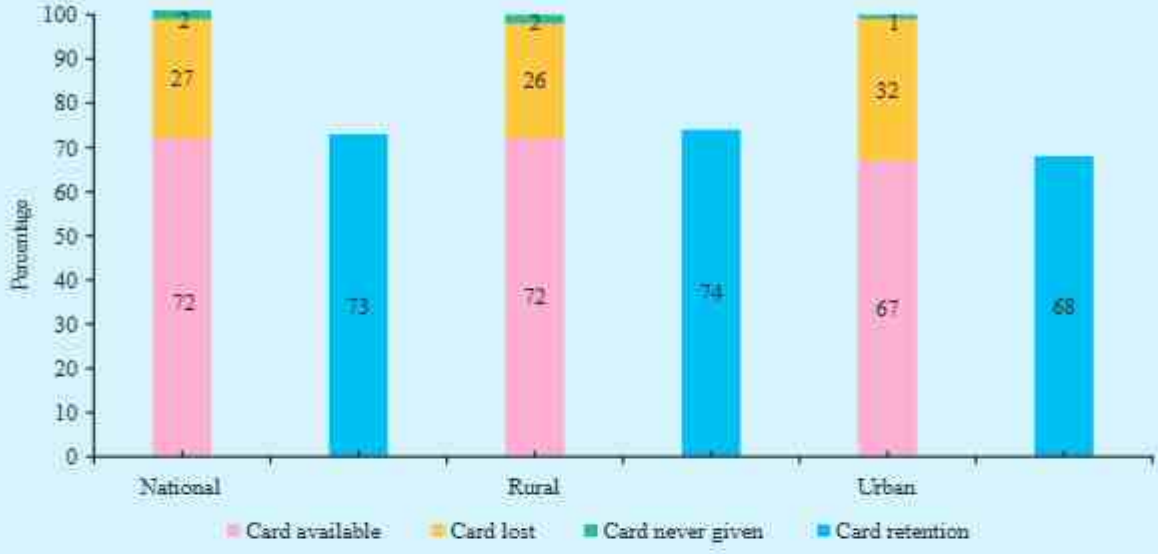
2.6.5 Knowledge about the Common Side-Effects of Vaccination

Many children experience minor side-effects following vaccination. Most of the side- effects last for a short time and the child recovers without any problem. A child needs care and comfort if side-effects occur. CES 2010 made an assessment of the mothers' knowledge by asking them questions on the common side-effects that occur following the vaccination. Eighty 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 67 percent in Barisal division and 85 percent in Chittagong division. In other divisions, it was found to be in the intermediary level (see Figure C25).

Likewise, among the city corporations fever was revealed to be the highest reported common side-effect. Ninty nine percent of the mothers/caregivers in CCC, 95 percent of them in KCC, 91 percent in BCC, 85 percent in RCC, and 69 percent in DCC and SCC 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 2010



Source: CES 2010

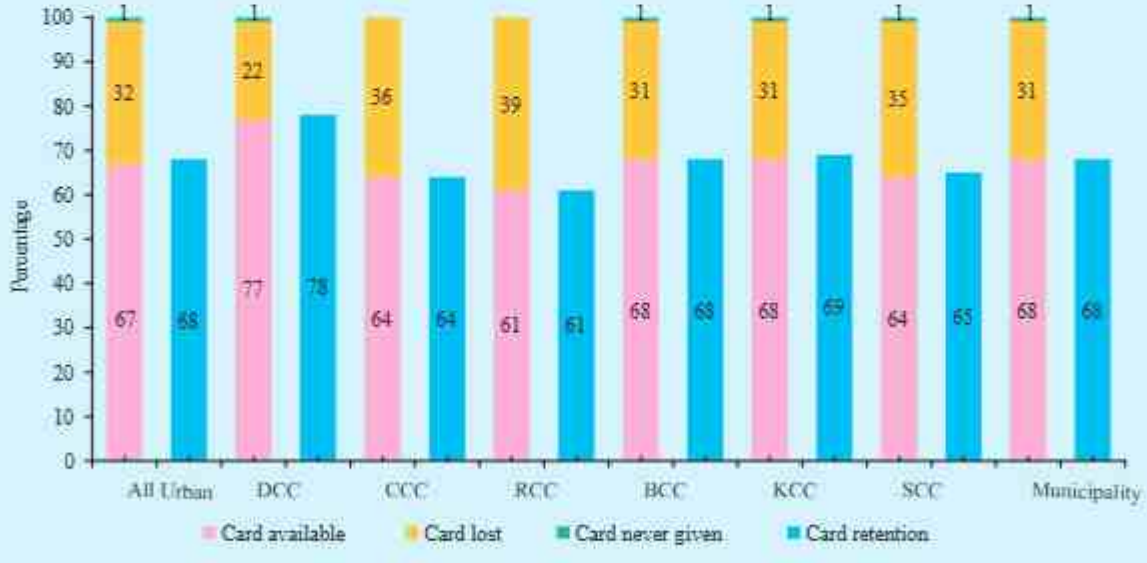
Figure C2. Vaccination Card Status among 12-23 Months Old Children Nationally from 1991 to 2010

Source: Coverage Evaluation Surveys (CESs) for 1991-1995, 1997-2000, 2001, 2002, 2003, 2005, 2006, 2007, 2009 & 2010

Figure C3. Vaccination Card Status among 12-23 Months Old Children in Rural Areas by Division in 2010

Source: CES 2010

Figure C4. Vaccination Card Status among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2010

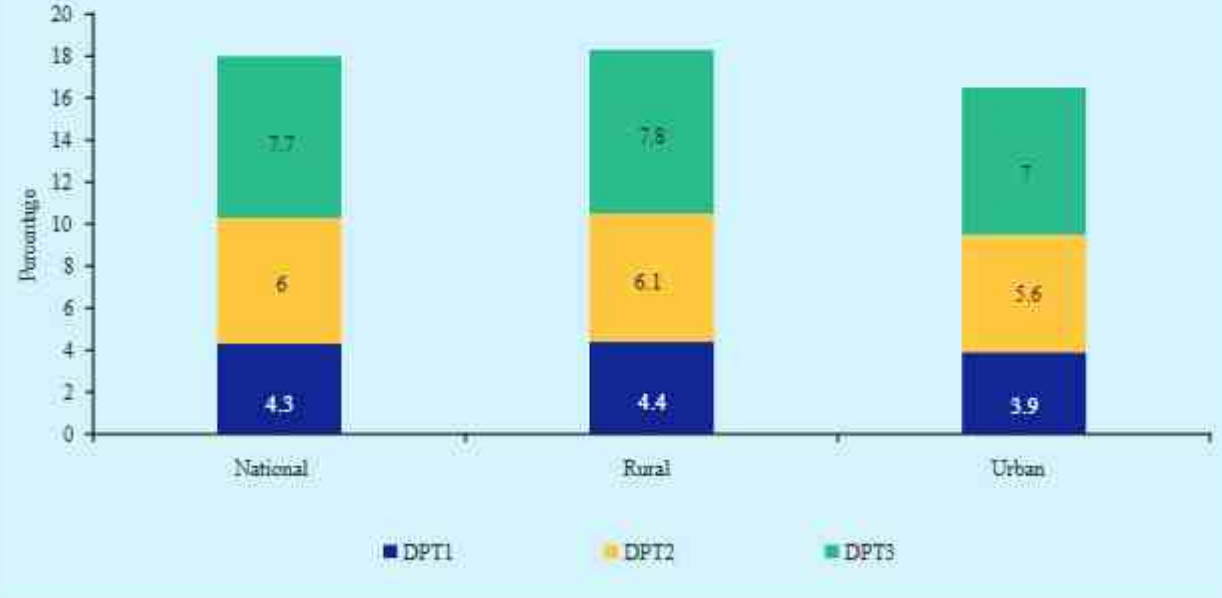


Source: CES 2010

Figure C5. Incidence of Invalid DPT1 and Measles Doses by Age 12 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2010 (Card-Only)

Source: CES 2010

Figure C6. Incidence of Invalid DPT1, DPT2 and DPT3 Doses by Age 12 Months among 12-23 Months Old Children by National, Rural and Urban Areas in 2010 (Card only)

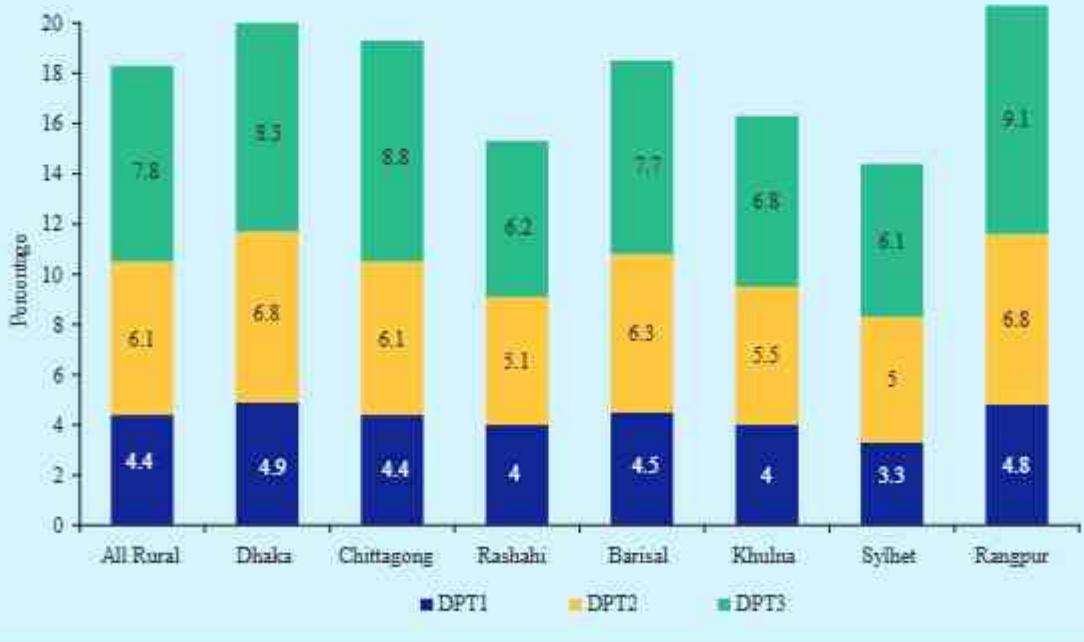


Source: CES 2010

Figure C7. Incidence of Invalid DPT1 and Measles Doses by Age 12 Months among 12-23 Months Old Children in Rural Areas by Division in 2010 (Card-Only)

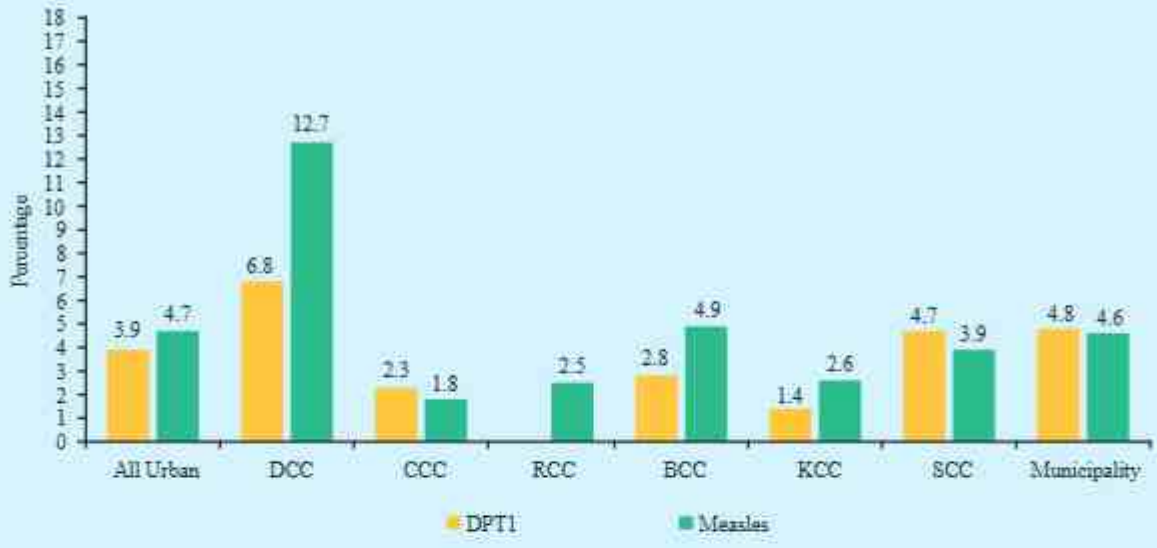
Source: CES 2010

Figure C8. Incidence of Invalid DPT1, DPT2 and DPT3 Doses by Age 12 Months among 12-23 Months Old Children in Rural Areas by Division in 2010 (Card-Only)



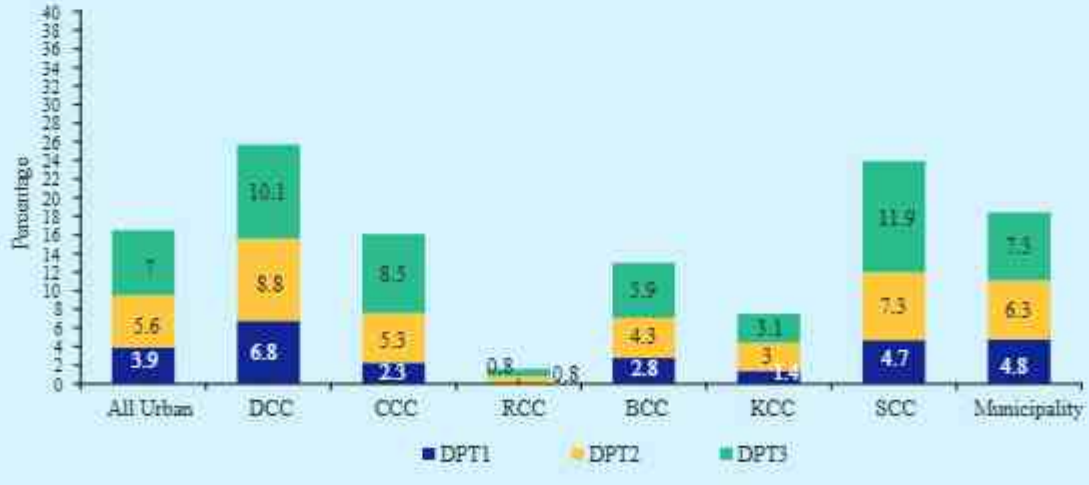
Source: CES 2010

Figure C9. Incidence of Invalid DPT1 and Measles Doses by Age 12 Months among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2010 (Card - Only)



Source: CES 2010

Figure C10. Incidence of Invalid DPT1, DPT2 and DPT3 Doses by Age 12 Months among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2010 (Card - Only)

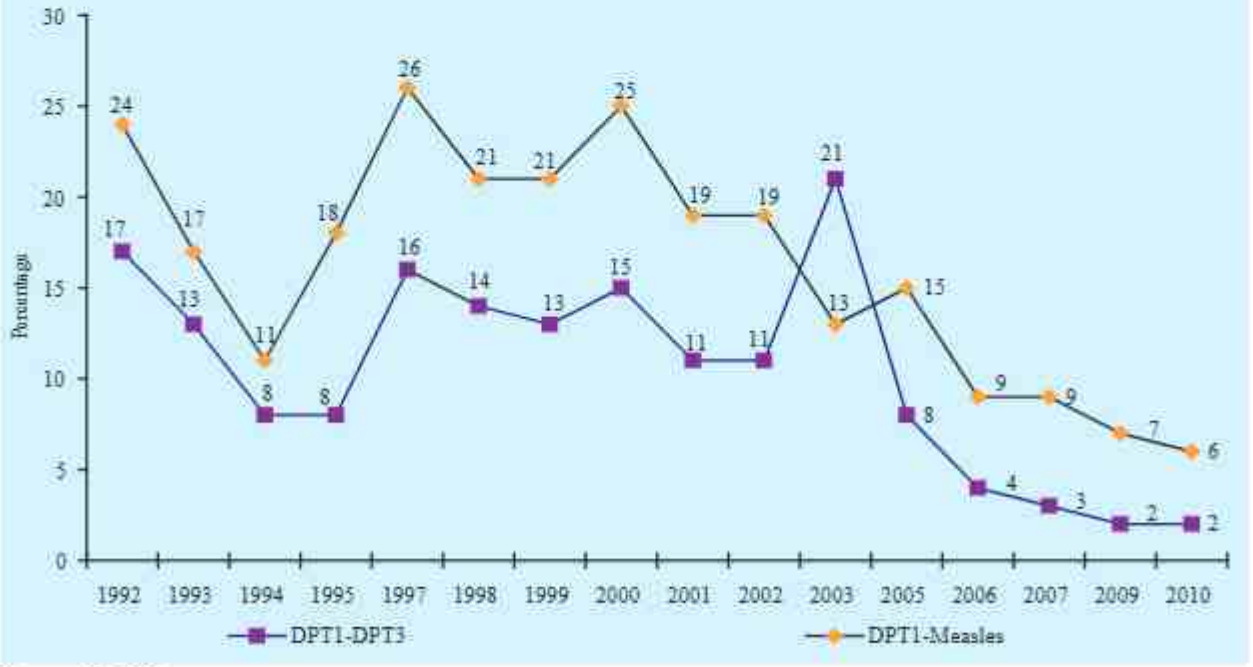


Source: CES 2010

Figure C11. Vaccination Dropout Rates for DPT1-DPT3 and DPT1-Measles among 12-23 Months Old Children in Rural and Urban Areas in 2010

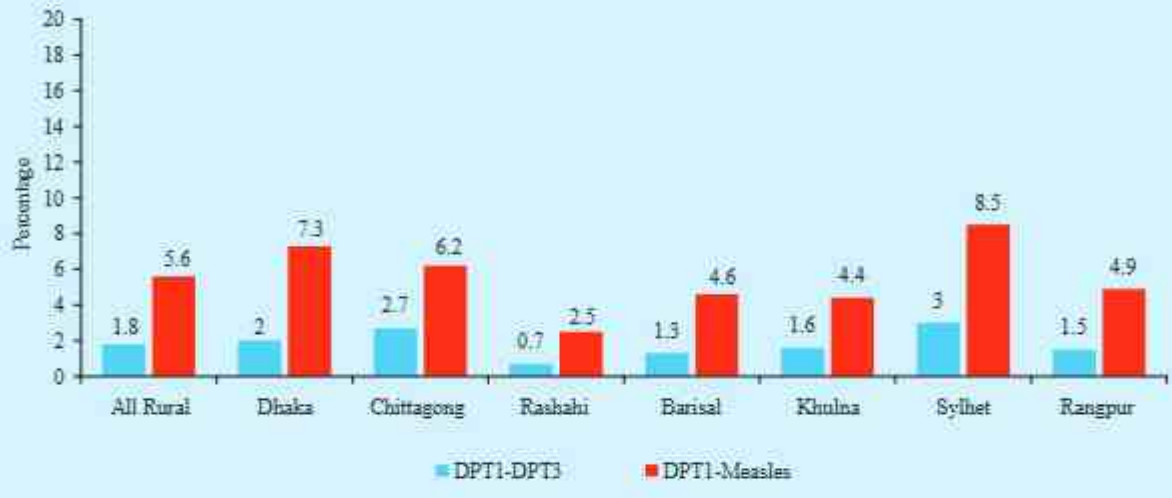
Source: CES 2010

Figure C12. Annual Trend in National Vaccination Dropout Rates for DPT1-DPT3 and DPT1-Measles among 12-23 Months Old Children From 1992 to 2010



Source: CES 2010

Figure C13. Vaccination Dropout Rates for DPT1-DPT3 and DPT1-Measles among 12-23 Months Old Children in Rural Areas by Division in 2010

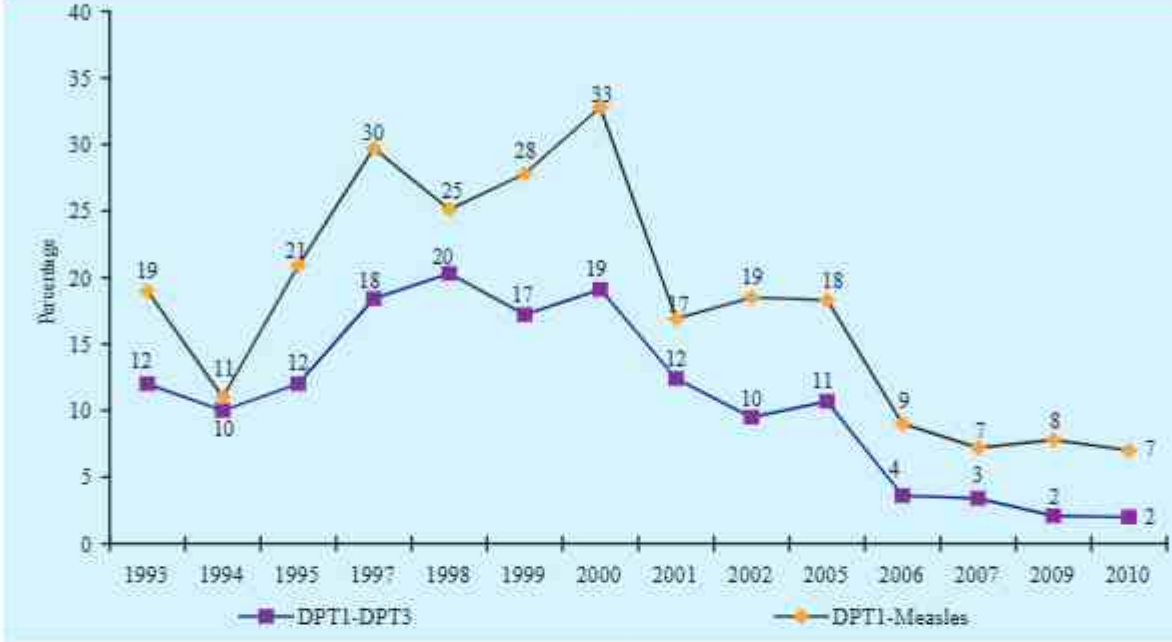


Source: CES 2010

Figure C14. Vaccination Dropout Rates for DPT1-DPT3 and DPT1-Measles among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2010

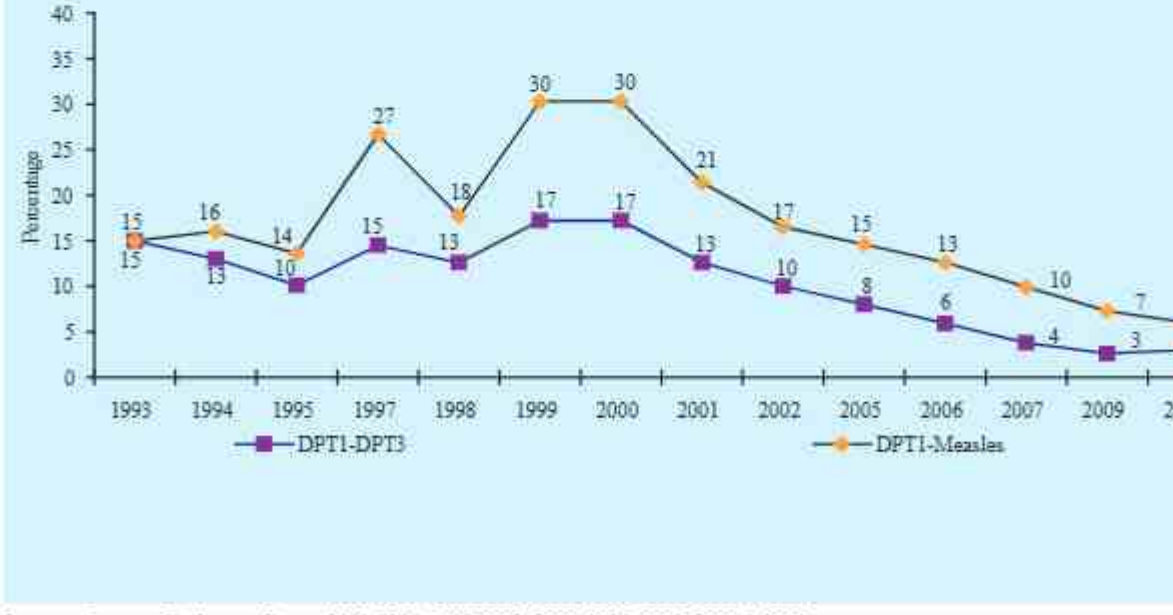
Source: CES 2010

Figure C15. Annual Trend in Vaccination Dropout Rates for DPT1-DPT3 and DPT1-Measles among 12-23 Months Old Children in Dhaka Division from 1993 to 2010



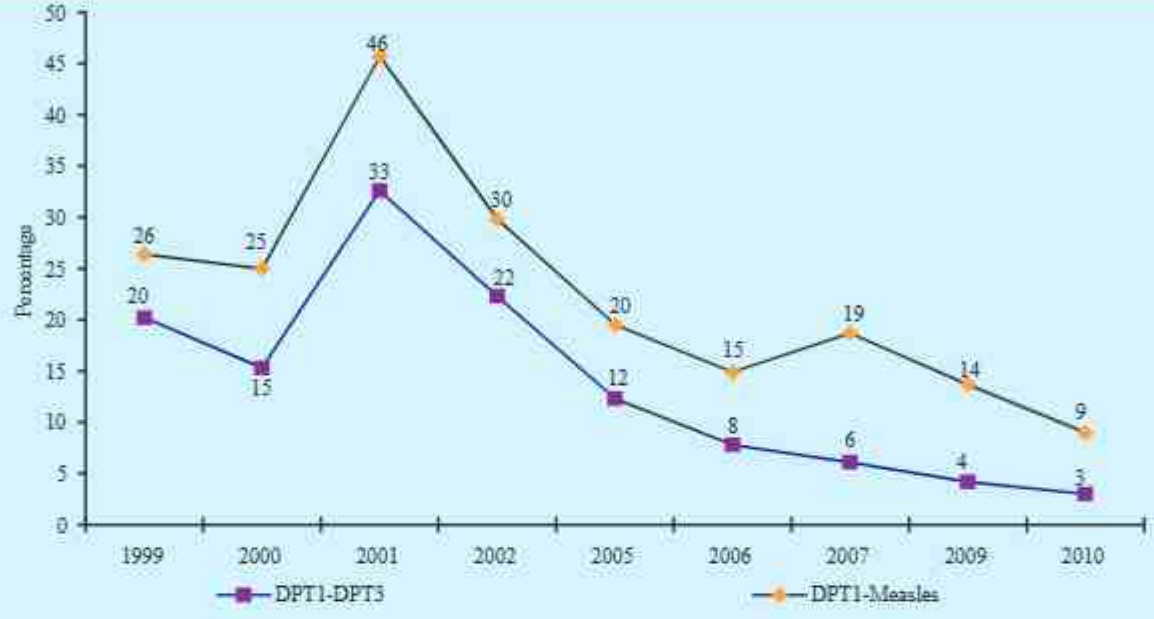
Source: Coverage Evaluation Survey 1993-1995, 1997-2002, 2005, 2006, 2007, 2009 & 2010

Figure C16. Annual Trend in Vaccination Dropout Rates for DPT1-DPT3 and DPT1-Measles among 12-23 Months Old Children in Chittagong Division from 1993 to 2010



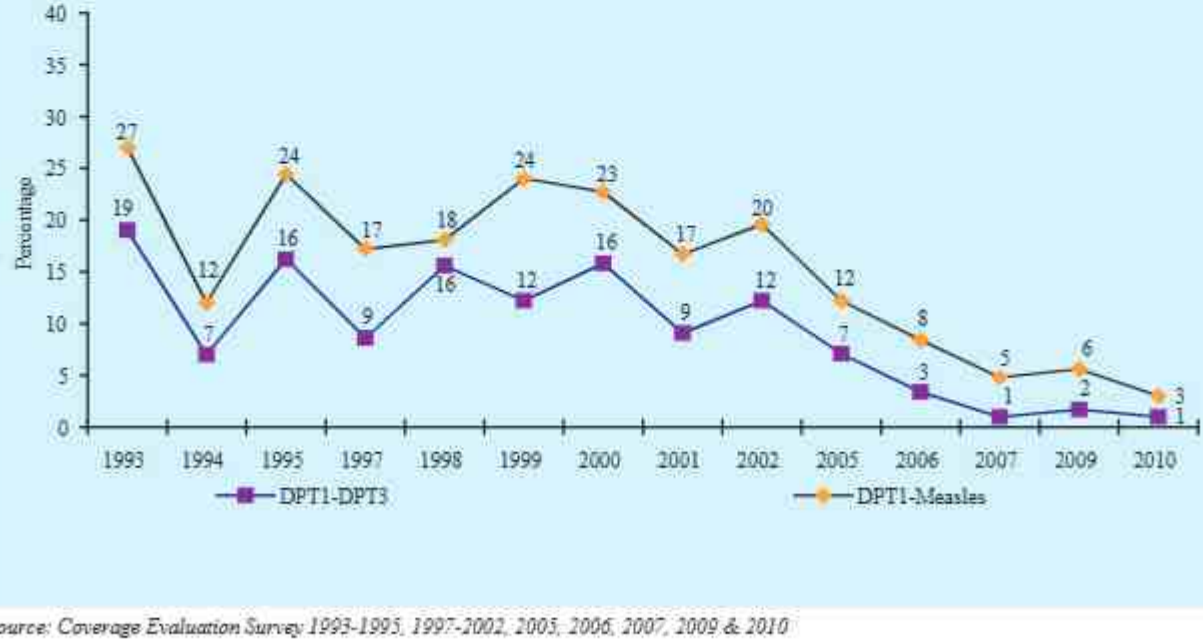
Source: Coverage Evaluation Survey 1993-1995, 1997-2002, 2005, 2006, 2007, 2009 & 2010

Figure C17. Annual Trend in Vaccination Dropout Rates for DPT1-DPT3 and DPT1-Measles among 12-23 Months Old Children in Sylhet Division* from 1999 to 2010



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

Figure C18. Annual Trend in Vaccination Dropout Rates for DPT1-DPT3 and DPT1-Measles among 12-23 Months Old Children in Rajshahi Division from 1993 to 2010

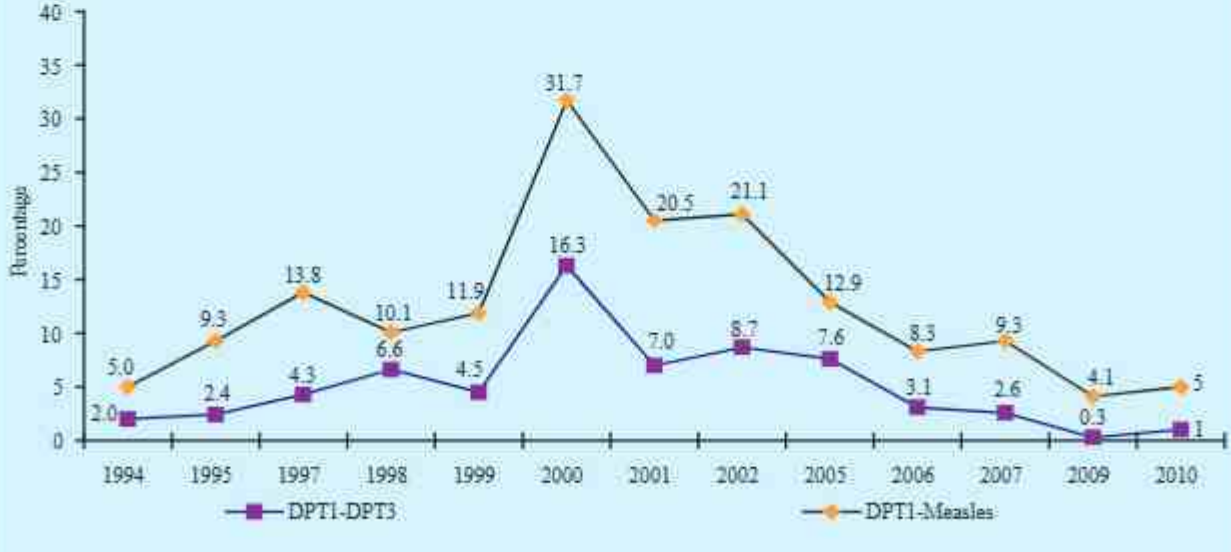


Source: Coverage Evaluation Survey 1993-1995, 1997-2002, 2005, 2006, 2007, 2009 & 2010

Figure C19. Annual Trend in Vaccination Dropout Rates for DPT1-DPT3 and DPT1-Measles among 12-23 Months Old Children in Khulna Division from 1993 to 2010

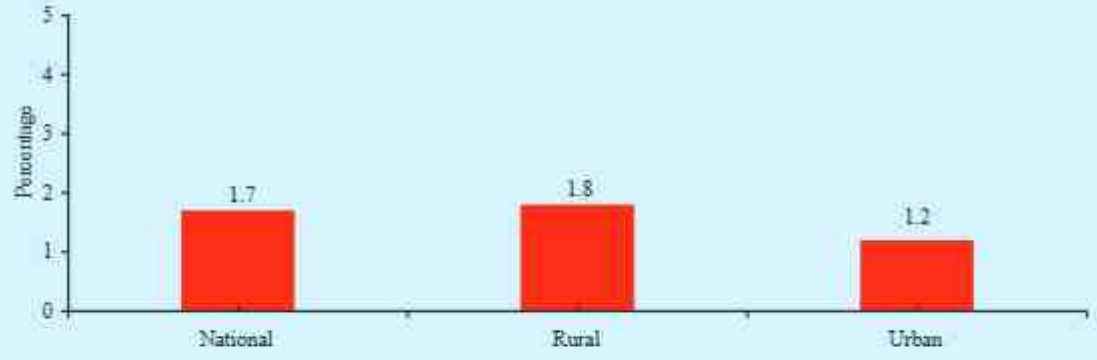
Source: Coverage Evaluation Survey 1993-1995, 1997-2002, 2005, 2006, 2007, 2009 & 2010

Figure C20. Annual Trend in Vaccination Dropout Rates for DPT1-DPT3 and DPT1-Measles among 12-23 Months Old Children in Barisal Divisionfrom 1994 to 2010



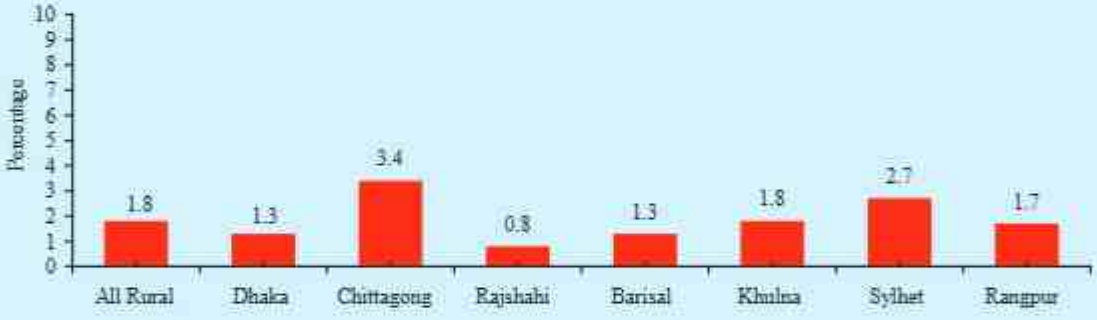
Source: Coverage Evaluation Survey 1994-1995, 1997-2002, 2005, 2006, 2007, 2009 & 2010

Figure C21. Incidence of Abscesses Following DPT or Measles Vaccination among 12-23 Months Old Children by National, Rural and Urban Areas in 2010



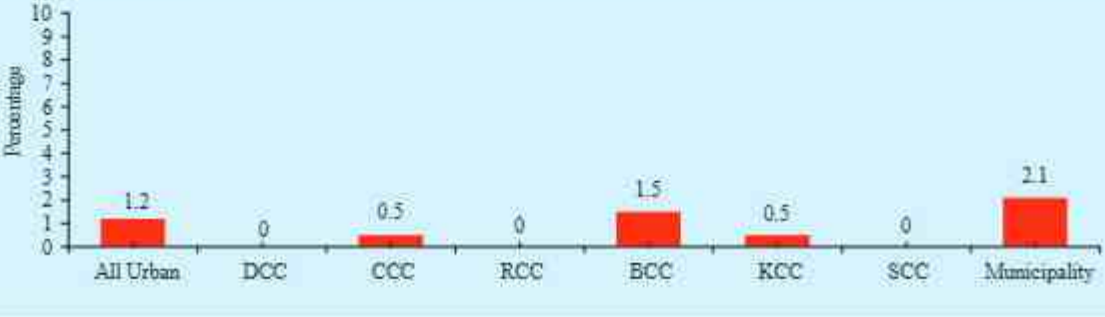
Source: CES 2010

Figure C22. Incidence of Abscesses Following DPT or Measles Vaccinationamong 12-23 Months Old Children in Rural Areas by Division in 2010



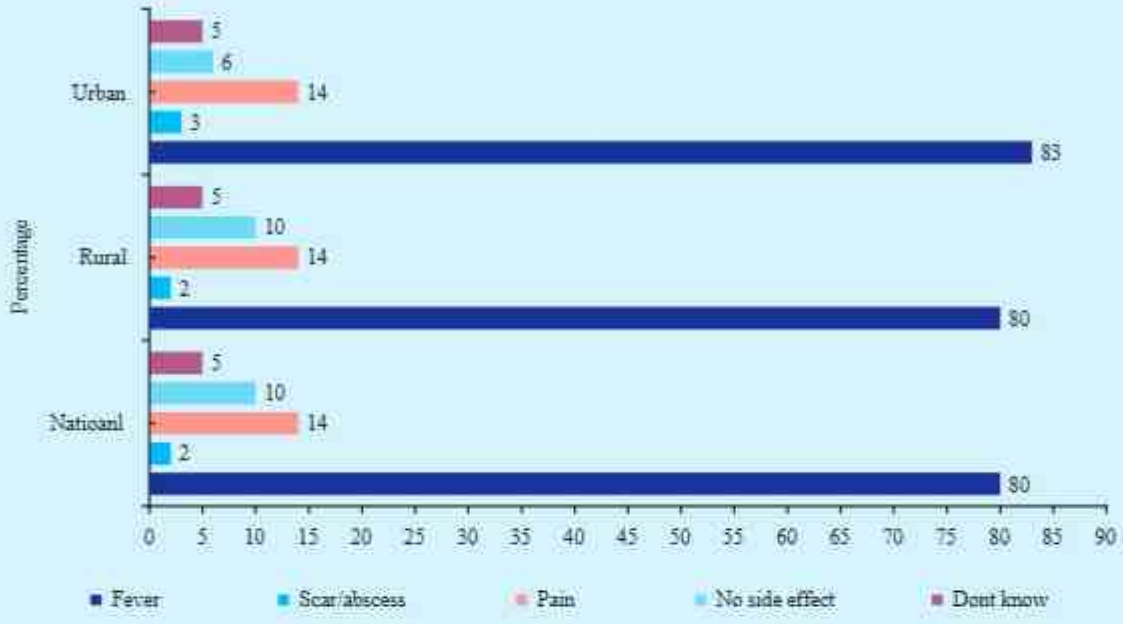
Source: CES 2010

Figure C23. Incidence of Abscesses Following DPT or Measles Vaccination among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2010



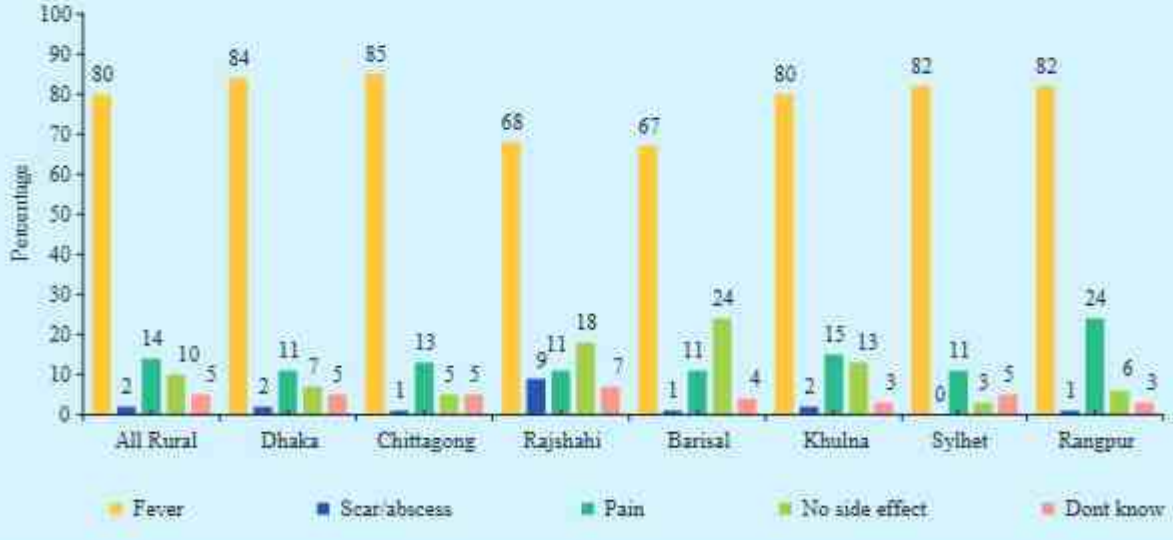
Source: CES 2010

Figure C24. Knowledge on Common Side-effect Following Immunization by National, Rural and Urban Areas in 2010



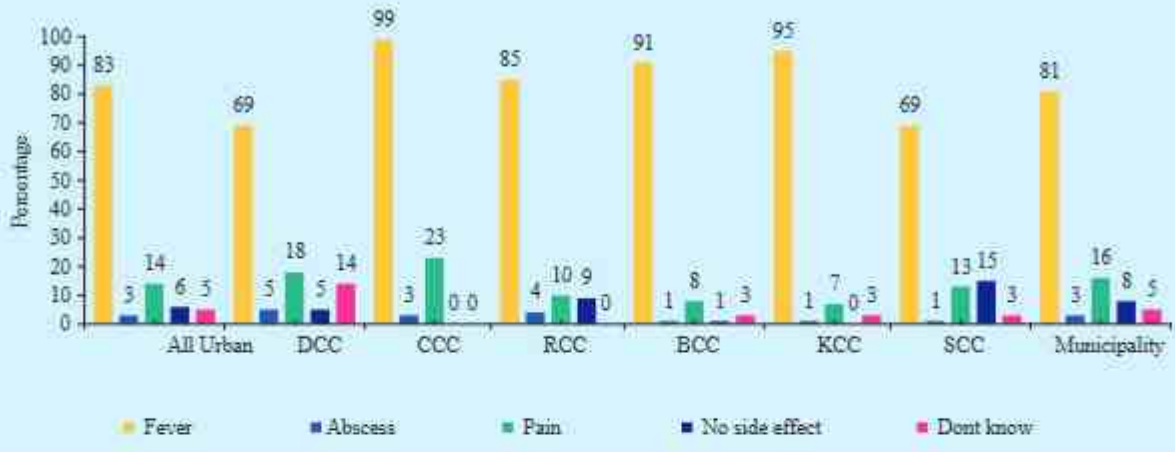
Source: CES 2010

Figure C25. Knowledge on Common Side-effect Following Immunization in Rural Areas by Division in 2010



Source: CES 2010

Figure C26. Knowledge on Common Side-effect Following Immunization in Urban Areas by City Corporations/ Municipality in 2010



Source: CES 2010

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 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 control and elimination of vaccine preventable diseases. Socio-demographic and socio-economic factors can be the 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 for improving the vaccination coverage and taking up strategic plans within the available sources.

2.7.1 Reasons for Never Vaccination

Mothers, whose children have not received any vaccine at all, were asked about the reasons for never vaccination. In this context, 27 percent mothers/caregivers mentioned about the distance of vaccination center from their villages while 16 percent stated that they didn't know that their children should be vaccinated. Another 18 percent mothers reported that they were scared of the side-effects following the vaccination. Ten percent mothers/caregivers commented that they don't believe in vaccination while 8 percent of them confessed that they were not aware of the vaccination center. Furthermore, another 8 percent of them admitted that they were busy with their household work; and so they couldn't vaccinate their children. This excuse was being followed by the statements that the session time was inconvenient for the mothers/caregivers (3 percent), the child was sick (1 percent), and the vaccinator didn't give (1 percent). Compared to rural mothers (16 percent), urban mothers/caregivers (18 percent) are more unaware of the vaccination service.

2.7.2 Reasons for Partial Vaccination

Children who have missed all the doses of the recommended antigens although receiving any/some dose(s) of antigen are referred to as being partially vaccinated. As regards to the partial vaccination, it was found that a little over one-fourth (26 percent) of the mothers reported that they were unaware of measles vaccination schedule. Sixteen percent of them mentioned that they were busy with their household work.Two percent reported that "the child was sick, so they couldn't vaccinate him/her". This statement was being followed by the following incidences: "mothers/caregivers didn't know when to go for the second/third dose" (8 percent), "mothers/caregivers forgot to vaccinate their children" (7 percent), "they were scared of the side-effects" (6 percent), "the child was sick; so s/he was not taken to the health center" (12 percent), "vaccination time was inconvenient for them" (3 percent), and "they didn't know where to go for the vaccine" (3 percent).

In urban areas, the common reasons for children not being fully vaccinated were: "the child was sick; therefore, s/he was not taken to the health center" (20 percent); "parents/caregivers were too busy to take the child for vaccination" (17 percent); "parents/caregivers did not know when to go for the measles dose" (17 percent); "mothers/caregivers forgot to vaccinate the child" (10 percent); " the child was sick; so the health worker didn't give it"(8 percent); " they were scared of the side-effects" (6 percent) ; and 4 percent reported "vaccination time was inconvenient for mothers/caregivers" (see Figure D1b).

Likewise, in rural areas the common reasons for children not being fully vaccinated were: "mothers/caregivers did not know when to go for measles dose" (26 percent); "mothers/caregivers didn't have time to vaccinate their children" (16 percent); "the child was sick" (12 percent); "they didn't know when to go for the 2nd/3rd dose" (8 percent); "parents/caregivers forgot to vaccinate their children" (7 percent); they had fear of side- effects" (6 percent); and 3 percent reported "vaccination time was inconvenient for them"(see Figure D1a).

2.8 Knowledge about the Number of Visits Required for Complete Vaccination

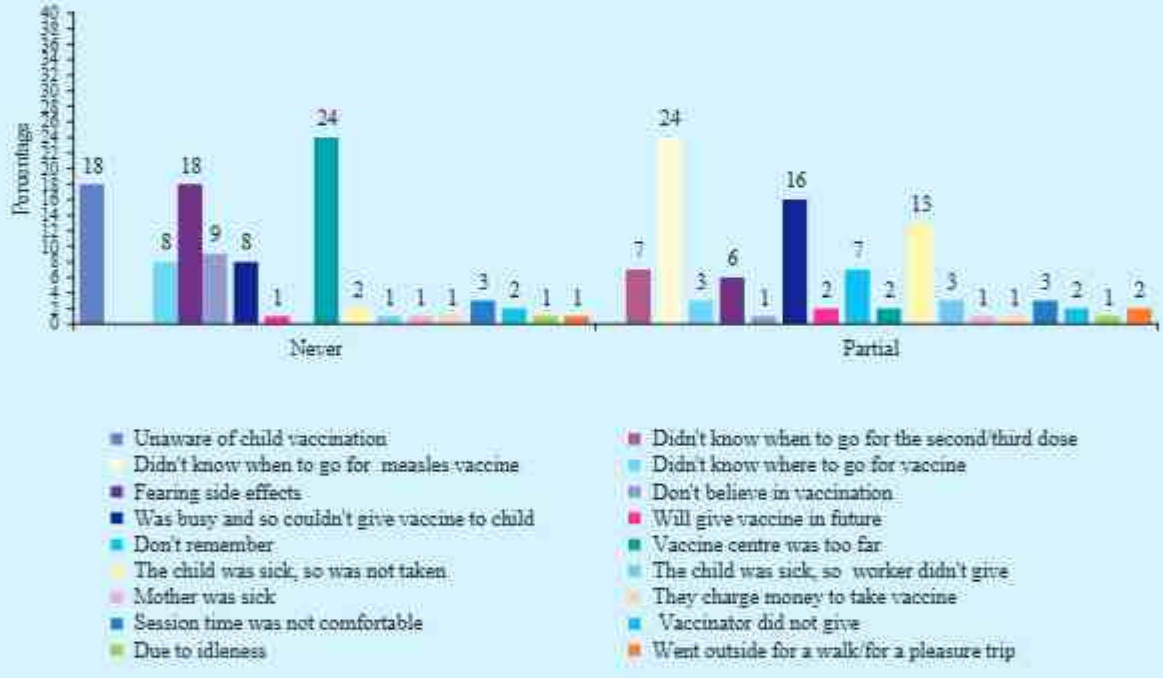
Mothers/caregivers were being asked a particular question to assess their knowledge about the number of visits required for completing all the doses. About one-fourth (24 percent) of them reported about 4 visits. Thirty eight percent of them mentioned that it would be more than 4 visits. However, a little over one-third (34 percent) of the respondents were found to be unaware of the number of visits. By area type, 27 percent of the mothers in urban areas rightly mentioned about 4 visits as against 24 percent residing in rural areas (see Figure D6). Likewise, 38 percent of them mentioned about more than 4 visits throughout the country with a little variation -38 percent in rural and 39 percent in urban areas.

In the rural areas by division, the proportion of the mothers/caregivers having proper knowledge of the required 4 visits for full vaccination was found to be the highest in Sylhet division (34 percent) and the lowest in Rangpur division (7 percent).The percentage of their having proper knowledge about the number of visits required for full vaccination in other divisions ranged from 23 percent in Dhaka division to 28 percent in Chittagong, Rajshahi, and Khulna divisions (see Figure D7).

However, 42 percent of them in Rangpur division were found to be unaware about the required number of visits, which was being followed by Chittagong and Rajshahi (38 percent), Sylhet (35 percent), Khulna (34 percent), and Dhaka divisions (31 percent).

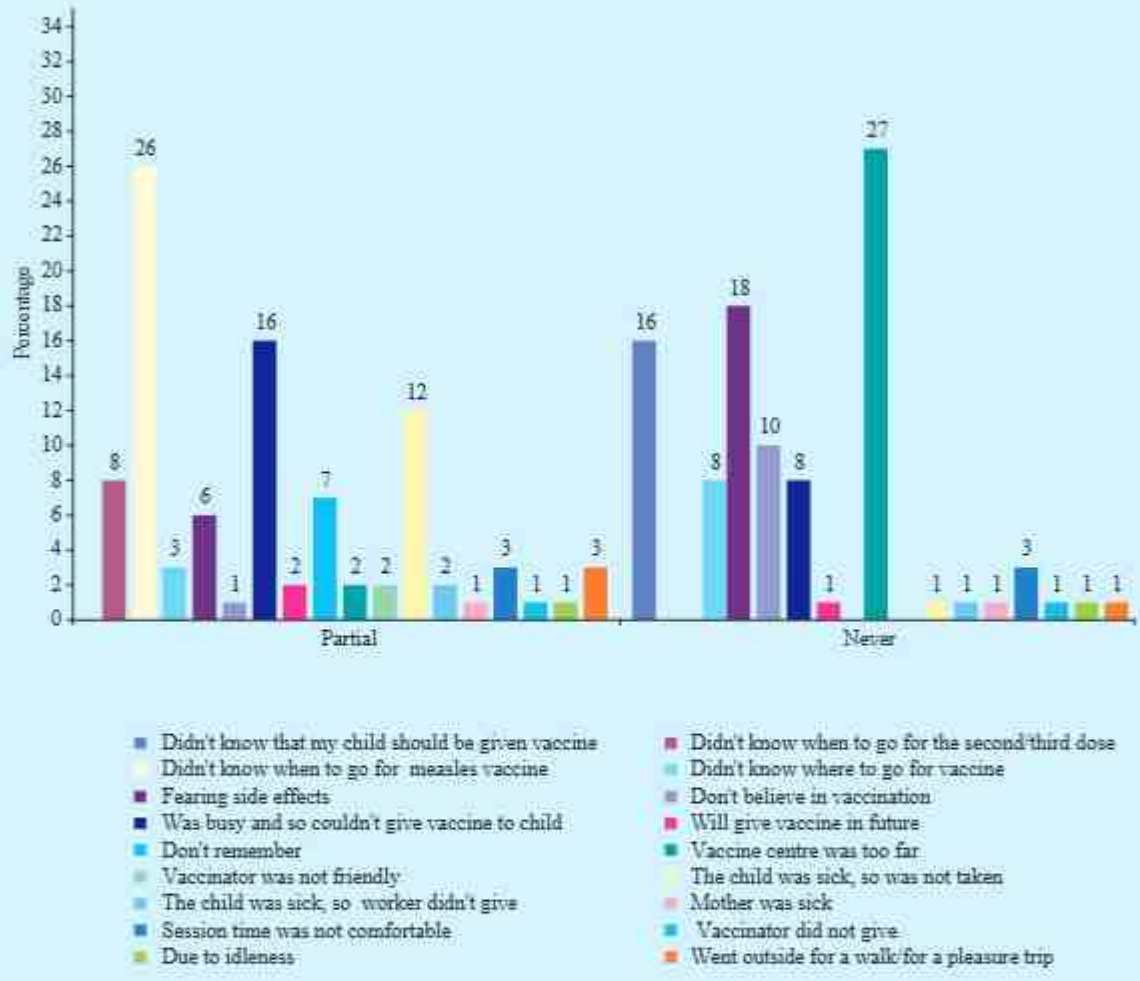
Among the city corporations, correct knowledge about the required number of visits for full vaccination was the least prevalent in BCC (20 percent) and the most prevalent in CCC (36 percent), which was being followed by DCC (33 percent), KCC (28 percent), RCC (21 percent), and SCC (20 percent) (see Figure D8).

Figure D1. Reasons for Partial or Never Vaccination among 12-23 Months Old Children by National Data in 2010



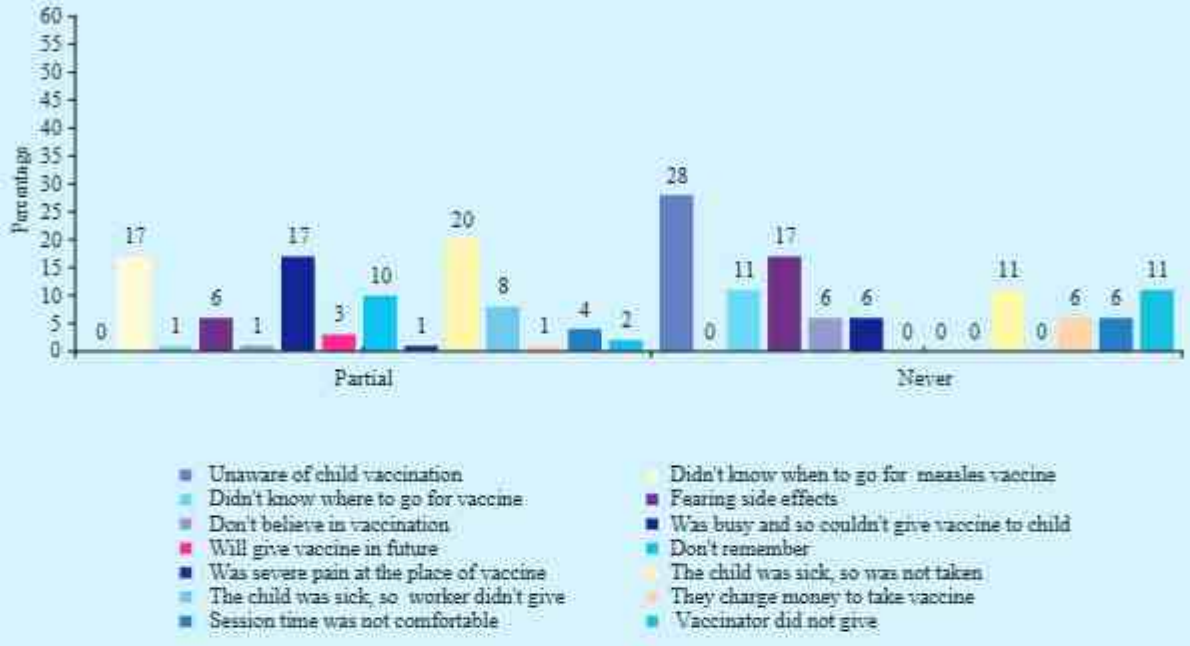
Source: CES 2010

Figure D1a. Reasons for Partial or Never Vaccination among 12-23 Months Old Children by Rural Area in 2010



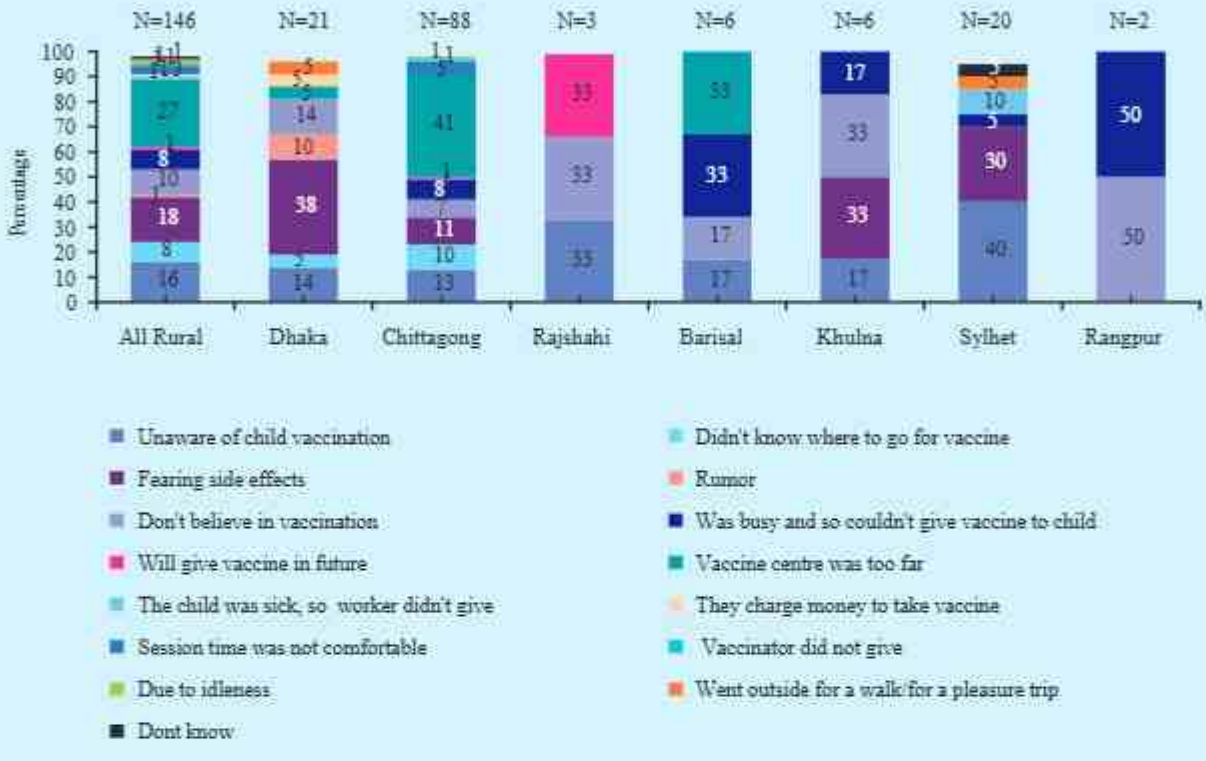
Source: CES 2010

Figure D1b. Reasons for Partial or Never Vaccination among 12-23 Months Old Children by Urban Area in 2010



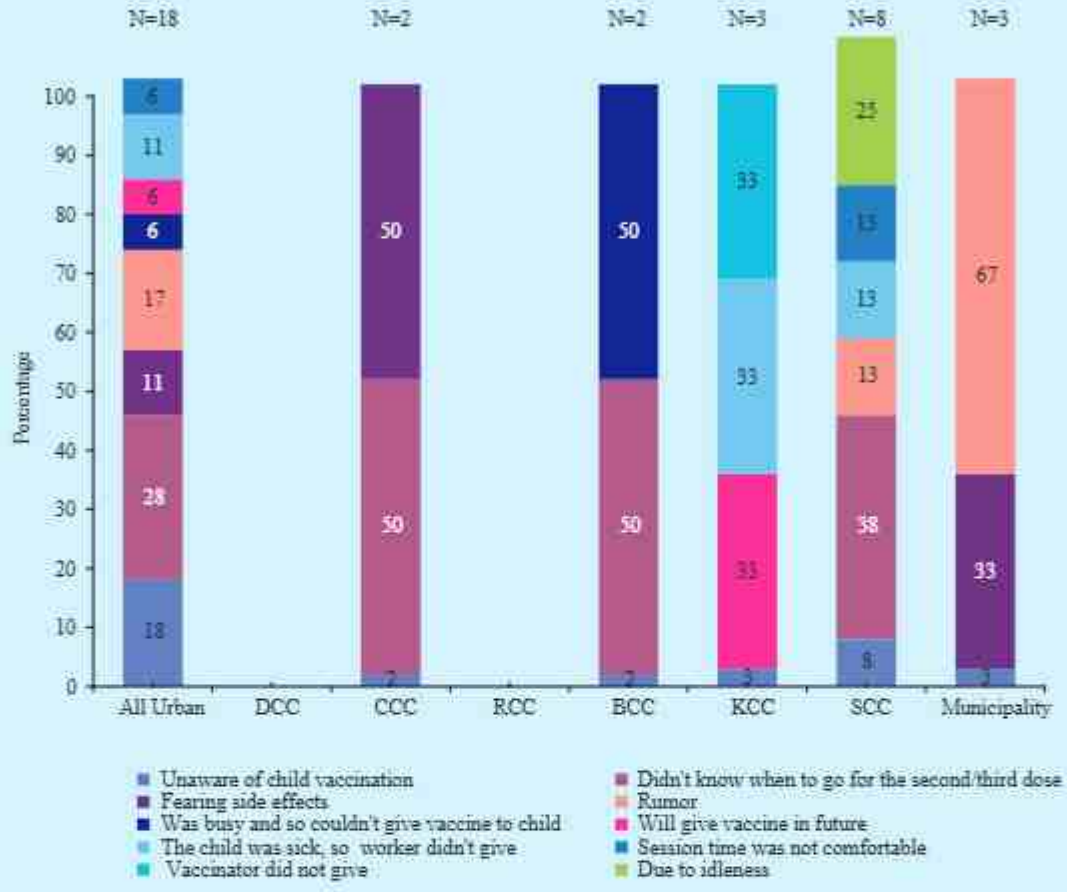
Source: CES 2010

Figure D2. Reasons for Never Vaccination among 12-23 Months Old Children in Rural Areas by Division in 2010



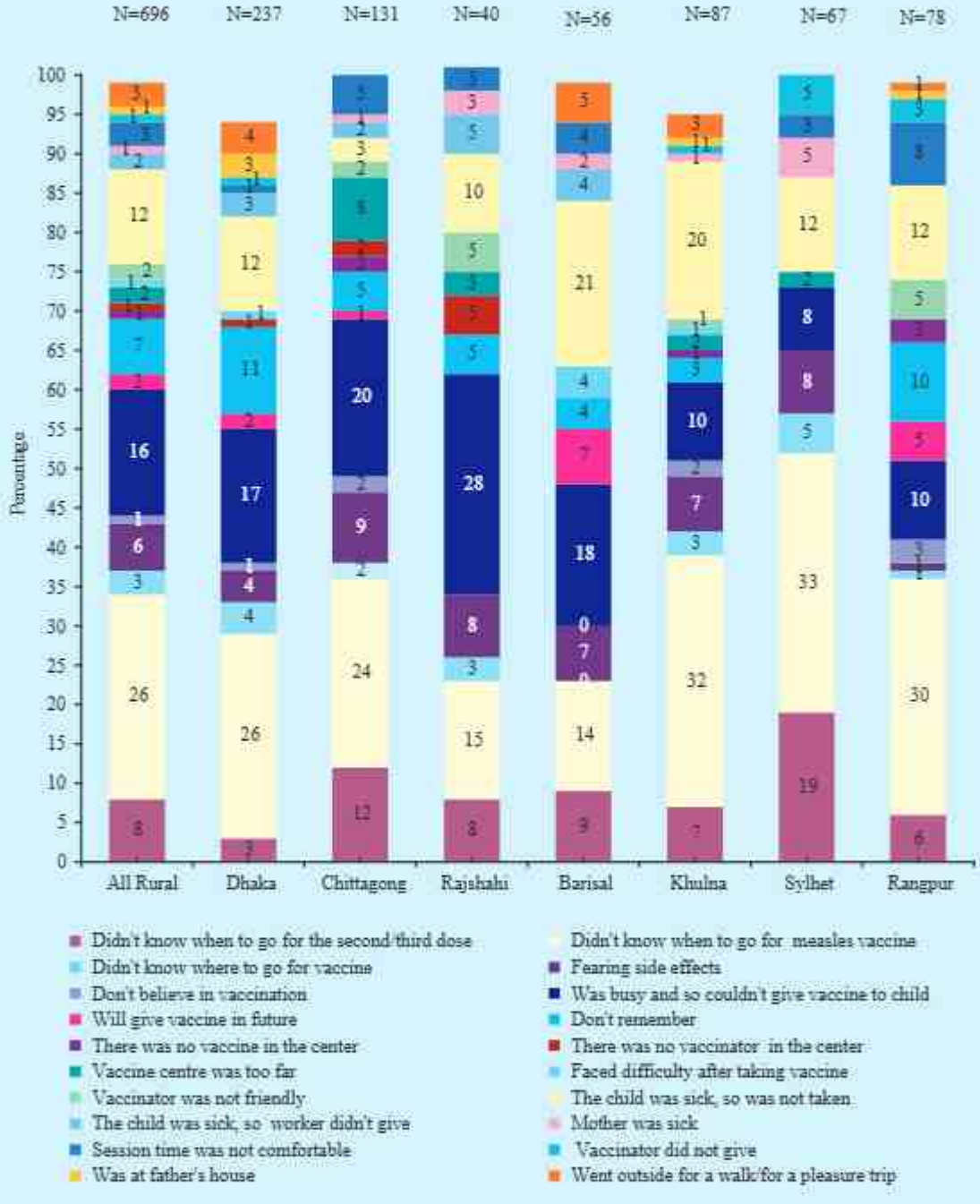
Source: CES 2010

Figure D3. Reasons for Never Vaccination among 12-23 Months Old Children in Urban Areas by City Corporation / Municipality in 2010



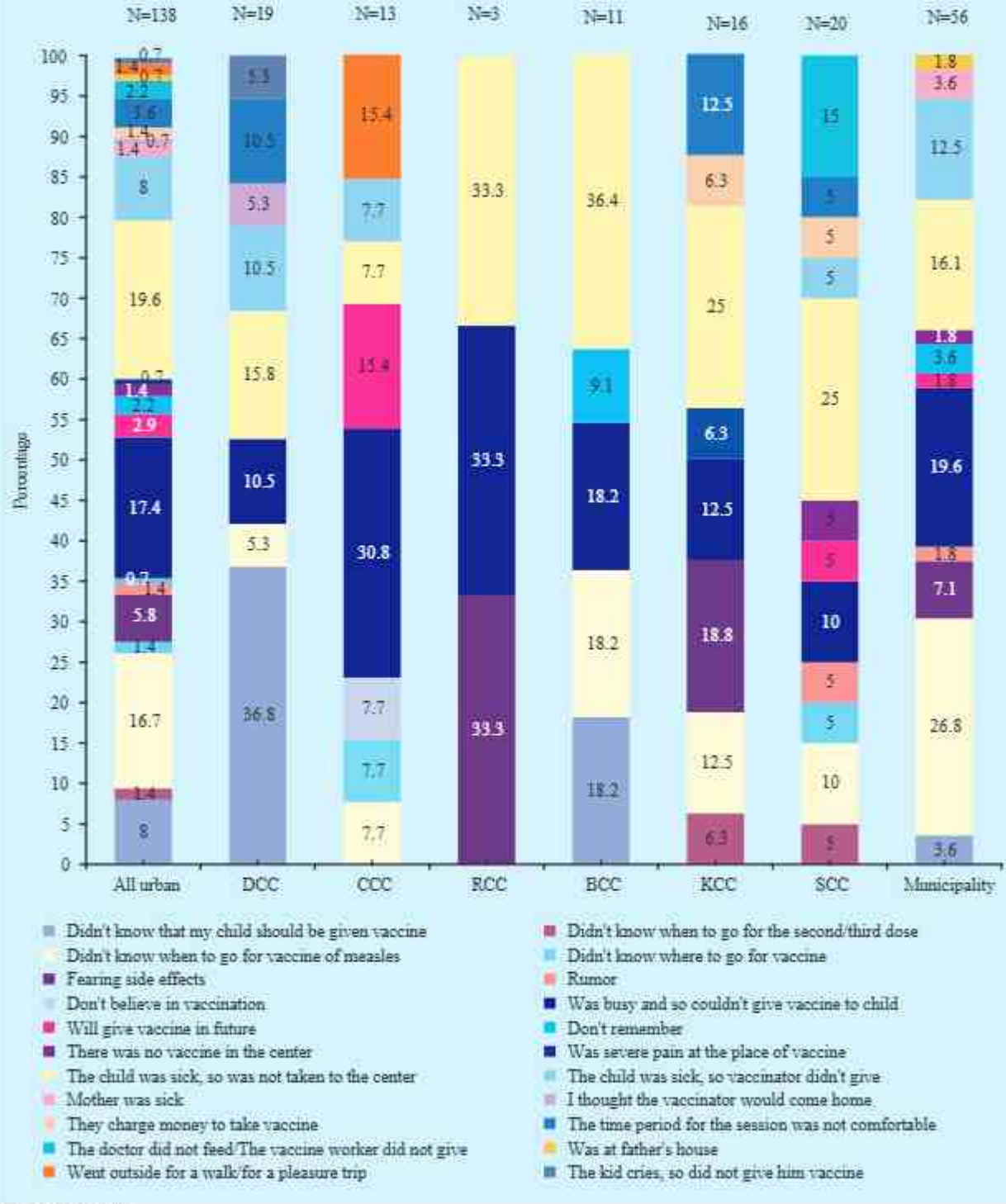
Source: CES 2010

Figure D4. Reasons for Partial Vaccination among 12-23 Months Old Children in Rural Areas by Division in 2010



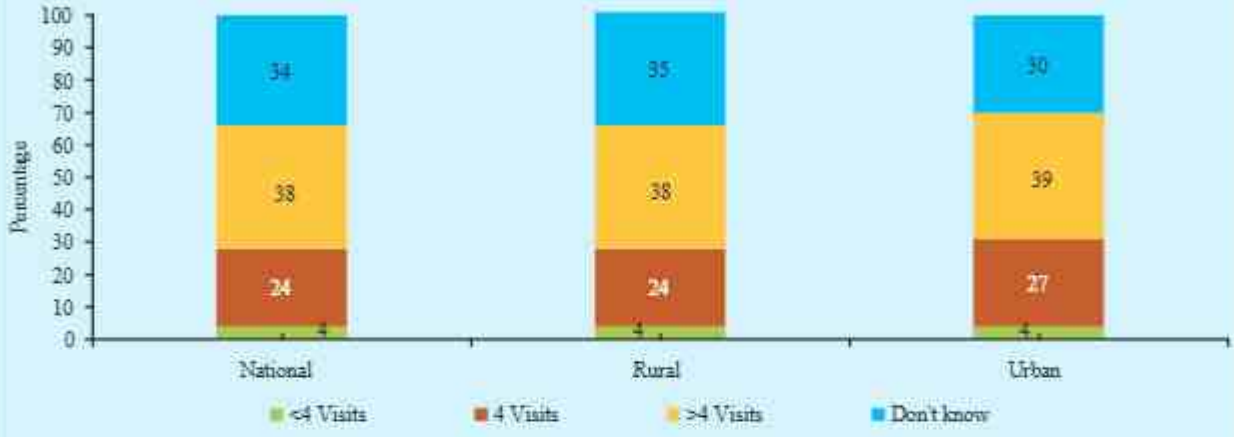
Source: Coverage Evaluation Survey 1993-1995, 1997-2002, 2005, 2006, 2007, 2009 & 2010

Figure D5. Reasons for Partial Vaccination among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2010



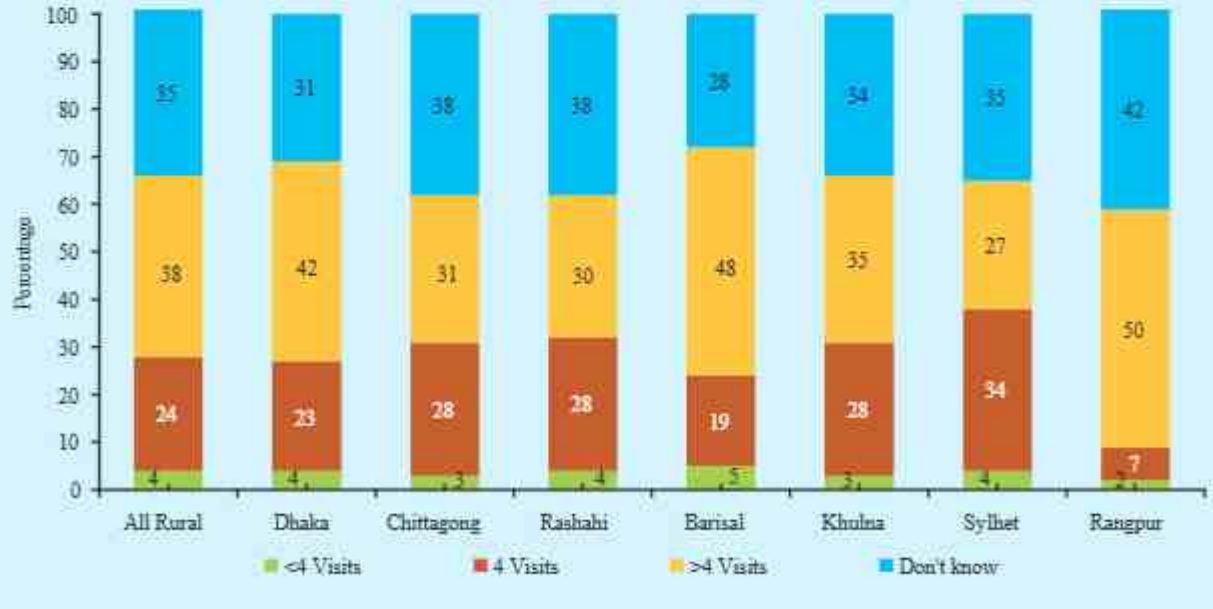
Source: CES 2010

Figure D6. 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 2010



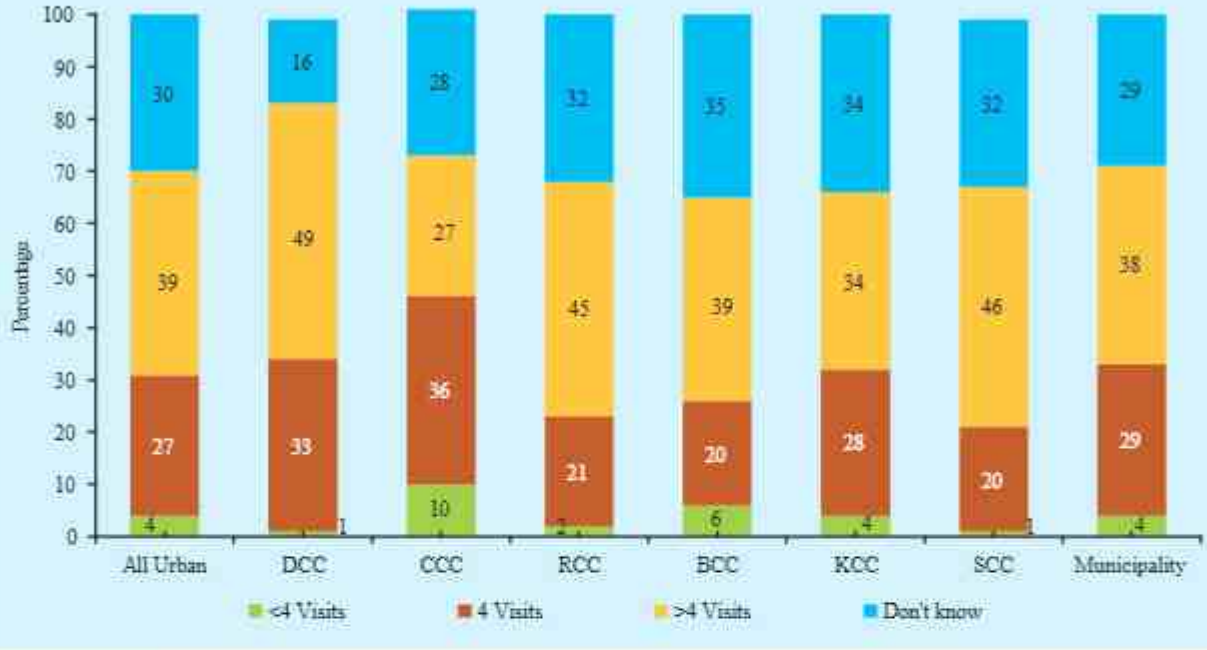
Source: CES 2010

Figure D7. 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 2010



Source: CES 2010

Figure D8. 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 2010



Source: CES 2010

2.9 Sources of Childhood Vaccination

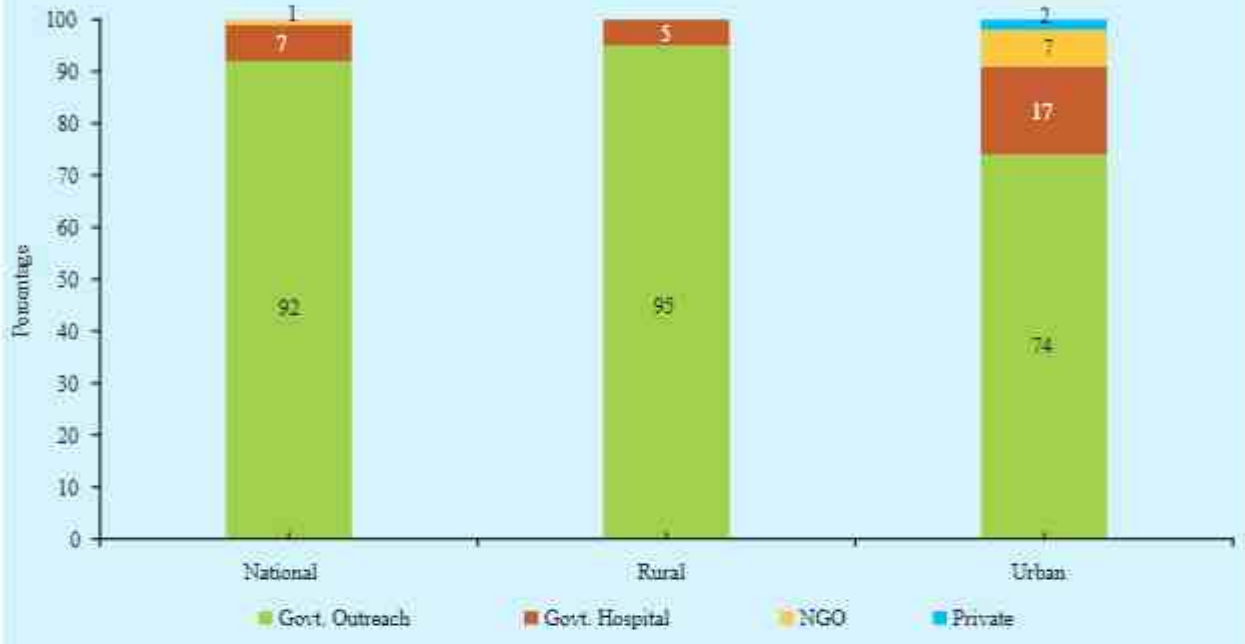
Figure E1 presents the sources of childhood vaccination. The analysis considers the source of DPT1 to explain it in this report. Figure E1 shows that the government facilities are the prime sources of providing vaccination services in Bangladesh. Ninety two percent of the surveyed children were vaccinated at the government outreach centers. 7 percent of them reported about government hospitals. Only 1 percent of their children were vaccinated by NGOs and health centers/clinics. By the place of residence, government sources emerged as the principal provider of childhood vaccination services both in rural (100 percent) and urban areas (91 percent) of Bangladesh. However, NGOs and private sources were found to be much higher in the percentage in urban areas compared to that in rural areas. Seven percent of the children in urban areas received DPT1 vaccine from NGOs and 2 percent from private service providers.

In the rural areas by division, the government outreach sites were found to be used most widely across the divisions, which ranged from 93 percent in Dhaka to 97 percent in Rangpur while the utilization was at an intermediary level in other divisions - 94 percent in Khulna and 96 percent in Rajshahi divisions (see Figure E2).

However, among the city corporations, the utilization rate of the government outreach centers was the most prevalent in KCC (95 percent) and the least prevalent in BCC (41 percent). Utilization of government outreach centers was 91 percent in RCC, which was being followed by SCC (90 percent), CCC (74 percent), and in DCC (44 percent) (see Figure E3).

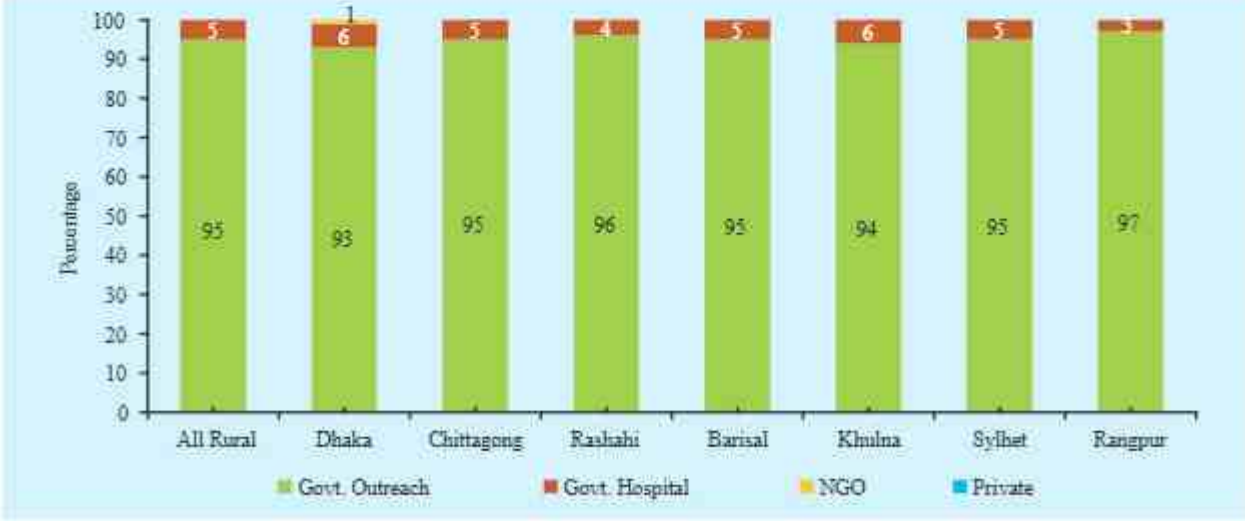
However, vaccination coverage by the NGOs was most discernible in DCC (43 percent), which was being followed by BCC (19 percent), RCC, KCC, and SCC (1 percent).

Figure E1. Source of DPT1 Vaccination among 12-23 Months Old Children by National, Rural and Urban Areas in 2010



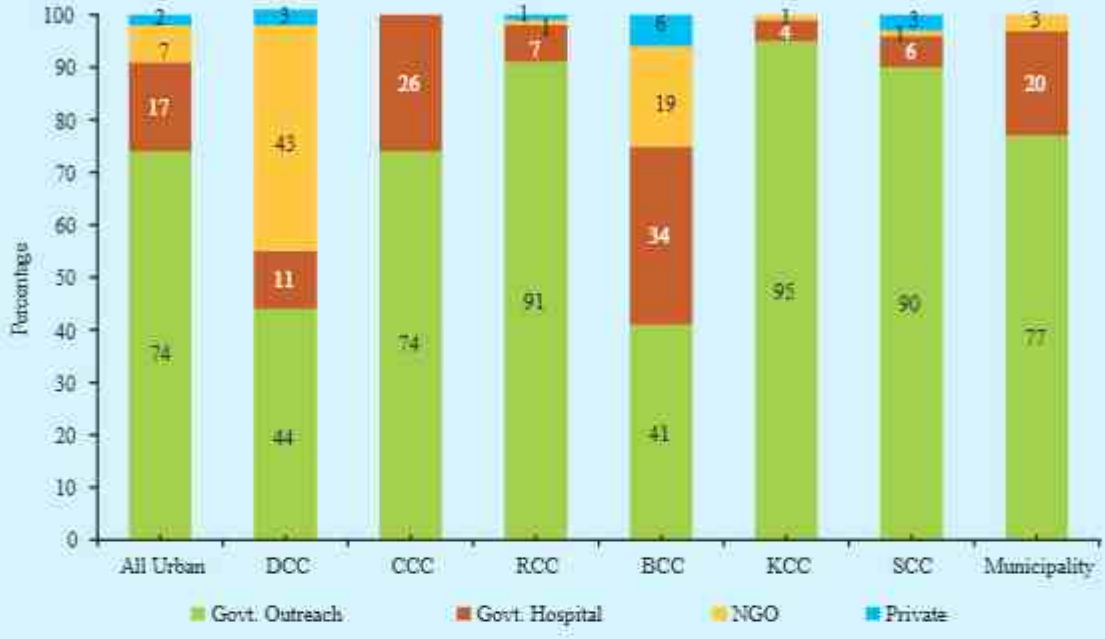
Source: CES 2010

Figure E2. Source of DPT1 Vaccination among 12-23 Months Old Children in Rural Areas by Division in 2010



Source: CES 2010

Figure E3. Source of DPT1 Vaccination among 12-23 Months Old Children in Urban Areas by City Corporation/ Municipality in 2010



Source: CES 2010

2.10 Missed Opportunity

A missed opportunity for immunization occurs when a child comes to a health facility or outreach site and doesn't receive any or all of the vaccine doses for which s/he is eligible. The most important causes behind the missed opportunities are the failure to administer simultaneously all vaccines for which a child was eligible. CES 2010 calculated the missed opportunity by using COSAS. The results are presented in Table 2.11. It shows that the uncorrected missed opportunity was .06 percent for DPT1, OPV1, OPV3, and DPT3, across the country. It was 1.86 percent for measles. However, corrected missed opportunity was 2.91% for DPT1 and OPV1, 1.99% for DPT2 and OPV2 and 1.86 percent for DPT3 and OPV3. And, it was 1.14% for measles vaccine. The survey findings show that there was no missed opportunity in the urban areas.

Table A9: Missed Opportunity

Antigens	National				Rural				Urban			
	Uncorrected	%	Corrected	%	Uncorrected	%	Corrected	%	Uncorrected	%	Corrected	%
BCG	4	0.03	0	0	4	0.03	0	0	0	0	0	0
DPT1	7	0.06	360	2.91	7	0.06	360	2.91	0	0	0	0
DPT2	4	0.03	246	1.99	4	0.03	246	1.99	0	0	0	0
DPT3	7	0.06	230	1.86	7	0.06	230	1.86	0	0	0	0
Polio 1	7	0.06	360	2.91	7	0.06	360	2.91	0	0	0	0
Polio 2	4	0.03	246	1.99	4	0.03	246	1.99	0	0	0	0
Polio 3	7	0.06	230	1.86	7	0.06	230	1.86	0	0	0	0
Measles	82	0.66	141	1.14	82	0.66	141	1.14	0	0	0	0

CHAPTER 3

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

Elimination of Neonatal tetanus (NT) is one of the disease reduction objectives of EPI Bangladesh since it is a major public health burden along with maternal tetanus. UNICEF, UNFPA, and WHO extended their support to the government to achieve this objective. Neonatal Tetanus Elimination is defined as incidence of less than one NT case per 1000 live births per year in each district. High vaccination coverage with tetanus toxoid among the pregnant women and in high-risk population along with all the childbearing aged women (CBAW) as well as improved access to clean delivery services are primary strategies for achieving this goal. Bangladesh has already reached NT elimination status in 2008. This status should be kept uphold by providing 5 doses of TT to every childbearing aged woman or the required doses of TT to the pregnant woman following TT vaccination schedule for ensuring the new-born protected at birth against Neonatal Tetanus. 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. Considering this point, CES is an important means to give the strategic direction to the program personnel in this situation. CES 2010 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 the program quality, card retention rate, invalid doses and, finally, PAB of children.

3.1 Objective of TT Survey

Along with the information on TT vaccination 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

3.1.1 Selection of Samples

Mothers who gave birth to child between 01-01-2009 and 31-12-2009 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 2010. At first, mothers who gave birth to a child between 01-01-2009 and 31-12-2009 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

Tetanus is a vaccine-preventable disease that causes annually a total of 309 000 deaths[2] Of particular concern is the maternal and neonatal tetanus (MNT) which represents a failure of public health in terms of routine vaccinations, antenatal care and clean delivery/umbilical cord care services. MNT is a swift and painful killer that killed about 200 000 newborns in year 2000.[3]

The goal of MNT elimination was declared jointly by the United Nations Children's Fund (UNICEF), the World Health Organization (WHO) and the United Nations Population Fund (UNFPA), along with the establishment of a global fund for MNT elimination.

MNT elimination is defined as the achievement of less than 1 case of neonatal tetanus per 1000 live births annually in every district of a country in the world. The 3 key strategies for achieving MNT elimination recommended by WHO/UNICEF/UNFPA are: provision of at least 2 doses of tetanus toxoid (TT2) to all pregnant women in high risk areas and 5 doses (TT5) to all women of childbearing age; promotion of clean delivery services to all pregnant women and ensuring effective surveillance for MNT.

The MNT Elimination Initiative aims to reduce the number of maternal and neonatal tetanus cases to such low levels that MNT is no longer a major public health problem. Unlike polio and smallpox, tetanus cannot be eradicated (tetanus spores are present in the environment worldwide), but through immunization of pregnant and child bearing aged women (CBAW) and promotion of more hygienic deliveries, MNT can be eliminated (defined as less than one case of neonatal tetanus per 1000 live births in every district)

A woman needs a total of five doses TT vaccine to get an adequate level of antibody against tetanus for her whole reproductive period. All these doses should be administered according to the EPI vaccination guideline: TT1 the first dose, 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.

Since a single dose of TT vaccine does not ensure any protection against tetanus, it requires two doses of duly administered TT vaccines to ensure protection for 3 years. TT3 ensures protection for 5 years, TT4 for 10 years. After TT5 being administered, a woman gets adequate tetanus antibody in her body to protect her whole reproductive life against tetanus. Table A10 below shows the complete TT vaccination schedule.

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[2] Vandelaer J et al. Tetanus in developing countries: an update on the Maternal and Neonatal Tetanus Elimination Initiative. Vaccine, 2003, 21(24):3442-5).

[3] Deming MS et al. Tetanus Toxoid coverage as an indicator of serological protection against neonatal tetanus. Bulletin of the World Health Organization, 2002, 80(9):696-703).

Table A10: 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 2010 was conducted to collect information about the TT vaccination from the mothers who had given birth to children between 01-01-2009 and 31-12-2009 with an aim to assess the protective status of the newborn child 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 irrespective of the maintenance of EPI-recommended 5 doses of TT vaccination schedule. Crude TT vaccination coverage is displayed in Figure F1, which shows that across the country, 55 percent of the mothers completed all the 5 doses of TT vaccination. Compared to the mothers residing in urban areas, rural mothers were more likely to receive TT5 doses (53 percent vs. 55 percent). In regard to TT2, overall 95 percent of the mothers received it with a little variation between urban and rural areas (96 percent in urban and 95 percent in rural areas). As it was expected, a declining trend in the coverage for the subsequent doses was observed in the findings. Across the country, 95 percent of the mothers received TT2 doses. It decreased down to 87 percent for TT3, 71 percent for TT4, and, finally, 55 percent for TT5 dose. A similar trend was observed in both urban and rural areas (see Figure F1).

Generally speaking, a little over one-third (39 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. Similar to crude TT2 coverage, valid TT2 coverage revealed 95 percent across the country. The urban-rural analysis shows 1 percent difference in the coverage - 96 percent in urban and 95 percent in rural 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 82 percent nationally. It declined down to 61 percent for TT4 and 39 percent for TT5 doses. Similarly, in urban areas, valid TT3 coverage was 82 percent, and TT4 was 58 percent as against 82 percent coverage for TT3 and 61 percent for TT4 in rural areas (see Figure F2).

The 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 39 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, 95 percent of the mothers received TT2 doses nationally - 96 percent in urban and 95 percent in rural areas.

3.4 Trends in Crude TT 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 upto 87 percent in 2010. As against that in CES 2006, TT3 coverage rate increased by 7 percent - 80 percent in 2006 to 87 percent in 2010. However, a slow upward trend in TT2 coverage was observed with fluctuations since 1997. During the last one decade, TT2 coverage increased by 6 percent - from 89 percent in 2000 to 95 percent in 2010. Between CESs 2009 and CES 2010, TT2 coverage decreased by 1 percent (96 percent in 2009, and 95 percent in 2010) (see Figure F3).

Figures F4-F9 show 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 percent- from 95 percent in 2009 to 96 percent in the CES 2010 (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. However, TT2 coverage decreased by 4 percent- from 97 percent in 2007 to 93 percent in 2010, and 2 percent from- 95 percent in 2009 to 93 percent in 2010. Likewise, in Rajshahi division it increased by 9 percent- from 89 percent in 2000 to 98 percent in 2010 (see Figure F6). Similarly, in Barisal division the coverage increased from 88 percent in 2000 to 95 percent in 2010 (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 2010, the coverage rate decreased by 1 percent - 97 percent in 2009 to 96 percent in 2010 (see Figure F8). In Sylhet division, although there is a fluctuation in the coverage, TT2 coverage increased from 77 percent in 2000 to 92 percent in 2010 (see Figure F9). An analysis of the trends shows that there was no improvement in the coverage of Barisal division between the CES 2009 and CES 2010. However, compared to CES 2009 TT2 coverage decreased by 1 percentage point in Khulna and 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 coverage's 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 TT1 vaccination was the highest in Rajshahi division (99 percent) and the lowest in Chittagong division (94 percent). The rate was intermediary in other division, which ranged from 95 percent in Sylhet to 98 percent in Rangpur divisions.

Like TT1 coverage, TT2 coverage was found to be the highest (98 percent) in Rajshahi and the lowest (92 percent) in Sylhet divisions. It was 97 percent in Rangpur, 96 percent in Khulna and Dhaka divisions, 95 percent in Barisal, and 93 percent in Chittagong divisions.

Similar to TT2 coverage, TT3 coverage was found to be the highest (91 percent) in Rajshahi and the lowest (82 percent) in Sylhet and Chittagong divisions. The intermediary range of TT3 coverage rate in other divisions ranged from 83 percent in Barisal division to 88 percent in Rangpur, Khulna, and Dhaka divisions.

As regards to TT4 coverage, 75 percent from Rajshahi, 74 percent from Dhaka,73 percent from Khulna, 71 percent from Rangpur,70 percent from Chittagong 67 percent from Sylhet, and 66 percent mothers from Barisal divisions received it.

However, TT5 coverage was found to be the highest in Rajshahi (59 percent) and the lowest in Barisal divisions (49 percent). It was found to be 55 percent in Chittagong, and Khulna divisions, 58 percent in Dhaka, 53 percent in Sylhet, and 51 percent in Rangpur 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 F-11 presents valid TT vaccination coverage. It shows that TT1 coverage was at or over 94 percent in all divisions (see Figure F11). TT2 vaccination coverage was associated with PAB. The act of administering one dose of TT does not produce any antibody 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 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 2010 reveal that TT2 coverage was the highest in Rajshahi division (98 percent) and the lowest in Chittagong and Sylhet divisions (92 percent). It was 97 percent in Rangpur, 96 percent in Khulna and Dhaka and 94 percent in Barisal division.

Similarly, valid TT3 vaccination coverage was found to be the highest in Rajshahi (86 percent) and the lowest in Barisal (75 percent) divisions. In other divisions it was intermediary that ranged from 80 percent in Sylhet to 85 percent in Rangpur divisions. It was 84 percent in Khulna, 83 percent in Dhaka, and 78 percent in Chittagong divisions.

As regards to TT4 coverage, it was found to be the highest (66 percent) in Rajshahi, and the lowest (51 percent) in Barisal division, which was being followed by Chittagong (59 percent), Khulna and Rangpur (63 percent), Dhaka (62 percent), and Sylhet (60 percent)divisions.

On the contrary, TT5 coverage rate was found to be the highest in Rajshahi (45 percent) and the lowest in Barisal divisions (31 percent). It was 43 percent in Sylhet, 40 percent in Khulna, 39 percent in Dhaka and Rangpur, and 38 percent in Chittagong divisions.

3.6 Levels of the Coverage by the Survey Unit

For a quick reference, rates of the valid TT coverage among the women aged between 18-49 years by division/ city corporation are given in the Appendix along with the valid TT2 coverage rates among the mothers having 0-11 months old children by division/city corporation.

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 DCC. There was no difference in CCC, BCC, and KCC (99 percent) regarding the access to vaccination. The coverage rate of TT1 vaccination service was found to be 98 percent in RCC, and the lowest - 94 percent- in SCC.

Among the city corporations, crude TT2 coverage was found to be the highest in DCC (99 percent), and the lowest in SCC (93 percent). However, TT2 coverage was 98 percent in CCC, 97 percent in RCC and BCC, and 96 percent in KCC. Similarly, TT3 coverage rate was found to be the highest in RCC (91 percent) and the lowest in SCC (81 percent).The second highest coverage rate was observed in CCC (89 percent). TT3 coverage rates were 88 percent in BCC, and 83 percent in KCC. Moreover, the coverage rate of TT4 was the highest in RCC (80 percent), which was being followed by CCC (72 percent), BCC (71 percent), DCC (64 percent), KCC (62 percent), and SCC (60 percent).

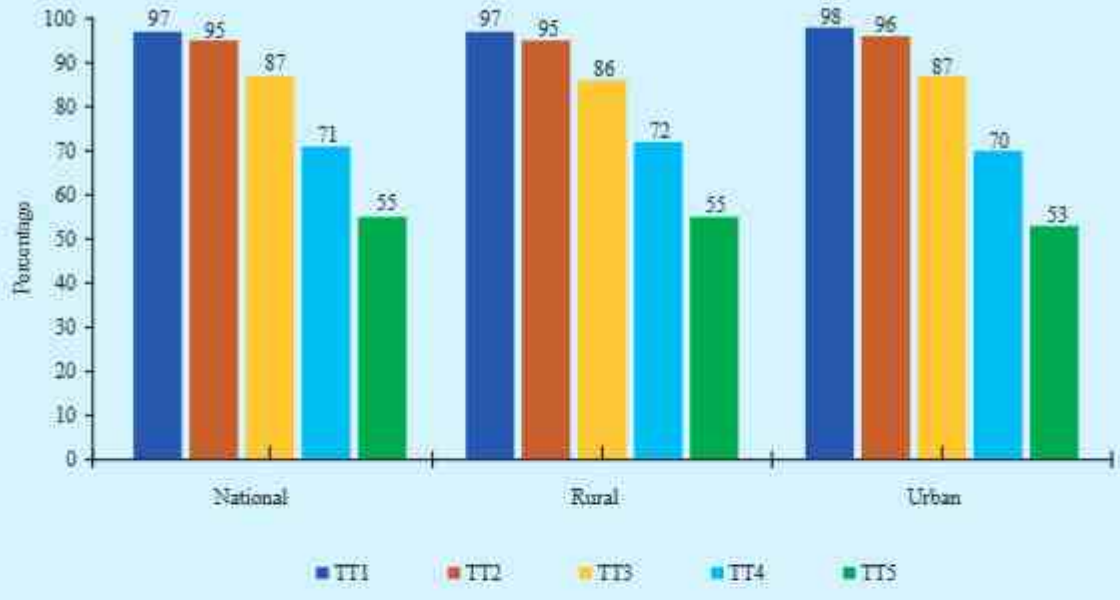
As it was expected, crude TT5 coverage was found to be the highest in RCC (63 percent) and the lowest in DCC (36 percent). TT5 coverage in other city corporations ranged between 45 percent in KCC and 59 percent in CCC. BCC and SCC had the same coverage rate (51 percent) (see Figure F12).

Figure F13 shows valid TT vaccination coverage. Valid TT2 coverage was found to be the highest in DCC (99 percent) and the lowest in SCC (93 percent). However, TT2 coverage rate was at or above 96 percent in other city corporations.

Among the city corporations', a much higher percentage of the mothers in Rajshahi City Corporation (91 percent) received the valid dose of TT3 than those residing in other city corporations. 84 percent mothers in BCC received valid TT3, which was being followed by KCC and CCC (80 percent), and SCC (74 percent). Like in the case of TT3, 73 percent of the mothers in RCC received TT4. More than half of the mothers in CCC and BCC (51 percent), and 49 percent of the mothers in KCC received it. However, TT4 coverage was found to be the lowest in DCC (45 percent).

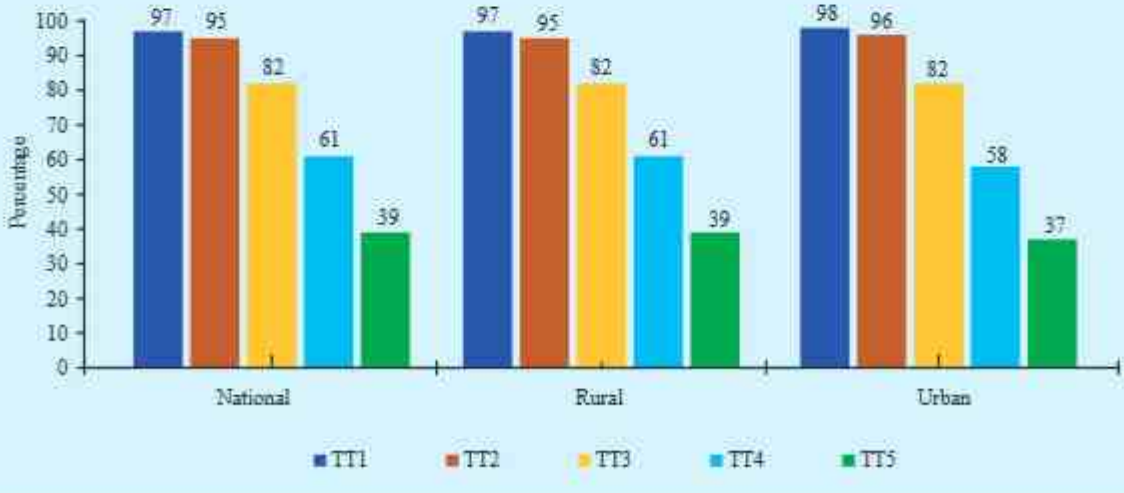
Similarly, TT5 coverage was found to be the highest in RCC (50 percent) and the lowest in DCC (27 percent). About one-third of the mothers in SCC (32 percent), BCC, KCC, and CCC (30 percent) received 5 doses of valid TT vaccine (see Figure F13).

Figure F1. Crude TT Vaccination Coverage among Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2010 (Card+History)



Source: CES 2010

Figure F2. Valid TT Vaccination Coverage among Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2010 (Card+History)

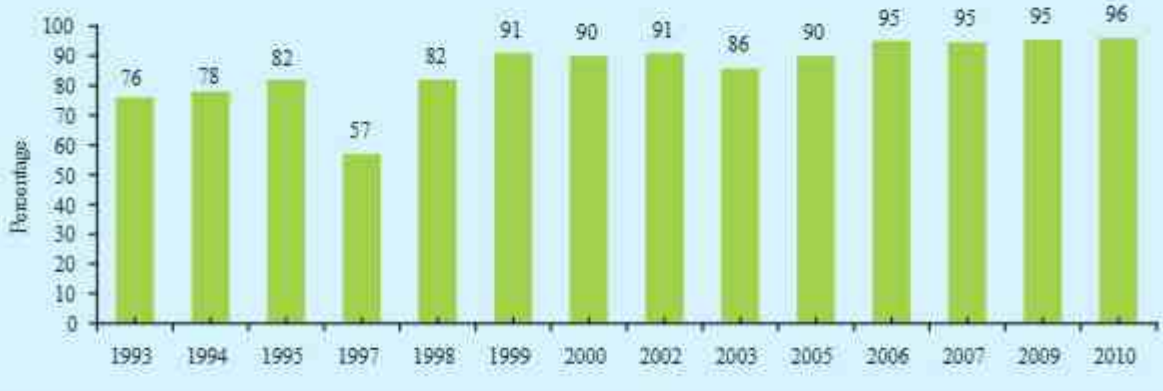


Source: CES 2010

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 2010 (Card+History)

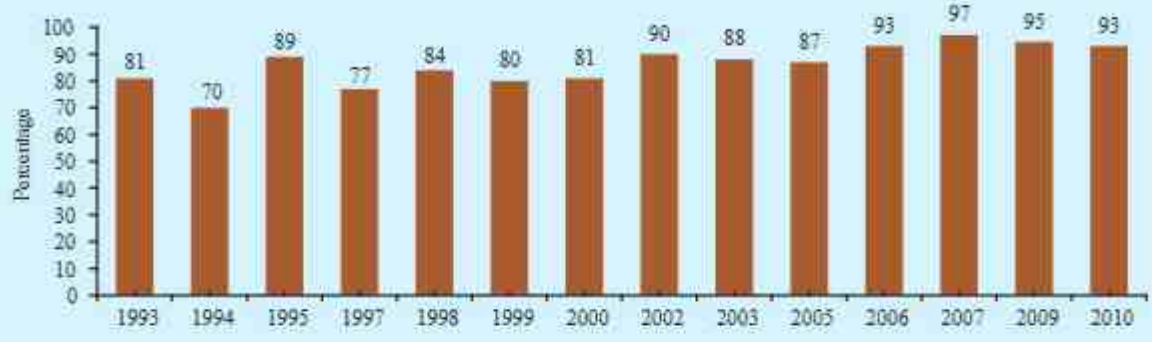
Source: Coverage Evaluation Survey 1991-1995, 1997-2002, 2003, 2005, 2006, 2007, 2009 & 2010
** Since the TT3 coverage rate was not available for 1992, it is given from 1993 instead of 1991.*

Figure F4. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Dhaka Division from 1993 to 2010 (Card + History)



Source: CES 2010

Figure F5. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Chittagong Division from 1993 to 2010 (Card + History)

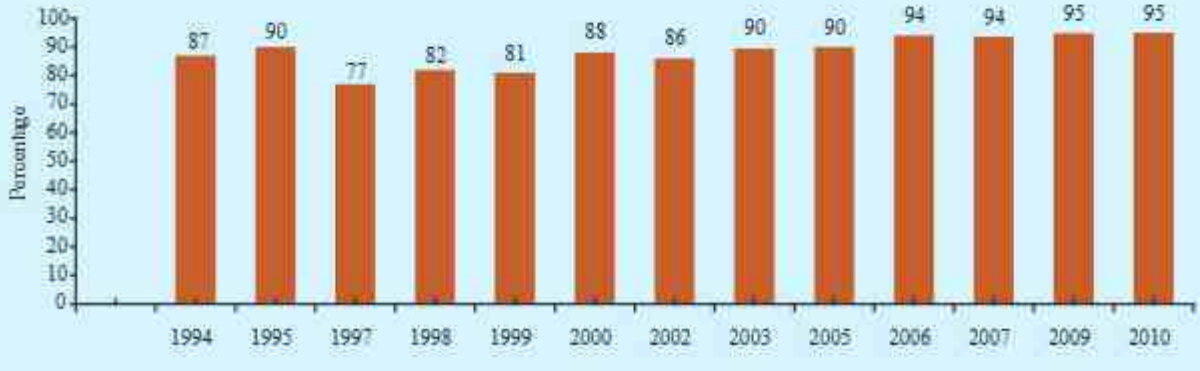


Source: CES 2010

Figure F6. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Rajshahi Division from 1993 to 2010 (Card + History)

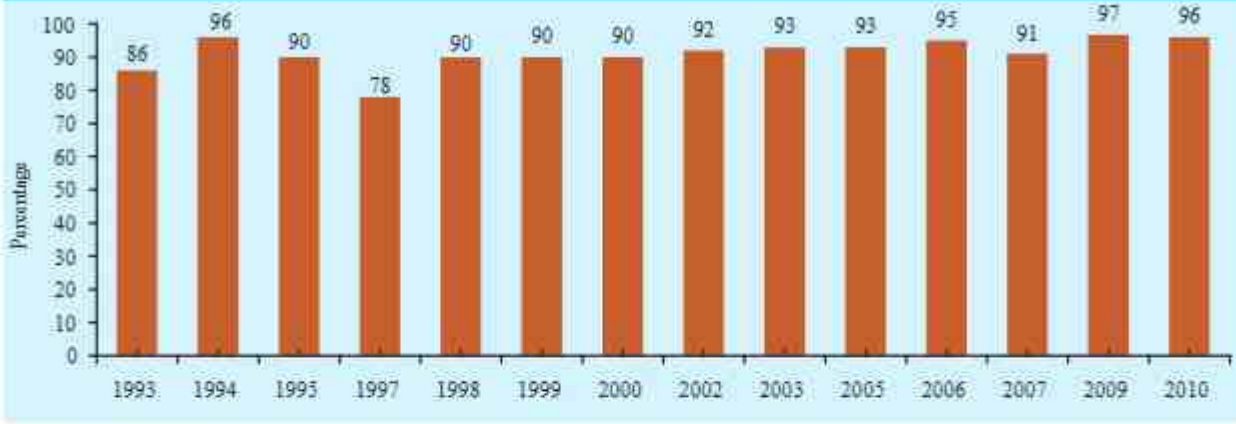
Source: CES 2010

Figure F7. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Barisal Division from 1994 to 2010 (Card + History)



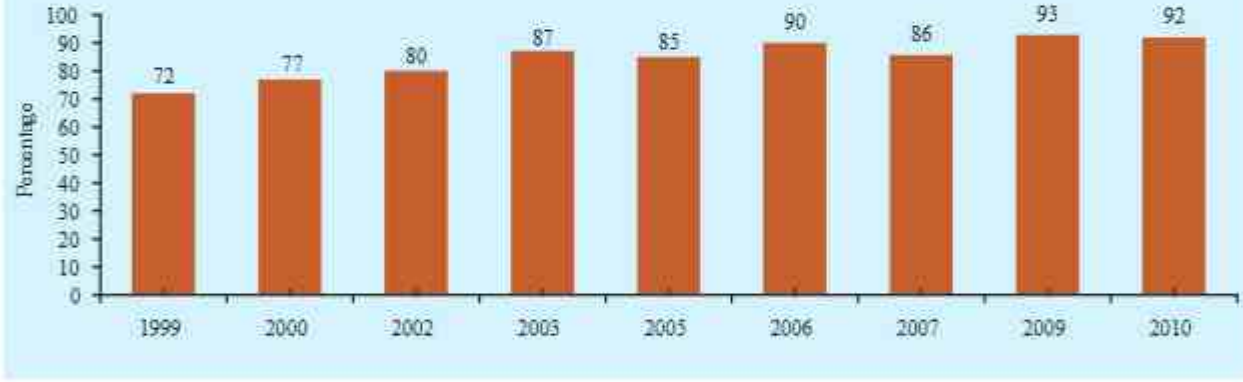
Source: CES 2010

Figure F8. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Khulna Division from 1993 to 2010 (Card + History)



Source: CES 2010

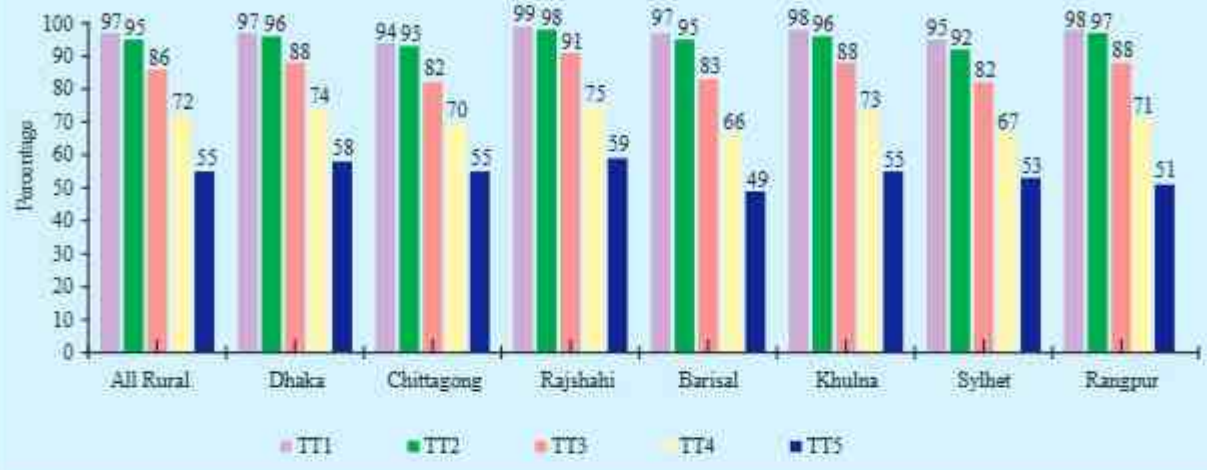
Figure F9. Crude TT2 Vaccination Coverage among Mothers of 0-11 Months Old Children by Sylhet Division from 1999 to 2010 (Card + History)



Source: CES 2010

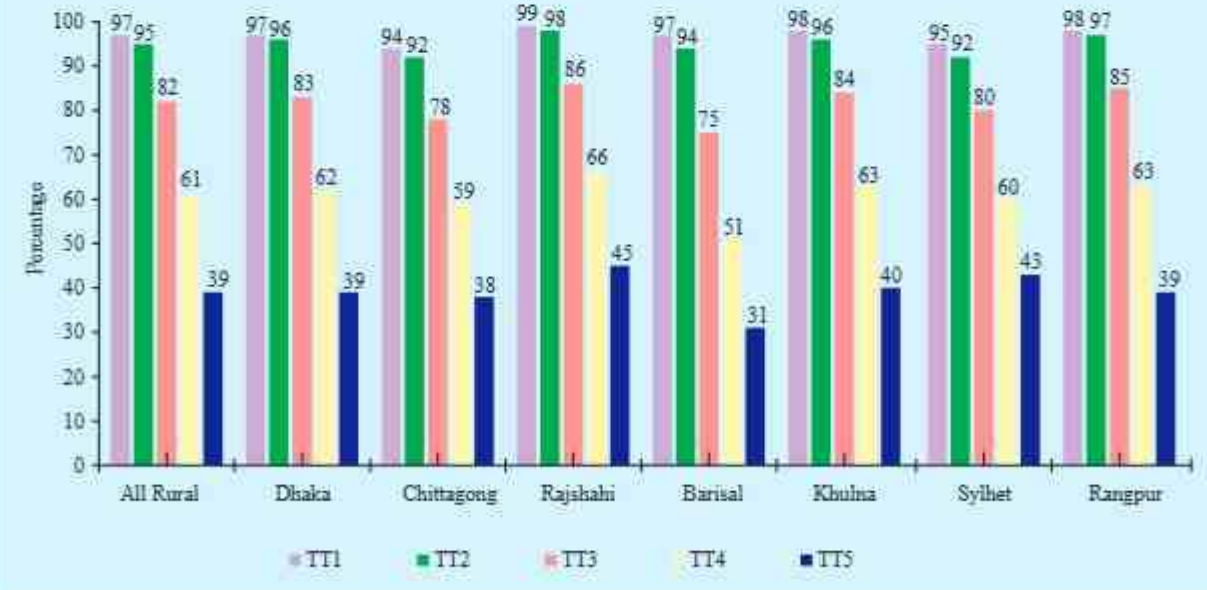
Note: Before 1999, Sylhet division was a part of Chittagong division
Source: Coverage Evaluation Surveys (CESs) for 1994-1995, 1997-2002,2003, 2005, 2006, 2007, 2009 & 2010

Figure F10. Crude TT Vaccination Coverage among Mothers of 0-11 Months Old Children in Rural Areas by Division in 2010 (Card+History)



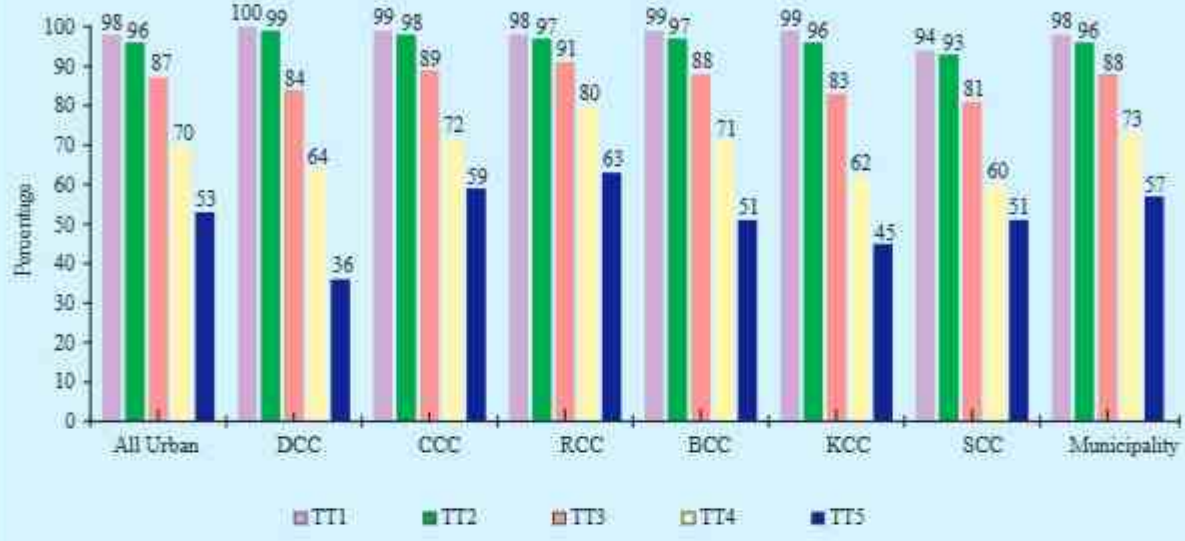
Source: CES 2010

Figure F11. Valid TT Vaccination Coverage among Mothers of 0-11 Months Old Children in Rural Areas by Division in 2010 (Card+History)



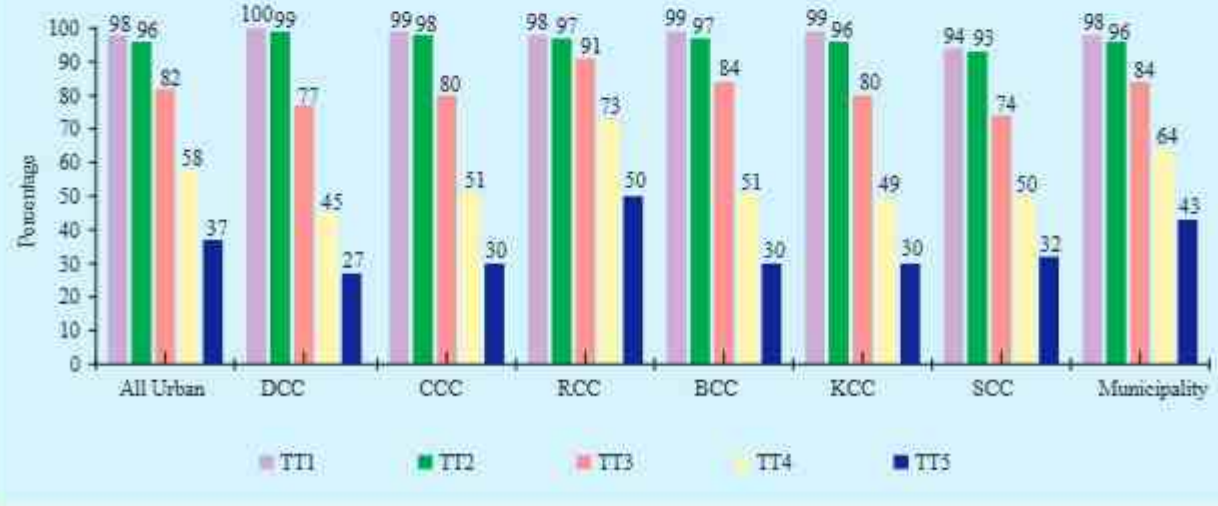
Source: CES 2010

Figure F12. Crude TT Vaccination Coverage among Mothers of 0-11 Months Old Children in Urban Areas by City Corporation/ Municipality in 2010 (Card+History)



Source: CES 2010

Figure F13. Valid TT Vaccination Coverage among Mothers of 0-11 Months Old Children in Urban Areas by City Corporation/Municipality in 2010 (Card+History)



Source: CES 2010

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) mothers reported that they had it. However, a little over half of them (54 percent) mentioned that they lost it. Fifty three percent of the mothers residing in rural areas, and 59 percent of them in urban areas lost the card. Likewise, card retention rate was found to be 40 percent across the country with 6 percent difference between rural (41 percent) and urban areas (35 percent) (see Figure G1).

By rural division, card retention rate was the highest in Rajshahi (50 percent) and the lowest in Dhaka and Barisal (34 percent). The intermediary rates ranged from 39 percent in Chittagong to 47 percent in Rangpur (see Figure G2). However, card retention rates in Sylhet and Chittagong divisions were 43 percent and 39 percent, respectively.

Among the city corporations, card retention rate was found to be the highest in KCC (43 percent) and the lowest in SCC (27 percent). In other city corporations, the rates were 36 percent in CCC, 35 percent in DCC and BCC, and 34 percent in RCC (see Figure G3).

The rural-urban analysis shows that card retention rate is 6 percent higher in rural areas compared to that in urban areas. Among the rural areas by division, it was the lowest in Dhaka and Barisal divisions. 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 TT3 and the incidence rate was decreasing for the subsequent doses. Fourteen 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 revealed 13 percent across the country - 13 percent in rural and 14 percent in urban areas. However, for TT5 the rate was 13 percent nationally. Incidence of invalid TT5 doses was similar both in urban and rural areas.

In rural areas by division, 20 percent of the mothers were found to have received invalid TT3 in Barisal division. The rate of invalid TT3 was revealed to be the lowest in Sylhet and Rangpur divisions (9 percent). It was 17 percent in Dhaka, which was being followed by Chittagong (15 percent), Khulna (12 percent), and Rajshahi (10 percent) divisions.

As regard to the incidence of invalid TT4 dose, it was found to be the highest in Barisal (19 percent) and the lowest in Rangpur divisions (9 percent). Furthermore, invalid doses of TT4 were 15 percent in Dhaka and Chittagong, 12 percent in Khulna, and 10 percent in Sylhet divisions. In contrast, the invalid rate of TT5 dose was found to be the lowest in Sylhet (7 percent) and the highest in Barisal (18 percent). In other divisions, the rate ranged between 10 percent in Rajshahi and Rangpur and 16 percent in Dhaka divisions (see Figure G5).

By city corporation, the highest rate of invalid TT3 dose was revealed in CCC (33 percent) and the lowest in RCC (4 percent). Sixteen percent mothers in BCC, 14 percent in SCC, 13 percent in KCC, and 12 percent in DCC received invalid TT3 doses. On the contrary, 21 percent mothers in BCC, 19 percent in CCC, 16 percent in DCC, 15 percent in SCC, 14 percent in KCC, and 8 percent in RCC received invalid TT4 doses.

However, a little over one- fourth (27 percent) of the mothers in CCC received invalid TT5 dose. The incidence of invalid TT5 dose was 22 percent in BCC, which was being followed by SCC (15 percent), KCC (10 percent), RCC (10 percent), and DCC (7 percent) (see Figure G6).

The analysis of the invalid TT2 dose shows that less than 1 percent mothers in all rural divisions received it. Incidence of invalid TT2 dose was similar in all city corporations. The highest invalid dose for TT3-TT5 can be minimized through increasing the 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 the TT Vaccination of Mothers

Screening the TT status of the mothers is an important means to increase TT vaccination coverage among 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 access to vaccination service. This data shows the opportunity to vaccinate the mothers also for the subsequent required doses.

Mothers were asked whether the vaccinator screened their TT status while the health workers visited the site to vaccinate their children. Nationally, 42 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 (41 percent in urban and 42 percent in rural) (see Figure G7).

In rural areas by division, the proportion of the screened mothers was found to be the highest in Rangpur (58 percent) and the lowest in Sylhet (28 percent) divisions. The proportion in other divisions ranged between 37 percent in both Khulna and Dhaka and 45 percent in Rajshahi divisions (see Figure G8).

Among the city corporations, the proportion of the screened mothers was found to be the highest in KCC (63 percent), which was being followed by BCC (56 percent), CCC (43 percent), RCC (34 percent), SCC (28 percent), and DCC (9 percent) (see Figure G9).

The findings shown above indicate that the missed opportunity was availed by 42 percent of the mothers across the country. Among the rural divisions, the proportion was found to be the lowest in Sylhet (28 percent screened) and the highest in Barisal (52 percent). In contrast, among the city corporations the rate of one's availing himself/herself of the missed opportunity was the highest in KCC (63 percent screened) and the lowest in DCC (9 percent screened).

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 2010 estimated the PAB of newborn babies through examining the time of receiving TT doses against the recommended TT vaccination schedule (shown in Table A10). In the country, 92 percent of the children are found to be protected at birth against tetanus. The rural-urban variation was 1 percentage point (92 percent in rural and 93 percent in urban areas). The trend of the nation in this regard is shown in Figure G11. It shows a slow but gradual increase with minor fluctuations in PAB since 1999. PAB against tetanus increased by 9 percent - from 83 percent in 1999 to 92 percent in 2010. However, compared to that in 2009, PAB status decreased by 1 percentage point - from 93 percent in 2009 to 92 percent in 2010.

Among the rural divisions, PAB against tetanus was found to be the highest in Rajshahi (95 percent) and the lowest in Sylhet (88 percent). Ninety four percent of the children were protected at birth against tetanus in Khulna and Rangpur divisions, which was being followed by Dhaka and Barisal (91 percent), and Chittagong (89 percent) divisions (see Figure G12).

In contrast, the proportion of the children protected at birth against tetanus was found to be the highest in RCC and DCC (96 percent) and the lowest in SCC (88 percent). Ninety five percent of the children were protected at birth in CCC, which was being followed by BCC (93 percent) and KCC (89 percent) (see Figure G13).

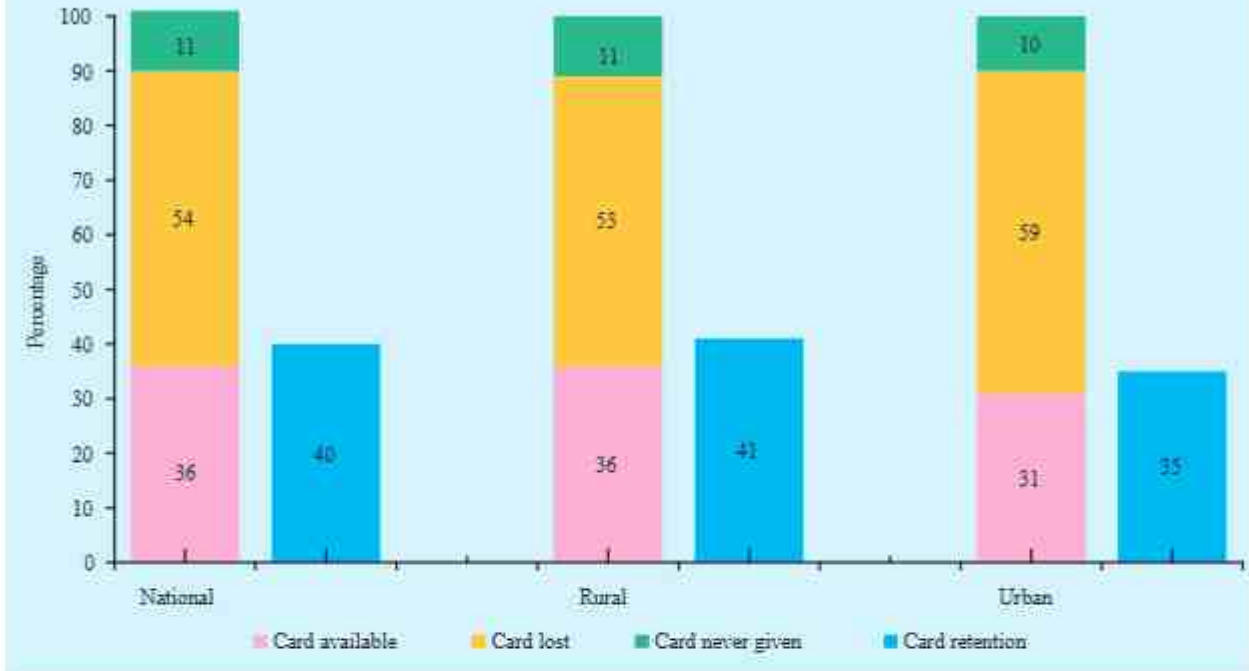
3.12 TT2 Coverage and PAB Status

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, 92 percent of the newborn babies were protected as against 95 percent by TT2 coverage. By age, differences between PAB and TT2 are more at the age of 30 and above. Seventy three percent of the newborn babies whose mothers' age was 40 and/ or above were protected at birth against tetanus with 78 percent coverage of TT2 dose. However, the difference was found smaller among the lower age groups. There was a marginal 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 93 percent) (see Figure G14).

A similar trend was observed in both the coverage rate and PAB status among the rural areas by division and urban areas by city corporation. 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 divisions and city corporations. Both in the rural divisions and city corporations, there was almost no difference between TT2 coverage rate and PAB in the age group of 20-24 years old mothers (see Figures G15-G16).

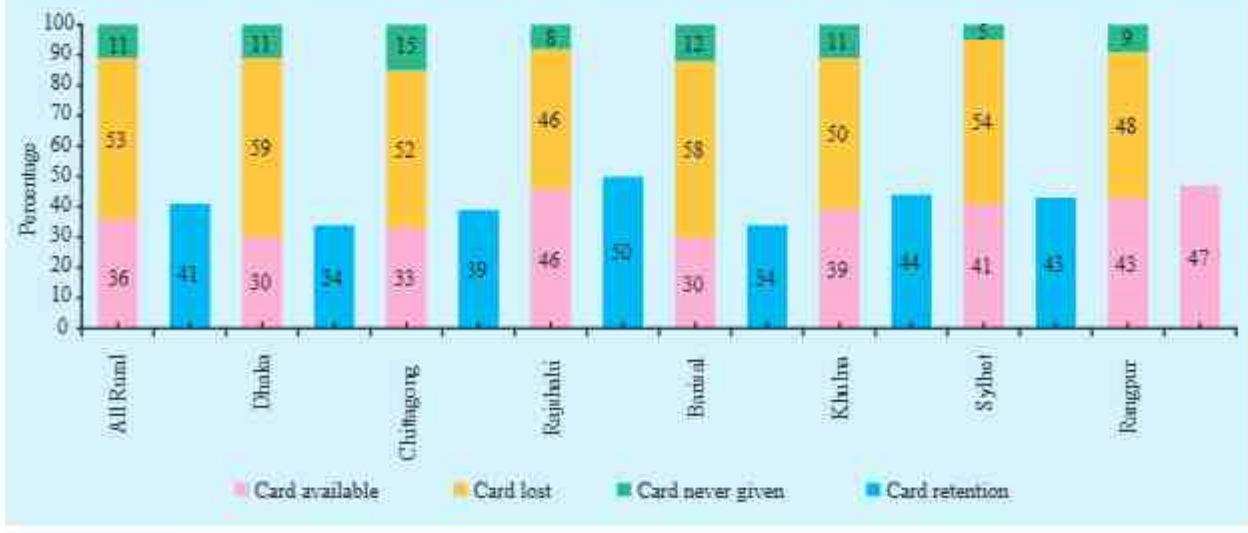
It is important to mention here that the coverage rate of TT2 dose and PAB status is not always related in all cases. For example, a mother can give birth after 4 years of receiving TT2 dose. She can receive the 3rd dose of TT during her pregnancy period. Then the newborn is protected in relation to 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 2010



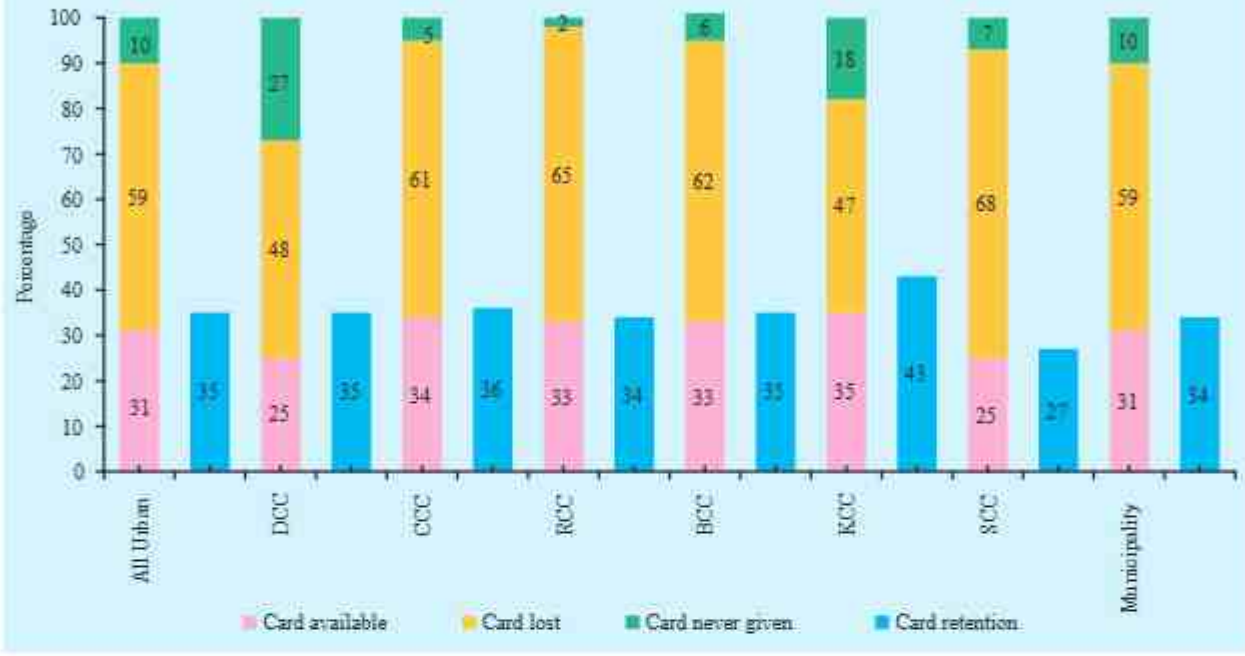
Source: CES 2010

Figure G2. TT Vaccination Card Status among Mothers of 0-11 Months Old Children in Rural Areas by Division in 2010



Source: CES 2010

Figure G3. TT Vaccination Card Status among Mothers of 0-11 Months Old Children in Urban Areas by City Corporation/ Municipality in 2010



Source: CES 2010

Figure G4. Incidence of Invalid TT Doses among Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2010 (Card+History)

Source: CES 2010

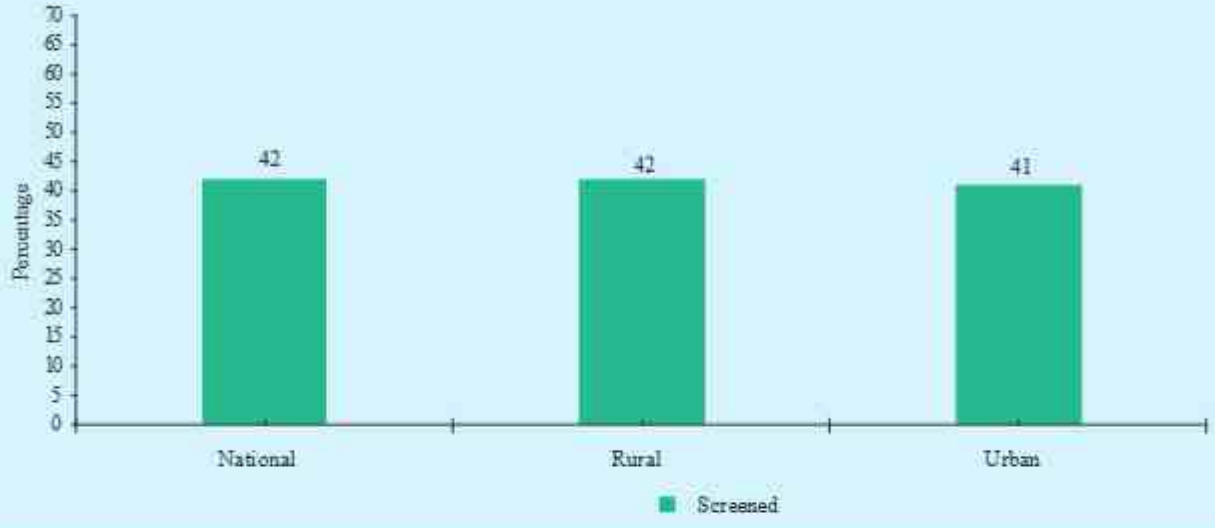
Figure G5. Incidence of Invalid TT Doses among Mothers of 0-11 Months Old Children in Rural Areas by Division in 2010 (Card+History)

Source: CES 2010

Figure G6. Incidence of Invalid TT Doses among Mothers of 0-11 Months Old Children in Urban Areas by City Corporation/ Municipality in 2010 (Card+History)

Source: CES 2010

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 2010

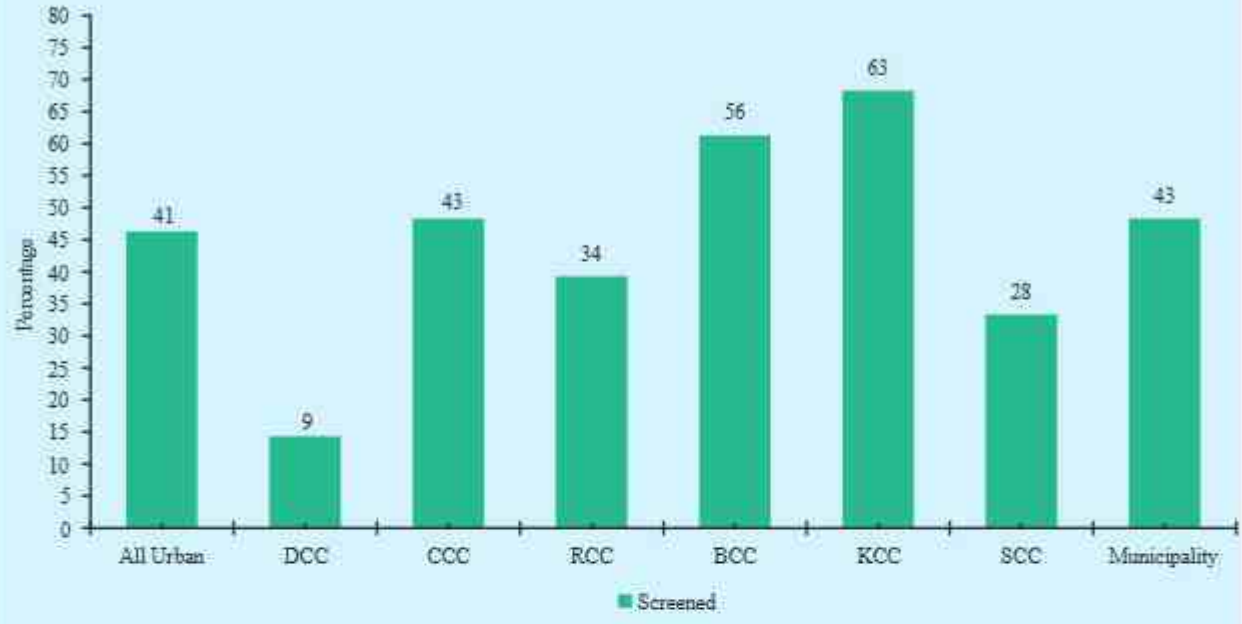


Source: CES 2010

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 2010

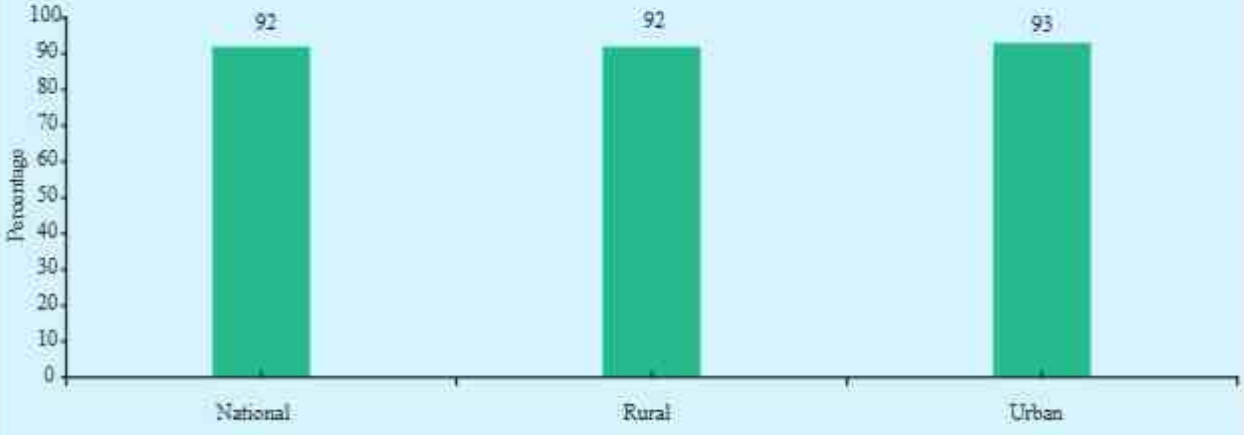
Source: CES 2010

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 2010



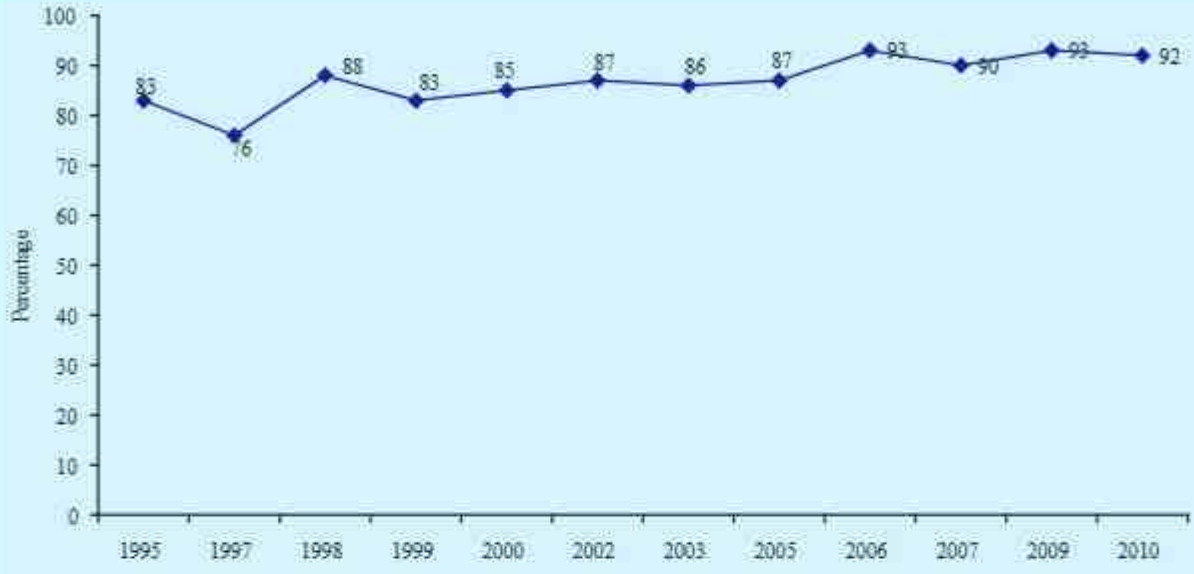
Source: CES 2010

Figure G10. Percentage of Newborns Protected at Birth (PAB) against Tetanus by National, Rural and Urban Areas in 2010



Source: CES 2010

Figure G11. Percentage of Newborns Protected at Birth against Tetanus at National Level from 1995 to 2010



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

Figure G12. Percentage of Newborns Protected at Birth against Tetanus in Rural Areas by Division in 2010

Source: CES 2010

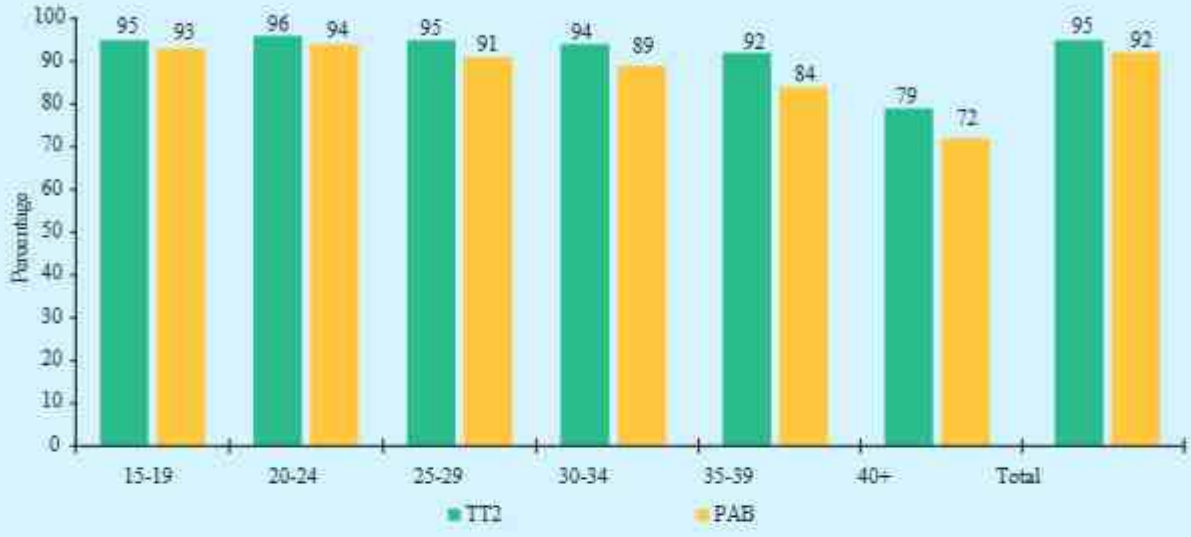
Figure G13. Percentage of Newborns Protected at Birth against Tetanus in Urban Areas by City Corporation/ Municipality in 2010

Source: CES 2010

Figure G14. Percentage of Mother Received TT2 and Percentage of New Born Protected at Birth by Age Group of Mother in 2010

Source: CES 2010

Figure G15. Percentage of Mother Received TT2 and Percentage of New Born Protected at Birth by Age Group of Mother in Rural Areas in 2010



Source: CES 2010

Figure G16. Percentage of Mother Received TT2 and Percentage of New Born Protected at Birth by Age Group of Mother in Urban Areas in 2010

Source: CES 2010

3.13 Mothers' Knowledge about TT Vaccination

In total, a woman requires 5 doses of TT vaccine for gaining lifetime tetanus antibody. EPI CES 2010 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 50 percent (53 percent) mothers mentioned about 5 doses. However, the urban-rural analysis shows 8 percent difference between the mother's living in urban areas and those belonging to rural areas. Fifty two percent of them in rural ares mentioned about 5 doses as against 60 percent urban mothers (see Figure H1).

In rural areas by division, the highest percentage of mothers in Rajshahi (57 percent), Dhaka, Khulna, and Sylhet divisions (55 percent) reported about 5 doses while 49 percent in Rangpur division gave the same answer. However, the percentage of mothers with correct knowledge in other divisions ranged from 41 percent in Barisal to 46 percent in Chittagong divisions (see Figure H2).

Among the city corporations', the percentage of mothers with correct knowledge was found to be the highest in RCC (85 percent) and the lowest in CCC (45 percent). The percentages were 70 percent in DCC and KCC, 49 percent in SCC, and 48 percent in BCC (see Figure H3)

Overall, 40 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 (41 percent in rural areas and 33 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 through courtyard meeting, interpersonal communication, and counseling in the EPI session needs to be ensured.

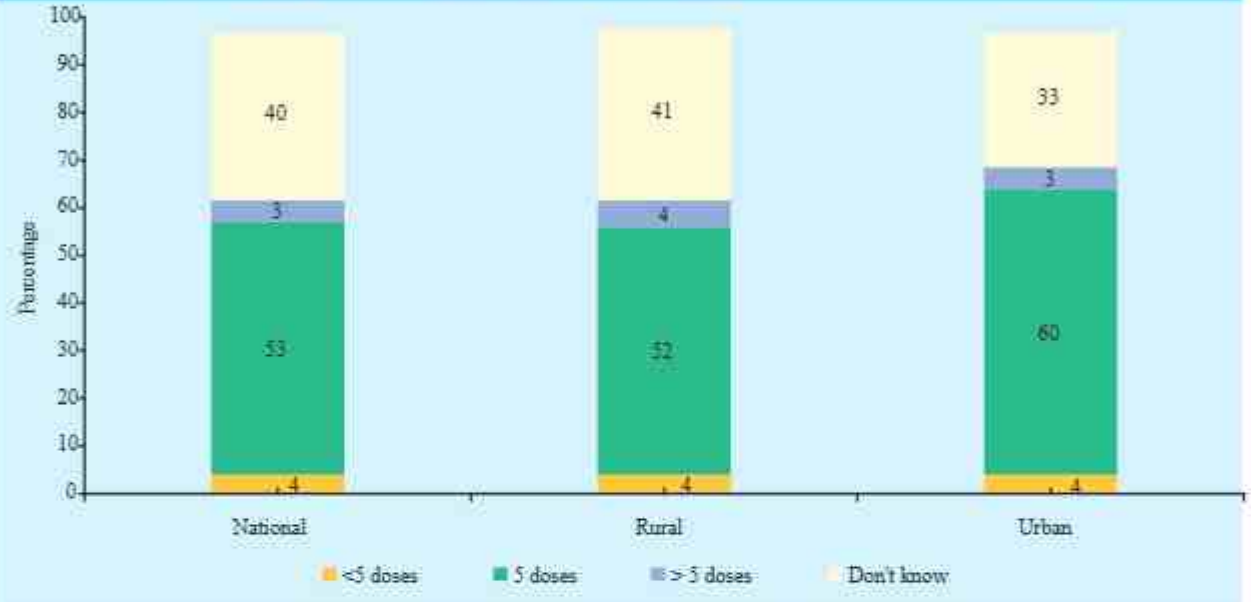
3.14 Sources of TT Vaccination

Sources of TT1 vaccination were investigated in EPI CES 2010. Throughout the country an overwhelming majority (91 percent) of the mothers reported about the government outreach centers while only 7 percent of them referred to the government hospitals. A small percentage (2 percent) reported about NGOs and private health facilities. However, sources varied a little by area type. Ninety four percent mothers in rural areas received TT1 from the government sources as against 78 percent in urban areas. Eight percent mothers reported about NGOs and private sources in urban areas as against less than 2 percent of them residing in rural areas (see Figure I1).

Similar to the national findings, at or above 92 percent of the mothers received TT1 from the government outreach centers in Dhaka and Chittagong divisions, 94 percent in Khulna, and Sylhet divisions. Rangpur division had the highest utilization of government outreach centers (97 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 RCC (95 percent) and the least in DCC (52 percent). On the contrary, the government hospitals/clinics were mostly utilized in BCC (19 percent) and the least in RCC (2 percent). Furthermore, delivery of vaccination services by NGOs was most prevalent in DCC (35 percent) and the least in RCC and SCC (0.5 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 2010

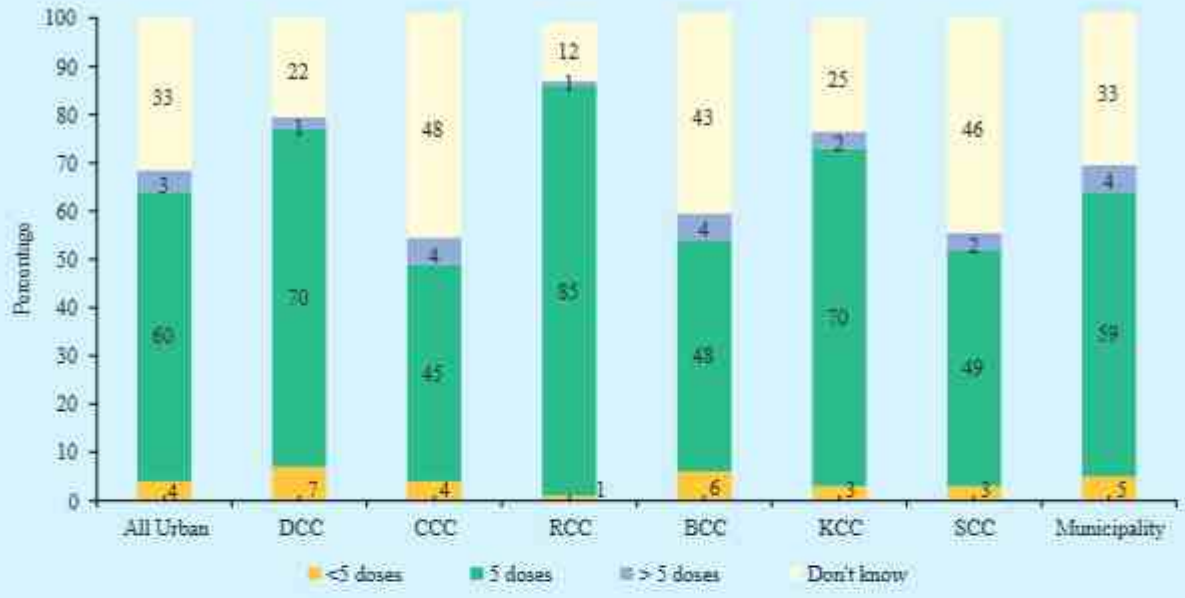


Source: CES 2010

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 2010

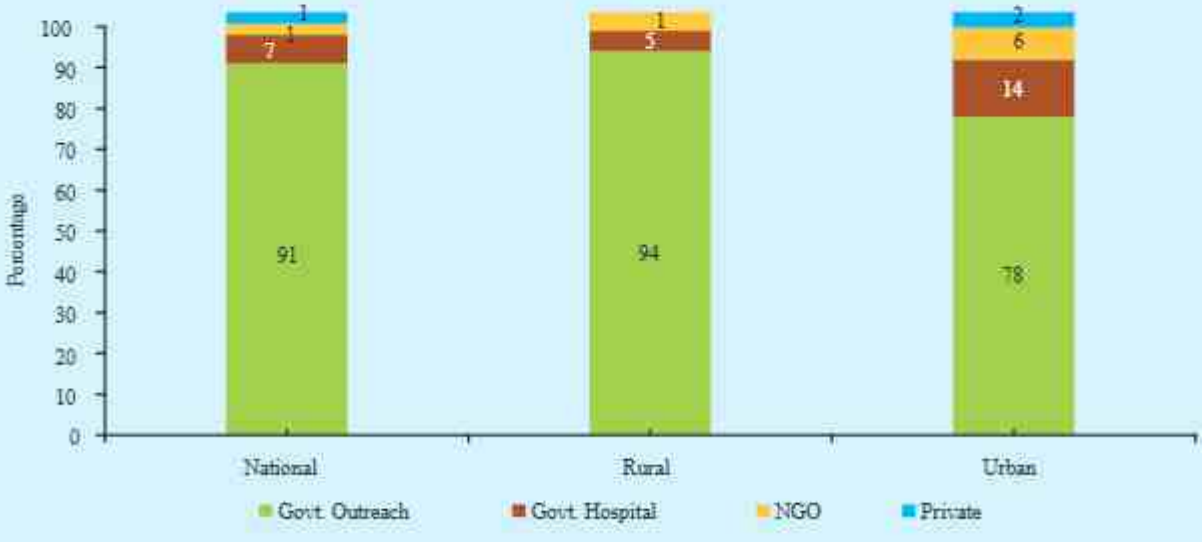
Source: CES 2010

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 2010



Source: CES 2010

Figure I1. Sources of TT1 Vaccination among Mothers of 0-11 Months Old Children by National, Rural and Urban Areas in 2010

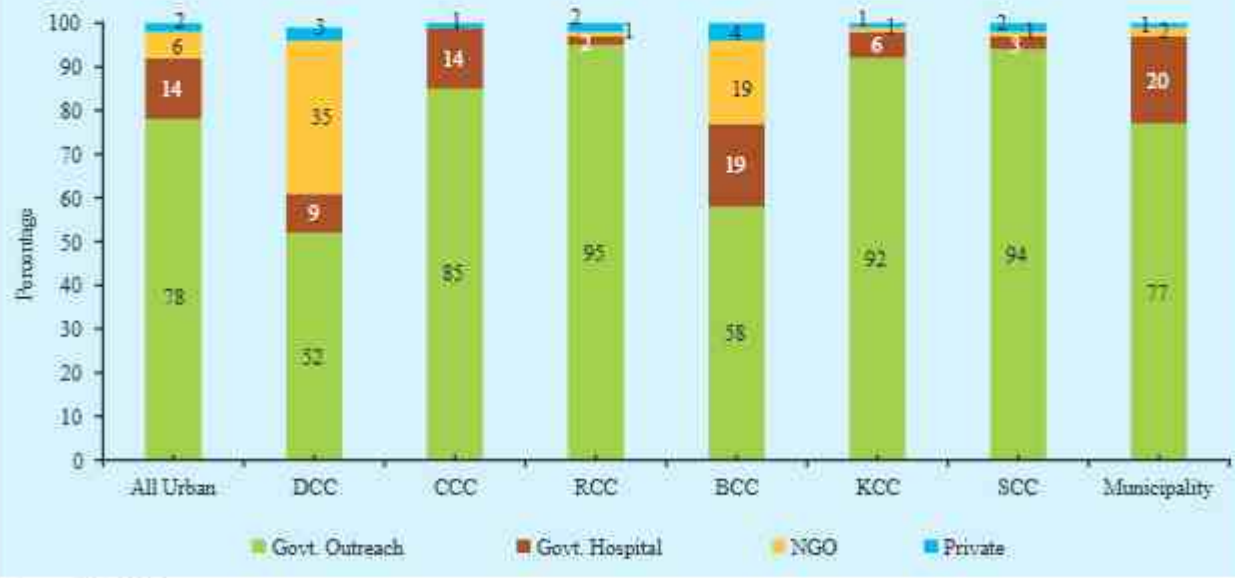


Source: CES 2010

Figure I2. Sources of TT1 Vaccination among Mothers of 0-11 Months Old Children in Rural Areas by Division in 2010

Source: CES 2010

Figure I3. Sources of TT1 Vaccination among Mothers of 0-11 Months Old Children in Urban Areas by City Corporation/ Municipality in 2010



Source: CES 2010

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 15-49 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.

4.1 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

4.1.1 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- were assessed in CES 2010 among the women with childbearing age (18-49 years). 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 47 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 those 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, 89 percent TT2, 79 percent TT3, and 63 percent TT4. A similar declining trend was observed in both rural and urban areas. Ninety two percent of the surveyed women in rural areas received TT1 as against 93 percent in urban areas. Besides, TT2 coverage rate was 89 percent, TT3 79 percent, and TT4 63 percent in rural areas as against the coverage rate of 90 percent for TT2, 80 percent for TT3, and 64 percent for TT4 in urban areas (see Figure J1).

Figure J2 illustrates the valid TT vaccination coverage. It indicates that more than one-third (33 percent) of the total surveyed women received 5 doses of TT vaccination across the country - 33 percent in rural and 34 percent in urban areas. The coverage of TT2 was 89 percent nationally. By specific area, it was 89 percent in rural and 90 percent in urban areas. Irrespective of areas a decreasing trend in the coverage of TT3 and TT4 was observed. Seventy six percent of the surveyed women received TT3, and more than half of them (53 percent) TT4. However, by area 75 percent of them in rural and 76 percent in urban areas received the valid 3 doses of TT vaccine. More than half of the women both in rural (53 percent) and urban (54 percent) areas received the valid 4 doses of TT vaccine.

The findings above show that the immune status against tetanus was slightly lower in rural areas compared to that in urban 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 and Rangpur divisions had the highest crude TT1 vaccination coverage (94 percent) and Chittagong the lowest crude coverage (87 percent). The coverage rates in other divisions were intermediary that ranged between 90 percent in Sylhet and 93 percent in Khulna and Dhaka divisions.

However, the highest TT2 coverage was observed in Rajshahi (92 percent), which was being followed by Rangpur (91 percent), Dhaka (90 percent), Khulna (89 percent), Barisal (87 percent), Sylhet (86 percent), and Chittagong (84 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 Rajshahi division (84 percent) and the lowest in Sylhet and Chittagong divisions (75 percent). The coverage rates in other divisions were 80 percent in Dhaka and Rangpur, 78 percent in Barisal, 76 percent in Khulna, and 75 percent in Chittagong. Similar to TT3, TT4 coverage was also the highest in Rajshahi (70 percent) and the lowest in Khulna (59 percent). Coverage in other divisions was in intermediary level that ranged between 61 percent in Barisal and 66 percent in Dhaka.

Moreover, TT5 vaccination coverage was the lowest in Khulna (42 percent) and the highest in Rajshahi (52 percent). TT5 coverage rates were 42 percent in Khulna, 43 percent in Rangpur, 45 percent in Chittagong, 47 percent in Sylhet, and 49 percent in Dhaka 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 at or over 90 percent in all divisions. The lowest TT1 coverage rate was revealed in Chittagong division (87 percent). It should be mentioned here that TT1 dose indicates the entry in TT vaccination service.

Likewise, TT2 coverage was at or above 86 percent in Sylhet, 87 percent in Barisal, 89 percent in Khulna, 90 percent in Dhaka, 91 percent in Rangpur, and 92 percent in Rajshahi divisions. The lowest TT2 coverage rate was found in Chittagong division (84 percent).

TT3 is administered at least after 6 months of the administering of TT2. A little over three-fourth of the women (82 percent) in Rajshahi division received 3 doses of TT vaccine as against 78 percent of the women in Rangpur, 76 percent in Dhaka, 73 percent in Barisal, Khulna, and Sylhet, and 72 percent in Chittagong divisions.

Furthermore, 63 percent women in Rajshahi received TT4, which was being followed by Sylhet and Rangpur (56 percent), Dhaka (54 percent), Chittagong (51 percent), Khulna (49 percent), and Barisal (47 percent).

The final goal of TT vaccination is to provide with the desired immune status of the recipients against tetanus for their whole reproductive life by giving them 5 doses of TT vaccines. Hence, the valid TT5 coverage indicates that a woman achieved immunity against tetanus for her whole reproductive life. Figure J4 shows that compared to those residing in other divisions more percentage of women in Rajshahi division (42 percent) received all the five doses of TT vaccine. The lowest TT5 coverage was revealed in Barisal division (26 percent), which was being followed by Dhaka and Rangpur (33 percent), Chittagong (32 percent), and Khulna divisions (29 percent).

4.4 Levels of the Coverage by the Survey Unit

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

4.5 TT Vaccination Coverage by City Corporation

Similar to the assessment of TT vaccination coverage in rural areas by division, CES 2010 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.
10 pt

Crude TT Vaccination Coverage

Figure J5 shows crude TT vaccination coverage of all doses. TT1 dose indicates the entry in TT vaccination service. Ninety nine percent women in Khulna City Corporation (KCC) received TT1 as against the lowest - 85 percent- in Sylhet City Corporation (SCC). However, 93 percent women in Barisal City Corporation (BCC), 90 percent in Rajshahi City Corporation (RCC), and 88 percent in Chittagong City Corporation (CCC) received TT1 vaccine. TT2 is received at least 28 days after TT1. As it was expected, TT2 coverage was found to be lower than that in TT1 in every city corporation. Among the city corporations, TT2 coverage was revealed to be the highest in Khulna City Corporation (97 percent) and the lowest in Sylhet City Corporation (82 percent). TT2 coverage rates in other city corporations were intermediary that ranged between 91 percent in Dhaka City Corporations and 86 percent in Chittagong City Corporation. The rate was 91 percent in Barisal City Corporation, which was being followed by Rajshahi City Corporation (88 percent).

Likewise, TT3 coverage rate was found at or above 71 percent in Sylhet City Corporation. It was 73 percent in Dhaka City Corporation, 77 percent in Barisal City Corporation, 79 percent in Chittagong City Corporation, 82 percent in Rajshahi City Corporation, and the highest - 85 percent - in Khulna City Corporation.

Furthermore, TT4 coverage rate was found to be the highest in Rajshahi City Corporation (70 percent), which was being followed by Khulna City Corporation (69 percent), Chittagong City Corporation (66 percent), Barisal City Corporation (63 percent), Dhaka City Corporation (54 percent), and Sylhet City Corporation (53 percent).

Among the surveyed women, crude TT5 coverage was found to be the highest in Rajshahi City Corporation and Khulna City Corporation (53 percent). The lowest TT5 coverage rate was noticed in Dhaka City Corporation (33 percent). TT5 coverage rates in other city corporations ranged between 40 percent in Sylhet City Corporation and 52 percent in Chittagong City Corporation (see Figure J5).

Valid TT Vaccination Coverage

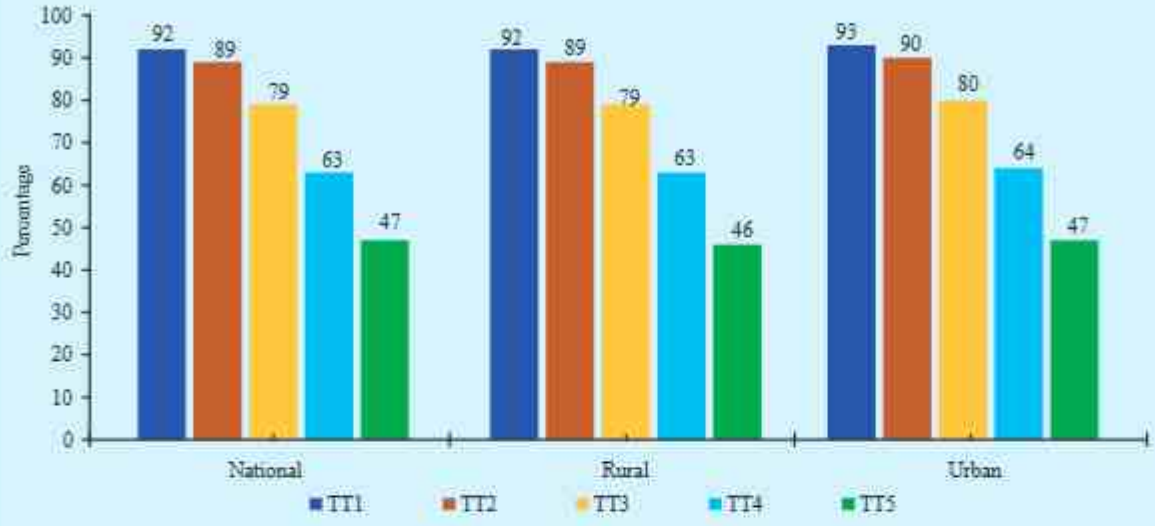
Valid TT vaccination coverage is shown in Figure J6. Since there is no question of validity of TT1, the analysis of TT1 is dropped from this section. TT2 coverage was found to be the highest in Khulna City Corporation (97 percent) and the lowest in Sylhet City Corporation (82 percent). The coverage in other city corporations was intermediary that ranged from 86 percent in Chittagong City Corporation to 91 percent in Dhaka City Corporation.

As it was expected, compared to that in TT2, TT3 coverage rates were lower in all city corporations. TT3 coverage was found to be the highest in KCC (84 percent) and the lowest in SCC (66 percent). However, TT3 coverage was found to be 80 percent in Rajshahi City Corporation (RCC), which was being followed by BCC (72 percent), CCC (71 percent), and DCC (70 percent).

Furthermore, TT4 coverage was found to be the highest in RCC (65 percent) and the lowest in BCC (39 percent). TT4 coverage rates in other divisions ranged between 45 percent in DCC and CCC and 64 percent in KCC. It was 47 percent in SCC.

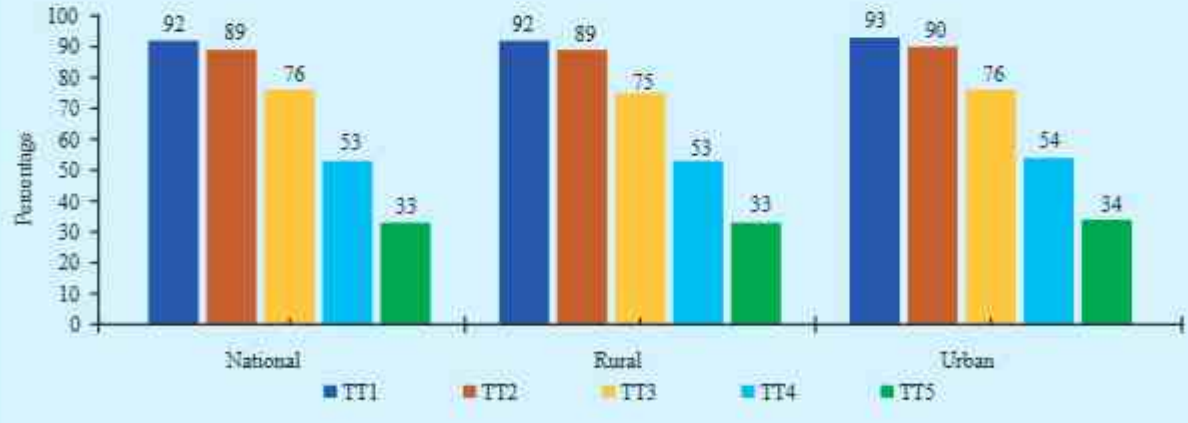
The coverage of TT5 is the ultimate goal of TT vaccination in EPI program. It was the highest in RCC (49 percent) and the lowest in CCC (21 percent). The coverage rates in other city corporations were 48 percent in KCC, 30 percent in SCC, 29 percent in DCC , and 23 percent in BCC, respectively (see Figure 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 2010 (Card+History)



Source: CES 2010

Figure J2. Valid TT Vaccination Coverage among Women Aged 18-49 Years Old by National, Rural and Urban Areas in 2010 (Card+History)

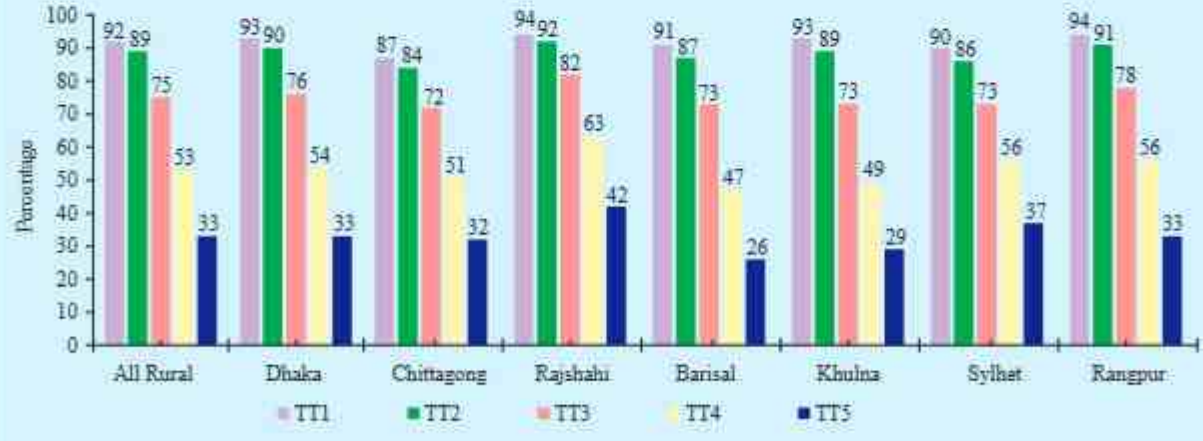


Source: CES 2010

Figure J3. Crude TT Vaccination Coverage among Women Aged 18-49 Years Old in Rural Areas by Division in 2010 (Card+History)

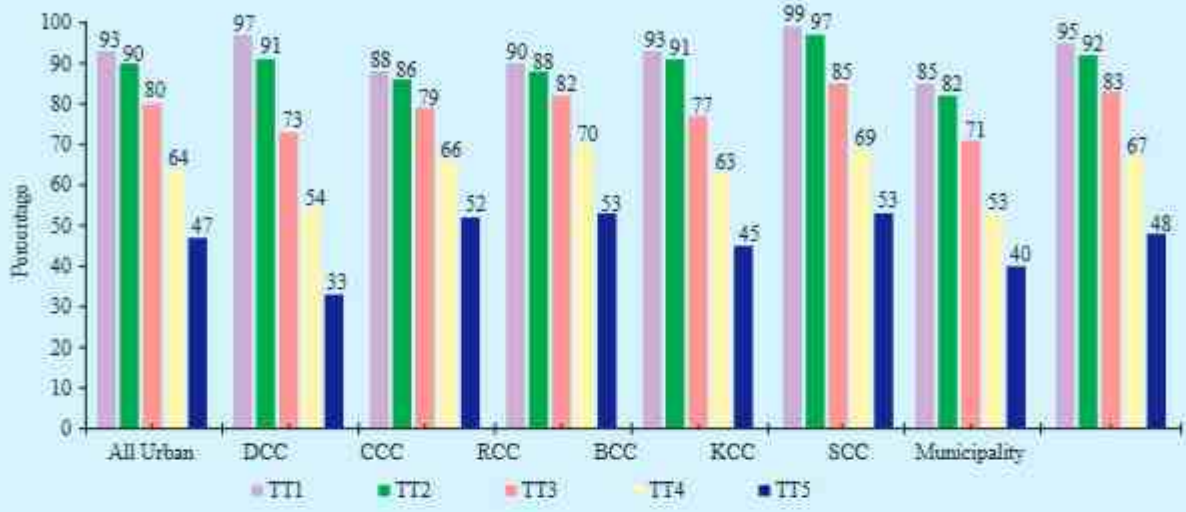
Source: CES 2010

Figure J4. Valid TT Vaccination Coverage among Women Aged 18-49 Years Old in Rural Areas by Division in 2010 (Card+History)



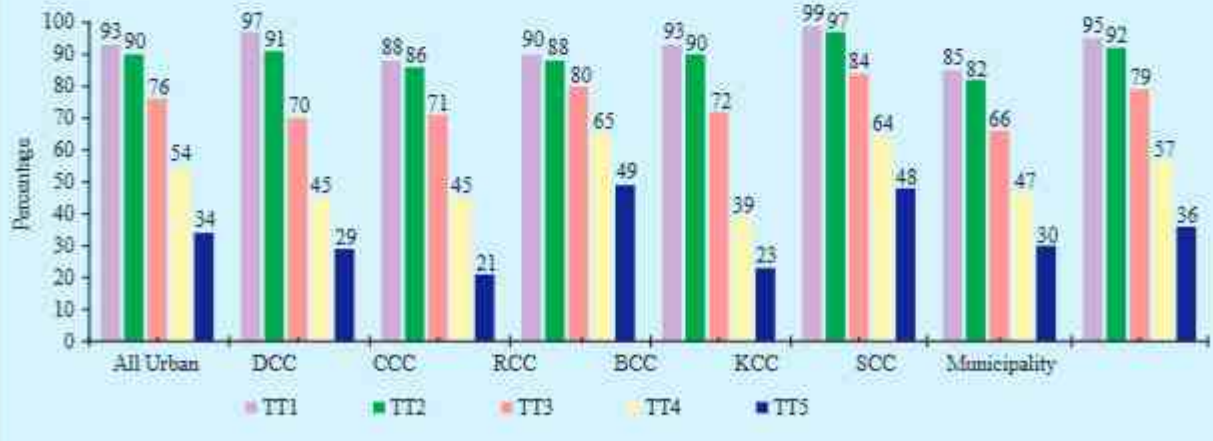
Source: CES 2010

Figure J5. Crude TT Vaccination Coverage among Women Aged 18–49 Years Old in Urban Areas by City Corporation/ Municipality in 2010 (Card+History)



Source: CES 2010

Figure J6. Valid TT Vaccination Coverage among Women Aged 18-49 Years Old in Urban Areas by City Corporation/ Municipality in 2010 (Card+History)



Source: CES 2010

4.6 Status of Retention of TT Card by Women

Retention of TT 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. Forty-one percent of the women reported of having the vaccination card. However, there was a slight difference between urban (36 percent) and rural areas (42 percent) in this regard. In terms of card retention, the rate revealed 44 percent nationally with 8 percent variation between urban and rural areas. Rural women (46 percent) were found more likely to retain vaccination card compared to those residing in urban areas (38 percent).

Likewise, in rural areas by division, card retention rate was found to be the highest in Rajshahi division (67 percent) and the lowest in Dhaka division (37 percent). The intermediary rates ranged between 41 percent in Barisal division and 50 percent in Rangpur division (see Figure K2).

By city corporation, card retention rate was the highest in DCC (54 percent) and the lowest in SCC (26 percent).The second highest card retention rate was found in KCC (48 percent), which was being followed by RCC (35 percent), BCC (32 percent), and CCC (27 percent) (see Figure K3).

4.7 Incidence of Invalid Doses

As has been mentioned in Chapter 2, 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 vaccination schedule, 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 (12 percent) of the total surveyed women received invalid dose of TT3 across the country. More urban women (13 percent) received invalid TT3 dose, compared to those residing in rural areas (11 percent).

However, the findings show a declining trend in the invalid TT vaccination rates for the subsequent doses. Nationally, the incidence rates of invalid doses of TT4 and TT5 were 11 percent and 10 percent, respectively. Furthermore, the declining trend was almost similar in urban and rural areas. Eleven percent women in rural areas received invalid TT3, another 11 percent invalid TT4, and 10 percent TT5 in rural areas as against 13 percent of the women who received invalid TT3, 10 percent invalid TT4, and 9 percent invalid TT5 in urban areas.

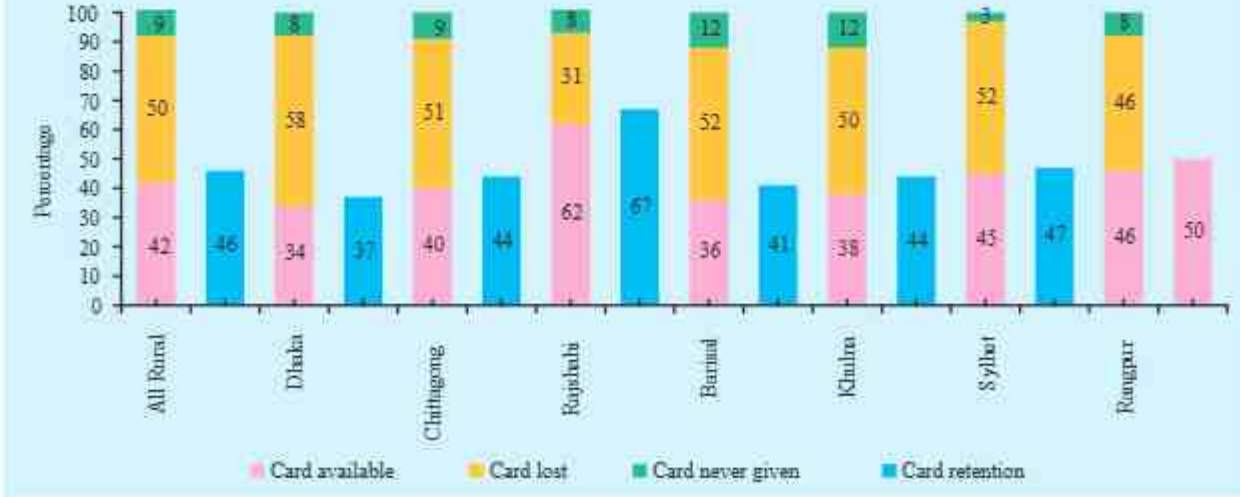
Similar to the national findings, the incidence rates of invalid TT3 were higher than those of TT4 and TT5 in all divisions except in Khulna and Sylhet. Among the divisions, invalid TT3 rates were the highest in Barisal division (17 percent) and the lowest in Sylhet division (5 percent). Similarly, incidence of invalid doses of TT4 was found to be the highest in Barisal division (17 percent). The lowest incidence of invalid doses of TT4 was revealed in Rajshahi division (7 percent). As it was expected, in case of TT5 the highest invalid dose was in Barisal division (15 percent), which was being followed by Dhaka (13 percent), Chittagong (10 percent), Khulna (9 percent), Rangpur (8 percent), Rajshahi (7 percent), and Sylhet divisions (5 percent) (see Figure K5).

As it was expected, among the city corporations the rate of invalid TT3 was the highest in CCC (36 percent) and the lowest in KCC (3 percent). However, the rate of invalid TT4 was the lowest in RCC (2 percent) and the highest in CCC (18 percent). Similar to invalid TT3 and TT4, rates of invalid TT5 dose were found to be the highest in CCC (25 percent) and the lowest in RCC and KCC (3 percent). The rates that were intermediary ranged from 4 percent in DCC to 19 percent in BCC (see Figure K6).

Figure K1. TT Vaccination Card Status among 18-49 Years Women by National, Rural and Urban Areas in 2010

Source: CES 2010

Figure K2. TT Vaccination Card Status among Women Aged 18-49 Years Old by Rural Areas by Division in 2010



Source: CES 2010

Figure K3. TT Vaccination Card Status among Women Aged 18-49 Years Old by Urban Areas by City Corporation/ Municipality in 2010

Source: CES 2010

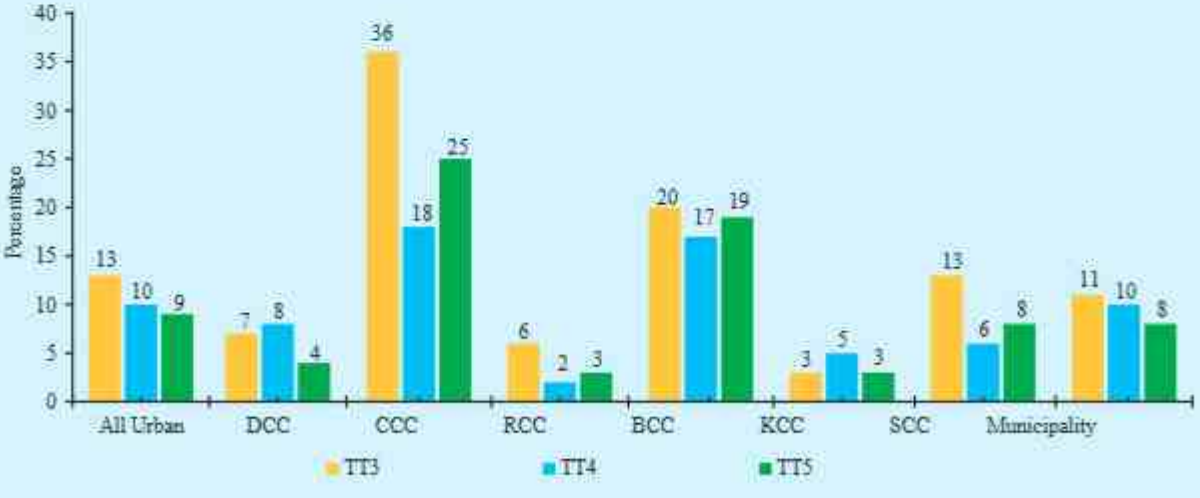
Figure K4. Incidence of Invalid TT Doses among Women Aged 18-49 Years Old by National, Rural and Urban Areas in 2010 (Card+History)

Source: CES 2010

Figure K5. Incidence of Invalid TT Doses among Women Aged 18-49 Years Old in Rural Areas by Division in 2010 (Card+History)

Source: CES 2010

Figure K6. Incidence of Invalid TT Doses among Women Aged 18-49 Years Old in Urban Areas by City Corporation/ Municipality in 2010 (Card+History)



Source: CES 2010

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 2010 made an assessment about 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. Fifty one percent of them reported about 5 doses of TT vaccine. As it was expected, percentage of women who had proper knowledge was 9 percent higher in urban areas (59 percent) than in rural areas (50 percent). However, throughout the country more than one-third mothers (41 percent) reported that they were not aware of the required number of TT doses. Among them, there was variation between women living in urban (34 percent) and those in rural areas (43 percent).

In the rural areas by division, the percentage about the women with knowledge of 5 doses of TT vaccine was found to be the highest in Rajshahi division (59 percent) and the lowest in Barisal division (38 percent). Moreover, 55 percent of the surveyed women reported in favor of 5 doses in Sylhet division, which was being followed by, Dhaka (53 percent), Rangpur, Khulna, and Chittagong divisions (47 percent) (see Figure L2). And, 50 percent of them in Barisal, 49 percent in Chittagong, 44 percent in Khulna, 43 percent in Rangpur, 40 percent in Dhaka, 39 percent in Sylhet, and 36 percent in Rajshahi divisions were not aware of the number of TT doses required by a woman to protect herself against tetanus.

However, in urban areas by city corporation 88 percent of the women in KCC reported in favor of 5 doses, which was being followed by DCC (78 percent), RCC (76 percent), SCC (54 percent), BCC (46 percent), and CCC (37 percent) (see Figure L3). Furthermore, 54 percent women in CCC were found to be unaware of the number of TT doses, which was being followed by BCC (47 percent), SCC (43 percent), RCC (21 percent), DCC (15 percent), and KCC (12 percent).

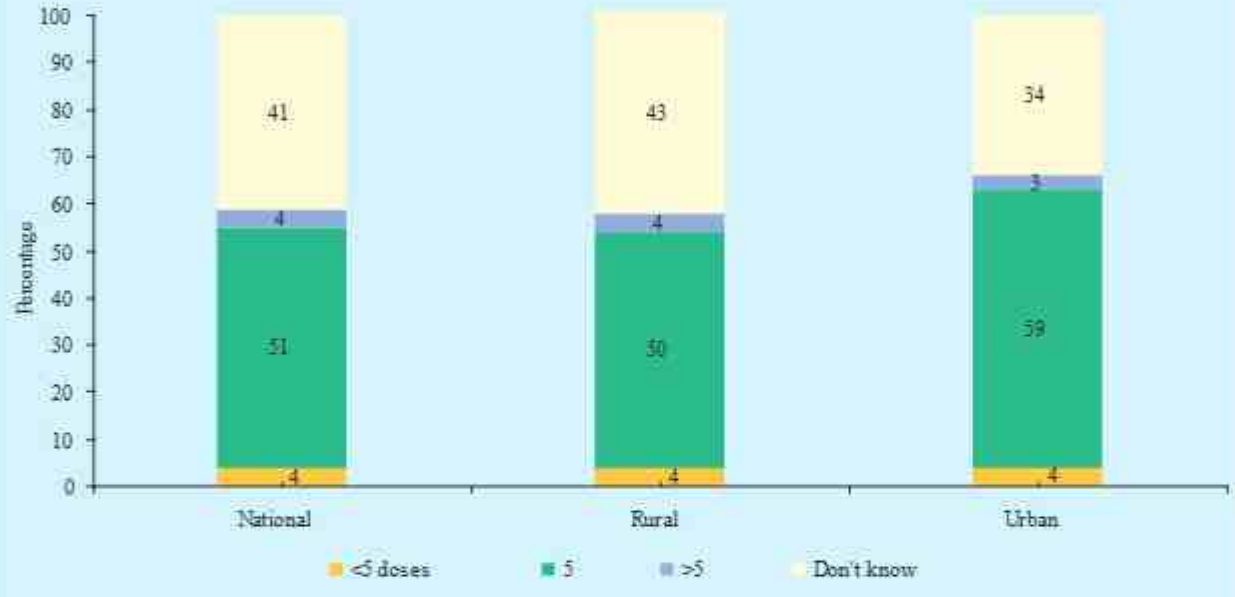
4.9 Sources of TT Vaccination

Sources of TT1 vaccine was investigated in CES 2010. 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 13 percent. Ninety three percent of the rural women received TT1 from the government outreach centers as against 80 percent of urban women. Besides, government hospitals were revealed as 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 (6 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 one percent women in Dhaka, 92 percent in Chittagong,

93 percent in Barisal, 94 percent in Rajshahi and Khulna, and 95 percent in Rangpur divisions received TT1 from the government source. However, utilization of the government source was found to be the lowest in Sylhet division (91 percent).

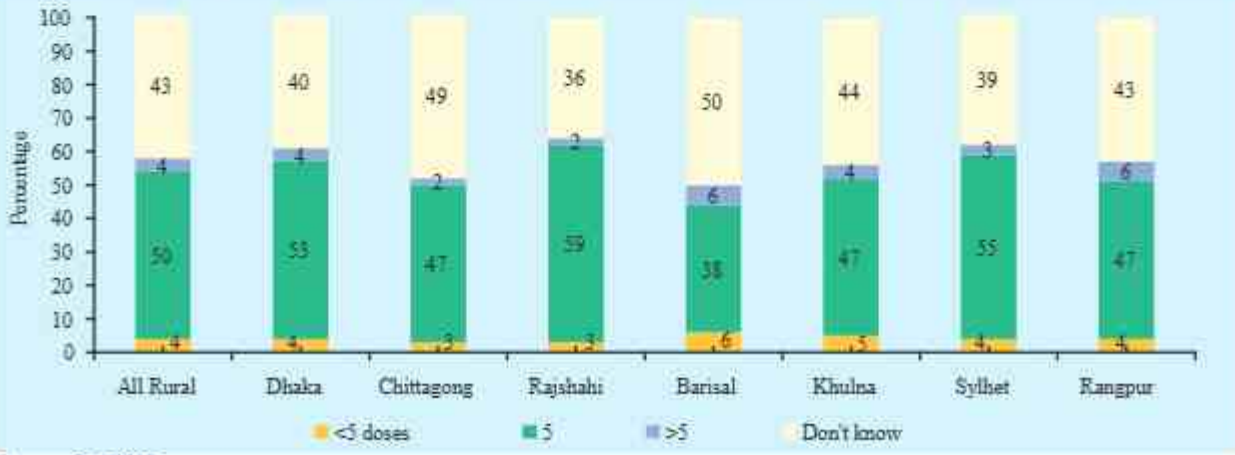
Among the city corporations, the utilization rate of the government outreach centers was the highest in KCC (99 percent) and the lowest in DCC (53 percent). It was 95 percent in SCC and RCC, 81 percent in CCC, and 69 percent in BCC (see Figure M3).

Figure L1. Number of TT Doses Required during Reproductive Period for Protection against Tetanus as Reported by Women Aged 18-49 Years Old by National, Rural and Urban Areas in 2010



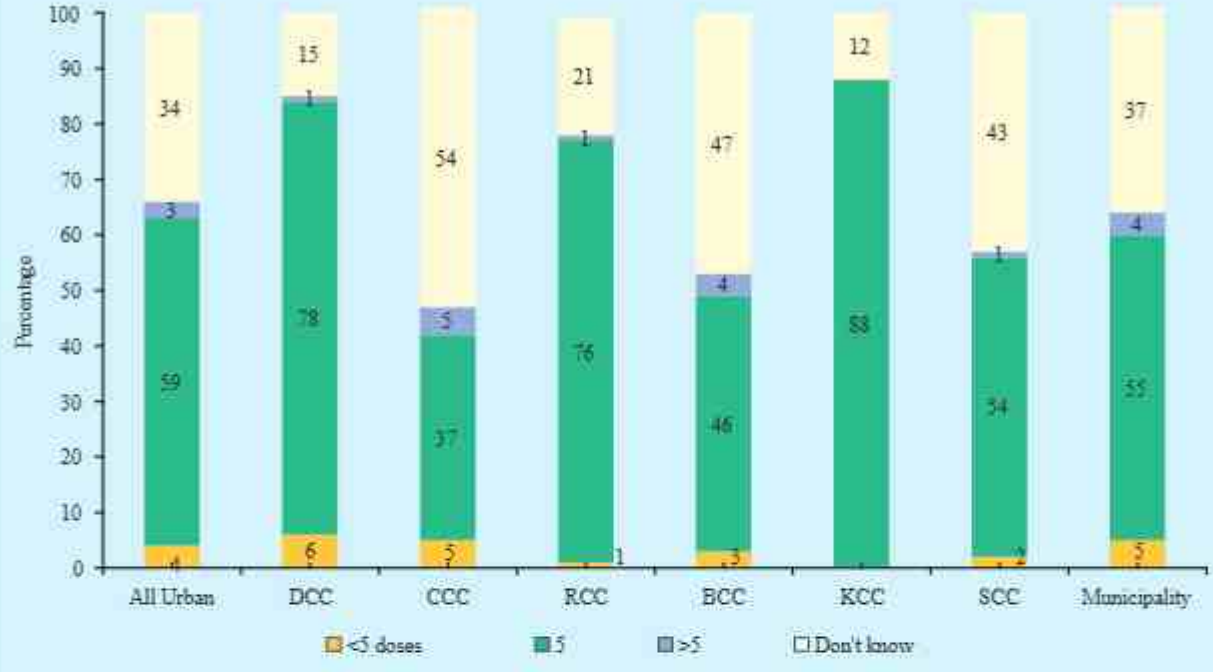
Source: CES 2010

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 2010



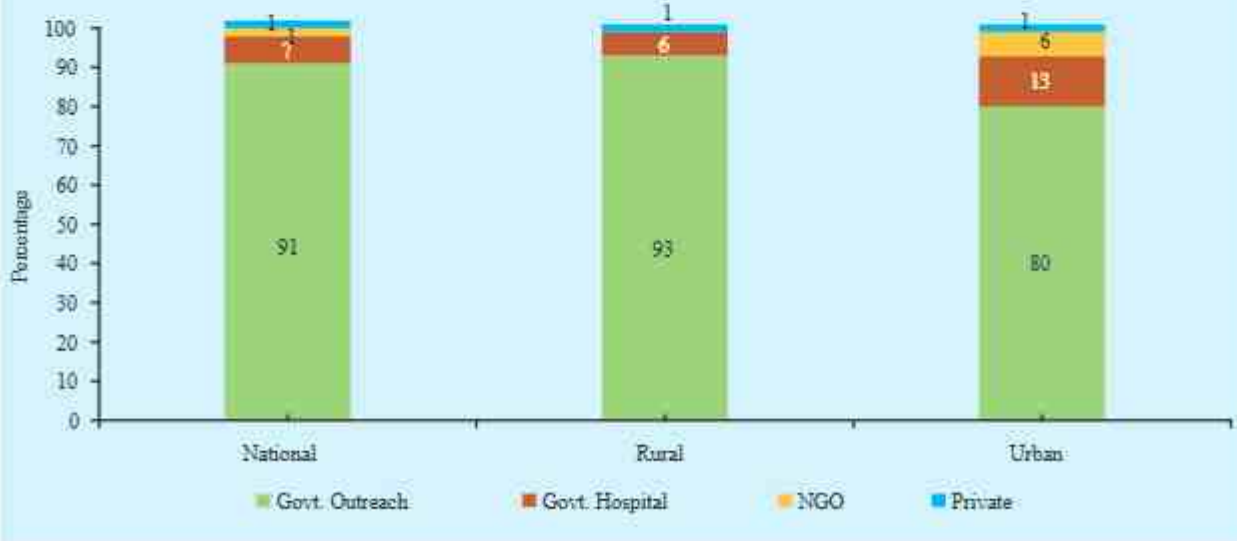
Source: CES 2010

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 2010



Source: CES 2010

Figure M1. Sources of TT1 Vaccination among Women Aged 18-49 Years Old by National, Rural and Urban Areas in 2010

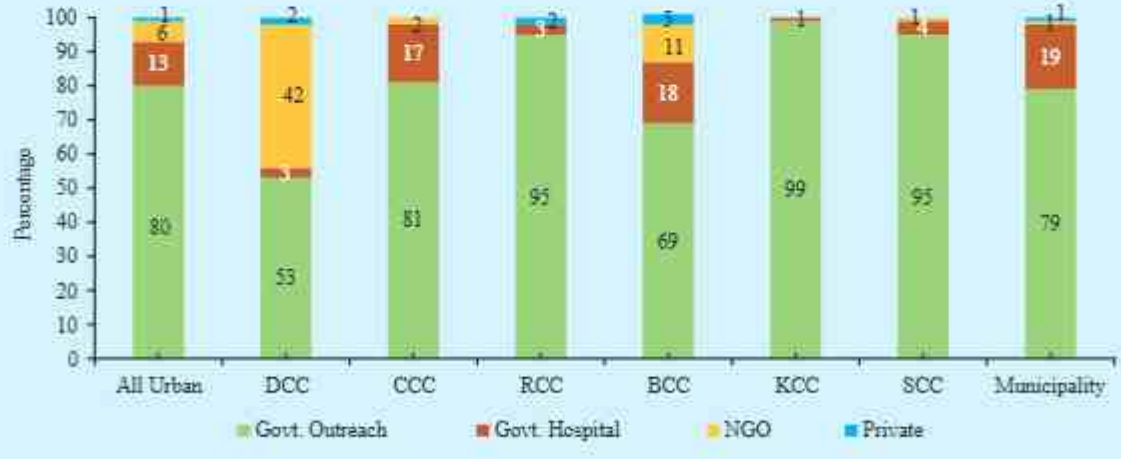


Source: CES 2010

Figure M2. Sources of TT1 Vaccination among Women Aged 18-49 Years Old in Rural Areas by Division in 2010

Source: CES 2010

Figure M3. Sources of TT1 Vaccination among Women Aged 18-49 Years Old in Urban Areas by City Corporation/ Municipality in 2010



Source: CES 2010

CHAPTER 5

OPV, VITAMIN A AND ANTHELMINTIC COVERAGE DURING 18th NID

This chapter provides information which has been obtained through CES 2010 on OPV coverage during 18th NID, along with Vitamin A, and Anthelmintic coverage during the same event. Distinctively, it presents the findings on OPV coverage among 0-59 month old children during 18th NID, Anthelmintic coverage among 24-59 months old children and Vitamin A coverage among 12-59 months old children along with reasons for not receiving OPV, Anthelmintic, and Vitamin A supplementation. Additionally, sources of information about NID are discussed.

In order to present the national OPV coverage during 18th NID as well as for an understanding about the methodology and findings of the 18th NID Survey, a brief description of NIDs is provided in the following section. 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 18th NID Survey

The survey on 18th NID was carried out as part of CES 2010 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
- To assess Vitamin A and Anthelmintic coverage
- To know reasons for not having Vitamin A and Anthelmintic

5.1 NID as a Supplementary Strategy

Polio (poliomyelitis) is a highly infectious disease caused by a virus. Health experts say that it invades the nervous system and can cause paralysis or even death within hours. Polio virus enters the body through the mouth or in water or food that has been contaminated with faecal material from an infected person. The disease affects mainly the younger children, but in rare instances, it can affect older children as well.

The Government of Bangladesh (GOB), with support from WHO, UNICEF, Rotary International, and the Centre for Disease Control and Prevention (CDC, Atlanta, GA, USA) mounted a model response to immunize all under-5 children across the country when the first case of polio was detected in March 2006 after maintaining a polio- free status for more than 5 years. Eighteen polio cases were, thereafter, detected in 12 districts across all divisions of Bangladesh, with the last one reported on 22 November, 2006. Since polio has been detected once again in 2006, Bangladesh has responded very aggressively to combat the situation. Accordingly, 13th special NID was conducted in 4 rounds in the year 2006. Afterward, in each year NIDs are being conducted as part of the Supplementary Immunization Activity (SIA). The last (18th) NID was conducted on 10th January, 2010. Although Bangladesh is free from polio Virus since 22 November, 2006, threat of the re-emergence of this virus still exists. In an effort to sustain its polio-free status, Bangladesh observed the 18th National Immunization Day (NID) on 10th January, 2010, through administering two drops of the polio

vaccine to 22 million children aged between 0-5 years. Albendazole, deworming tablets, were also provided to 24-59 months old children along with the polio drops

during the 18th NID on 10th January, 2010. Besides, Bangladesh integrated National Vitamin A-Plus Campaign (NVAC) with NIDs. With support from Canadian International Development Agency (CIDA), Micronutrient Initiative, UNICEF, and WHO, the Government of Bangladesh has provided a high potency Vitamin A capsule (200,000 IU) with polio vaccine among the children aged between 12-59 months in the 1st round of 18th NID. It is a cost- effective model for other countries that are struggling to achieve and maintain a high coverage of Vitamin A supplementation and polio vaccination. Vitamin A deficiency poses a major threat to the health and survival of children and mothers. It is now known that Vitamin A deficiency increases the risk of child death from diseases, such as measles and diarrhoea. These indicators contribute to over 25 percent of death of the children aged between 1-5 years in Bangladesh.

5.1.1 Organizing the NIDs

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 18th NID. 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/mohalla, 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 18th NID was implemented over a representative national NID sample of 0-59 months old children, drawn from the cluster samples for CES 2010 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.

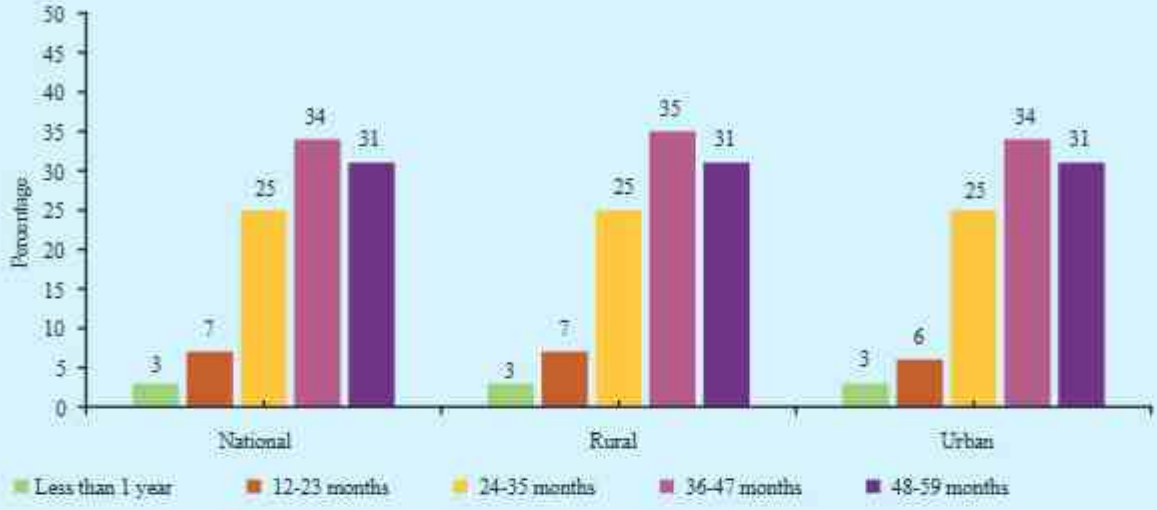
5.3 OPV Coverage

97 percent of the children aged between 0-59 months were vaccinated with OPV during 18th NID held on 10 January, 2010. Among them, 96 percent received OPV from the fixed site during NID and 1 percent during child- to- child search following the NID. There was no such difference between the rural and the urban coverages. Ninety six percent of the rural children were vaccinated with OPV as against 98 percent of the urban children during the 18th NID. Likewise, during the measles follow-up campaign 93 percent of the children across the country received OPV. Similar to the 18th NID, urban-rural variation in OPV coverage was not remarkable. Ninety two percent of the rural children received OPV as against 94 percent of the urban children (Figure N2). It needs to be mentioned here that during the measles campaign OPV was not much focused.

However, 91 percent children received OPV during both the rounds of 18th NID and measles follow-up campaign. There was no remarkable difference in the OPV coverage between the urban (93 percent) and rural areas (92 percent) (see Figure N2).

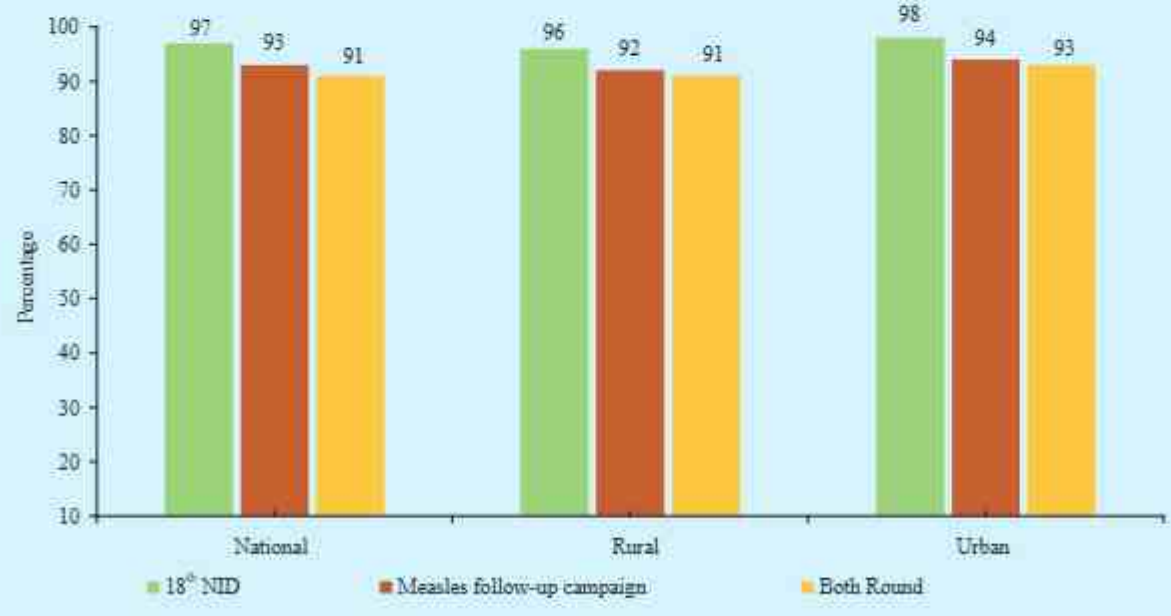
As has been mentioned earlier, 91 percent of the rural children received OPV during 18th NID and measles follow-up campaign. According to rural divisions, OPV coverage in both the rounds was the highest in Rajshahi (95 percent) and the lowest in Chittagong divisions (87 percent). OPV coverage in Dhaka, Khulna, and Rangpur divisions was 92 percent (Figure N5). However, in the city corporation areas, the highest OPV coverage in both the rounds was in Rajshahi City Corporation (98 percent), which was being followed by KCC (95 percent), SCC (95 percent), DCC (93 percent), CCC (92 percent), and BCC (84 percent) (see Figure N6).

Figure N1 : Age Distribution of Children Sampled for 18th NID Survey by National, Rural and Urban Areas in 2010



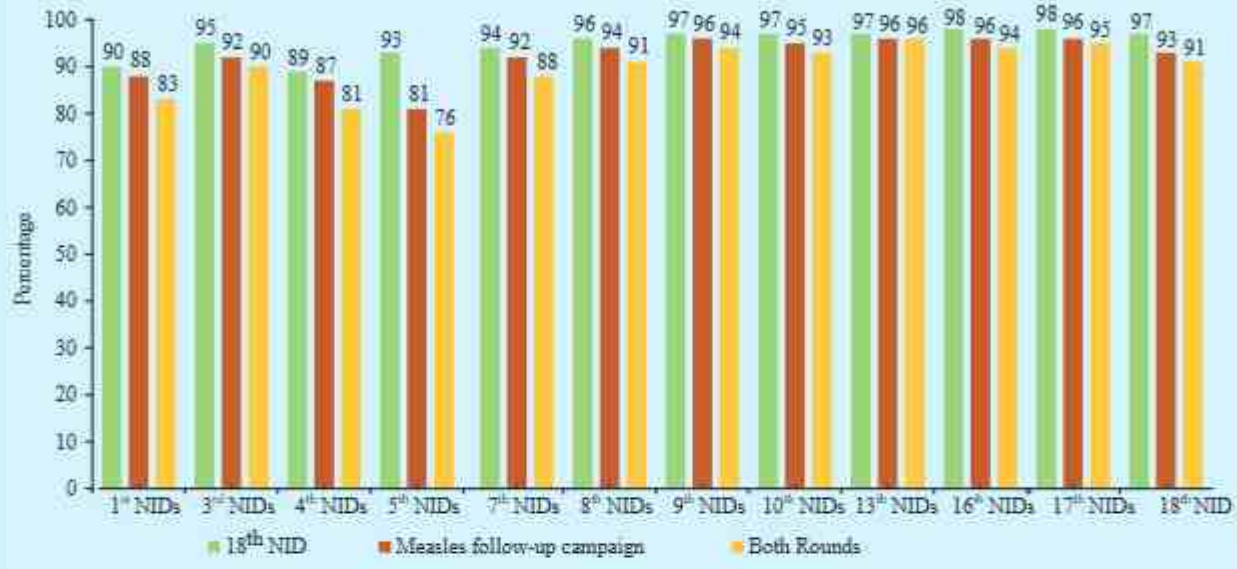
Source: CES 2010

Figure N2 : OPV Coverage during 18th NID by National, Rural and Urban Areas in 2010



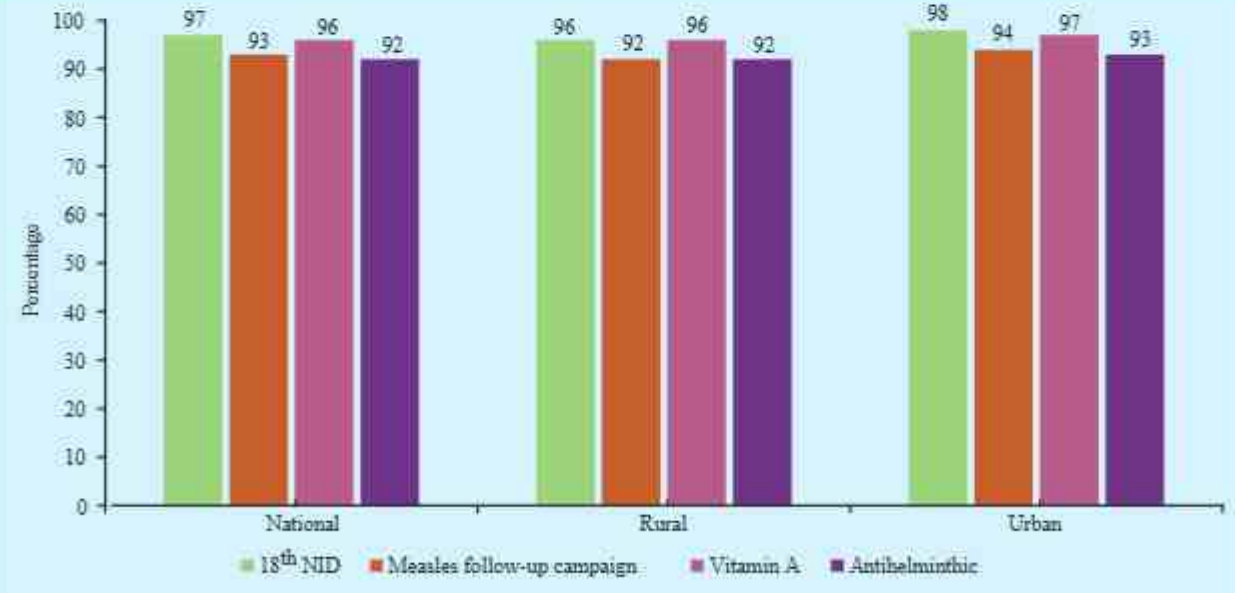
Source: CES 2010

Figure N3 : OPV Coverage among 0-59 Months Old Children by NIDs from 1995 to 2010



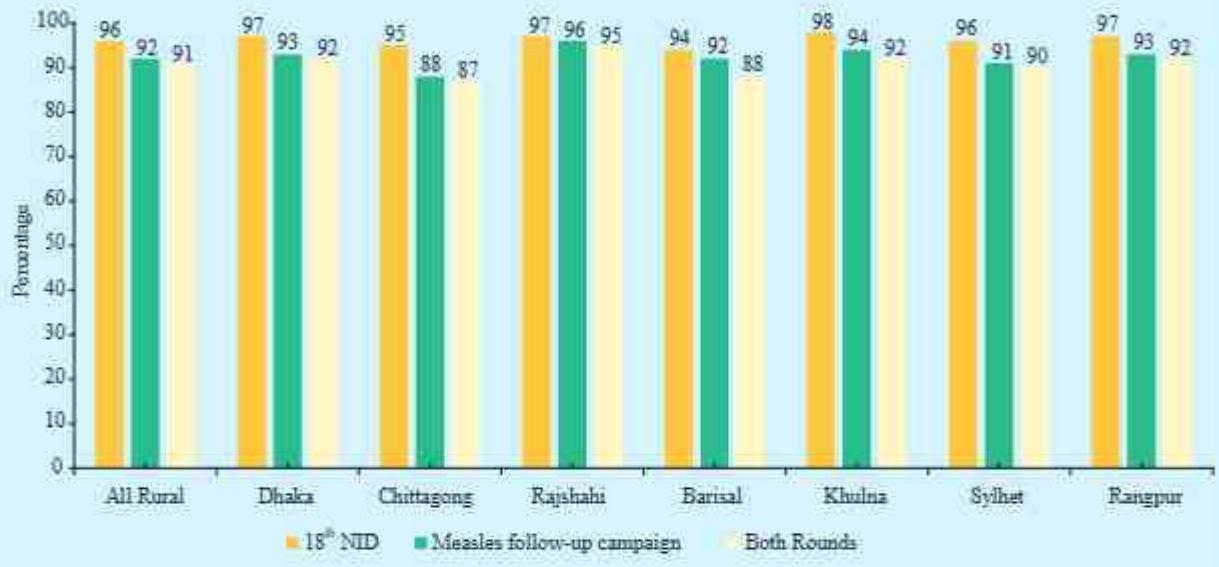
Source: CES 2010

Figure N4 : Round Specific OPV Coverage among 0-59 Months Old Children, Vitamin A Coverage among 12-59 months Old Children and Antihelminthic Coverage among 24-59 Months Old Children in 18th NID by National, Rural and Urban Areas in 2010



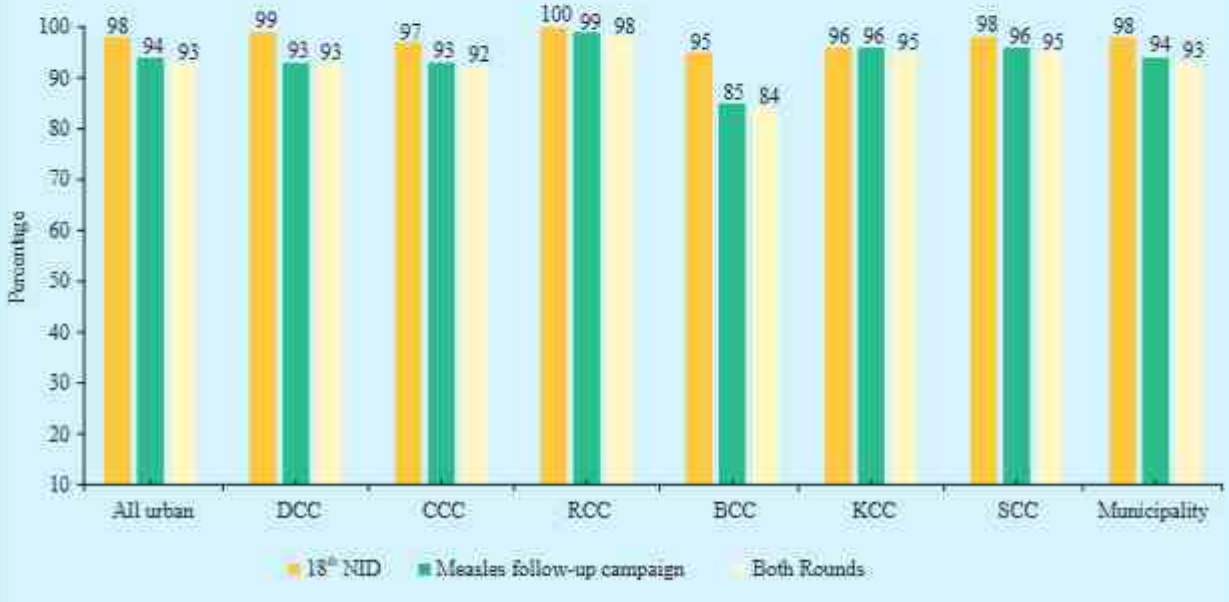
Source: CES 2010

Figure N5: OPV Coverage among 0-59 Months Old Children in 18th NID in Rural Areas by Division in 2010



Source: CES 2010

Figure N6: OPV Coverage among 0-59 Months Old Children in 18th NID in Urban Areas by City Corporation in 2010



Source: CES 2010

5.4 Reasons for not having Children Vaccinated at the Fixed Sites

Specific reasons for children not being vaccinated were investigated in CES 2010. Mothers/ caregivers were asked about the reasons for their children not being vaccinated with OPV at the fixed site or not vaccinated at all. A little over one-third (35 percent) of them reported that they did not know about the campaign. Seventeen percent of them stated that they were busy with their household work - 17 percent in rural and 16 percent in urban areas. More than one among ten mothers/caregivers (14 percent) reported that they were not at home while NID was conducted. The other reasons were: vaccination center was too far (8 percent); mothers/caregivers were travelling (9 percent); and the child was sick (3 percent) (see Figure O1).

However, as the cause for not receiving OPV during measles campaign more than half of the mothers/caregivers reported that they were unaware of the campaign. The other most common causes were: mothers/caregivers were not at home (12 percent); they were travelling (7 percent); vaccination center was too far (6 percent); mothers/caregivers were busy with their household work, and the child was vaccinated with OPV during the 18th NID (5 percent) (see Figure O2).

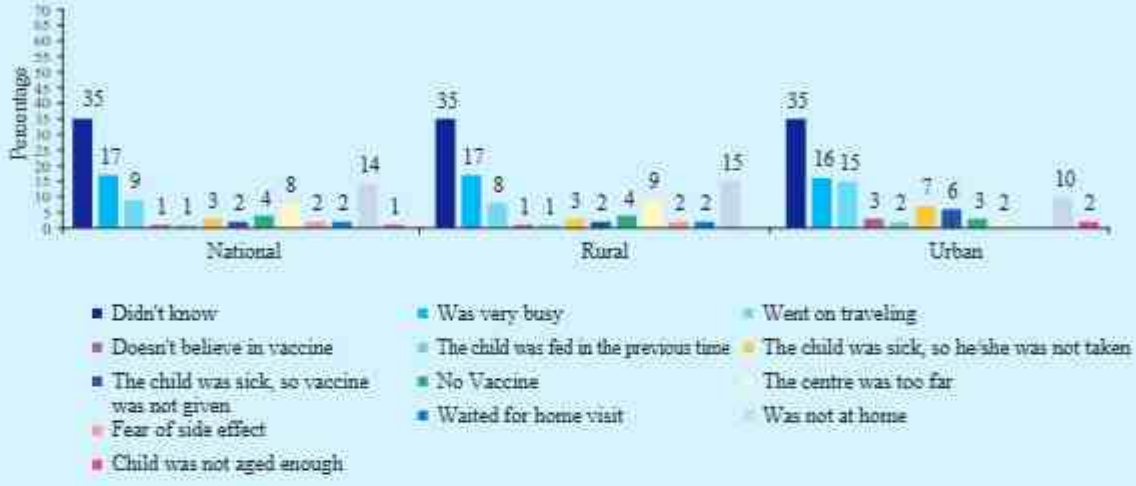
5.5 Sources of Information about 18th NID

Mothers/ caregivers were asked about the sources of information about 18th NID. About one-third (28 percent) of them mentioned about the visit of the health worker. One-fourth of them referred to mobile miking. Twenty four percent cited mosque miking. This factor was being followed by television (20 percent), neighbors and NGO workers (14 percent), GOB workers (11 percent), and volunteers (8 percent).

Likewise, in rural areas, the most common sources of information about the 18th NID were: health workers' visit (29 percent), mosque miking (26 percent), mobile miking (24 percent), and NGO workers (15 percent).

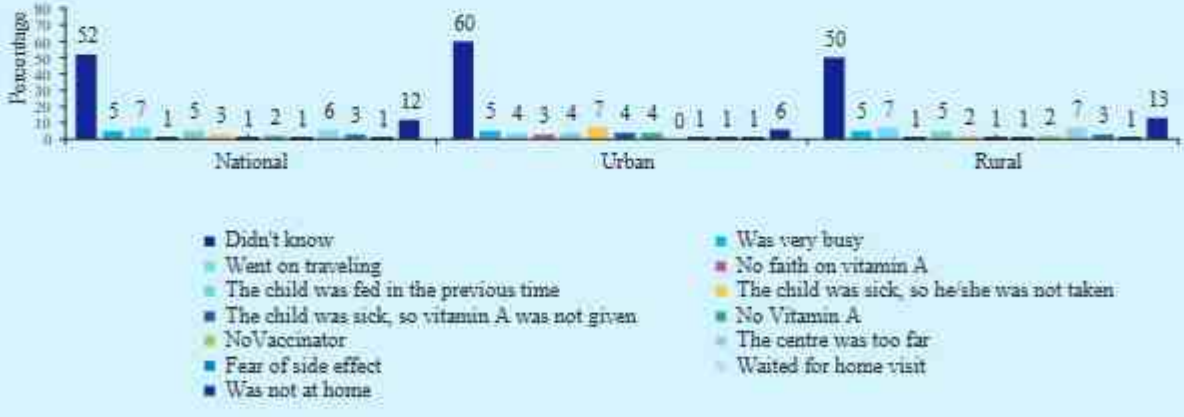
As it was expected in the urban areas, television was the most common source of information (44 percent). This factor was being followed by mobile milking (30 percent), health workers (19 percent), family members (18 percent), and mosque milking (15 percent) (see Figure O3).

Figure O1: Reasons Why Children were not Vaccinated in during 18th NID by National, Rural and Urban Areas in 2010



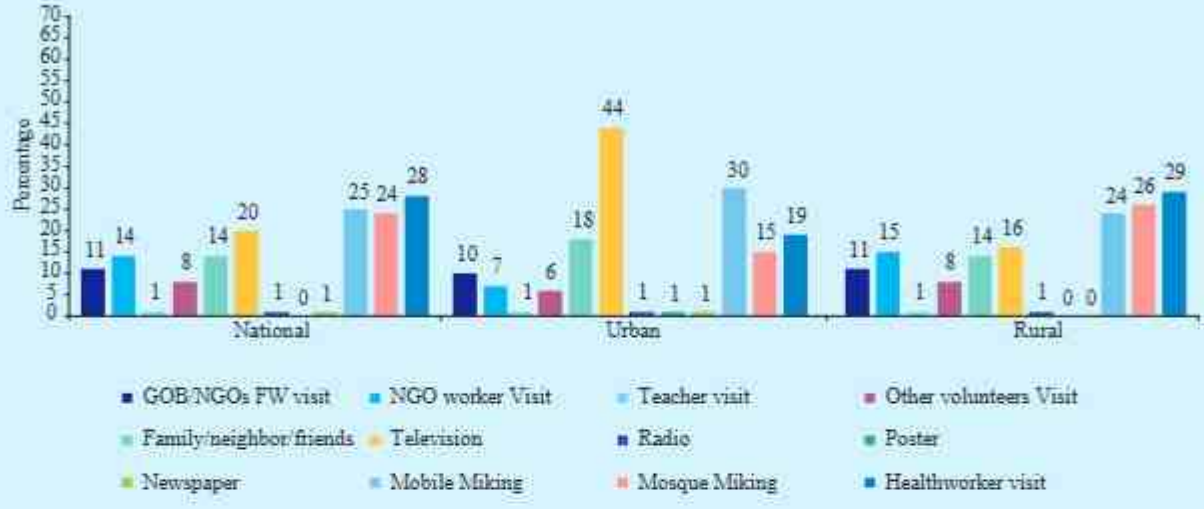
Source: CES 2010

Figure O2: Reasons Why Children were not Vaccinated during Measles Follow-up Camapaign by National, Rural and Urban Areas in 2010



Source: CES 2010

Figure O3: Sources of Information of 18th NID by National, Rural and Urban Areas in 2010



Source: CES 2010

5.6 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. Vitamin A deficiency poses a major threat to the health and survival of children and mothers. It is now known that Vitamin A deficiency increases the risk of child death from diseases, such as measles and diarrhoea. According to WHO, these infections contribute to over 25 percent of death of the children aged between 1-5 years in Bangladesh. A decision has been taken by the government of Bangladesh to integrate National Vitamin A-Plus Campaign (NVAC) with NIDs through a well-coordinated approach. With support from Canadian International Development Agency (CIDA), Micronutrient Initiative, UNICEF, and WHO, the government of Bangladesh has provided a high potency Vitamin A capsule (200,000 IU) with polio vaccine among the children aged between 12-59 months during 18th NID. Vitamin A (100,000 IU) is given to the children (9-11 months old) during the measles vaccination; post partum mothers receive one vitamin A capsule (200,000 IU) (within 6 weeks of delivery) through routine EPI.

Infants

Vitamin A Supplementation (VAS) (100,000 IU) among the infants aged between 9-11 months under routine EPI was 93 percent across the country. The coverage of VAS among the infants who were 9-11 months old was almost similar in both urban and rural areas. In both rural and urban areas, it was 93 percent (see Figure P1). It is important to mention here that VAS is given while the child visits for measles vaccine. As it was expected, coverage of measles was almost similar to that of VAS. Nationally, 93 percent of the children received Vitamin A as against 93 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 in Rajshahi division (97 percent) and the lowest in Sylhet division (89 percent). VAS coverage in other divisions ranged from 90 percent in Chittagong to 95 percent in Barisal, Khulna, and Rangpur divisions (see Figure P2). However, in city corporations, it ranged from the lowest - 87 percent in SCC to the highest - 99 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 (94 percent) received Vitamin A than their female counterparts (93 percent) in rural areas. In contrast, 93 percent of the females in urban areas received Vitamin A as against 94 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 NIDs. During the 18th NID, Vitamin A was given in the 1st round held on 10th January, 2010. Ninety six percent of the eligible children received Vitamin A capsule during the 18th NID held on 10th January, 2010. The urban-rural analysis shows almost no marked variation between

urban and rural areas. Ninety seven percent children in urban areas received Vitamin A as against 96 percent residing in rural areas (see Figure P1).

By rural division, Vitamin A Supplementation (VAS) coverage was found to be the highest in Dhaka division (97 percent) and the lowest in Chittagong division (94 percent). It was same for Rajshahi, Khulna and Sylhet divisions (96 percent), and Rangpur, and Barisal divisions (95 percent) (see Figure P2).

Figure P3 illustrates VAS coverage by city corporation. It shows that VAS coverage was found to be the highest in Rajshahi City Corporation (100 percent) and the lowest in Barisal City Corporation (94 percent). Furthermore, there was no difference in VAS coverage among CCC and KCC (96 percent). However, the second highest coverage was in DCC (99 percent), which was being followed by SCC (97 percent) (see Figure P3).

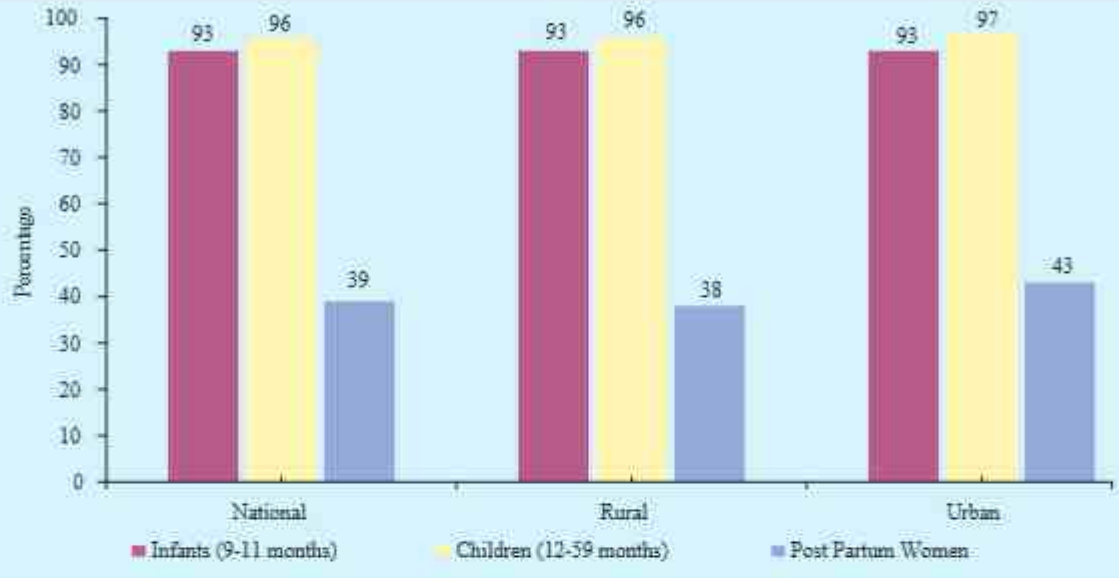
In terms of sex differentiation, no marked difference was observed between males and females. Similar findings were noticed while considering VAS coverage by area type (see Figure P5).

Postpartum 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 39 percent of the postpartum women received Vitamin A capsule across the country. The urban-rural differentiation was 5 percent. Forty three percent women in urban areas received VAS as against 38 percent residing in rural areas.

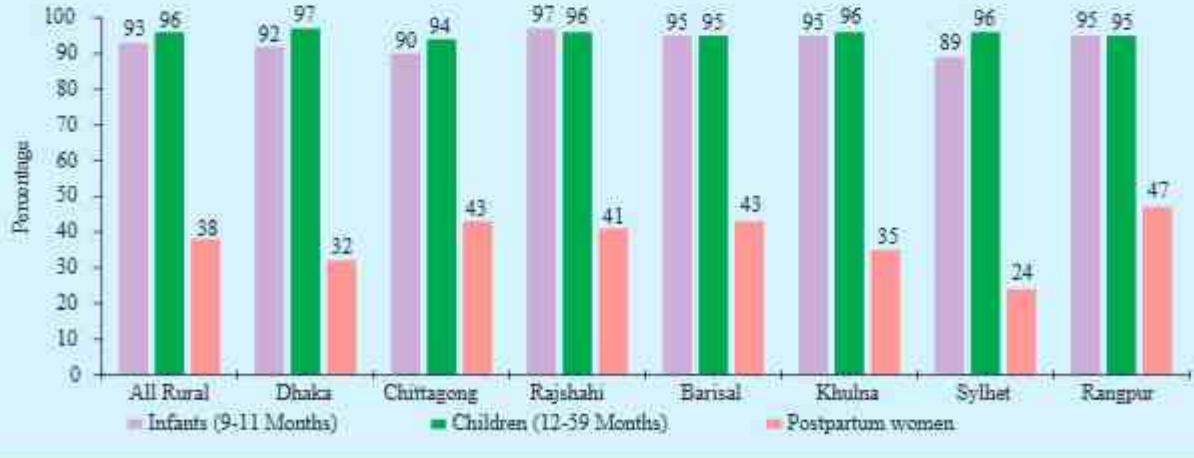
By rural division, VAS coverage among postpartum women ranged from 24 percent in Sylhet division to 47 percent in Rangpur division. It was 32 percent in Dhaka, 35 percent in Khulna, 41 percent in Rajshahi, and 43 percent in Chittagong and Barisal divisions (see Figure P2). However, among the city corporations, VAS coverage was the highest in Rajshahi City Corporation (54 percent) and the lowest in Sylhet City Corporation (26 percent). The coverage in other city corporations ranged from 34 percent in Chittagong City Corporation to 51 percent in Barisal City Corporation (see Figure P3).

Figure P1. Vitamin A Coverage among infants aged 9-11 months in Childhood Vaccination Survey, Vitamin A Supplementation Coverage among Children 12-59 Months in 18th NID and Vitamin A Coverage among Postpartum Women in TT Survey by National, Rural and Urban Areas in 2010



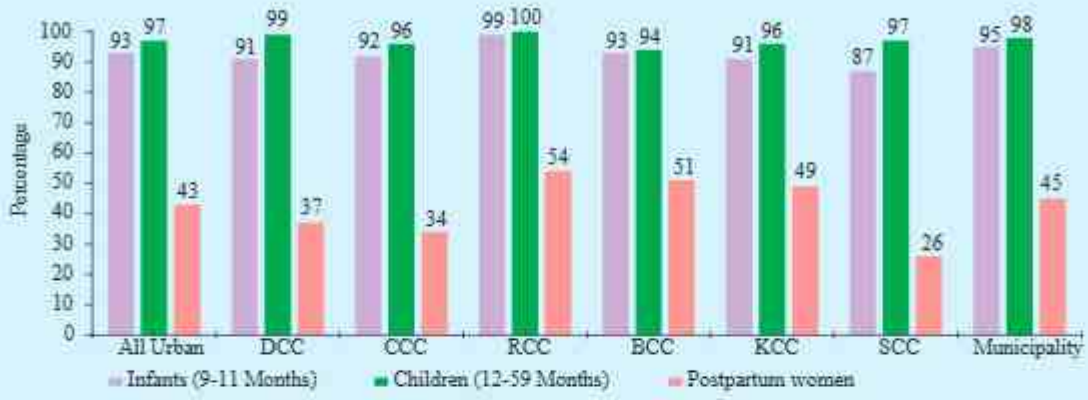
Source: CES 2010

Figure P2. Vitamin A supplementation Coverage during 18th NID among Children aged 12-59 months, Infants aged 9-11 months, and Postpartum women in Rural Areas by Division in 2010



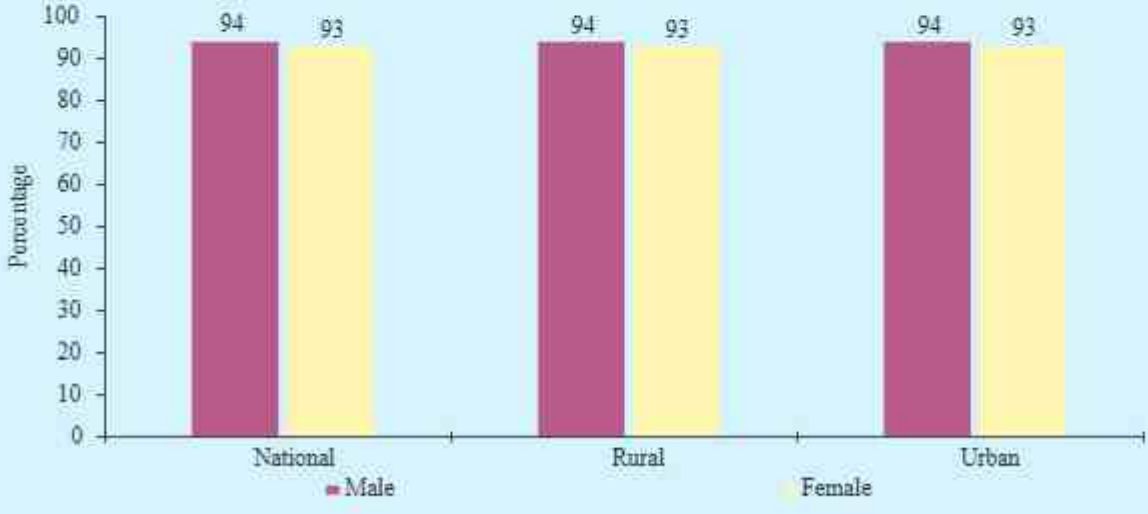
Source: CES 2010

Figure P3. Vitamin A supplementation Coverage during 1st Round of 18th NID amon Children aged 12-59 months, Infants aged 9-11 months, and Postpartum women in Urban Areas by City Corporation/ Municipality in 2010



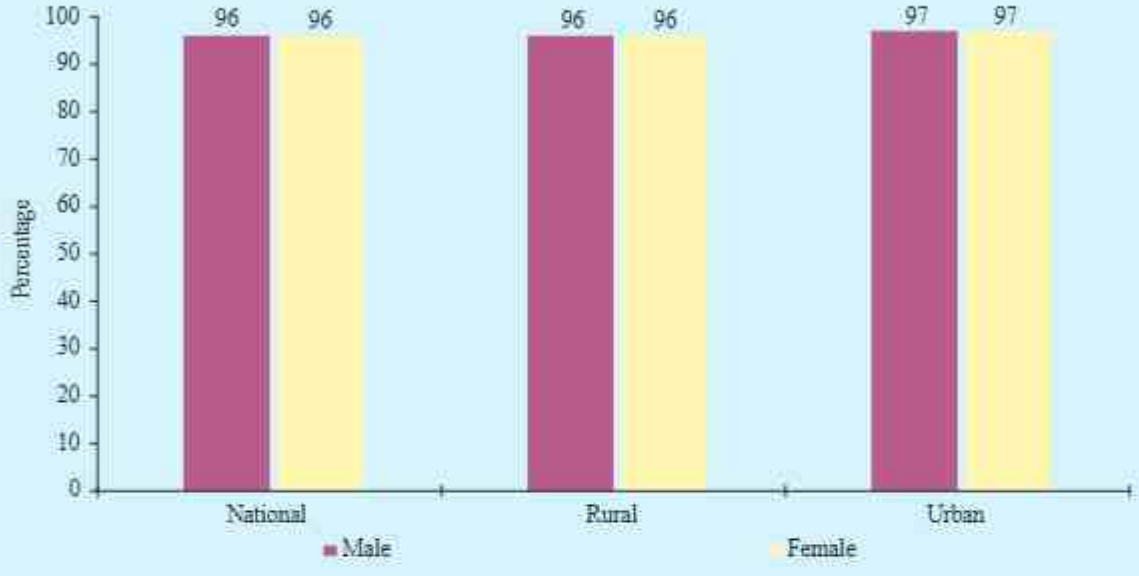
Source: CES 2010

Figure P4. Vitamin A Coverage among Infants Aged 9-11 Months in Childhood Vaccination Survey by Region and Sex in 2010



Source: CES 2010

Figure P5. Vitamin A Supplementation Coverage among Children aged 12-59 months in 18th NID by Region and Sex in 2010



Source: CES 2010

5.6.1 Reasons for Children not receiving VAC during the 18th NID

CES 2010 investigated the causes as to why the children didn't receive Vitamin A Capsule (VAC) during the 18th NID. To find out the reasons mothers/care givers were asked why their children didn't receive VAC during 18th NID held on 10th January, 2010. One- third (33 percent) of them reported that they were not aware of NID. Fifteen percent of them mentioned that they were not at home during NID. However, 9 percent mentioned about the long distance of the vaccination center from their residences. Lack of awareness about the NID/Vitamin A supplementation was the most common cause for not receiving VAC in both rural (32 percent) and urban (40 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 in Sylhet division (43 percent). It was being followed by Barisal (40 percent), Dhaka (35 percent), Rangpur (33 percent), Rajshahi (32 percent), Khulna (31 percent), and Chittagong divisions (23 percent) (see Table P2).

Likewise, in urban areas by city corporation, very few children 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 18th NID in 2010 by National, Rural and Urban Areas

Reasons for not receiving Vitamin A	National	Rural	Urban
Did n't know	33.1	32.2	39.7
Was very busy	6.6	6.6	7.4
Went on traveling	6.8	6.2	11.8
No faith on vitamin A	1.5	1.3	2.9
The child was fed in the previous time	4.5	4.9	1.5
The child was sick, so he/she was not taken	3	2.8	4.4
The child was sick, so vitamin A was not given	3.7	2.8	10.3
No Vitamin A	6.6	7.3	1.5
No Vaccinator	1.8	1.9	1.5
The centre was too far	8.8	9.7	1.5
Time was inconvenient	1.2	1.3	0
Fear of side effect	2	2.2	0
Waited for home visit	1.5	1.5	1.5
Was not at home	15.1	15.5	11.8
Child was not aged enough	0.7	0.6	1.5
The child refused to eat	2.5	2.6	1.5
Cant recall	0.3	0.4	0
The doctor didn't give	0.3	0.2	1.5
Number of Children Who did not receive Vitamin A	**1170**	**1004**	**166**

Table P2: Reasons as to why Children did not Receive Vitamin A Supplement during 18th NID in 2010 in Rural Areas by Division

Reasons for not receiving Vitamin A	Rural Total	DHK	CTG	RAJ	BSL	KHL	SYL	Rang pur
Didn't know	32.2	35	23	32.1	40	31.4	42.9	32.6
Was very busy	6.6	6	4.9	8.9	9.2	7.1	8.6	4.7
Went on traveling	6.2	4	5.7	12.5	4.6	11.4	0	4.7
No faith on vitamin A	1.3	3	2.5	0	0	1.4	0	0
The child was fed in the previous time	4.9	4	0	1.8	4.6	8.6	0	14
The child was sick, so he/she was not taken	2.8	6	0	0	6.2	2.9	2.9	2.3
The child was sick, so vitamin A was not given	2.8	4	0.8	5.4	1.5	5.7	0	2.3
No Vitamin A	7.3	11	4.1	12.5	7.7	2.9	2.9	9.3
No Vaccinator	1.9	1	3.3	1.8	0	1.4	5.7	1.2
The centre was too far	9.7	1	32.8	0	4.6	4.3	11.4	1.2
Time was inconvenient	1.3	1	4.1	0	0	0	2.9	0
Fear of side effect	2.2	3	2.5	3.6	0	4.3	0	1.2
Waited for home visit	1.5	3	3.3	0	0	1.4	0	0
Was not at home	15.5	18	11.5	21.4	18.5	14.3	22.9	10.5
Child was not aged enough	0.6	0	0	0	0	0	0	3.5
The child refused to eat	2.6	0	1.6	0	3.1	0	0	11.6
Cant recall	0.4	0	0	0	0	2.9	0	0
Number of Children Who did not receive Vitamin A	**534**	**100**	**122**	**56**	**65**	**70**	**35**	**86**

Table P3: Reasons as to why Children did not receive Vitamin A Supplement during 18th NID in 2010 in Urban Areas by City Corporation/ Municipality

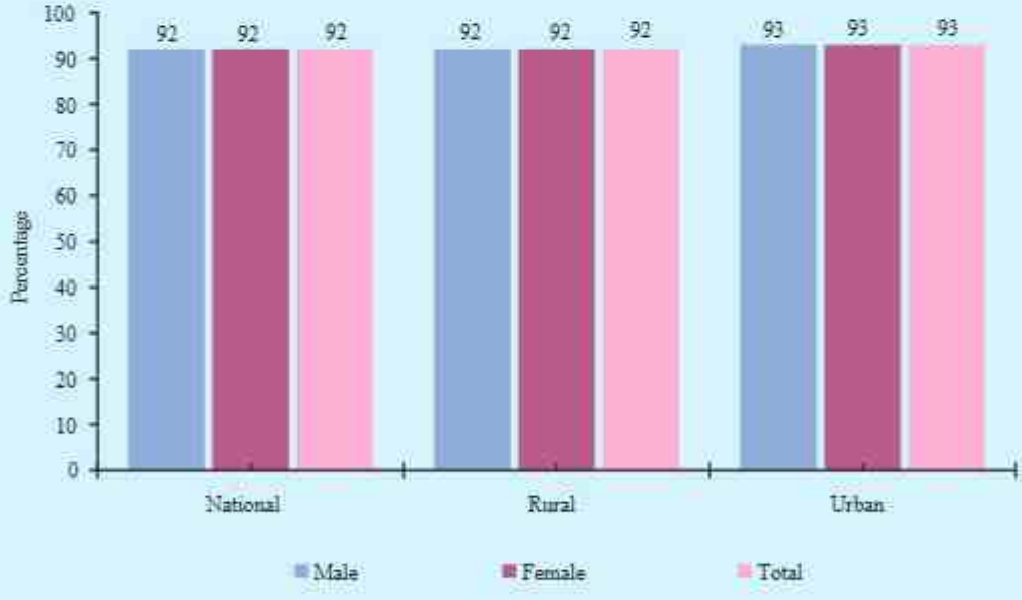
Reasons for not receiving Vitamin A	Urban Total	DCC	CCC	RCC	BCC	KCC	SCC	Other Urban
Didn't know	39.7	100	37.5	100	61.5	11.1	28.6	33.3
Was very busy	7.4	0	12.5	0	15.4	0	14.3	3.7
Went on traveling	11.8	0	25	0	0	22.2	0	14.8
No faith on vitamin A	2.9	0	12.5	0	0	11.1	0	0
The child was fed in the previous time	1.5	0	0	0	0	0	14.3	0
The child was sick, so he/she was not taken	4.4	0	0	0	0	22.2	0	3.7
The child was sick, so vitamin Awas not given	10.3	0	0	0	7.7	22.2	0	14.8
No Vitamin A	1.5	0	0	0	0	11.1	0	0
No Vaccinator	1.5	0	0	0	0	0	0	3.7
The centre was too far	1.5	0	0	0	0	0	14.3	0
Waited for home visit	1.5	0	0	0	7.7	0	0	0
Was not at home	11.8	0	12.5	0	7.7	0	14.3	18.5
Child was not aged enough	1.5	0	0	0	0	0	0	3.7
The child refused to eat	1.5	0	0	0	0	0	0	3.7
The doctor didnt give	1.5	0	0	0	0	0	14.3	0
Number of Children Who did not receive Vitamin A	**68**	**3**	**8**	**1**	**13**	**9**	**7**	**27**

5.7 Anthelmintic Coverage among Children

Albandazole tablet as an anthelmintic was given to the children aged between 24-59 months during the 18th NID held on 10th January, 2010. The survey findings are presented in Figure Q1. It shows that 92 percent of the children received Anthelmintic treatment during the 18th NID (see Figure Q1). The coverage was 1 percent higher in urban areas (93 percent), compared to that in rural areas (92 percent).

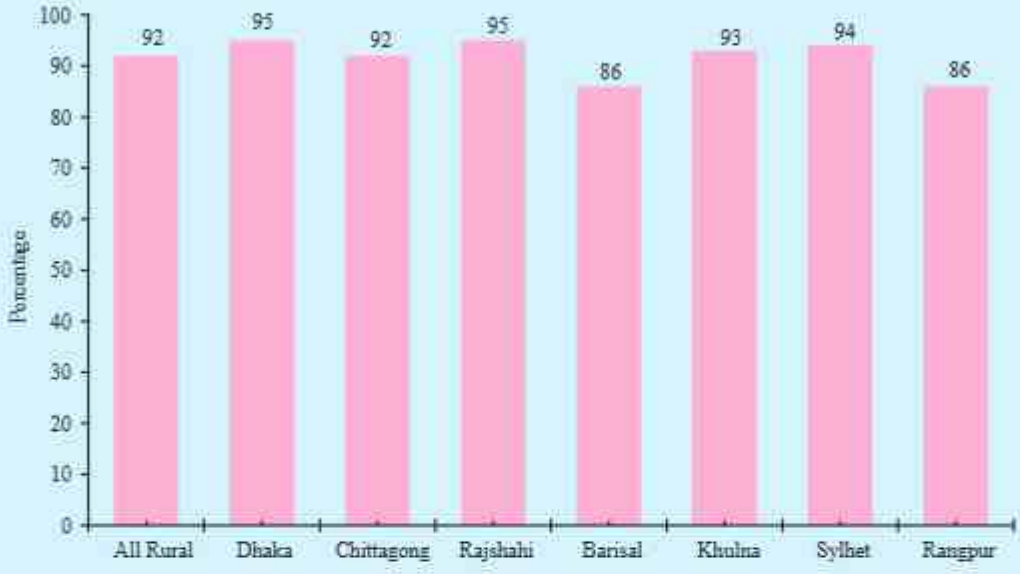
In rural areas by division, the coverage of Anthelmintic treatment was the highest in Rajshahi and Dhaka division (95 percent) and the lowest in Barisal and Rangpur divisions (86 percent). In other divisions, it ranged from 92 percent in Chittagong to 94 percent in Sylhet division (see Figure Q2). However, among the city corporations, the highest coverage rate was in Rajshahi City Corporation (98 percent). Sylhet City Corporation had the second highest position with 97 percent coverage. The lowest anthelmintic coverage was 85 percent which was found to be in CCC and BCC. It was being followed by DCC (93 percent) and KCC (95 percent) (see Figure Q3).

Figure Q1. Anthelmintic Coverage among Children in 18th NID in 2010 by National, Rural and Urban Areas



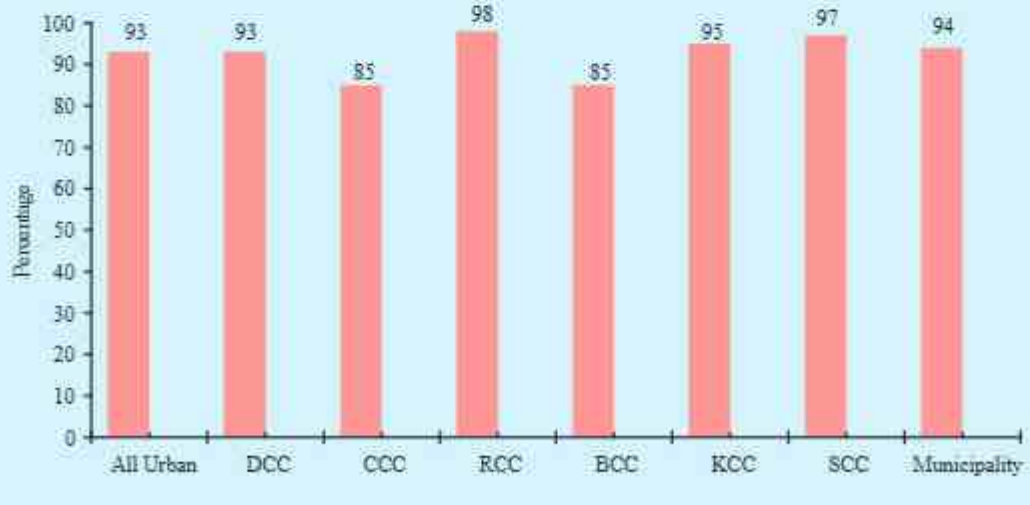
Source: CES 2010

Figure Q2. Anthelmintic Coverage among Children in 18th NID in 2010 in Rural Areas by Division



Source: CES 2010

Figure Q3. Anthelmintic Coverage among Children in 18th NID in 2010 in Urban Areas by City Corporation/ Municipality



Source: CES 2010

5.7.1 Reasons for Children's not Receive Anthelmintic

Mothers / caregivers, whose children didn't receive Anthelmintic treatment during the 18th NID, were asked to show the causes for not feeding it. Table Q1 shows that 27 percent of them reported that they didn't know about it while 18 percent mentioned that they had fed Anthelmintic tablet to the children in the past. This statement was being followed by some other reasons: the child was not at home; s/he was sick; and that Anthelmintic tablet was not available (7 percent); and mothers/caregivers were busy with their household work (4 percent) (see Tables Q1-Q3).

Lack of awareness about NID was the most common cause for not receiving Anthelmintic in both rural (27 percent) and urban (29 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 - 33 percent - in Barisal division, and the lowest - 22 percent - in Dhaka division. About one-third (31 percent) of them in Sylhet mentioned it. This was being followed by Khulna (30 percent), Rajshahi (28 percent), Rangpur (27 percent) and Chittagong divisions (23 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 NID. It was 55 percent in BCC, which was being followed by RCC and DCC (40 percent), SCC (29 percent), CCC (23 percent), and KCC (18 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 18th NID in 2010 by Region

Reasons for not receiving Anthelmintic	National	Rural	Urban
Didn't know	27.3	27	28.9
Was very busy	4.3	4.5	3
Went on traveling	3.8	3.8	4.2
Doesn't believe in vaccine	2.1	1.9	3
The child was fed in the previous time	17.8	14.9	34.9
The child was sick, so he/she was not taken	1.9	1.8	2.4
The child was sick, so vaccine was not given	7.1	6.8	9
No Vaccine	7.2	7.6	4.8
No Vaccinator	0.9	1	0
The centre was too far	4.2	4.8	0.6
Time was inconvenient	0.9	1.1	0
Fear of side effect	4.4	5	1.2
Waited for home visit	1.2	1.4	0
Was not at home	7.4	8	4.2
Child was not aged enough	1.1	1.2	0.6
The child refused to eat	2.5	2.7	1.2
Cant recall	0.3	0.4	0
The doctor didn't give	5.6	6.3	1.8
Number of Children who did not receive Anthelmintic tablet	**1170**	**1004**	**166**

Table Q2: Reasons as to why Children did not Receive Anthelmintic during 18th NID in 2010 in Rural Areas by Division

Reasons for not receiving Anthelmintic	Rural Total	DHK	CTG	RAJ	BSL	KHL	SYL	Rangpur
Didn't know	27	22.3	22.5	27.5	32.7	30.2	31.1	27
Was very busy	4.5	6.3	4.4	5	3.6	4.3	6.7	3.3
Went on traveling	3.8	4	3.8	7.5	3	4.3	2.2	2.8
Doesn't believe in vaccine	1.9	2.9	2.7	1.3	1.2	2.9	0	0.9
The child was fed in the previous time	14.9	16	12.6	16. 3	12.5	9.4	2.2	25.7
The child was sick, so he/she was not taken	1.8	4.6	0.5	3.8	1.2	2.2	0	0.5
The child was sick, so vaccine was not given	6.8	10.9	2.2	6.3	12.5	7.9	0	3.7
No Vaccine	7.6	10.9	4.9	6.3	8.3	3.6	8.9	9.3
No Vaccinator	1	0.6	2.2	1.3	0	1.4	4.4	0
The centre was too far	4.8	0	20.9	0	1.2	2.2	8.9	0.5
Time was inconvenient	1.1	1.1	2.7	0	1.2	0	2.2	0.5
Fear of side effect	5	6.3	3.3	2.5	4.8	10.8	11.1	1.4
Waited for home visit	1.4	2.3	2.2	0	1.2	0	0	1.9
Was not at home	8	8	8.8	12.5	8.9	5	20	4.2
Child was not aged enough	1.2	0.6	1.6	0	2.4	1.4	0	0.9
The child refused to eat	2.7	2.9	2.7	1.3	1.8	5	0	2.8
Can't recall	0.4	0	0	0	0	0.7	0	1.4
The doctor didn't give	6.3	.6	1.6	8.8	3.6	8.6	2.2	15.3
Number of Children who did not receive Anthelm intic tablet	**1004**	**175**	**182**	**80**	**168**	**139**	**45**	**215**

Table Q3: Reasons as to why Children did not Receive Anthelmintic during 18th NID in 2010 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	28.9	40	22.6	40	54.8	18.2	28.6	18.2
Was very busy	3	0	3.2	0	6.5	0	14.3	1.5
Went on traveling	4.2	6.7	6.5	0	0	18.2	0	3
Doesn't believe in vaccine	3	0	3.2	20	0	18.2	0	1.5
The child was fed in the previous time	34.9	33. 3	58.1	20	12.9	0	14.3	43.9
The child was sick, so he/she was not taken	2.4	0	0	0	0	18.2	0	3
The child was sick, so vaccine was not given	9	6.7	3.2	0	9.7	18.2	0	12.1
No Vaccine	4.8	0	0	20	12.9	0	0	4.5
The centre was too far	0.6	0	0	0	0	0	14.3	0
Fear of side effect	1.2	0	0	0	0	9.1	0	1.5
Was not at home	4.2	6.7	3.2	0	3.2	0	14.3	4.5
Child was not aged enough	0.6	6.7	0	0	0	0	0	0
The child refused to eat	1.2	0	0	0	0	0	0	3
The doctor didn't give	1.8	0	0	0	0	0	14.3	3
Number of Children who did not receive Anthelmintic tablet	**166**	**15**	**31**	**5**	**31**	**11**	**7**	**66**

CHAPTER 6

MEASLES FOLLOW-UP CAMPAIGN

The Measles Initiative is a partnership committed to reducing measles deaths globally. Launched in 2001, the Initiative - led by the American Red Cross, the United Nations Foundation, the U.S. Centers for Disease Control and Prevention, UNICEF, and the World Health Organization (WHO)-provides technical and financial support to different governments and communities on vaccination campaigns and disease surveillance in the world.

In 2001, WHO and UNICEF adopted a joint strategic plan for global measles mortality reduction, which was endorsed by the World Health Assembly in 2003. In Bangladesh, the objective of the national plan of action is to reduce measles mortality by 90 percent by 2010 in comparison to 2000.

Bangladesh conducted a major national measles catch up campaign in 2005-2006. About 35 million children aged between 9 months and 10 years were immunized. As a result, the number of measles outbreaks registered in 2006 was only 7, compared to 27 registered in the first two months of 2006 prior to the campaign. No measles outbreak was reported in 2007; and only one occurred respectively in 2008 and 2009.

However, 25 to 30 percent of the children in each birth cohort remain susceptible to measles. This is why, the Ministry of Health and Family Welfare has decided to conduct this measles follow-up campaign, with the objective to target particularly those children who were born after the last campaign held in 2005-06. Children who had measles vaccines before or those who suffered from measles were also vaccinated with measles vaccine during this campaign as a second dose of vaccine is recommended to ensure that the child is fully immunized. The measles campaign was held between 14 and 28 February, 2010.With an aim to cover all the 20 million children living in Bangladesh through this fortnight-long campaign, 23 million doses of measles vaccines, 29 million doses of polio vaccines, 23 million auto-disabled syringes, 2.3 million reconstitution syringes and 150,000 safety boxes were distributed throughout the country. Every step was taken to ensure the full safety of the injection through the use of disposable syringes and effective maintenance of the cold chain in order to keep the vaccines below +8 degrees celsius.

6.1 Measles Follow-up Campaign and Coverage

In the EPI Coverage Evaluation Survey 2010, information about the measles vaccination was collected from the children who were born between 16-02-2005 and 20-05-2009. The information collected in this respect suggests that overall, in Bangladesh, 88 percent of the eligible children were covered by measles vaccination under measles follow-up campaign in 2010. There was a little variation in the coverage by urban and rural areas, i.e. 88 percent in rural areas as opposed to 89 percent in urban areas (see Figure R2). Among all the rural divisions, measles coverage was found to be the highest (92 percent) in Rajshahi, which was being followed by Rangpur (90 percent), Khulna and Sylhet (89 percent), Dhaka (88 percent), Barisal (85 percent) and Chittagong (84 percent). As has been mentioned above, there was a little difference between rural areas by division and in urban areas by city corporation and municipality in respect of measles coverage (see Figure R3- R4). In the urban areas by city corporation, the coverage was the highest in RCC (96 percent) and the lowest in BCC (80 percent). However, for the other city corporations, it varied between 83 percent in CCC and 93 percent in DCC.

6.2 Reasons for not Receiving Measles by Urban and Rural areas

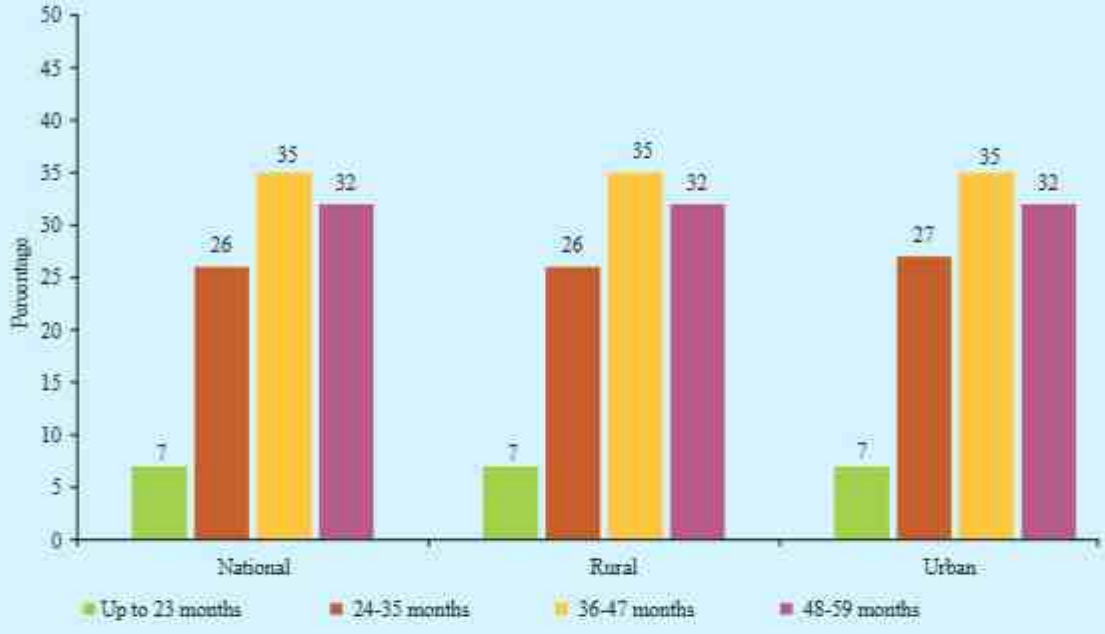
Mothers or caregivers of the children who did not receive measles vaccines during the period mentioned above were asked to mention reasons for not receiving measles.The information is presented in Figure R5. About one-third of them (33 percent) mentioned that they did not know about the measles campaign. This statement was being followed by the following reasons: the child was given measles earlier (32 percent); mothers/caregivers were not at home (7 percent); mothers/caregivers were in travelling (4 percent); the child was sick, so the parents did not take him/her to the vaccination site (4 percent); vaccination center was too far (4 percent); and mothers/care givers were busy with their household work (3 percent). More or less, similar patterns of causes were observed in both urban and rural areas.

In both rural and urban areas, the most common causes were parents' lack of awareness about the campaign and fact that the child had been vaccinated with measles vaccine earlier.

6.3 Sources of Receiving Information for Measles Campaign

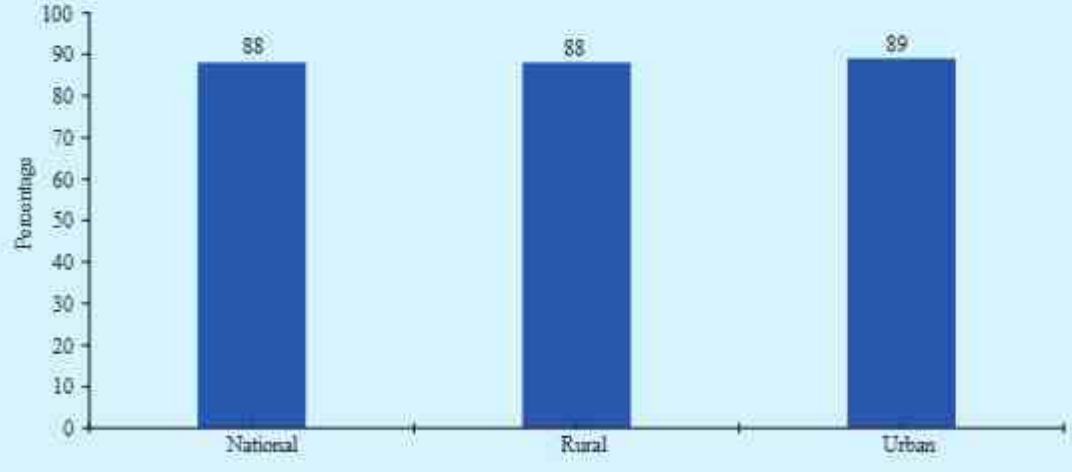
CES 2010 investigated the sources of receiving information about measles campaign. Overall, in Bangladesh the significant sources of information were field workers (28 percent), mosque-miking (25 percent), mobile-miking (22 percent), television (19 percent), neighbors (14 percent), NGO workers (12 percent), volunteers (7 percent), and GoB workers (10 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 (39 percent). The other sources were mobile-miking (28 percent), health workers' visit (20 percent), mosque-miking and neighbors (17 percent), GoB/ NGO worker's (9 percent), and volunteers' visit to the residence (6 percent). The corresponding sources in rural areas were TV (15 percent), mobile miking (21 percent), health workers' visit (30 percent), mosque-miking (26 percent), neighbors and NGO workers (13 percent), GoB workers (11 percent), and volunteers (8 percent) (see Figure R6).

Figure R1 : Age Distribution of Children Sampled for Measles Survey by National, Rural and Urban Areas in 2010



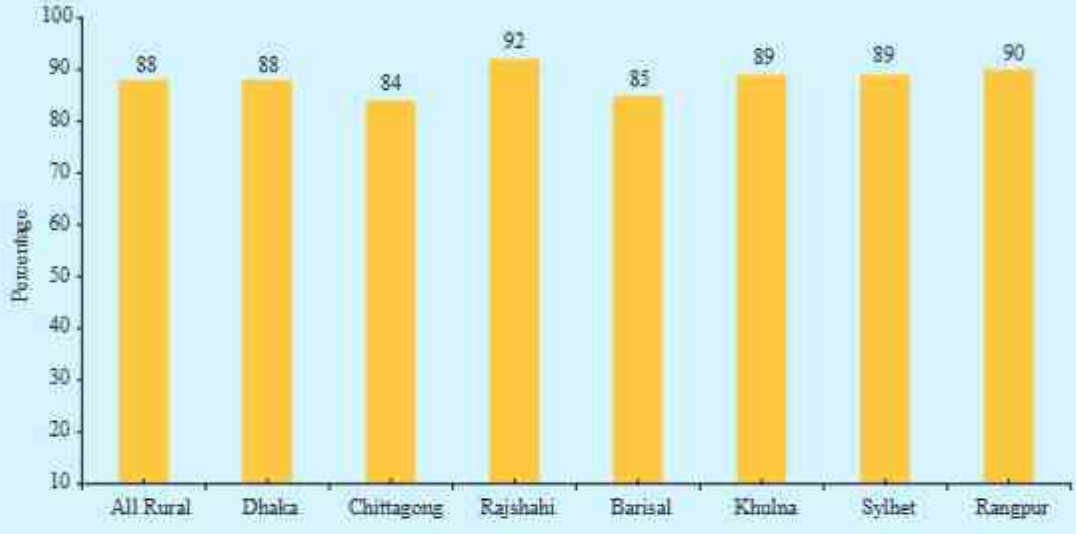
Source: CES 2010

Figure R2: Measles Coverage by National, Rural and Urban Areas in 2010



Source: CES 2010

Figure R3: Measles Coverage in Rural Areas by Divisions in 2010

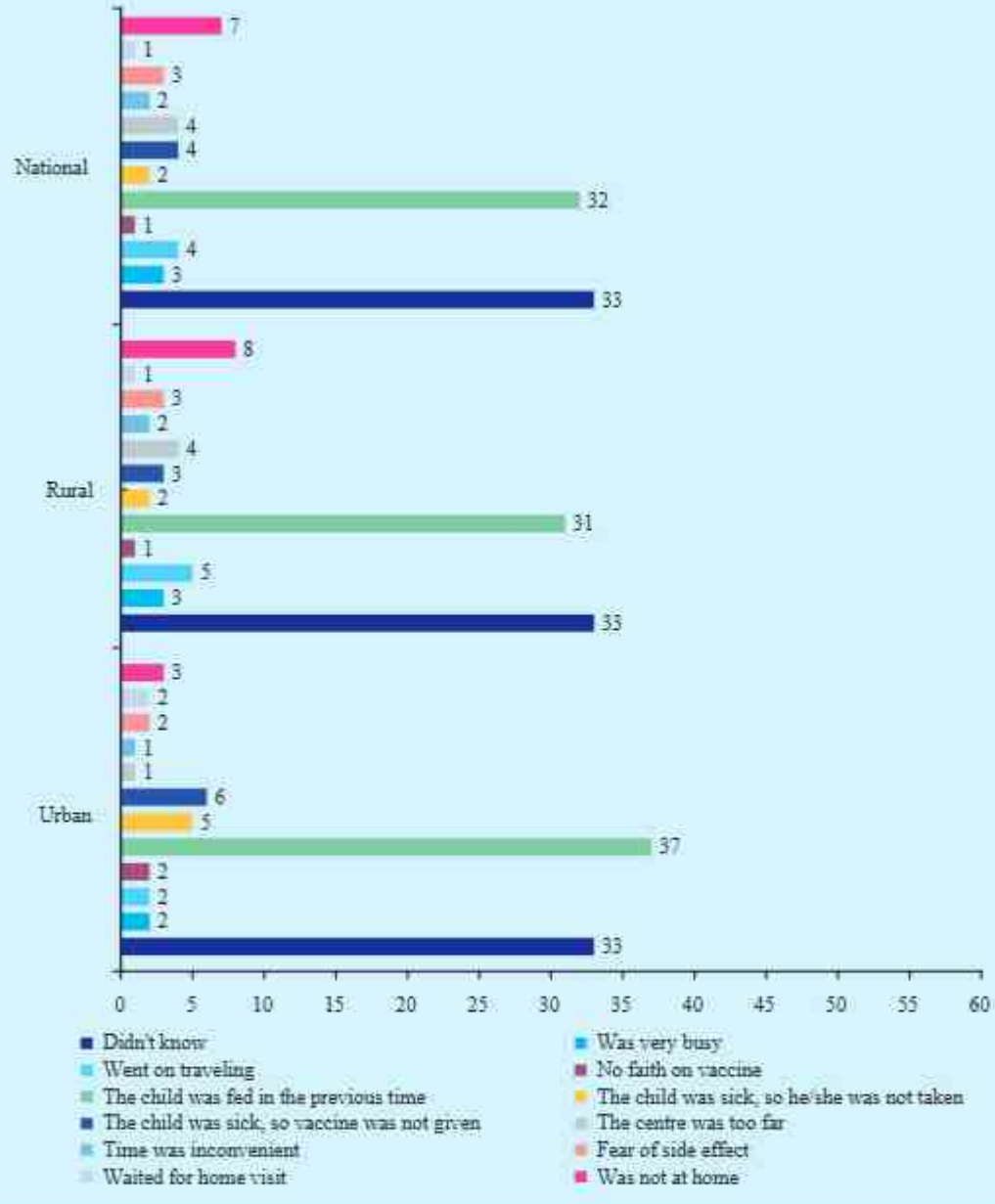


Source: CES 2010

Figure R4: Measles Coverage in Urban Areas by City Corporations/ all Municipalities in 2010

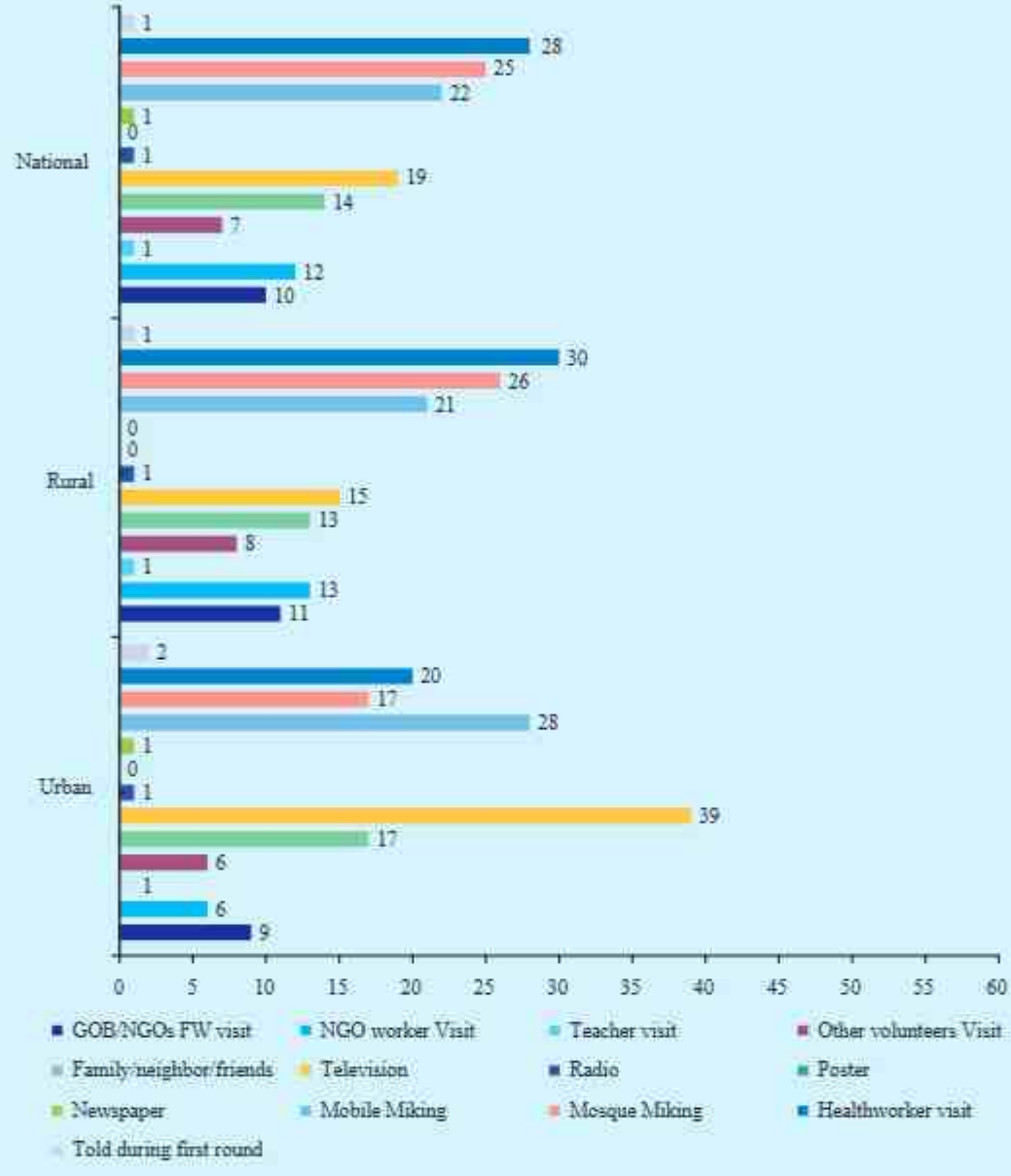
Source: CES 2010

Figure R5: Reasons for not Receiving Measles by National, Rural and Urban Areas in 2010



Source: CES 2010

Figure R6: Soureces of Information about Measles Follow-up Camapign by National, Rural and Urban Areas in 2010



Source: CES 2010

CHAPTER 7

DISCUSSION AND PROGRAMATIC IMPLICATIONS

DISCUSSION AND PROGRAMMATIC IMPLICATION

CES 2010 was conducted as an important part of the monitoring activities of EPI program in Bangladesh following the WHO EPI 30 clusters sampling technique. Since 1991, 17 CESs have been conducted so far. Four types of survey respondents were included in EPI CES 2010. Despite the tremendous progress observed in the vaccination coverage since the initiation of the program, the vaccination coverage is lacking 11 percent behind the expected coverage of 90 percent. In CES 2010, fully vaccination coverage by 12 months of age was found to be 79 percent with a little variation in urban (79 percent) and rural (80 percent) areas. Narrowing the gap in the vaccination coverage between children living in rural and those in urban areas is a milestone of the EPI program. It is also a good indication to reach the target coverage (90 percent).

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 (79 percent), as a result of low performance in some of the districts under those divisions. The coverage was found to be 78 percent in Dhaka division, 76 percent in Chittagong division, and 74 percent in Sylhet division.

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, and Sylhet divisions. Compared to the CES 2009, coverage in Dhaka division increased in 13 different districts while it marginally decreased in only 3 districts which are Mymensingh, Munshiganj, and Shariatpur. However, the highest improvement in the coverage was observed in Narayanganj district. It increased by 17 percent- from 69 percent in 2009 to 86 percent in 2010. Besides, improvement of the coverage in Gazipur district was 13 percent, in Netrokona 10 percent, in Gopalganj and Madaripur 8 percent, in Kishoreganj 6 percent, in Narsingdi 7 percent, in Jamalpur and Manikganj 5 percent, and in Sherpur 7 percent. 5 percent increase in the vaccination coverage in Dhaka division is a result of the improvement in the coverage in those districts.

Notwithstanding, coverage in Netrokona, Rajbari, Shariatpur, Jamalpur, Gazipur, and Faridpur districts, and DCC was below the divisional coverage. Among the districts, the highest coverage was 86 percent- in Sherpur and Narayanganj districts; and the lowest in Madaripur district. Incidence of invalid DPT3 was 16 percent in Gazipur, 14 percent in Faridpur, 12 percent in Netrokona and Rajbari, 10 percent in Madaripur and Mymensingh, 9 percent in Tangail and Shariatpur, 8 percent in Dhaka, and less than 8 percent in other districts. The act of administering invalid doses of measles was found to be the highest in Netrokona district (9 percent). It was 8 percent in Madaripur, 6 percent in Sherpur, Rajbari, and Gopalganj, and less than 6 percent in other districts. However, DPT1-measles dropout rates were 15 percent in Manikganj, 11 percent in Shariatpur, Mymensingh and Jamalpur, 10 percent in Madaripur, 8 percent in Rajbari and Narsinghdi, and less than 8 percent in other districts. In Chittagong division, the coverage increased by 2 percent, compared to that in CES 2009. Among all the districts there, it increased in 7 districts and decreased in Bandarban, Khagrachhari, Rangamati, and Noakhali. The highest coverage was observed in Brahmanbaria (85 percent) and the lowest

was found to be decreasing, while it was more fluctuating in Cox'sbazar and Bandarban districts. In Chittagong division, the leftout was found to be the highest (15 percent) in Bandarban district, and the dropout in Noakhali district (13 percent). Despite improvement in the coverage in some of the districts of Chittagong division, incidence of invalid doses is a concern. Invalid DPT3 was 16 percent in Cox'sbazar, 14 percent in Chadpur, 13 percent in Chittagong, 9 percent in Comilla, and less than 9 percent in other districts. The act of administering invalid measles dose was also found to be the highest in Cox'sbazar (10 percent). No invalid measles dose was found in Comilla district.

In Rajshahi division, coverage increased in 13 districts and marginally decreased in 3 districts: Nilphamari (6 percent), Pabna (4 percent), and Joypurhat (1 percet). Rajshahi achieved the targeted coverage of 90 percent of the EPI program. The highest improvement in coverage was noticed in Kurigram district (65 percent in 2009 and 81 percent in 2010), and the lowest in Serajganj district (80 percent in 2009 and 84 percent in 2010). Among the districts, the highest coverage was found to be 90 percent in Rajshahi and the lowest in Thakurgaon district (69 percent). A very small proportion of left-out was observed in Chapainawabganj (1 percent), Natore (1 percent), Nilphamari (0.5 percent), and Thakurgaon (0.5 percent) districts. Incidence of invalid dose of DPT3 was the highest in Thakurgaon (14 percent), and measles in Pabna (8 percent). In case of DPT1-measles dropout rate, it was found 8 percent in Thakurgaon and Nilphamari, 7 percent in Chapainawabganj and Gaibandha, 5 percent in Rangpur and Lalmonirhat, and less than 5 percent in other districts. However, it is important to mention here that the coverage was at or over the national coverage in 11 districts and below in Gaibandha, Kurigram, Rangpur, Nilphamari, and Thakurgaon. While taking into account all these facts and figures, it can now be said that it is a challenge for the recently established division - Rangpur - to increase the coverage upto a satisfactory level.

In Khulna division, the overall coverage increased by 3 percent, compared to that in CES 2009. Among the districts, the coverage decreased in Bagerhat (71 percent in 2009 and 69 percent in 2010) and Jhenaidah (84 percent in 2009 and 77 percent in 2010). The coverage was at or over 80 percent in all the districts except in Bagerhat and Jhenaidah. The highest coverage was found to be 86 percent in Khulna and the lowest in Bagerhat (69 percent). Incidence of invalid DPT3 was 12 percent in Jhenaidah, 10 percent in Bagerhat and Kustia, 9 percent in Meherpur, 6 percent in Chuadanga and Jessore, and less than 6 percent in other districts. The act of administering invalid dose of measles vaccine was found to be the highest (8 percent) in Chuadanga, Narail, and Bagerhat, and the lowest in Satkhira (2.5 percent). However, DPT1-measles dropout rate was the highest (11 percent) in Bagerhat, and the lowest (1 percent) in Khulna. Incidence of invalid DPT3, measles, and the dropout rates attributed to low vaccination coverage in Bagerhat district.

Compared to that in CES 2009, full vaccination coverage in Barisal division increased by 4 percent in CES 2010. Coverage in Perojpur and Patuakhali districts marginally decreased. Except in Barisal district, it was found to be at or over 80 percent in other districts. Notwithstanding, incidence of invalid dose of DPT3 was 10 percent in Patuakhali and Barisal, 9 percent in Jhalokati, and 6 percent in Bhola. Invalid measles dose was 6 percent in Perojpur and 5 percent in Jhalokati. Besides, DPT1-measles dropout rate was the highest in Barguna and the lowest in Jhalokati and Patuakhali.

Although improvement in the coverage was observed in Sylhet division, it is still 5 percent below the level of national coverage (79 percent). Compared to that found in CES 2009, the coverage increased in all districts except in Sunamganj. The highest improvement in coverage was observed in Habiganj district (61 percent in 2009 and 79 percent in 2010). The left-out rate was found to be comparatively higher in Moulvibazar (4.3 percent) and Sunamganj (3.8 percent). Incidence of invalid dose of DPT3 was 8 percent in Moulvibazar, 7 percent in Habiganj, 6 percent in Sylhet, and 5 percent in Sunamganj districts. The act of administering invalid dose of measles vaccine was found to be 5 percent in Sylhet, 3 percent in Sunamganj and Moulvibazar, and 1 percent in Habiganj. However, in terms of DPT1-measles dropout rate it should be mentioned here that it was found to be 13 percent in Sunamganj, 11 percent in Moulvibazar, 8 percent in Sylhet, and 6 percent in Hobiganj district.

A question may arise despite tremendous progress in the vaccination service as to why the coverage is lower than that in found in the previous CES in some districts. Is it due to the high dropout rates? Or, is it for administering vaccine by not 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 using the CES 2010 data. The analysis has identified four main causes - a) dropouts, b) the act of administering vaccine before the EPI-recommended interval between the doses, c) the act of administering the measles vaccine beyond 12 months of age, and d) low card retention rate.

Dropout resulted from the mothers'/caregivers' lack of awareness of the importance of vaccination, distance of the vaccination center, lack of proper information by the field workers about the vaccination day, and migration. In order to achieve the coverage target, all these issues should be considered in the program. Higher dropout rates also attributed to lower vaccination coverage rate. The dropout rate was observed to be the highest (DPT1-measles - 13 percent) in Noakhali, which attributed to the lowest vaccination coverage in that district (64 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 is also responsible for the low coverage in Dhaka, Chittagong, and Sylhet divisions below the national coverage. The incidence of invalid doses of DPT3 revealed 8 percent in Dhaka, 9 percent in Chittagong, and 7 percent in Sylhet divisions. As regard to district coverage, it should be stated here that the coverage in Noakhali district was the lowest with 13 percent invalid DPT3 dose. Similarly, in Rajshahi division, the coverage stands the lowest in Thakurgaon district with 14 percent invalid DPT3 dose.

EPI program should ensure EPI-recommended vaccination schedule allover the country, irrespective of the residences of the target population. Vaccination card retention rate is one of the major causes of lower coverage since the vaccination coverage is based on card. Nationally, card retention rate was 73 percent. It was the highest in Rajshahi and Sylhet divisions (77 percent) and the lowest in Dhaka division (69 percent). Among all districts, vaccination card retention rate was found to be the highest in Joypurhat (94 percent). In Bangladesh, some of the mothers/caregivers didn't give any importance to preserve it. Non- preservation of the vaccination cards was observed among the mothers residing both in urban and rural areas.

Besides, in Bangladesh birth registration is not done in most of the cases. As a result, it is often very difficult to find out the exact date of birth of the child.

Finally, there is a large difference between the overall vaccination coverage and the valid coverage rates in almost all 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 Chittagong division. It was 14 percent in Dhaka, Barisal, Khulna, and Sylhet divisions, and 13 percent in Rajshahi division. Now the major questions are: How this gap can be minimized and what are the strategies to be taken for this purpose? All these issues require a detailed discussion.

In regard to 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 55 percent of the mothers received 5 doses of TT. But, in terms of valid coverage, the coverage of TT5 was found to be 39 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 the recipient's previous TT status. In most of the cases, mothers lost their vaccination cards. 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. TT2 coverage is mostly related to PAB. Among the surveyed mothers, Valid TT2 coverage was found to be 95 percent while the PAB status was found to be 92 percent in CES 2010. The analysis indicated that a total of 8 percent children were not protected against tetanus while they were born. Although TT2 coverage was 95 percent, PAB was 92 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 8 percent of the children are at risk of tetanus although Bangladesh achieved the NT elimination status.

Similarly, TT survey among the women who are 18-49 years old shows that overall 47 percent women received TT5 doses. Among them, 33 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. Nationally, 41 percent of the mothers didn't know about the number of doses. The urban-rural analysis shows 9 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 avoid administering unnecessary doses and save huge quantities of TT vaccine. CES 2010 shows that 51 percent of the women lost their vaccination cards. The survey results revealed that card retention rate is 44 percent. Rural mothers were found to be more likely to retain TT vaccination card, compared to their urban counterparts (46 in rural and 38 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. 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, 97 percent of the children aged between 0-59 months received OPV in the first round of 18th NID while 93 percent received it during the measles follow-up campaign. However, 91 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, 96 percent of the children received OPV from the fixed site during the 18th NID. Despite the high coverage of OPV in the 18th NID (97 percent), the coverage is decreased by 4 percent during the measles follow-up campaign. This may be due to the lack of awareness about the campaign. Among the mothers/caregivers whose children didn't receive OPV on 10th January, 2010, 35 percent reported about their lack of awareness about it. Seventeen percent mothers reported that they were busy with their household work. 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 reducing the rates of left-outs and dropouts in either round.

In order to reduce child mortality and morbidity caused by measles, a measles follow up campaign targeted towards the children aged between 9 months and 59 months was held from 14th February to 28th February in 2010 in Bangladesh. Eighty eight percent of the children received measles vaccine during this period. Urban-rural variation was 1 percent. As against 88 percent in rural areas, 89 percent of the children in urban areas received measles vaccine. While explaining the reasons for not receiving measles vaccine, 32 percent of the mothers reported that they vaccinated their children with measles vaccine according to the routine vaccination schedule. About one-third of the mothers/caregivers were unaware of the campaign. More IPC regardless of routine vaccination schedule through health workers may help achieve universal coverage.

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

- How the child vaccination card can be preserved since 27 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? And, use same card in all the Go, NGO and private hospitals/clinics
- How to minimize the dropouts from DPT1 to DPT3? Missing DPT2 or DPT3 will discourage mothers not to visit EPI center for the next vaccination because they do not give importance to it
- Dropout rates from DPT1 to DPT3 are also high in the low performing divisions. These divisions need regular supervision and monitoring to minimize the dropout rates
- Dropout rate from DPT1 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 increase significantly
- Overall, the success of EPI Program depends on three important factors: 1) preservation of the vaccination card and minimizing the dropout rates in case of multi-doses vaccines, 2) strict maintenance of the recommended dose schedule of vaccines to avoid invalid doses, thus ensuring reduction of the gap between overall/total coverage and valid coverage. If EPI program management could improve 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 low performance. 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 AND FIGURES

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N. OPV Coverage

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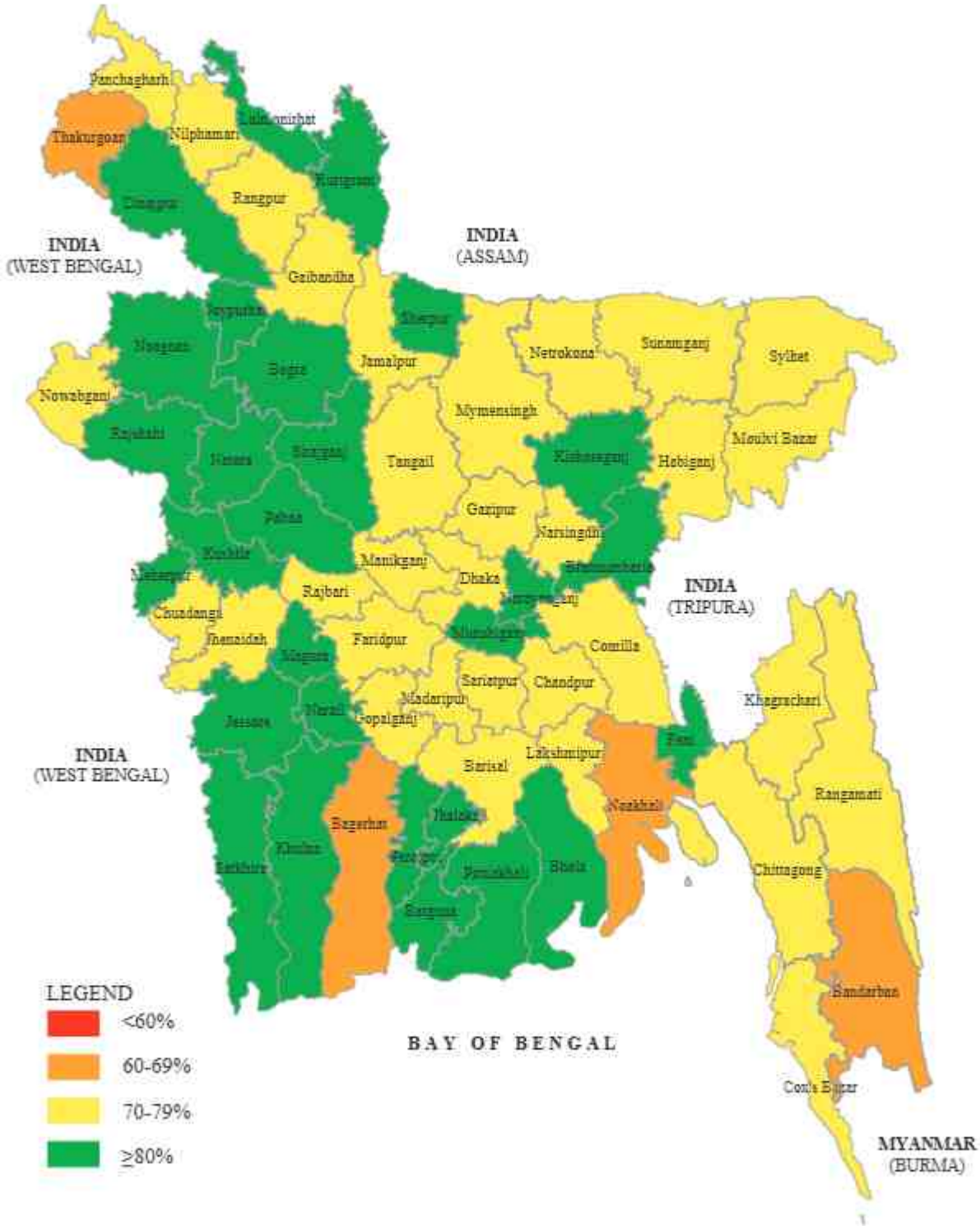
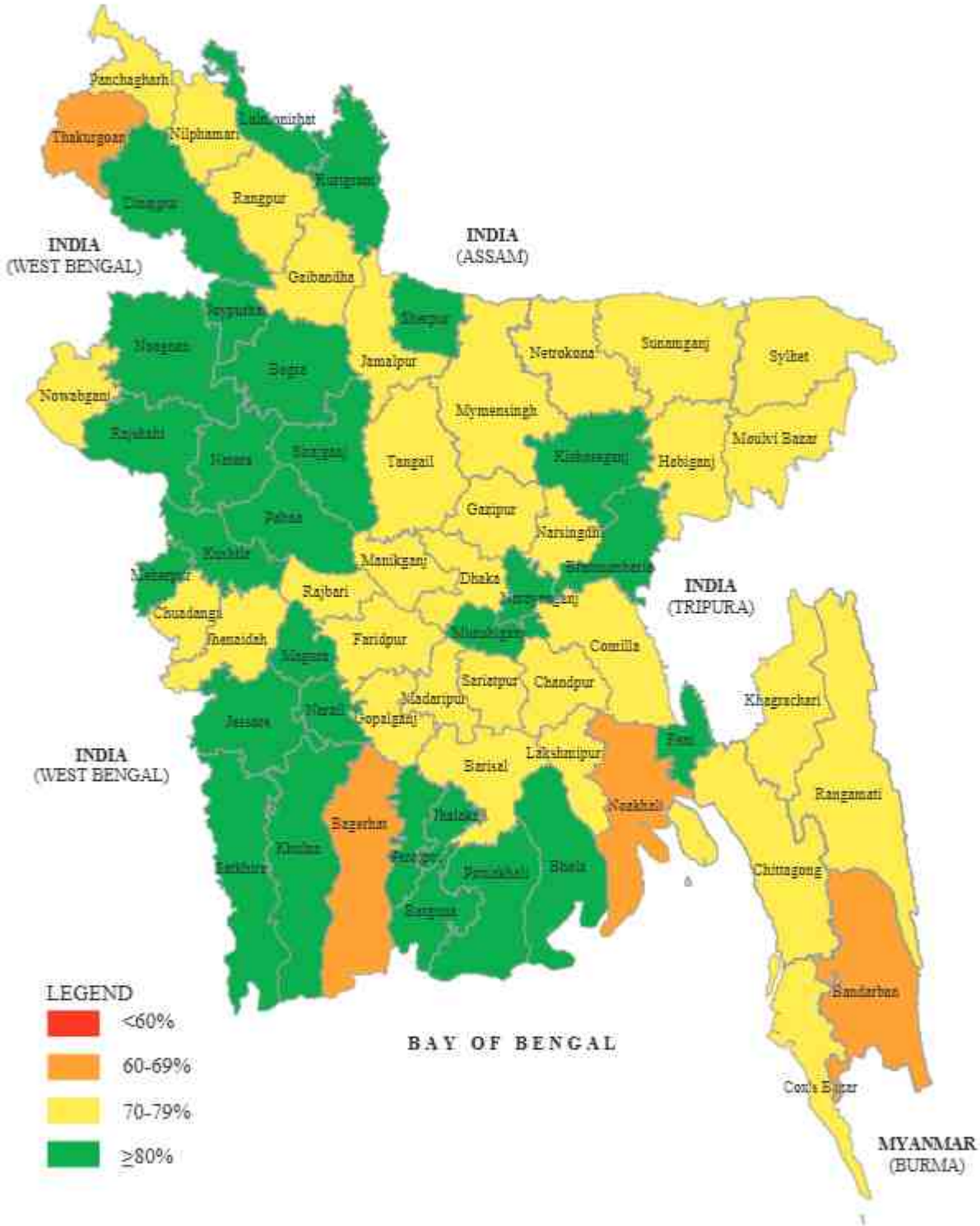
R. Measles Coverage

VACCINATION COVERAGE BY SURVEY UNIT

VALID FULLY VACCINATION COVERAGE BY 12 MONTHS OF AGE IN BANGLADESH BY DISTRICT 2010



VALID FULLY VACCINATION COVERAGE BY 12 MONTHS OF AGE IN BANGLADESH BY DISTRICT 2010



Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Rajshahi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.4	94.3	94.3	94.6	90.2
Rangpur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.3	88.3	88.3	87.8	78.0
Serajganj	99.3	99.3	99.3	99.3	99.3	99.3	99.3	96.8	90.9	90.9	89.7	83.5
Thakurgaon	98.9	98.4	98.4	98.4	97.1	96.5	96.5	90.3	82.2	82.2	78.7	69.0
RCC	100.0	99.5	99.5	99.5	99.0	99.0	99.0	99.0	98.3	98.3	96.1	95.3
Rajshahi Division	99.6	99.4	99.4	99.4	98.5	98.5	98.5	95.7	90.9	90.9	87.7	82.5
Habiganj	98.6	98.6	98.6	98.6	96.5	96.5	96.5	93.1	88.6	88.6	83.3	78.5
Moulavibazar	95.7	95.2	95.2	95.2	94.3	94.3	94.3	90.7	85.7	85.7	79.3	73.7
Sunamganj	96.2	95.7	95.7	95.7	92.3	92.3	92.3	85.7	83.4	83.4	75.9	73.6
Sylhet	100.0	100.0	100.0	100.0	99.5	99.0	99.0	95.9	91.4	91.4	81.6	75.9
SCC	95.5	94.0	94.0	94.0	90.6	90.6	90.6	85.9	78.3	78.3	77.3	69.5
Sylhet Division	97.2	96.7	96.7	96.7	94.7	94.6	94.6	90.3	85.7	85.7	79.4	74.3
Barisal	99.0	98.4	98.4	98.4	97.9	97.2	97.2	93.7	88.1	88.1	84.7	78.1
Bhola	97.8	97.4	97.4	97.4	96.9	96.9	96.9	94.2	90.4	90.4	88.2	84.3
Barguna	100.0	99.5	99.5	99.5	97.9	97.9	97.9	93.9	91.1	91.1	83.8	80.8
Jhalokati	99.3	99.3	99.3	99.3	98.3	98.3	98.3	97.4	89.1	89.1	88.2	80.3
Patuakhali	99.5	98.9	98.9	98.9	97.5	97.5	97.5	95.7	87.7	87.7	88.9	80.6
Perojpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.0	92.9	92.9	86.5	83.0
BCC	99.0	99.0	99.0	99.0	96.2	96.2	96.2	94.1	89.2	89.2	86.4	80.5
Barisal Division	99.3	98.9	98.9	98.9	97.7	97.6	97.6	95.0	89.8	89.8	86.6	81.0
Bandarban	83.2	83.2	83.2	83.2	82.4	82.4	82.4	78.4	75.7	75.7	68.4	65.3
B.Baria	95.5	95.0	95.0	95.0	94.6	94.6	94.6	92.2	89.5	89.5	87.7	84.7
Chandpur	97.6	97.6	97.6	97.6	97.6	97.6	97.6	95.6	83.8	83.8	92.2	79.9
Chittagong	100.0	100.0	100.0	100.0	98.4	98.4	98.4	95.6	85.9	85.9	88.7	78.9
Comilla	99.5	99.5	99.5	99.5	97.4	97.4	97.4	94.5	88.6	88.6	85.7	79.6
Cox'sbazar	100.0	100.0	100.0	100.0	99.5	99.5	99.5	94.5	83.7	83.7	84.8	72.6
Feni	99.0	99.0	99.0	99.0	99.0	99.0	99.0	94.2	91.7	91.7	86.3	83.7
Khagrachari	91.9	91.9	91.9	91.9	88.6	88.6	88.6	86.5	82.2	82.2	77.8	73.2
Lakshmipur	97.1	96.7	96.7	96.7	95.7	95.7	95.7	91.3	87.5	87.5	83.4	79.3
..oakhali	96.7	96.2	96.2	96.2	93.6	93.6	93.6	87.7	78.8	78.8	73.5	63.9
Rangama i	94.2	93.7	93.7	93.7	91.8	91.8	91.8	90.8	87.3	87.3	78.2	74.6
CCC	97.6	97.6	97.6	97.6	97.1	97.1	97.1	95.4	87.9	87.9	85.9	78.2
C . slum	98.6	98.1	98.1	98.1	94.1	94.1	94.	89.3	84.4	84.4	74.9	69.1
[illegible]	96.0	95.9	95.9	95.9	94.7	94.7	94.7	91.5	85.3	85.3	82.7	76.2
..ational	98.6	98.4	98.4	98.4	97.1	97.0	97.0	93.6	88.7	88.7	84.8	79.4
..ban	98.9	98.5	98.5	98.5	96.7	96.7	96.7	93.7	88.7	88.7	84.3	79.0
Rural	98.6	98.4	98.4	98.4	97.1	97.0	97.0	93.6	88.7	88.7	84.9	79.5

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Rajshahi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.4	94.3	94.3	94.6	90.2
Rangpur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.3	88.3	88.3	87.8	78.0
Serajganj	99.3	99.3	99.3	99.3	99.3	99.3	99.3	96.8	90.9	90.9	89.7	83.5
Thakurgaon	98.9	98.4	98.4	98.4	97.1	96.5	96.5	90.3	82.2	82.2	78.7	69.0
RCC	100.0	99.5	99.5	99.5	99.0	99.0	99.0	99.0	98.3	98.3	96.1	95.3
Rajshahi Division	99.6	99.4	99.4	99.4	98.5	98.5	98.5	95.7	90.9	90.9	87.7	82.5
Habiganj	98.6	98.6	98.6	98.6	96.5	96.5	96.5	93.1	88.6	88.6	83.3	78.5
Moulavibazar	95.7	95.2	95.2	95.2	94.3	94.3	94.3	90.7	85.7	85.7	79.3	73.7
Sunamganj	96.2	95.7	95.7	95.7	92.3	92.3	92.3	85.7	83.4	83.4	75.9	73.6
Sylhet	100.0	100.0	100.0	100.0	99.5	99.0	99.0	95.9	91.4	91.4	81.6	75.9
SCC	95.5	94.0	94.0	94.0	90.6	90.6	90.6	85.9	78.3	78.3	77.3	69.5
Sylhet Division	97.2	96.7	96.7	96.7	94.7	94.6	94.6	90.3	85.7	85.7	79.4	74.3
Barisal	99.0	98.4	98.4	98.4	97.9	97.2	97.2	93.7	88.1	88.1	84.7	78.1
Bhola	97.8	97.4	97.4	97.4	96.9	96.9	96.9	94.2	90.4	90.4	88.2	84.3
Barguna	100.0	99.5	99.5	99.5	97.9	97.9	97.9	93.9	91.1	91.1	83.8	80.8
Jhalokati	99.3	99.3	99.3	99.3	98.3	98.3	98.3	97.4	89.1	89.1	88.2	80.3
Patuakhali	99.5	98.9	98.9	98.9	97.5	97.5	97.5	95.7	87.7	87.7	88.9	80.6
Perojpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.0	92.9	92.9	86.5	83.0
BCC	99.0	99.0	99.0	99.0	96.2	96.2	96.2	94.1	89.2	89.2	86.4	80.5
Barisal Division	99.3	98.9	98.9	98.9	97.7	97.6	97.6	95.0	89.8	89.8	86.6	81.0
Bandarban	83.2	83.2	83.2	83.2	82.4	82.4	82.4	78.4	75.7	75.7	68.4	65.3
B.Baria	95.5	95.0	95.0	95.0	94.6	94.6	94.6	92.2	89.5	89.5	87.7	84.7
Chandpur	97.6	97.6	97.6	97.6	97.6	97.6	97.6	95.6	83.8	83.8	92.2	79.9
Chittagong	100.0	100.0	100.0	100.0	98.4	98.4	98.4	95.6	85.9	85.9	88.7	78.9
Comilla	99.5	99.5	99.5	99.5	97.4	97.4	97.4	94.5	88.6	88.6	85.7	79.6
Cox'sbazar	100.0	100.0	100.0	100.0	99.5	99.5	99.5	94.5	83.7	83.7	84.8	72.6
Feni	99.0	99.0	99.0	99.0	99.0	99.0	99.0	94.2	91.7	91.7	86.3	83.7
Khagrachari	91.9	91.9	91.9	91.9	88.6	88.6	88.6	86.5	82.2	82.2	77.8	73.2
Lakshmipur	97.1	96.7	96.7	96.7	95.7	95.7	95.7	91.3	87.5	87.5	83.4	79.3
Noakhali	96.7	96.2	96.2	96.2	93.6	93.6	93.6	87.7	78.8	78.8	73.5	63.9
Rangamati	94.2	93.7	93.7	93.7	91.8	91.8	91.8	90.8	87.3	87.3	78.2	74.6
CCC	97.6	97.6	97.6	97.6	97.1	97.1	97.1	95.4	87.9	87.9	85.9	78.2
Ctg Slum	98.6	98.1	98.1	98.1	94.1	94.1	94.1	89.3	84.4	84.4	74.9	69.1
Chittagong Division	96.0	95.9	95.9	95.9	94.7	94.7	94.7	91.5	85.3	85.3	82.7	76.2
National	98.6	98.4	98.4	98.4	97.1	97.0	97.0	93.6	88.7	88.7	84.8	79.4
Urban	98.9	98.5	98.5	98.5	96.7	96.7	96.7	93.7	88.7	88.7	84.3	79.0
Rural	98.6	98.4	98.4	98.4	97.1	97.0	97.0	93.6	88.7	88.7	84.9	79.5

Table 1a: Valid Vaccination Coverage by Age 12 Months among 12-23 Months Old Children According to Survey Units by District, City Corporation (Fully Vaccinated Arranged in Ascending Order by All Districts)

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Noakhali	96.7	96.2	96.2	96.2	93.6	93.6	93.6	87.7	78.8	78.8	73.5	63.9
Bandarban	83.2	83.2	83.2	83.2	82.4	82.4	82.4	78.4	75.7	75.7	68.4	65.3
Thakurgaon	98.9	98.4	98.4	98.4	97.1	96.5	96.5	90.3	82.2	82.2	78.7	69.0
Ctg Slum	98.6	98.1	98.1	98.1	94.1	94.1	94.1	89.3	84.4	84.4	74.9	69.1
Bagerhat	97.4	96.9	96.9	96.9	95.1	94.2	94.2	87.6	83.3	83.3	74.8	69.4
SCC	95.5	94.0	94.0	94.0	90.6	90.6	90.6	85.9	78.3	78.3	77.3	69.5
DCC	100.0	99.4	99.4	99.4	97.3	97.3	97.3	89.1	84.7	84.7	74.7	69.9
Dhaka Slum	98.6	98.6	98.6	98.6	96.2	96.2	96.2	87.9	84.0	84.0	74.4	70.3
Madaripur	99.0	99.0	99.0	99.0	98.1	98.1	98.1	94.3	88.3	88.3	78.0	72.3
Cox'sbazar	100.0	100.0	100.0	100.0	99.5	99.5	99.5	94.5	83.7	83.7	84.8	72.6
Khagrachari	91.9	91.9	91.9	91.9	88.6	88.6	88.6	86.5	82.2	82.2	77.8	73.2
Nilphamari	98.9	98.3	98.3	98.3	97.9	97.9	97.9	95.4	89.3	89.3	79.8	73.4
Sunamganj	96.2	95.7	95.7	95.7	92.3	92.3	92.3	85.7	83.4	83.4	75.9	73.6
Moulavibazar	95.7	95.2	95.2	95.2	94.3	94.3	94.3	90.7	85.7	85.7	79.3	73.7
Rangamati	94.2	93.7	93.7	93.7	91.8	91.8	91.8	90.8	87.3	87.3	78.2	74.6
Faridpur	99.0	99.0	99.0	99.0	99.0	99.0	99.0	94.2	84.7	84.7	85.2	74.7
Manikganj	98.6	97.8	97.8	97.8	95.4	95.4	95.4	87.9	86.3	86.3	76.8	75.0
Rajbari	100.0	100.0	100.0	100.0	99.3	99.3	99.3	92.4	85.6	85.6	83.3	75.5
Sylhet	100.0	100.0	100.0	100.0	99.5	99.0	99.0	95.9	91.4	91.4	81.6	75.9
Netrokona	98.2	98.2	98.2	98.2	95.1	93.3	93.3	85.4	83.6	83.6	80.0	76.2
Shariatpur	99.0	98.6	98.6	98.6	95.0	95.0	95.0	92.6	85.5	85.5	83.9	76.4
Jhenaidah	100.0	100.0	100.0	100.0	97.0	96.3	96.3	92.2	85.1	85.1	85.3	76.9
Gazipur	100.0	99.5	99.5	99.5	98.3	98.3	98.3	93.3	81.3	81.3	90.7	77.1
Jamalpur	99.3	98.4	98.4	98.4	96.8	96.8	96.8	93.2	89.9	89.9	80.5	77.2
Gopalganj	98.6	98.6	98.6	98.6	97.4	96.7	96.7	95.3	91.0	91.0	83.6	78.0
Rangpur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.3	88.3	88.3	87.8	78.0
Gaibandha	99.5	99.5	99.5	99.5	98.4	98.4	98.4	95.2	93.5	93.5	79.9	78.1
Barisal	99.0	98.4	98.4	98.4	97.9	97.2	97.2	93.7	88.1	88.1	84.7	78.1
CCC	97.6	97.6	97.6	97.6	97.1	97.1	97.1	95.4	87.9	87.9	85.9	78.2
Habiganj	98.6	98.6	98.6	98.6	96.5	96.5	96.5	93.1	88.6	88.6	83.3	78.5
KCC	97.9	97.4	97.4	97.4	94.8	94.8	94.8	91.7	89.5	89.5	80.8	78.7
Chittagong	100.0	100.0	100.0	100.0	98.4	98.4	98.4	95.6	85.9	85.9	88.7	78.9
Dhaka	99.5	99.5	99.5	99.5	98.9	98.9	98.9	93.6	89.9	89.9	82.9	78.9
Tangail	98.6	98.6	98.6	98.6	96.5	95.2	95.2	90.3	85.8	85.8	85.6	79.2
Lakshmipur	97.1	96.7	96.7	96.7	95.7	95.7	95.7	91.3	87.5	87.5	83.4	79.3
Mymensingh	99.0	99.0	99.0	99.0	96.2	96.2	96.2	91.1	86.6	86.6	84.0	79.3
Panchagarh	100.0	100.0	100.0	100.0	97.6	97.6	97.6	93.4	88.4	88.4	84.8	79.4
Chapai Nawabganj	99.0	98.6	98.6	98.6	95.9	95.9	95.9	92.6	90.2	90.2	82.2	79.6
Comilla	99.5	99.5	99.5	99.5	97.4	97.4	97.4	94.5	88.6	88.6	85.7	79.6
Norsingdhi	99.3	99.3	99.3	99.3	97.9	97.9	97.9	94.3	90.9	90.9	83.3	79.7
Chandpur	97.6	97.6	97.6	97.6	97.6	97.6	97.6	95.6	83.8	83.8	92.2	79.9
Chuadanga	99.0	99.0	99.0	99.0	96.8	96.8	96.8	95.8	90.2	90.2	85.9	79.9
Jhalokati	99.3	99.3	99.3	99.3	98.3	98.3	98.3	97.4	89.1	89.1	88.2	80.3

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
BCC	99.0	99.0	99.0	99.0	96.2	96.2	96.2	94.1	89.2	89.2	86.4	80.5
Patuakhali	99.5	98.9	98.9	98.9	97.5	97.5	97.5	95.7	87.7	87.7	88.9	80.6
Barguna	100.0	99.5	99.5	99.5	97.9	97.9	97.9	93.9	91.1	91.1	83.8	80.8
Kurigram	99.3	99.3	99.3	99.3	99.3	99.3	99.3	97.9	87.9	87.9	91.4	81.3
Narail	98.2	98.2	98.2	98.2	95.1	95.1	95.1	92.5	90.3	90.3	84.0	81.6
Dinajpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	95.6	88.3	88.3	89.4	81.8
Meherpur	100.0	99.3	99.3	99.3	98.6	98.6	98.6	96.9	90.3	90.3	89.8	82.6
Lalmonirhat	99.1	98.2	98.2	98.2	96.9	96.9	96.9	92.7	88.2	88.2	87.3	82.6
Kishoreganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.4	91.7	91.7	89.9	82.9
Kustia	100.0	100.0	100.0	100.0	98.2	97.4	97.4	93.5	88.4	88.4	89.4	83.0
Perojpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.0	92.9	92.9	86.5	83.0
Pabna	99.3	98.6	98.6	98.6	97.6	97.6	97.6	93.4	92.0	92.0	85.0	83.5
Serajganj	99.3	99.3	99.3	99.3	99.3	99.3	99.3	96.8	90.9	90.9	89.7	83.5
Feni	99.0	99.0	99.0	99.0	99.0	99.0	99.0	94.2	91.7	91.7	86.3	83.7
Magura	99.4	99.4	99.4	99.4	97.5	97.5	97.5	95.2	92.7	92.7	86.3	83.7
Munshiganj	100.0	100.0	100.0	100.0	99.3	98.6	98.6	95.9	93.0	93.0	87.4	83.7
Bhola	97.8	97.4	97.4	97.4	96.9	96.9	96.9	94.2	90.4	90.4	88.2	84.3
B.Baria	95.5	95.0	95.0	95.0	94.6	94.6	94.6	92.2	89.5	89.5	87.7	84.7
Satkhira	100.0	99.5	99.5	99.5	97.6	97.6	97.6	95.2	92.5	92.5	88.1	85.2
Narayanganj	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.0	93.6	93.6	91.0	85.6
Sherpur	100.0	99.4	99.4	99.4	99.0	99.0	99.0	95.6	94.4	94.4	86.9	85.6
Jessore	99.0	98.5	98.5	98.5	97.5	97.5	97.5	94.6	91.7	91.7	88.8	85.6
Joypurhat	100.0	100.0	100.0	100.0	98.5	98.5	98.5	95.4	92.4	92.4	89.0	85.8
Nartore	99.0	99.0	99.0	99.0	99.0	99.0	99.0	96.5	92.7	92.7	90.1	86.0
Khulna	99.5	99.5	99.5	99.5	98.9	98.9	98.9	96.7	94.1	94.1	89.0	86.2
Bogra	100.0	99.5	99.5	99.5	99.5	99.5	99.5	98.3	92.7	92.7	93.5	87.6
Naogaon	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.5	94.7	94.7	92.8	88.8
Rajshahi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.4	94.3	94.3	94.6	90.2
RCC	100.0	99.5	99.5	99.5	99.0	99.0	99.0	99.0	98.3	98.3	96.1	95.3
National	98.6	98.4	98.4	98.4	97.1	97.0	97.0	93.6	88.7	88.7	84.8	79.4
Rural	98.9	98.5	98.5	98.5	96.7	96.7	96.7	93.7	88.7	88.7	84.3	79.0
Urban	98.6	98.4	98.4	98.4	97.1	97.0	97.0	93.6	88.7	88.7	84.9	79.5

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

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
DCC	100.0	99.4	99.4	99.4	97.3	97.3	97.3	89.1	84.7	84.7	74.7	69.9
Dhaka Slum	98.6	98.6	98.6	98.6	96.2	96.2	96.2	87.9	84.0	84.0	74.4	70.3
Madaripur	99.0	99.0	99.0	99.0	98.1	98.1	98.1	94.3	88.3	88.3	78.0	72.3
Faridpur	99.0	99.0	99.0	99.0	99.0	99.0	99.0	94.2	84.7	84.7	85.2	74.7
Manikganj	98.6	97.8	97.8	97.8	95.4	95.4	95.4	87.9	86.3	86.3	76.8	75.0
Rajbari	100.0	100.0	100.0	100.0	99.3	99.3	99.3	92.4	85.6	85.6	83.3	75.5
Netrokona	98.2	98.2	98.2	98.2	95.1	93.3	93.3	85.4	83.6	83.6	80.0	76.2
Shariatpur	99.0	98.6	98.6	98.6	95.0	95.0	95.0	92.6	85.5	85.5	83.9	76.4
Gazipur	100.0	99.5	99.5	99.5	98.3	98.3	98.3	93.3	81.3	81.3	90.7	77.1
Jamalpur	99.3	98.4	98.4	98.4	96.8	96.8	96.8	93.2	89.9	89.9	80.5	77.2
Gopalganj	98.6	98.6	98.6	98.6	97.4	96.7	96.7	95.3	91.0	91.0	83.6	78.0
Dhaka	99.5	99.5	99.5	99.5	98.9	98.9	98.9	93.6	89.9	89.9	82.9	78.9
Tangail	98.6	98.6	98.6	98.6	96.5	95.2	95.2	90.3	85.8	85.8	85.6	79.2
Mymensingh	99.0	99.0	99.0	99.0	96.2	96.2	96.2	91.1	86.6	86.6	84.0	79.3
Norsingdhi	99.3	99.3	99.3	99.3	97.9	97.9	97.9	94.3	90.9	90.9	83.3	79.7
Kishoreganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.4	91.7	91.7	89.9	82.9
Munshiganj	100.0	100.0	100.0	100.0	99.3	98.6	98.6	95.9	93.0	93.0	87.4	83.7
Narayanganj	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.0	93.6	93.6	91.0	85.6
Sherpur	100.0	99.4	99.4	99.4	99.0	99.0	99.0	95.6	94.4	94.4	86.9	85.6
Dhaka Division	99.3	99.1	99.1	99.1	97.8	97.5	97.5	93.2	88.3	88.3	83.7	78.3
Bagerhat	97.4	96.9	96.9	96.9	95.1	94.2	94.2	87.6	83.3	83.3	74.8	69.4
Jhenaidah	100.0	100.0	100.0	100.0	97.0	96.3	96.3	92.2	85.1	85.1	85.3	76.9
KCC	97.9	97.4	97.4	97.4	94.8	94.8	94.8	91.7	89.5	89.5	80.8	78.7
Chuadanga	99.0	99.0	99.0	99.0	96.8	96.8	96.8	95.8	90.2	90.2	85.9	79.9
Narail	98.2	98.2	98.2	98.2	95.1	95.1	95.1	92.5	90.3	90.3	84.0	81.6
Meherpur	100.0	99.3	99.3	99.3	98.6	98.6	98.6	96.9	90.3	90.3	89.8	82.6
Kustia	100.0	100.0	100.0	100.0	98.2	97.4	97.4	93.5	88.4	88.4	89.4	83.0
Magura	99.4	99.4	99.4	99.4	97.5	97.5	97.5	95.2	92.7	92.7	86.3	83.7
Satkhira	100.0	99.5	99.5	99.5	97.6	97.6	97.6	95.2	92.5	92.5	88.1	85.2
Jessore	99.0	98.5	98.5	98.5	97.5	97.5	97.5	94.6	91.7	91.7	88.8	85.6
Khulna	99.5	99.5	99.5	99.5	98.9	98.9	98.9	96.7	94.1	94.1	89.0	86.2
Khulna Divisi.n	99.2	98.9	98.9	98.9	97.0	96.8	96.8	93.9	90.0	90.0	85.7	81.3
Thakurgaon	98.9	98.4	98.4	98.4	97.1	96.5	96.5	90.3	82.2	82.2	78.7	69.0
Nilphamari	98.9	98.3	98.3	98.3	97.9	97.9	97.9	95.4	89.3	89.3	79.8	73.4
Rangpur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.3	88.3	88.3	87.8	78.0
Gaibandha	99.5	99.5	99.5	99.5	98.4	98.4	98.4	95.2	93.5	93.5	79.9	78.1
Panchagarh	100.0	100.0	100.0	100.0	97.6	97.6	97.6	93.4	88.4	88.4	84.8	79.4
Cuapur Na..ilog...	99.0	98.6	98.6	98.6	95.9	95.9	95.9	92.6	90.2	90.2	82.2	79.6
Kurigram	99.3	99.3	99.3	99.3	99.3	99.3	99.3	97.9	87.9	87.9	91.4	81.3
Dinajpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	95.6	88.3	88.3	89.4	81.8
La monirhat	99.1	98.2	98.2	98.2	96.9	96.9	96.9	92.7	88.2	88.2	87.3	82.6
Pabna	99.3	98.6	98.6	98.6	97.6	97.6	97.6	93.4	92.0	92.0	85.0	83.5
Serajganj	99.3	99.3	99.3	99.3	99.3	99.3	99.3	96.8	90.9	90.9	89.7	83.5

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Joypurhat	100.0	100.0	100.0	100.0	98.5	98.5	98.5	95.4	92.4	92.4	89.0	85.8
Nartore	99.0	99.0	99.0	99.0	99.0	99.0	99.0	96.5	92.7	92.7	90.1	86.0
Bogra	100.0	99.5	99.5	99.5	99.5	99.5	99.5	98.3	92.7	92.7	93.5	87.6
Naogaon	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.5	94.7	94.7	92.8	88.8
Rajshahi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.4	94.3	94.3	94.6	90.2
RCC	100.0	99.5	99.5	99.5	99.0	99.0	99.0	99.0	98.3	98.3	96.1	95.3
Rajshahi Division	99.6	99.4	99.4	99.4	98.5	98.5	98.5	95.7	90.9	90.9	87.7	82.5
Barisal	99.0	98.4	98.4	98.4	97.9	97.2	97.2	93.7	88.1	88.1	84.7	78.1
Jhalokati	99.3	99.3	99.3	99.3	98.3	98.3	98.3	97.4	89.1	89.1	88.2	80.3
BCC	99.0	99.0	99.0	99.0	96.2	96.2	96.2	94.1	89.2	89.2	86.4	80.5
Patuakhali	99.5	98.9	98.9	98.9	97.5	97.5	97.5	95.7	87.7	87.7	88.9	80.6
Barguna	100.0	99.5	99.5	99.5	97.9	97.9	97.9	93.9	91.1	91.1	83.8	80.8
Perojpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.0	92.9	92.9	86.5	83.0
Bhola	97.8	97.4	97.4	97.4	96.9	96.9	96.9	94.2	90.4	90.4	88.2	84.3
Barisal Division	99.3	98.9	98.9	98.9	97.7	97.6	97.6	95.0	89.8	89.8	86.6	81.0
SCC	95.5	94.0	94.0	94.0	90.6	90.6	90.6	85.9	78.3	78.3	77.3	69.5
Sunamganj	96.2	95.7	95.7	95.7	92.3	92.3	92.3	85.7	83.4	83.4	75.9	73.6
Moulavibazar	95.7	95.2	95.2	95.2	94.3	94.3	94.3	90.7	85.7	85.7	79.3	73.7
Sylhet	100.0	100.0	100.0	100.0	99.5	99.0	99.0	95.9	91.4	91.4	81.6	75.9
Habiganj	98.6	98.6	98.6	98.6	96.5	96.5	96.5	93.1	88.6	88.6	83.3	78.5
Sylhet Division	97.2	96.7	96.7	96.7	94.7	94.6	94.6	90.3	85.7	85.7	79.4	74.3
Noakhali	96.7	96.2	96.2	96.2	93.6	93.6	93.6	87.7	78.8	78.8	73.5	63.9
Bandarban	83.2	83.2	83.2	83.2	82.4	82.4	82.4	78.4	75.7	75.7	68.4	65.3
Ctg Slum	98.6	98.1	98.1	98.1	94.1	94.1	94.1	89.3	84.4	84.4	74.9	69.1
Cox'sbazar	100.0	100.0	100.0	100.0	99.5	99.5	99.5	94.5	83.7	83.7	84.8	72.6
Khagrachari	91.9	91.9	91.9	91.9	88.6	88.6	88.6	86.5	82.2	82.2	77.8	73.2
Rangamati	94.2	93.7	93.7	93.7	91.8	91.8	91.8	90.8	87.3	87.3	78.2	74.6
CCC	97.6	97.6	97.6	97.6	97.1	97.1	97.1	95.4	87.9	87.9	85.9	78.2
Chittagong	100.0	100.0	100.0	100.0	98.4	98.4	98.4	95.6	85.9	85.9	88.7	78.9
Lakshmipur	97.1	96.7	96.7	96.7	95.7	95.7	95.7	91.3	87.5	87.5	83.4	79.3
Comilla	99.5	99.5	99.5	99.5	97.4	97.4	97.4	94.5	88.6	88.6	85.7	79.6
Chandpur	97.6	97.6	97.6	97.6	97.6	97.6	97.6	95.6	83.8	83.8	92.2	79.9
Feni	99.0	99.0	99.0	99.0	99.0	99.0	99.0	94.2	91.7	91.7	86.3	83.7
B.Baria	95.5	95.0	95.0	95.0	94.6	94.6	94.6	92.2	89.5	89.5	87.7	84.7
Chittagong Division	96.0	95.9	95.9	95.9	94.7	94.7	94.7	91.5	85.3	85.3	82.7	76.2
National	98.6	98.4	98.4	98.4	97.1	97.0	97.0	93.6	88.7	88.7	84.8	79.4
Urban	98.9	98.5	98.5	98.5	96.7	96.7	96.7	93.7	88.7	88.7	84.3	79.0
Rural	98.6	98.4	98.4	98.4	97.1	97.0	97.0	93.6	88.7	88.7	84.9	79.5

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

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Dhaka	99.5	99.5	99.5	99.5	99.5	99.5	99.5	96.1	91.2	91.2	92.9	87.6
Faridpur	99.0	99.0	99.0	99.0	99.0	99.0	99.0	94.2	84.7	84.7	90.0	79.4
Gazipur	100.0	99.5	99.5	99.5	99.0	98.3	98.3	94.9	82.1	82.1	93.4	78.0
Gopalganj	98.6	98.6	98.6	98.6	98.1	97.4	97.4	96.0	91.7	91.7	89.2	83.6
Jamalpur	100.0	99.0	99.0	99.0	98.1	98.1	98.1	93.8	90.6	90.6	85.2	81.9
Kishoreganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	92.2	92.2	92.2	85.2
Madaripur	99.0	99.0	99.0	99.0	98.1	98.1	98.1	95.1	88.3	88.3	83.0	76.4
Manikganj	98.6	97.8	97.8	97.8	95.4	95.4	95.4	88.7	87.1	87.1	80.3	78.5
Munshiganj	100.0	100.0	100.0	100.0	99.3	98.6	98.6	96.6	93.0	93.0	91.8	87.4
Mymensingh	99.0	99.0	99.0	99.0	96.2	96.2	96.2	91.9	87.4	87.4	86.3	81.6
Narayanganj	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.0	93.6	93.6	94.2	88.7
Norsingdhi	100.0	100.0	100.0	100.0	99.3	99.3	99.3	95.7	92.3	92.3	87.6	84.0
Netrokona	99.0	99.0	99.0	99.0	95.9	94.2	94.2	86.2	84.5	84.5	83.8	80.0
Rajbari	100.0	100.0	100.0	100.0	100.0	100.0	100.0	93.8	86.9	86.9	86.5	78.7
Shariatpur	99.0	98.6	98.6	98.6	96.7	96.7	96.7	94.4	87.3	87.3	87.6	80.2
Sherpur	100.0	99.4	99.4	99.4	99.0	99.0	99.0	95.6	94.4	94.4	88.9	87.6
Tangail	98.6	98.6	98.6	98.6	96.5	95.2	95.2	93.6	87.7	87.7	91.4	83.5
DCC	100.0	99.4	99.4	99.4	97.3	97.3	97.3	92.2	87.2	87.2	80.1	74.7
Dhaka Slum	98.6	98.6	98.6	98.6	97.1	97.1	97.1	89.9	85.0	85.0	77.4	72.3
Dhaka Division	99.4	99.2	99.2	99.2	98.2	97.9	97.9	94.4	89.2	89.2	88.0	82.2
Bagerhat	99.0	98.6	98.6	98.6	96.8	95.9	95.9	91.0	85.0	85.0	81.2	73.9
Chuadanga	99.0	99.0	99.0	99.0	97.4	97.4	97.4	96.4	90.8	90.8	89.3	83.2
Jessore	99.0	98.5	98.5	98.5	98.1	98.1	98.1	95.8	92.3	92.3	93.2	89.4
Jhenaidah	100.0	100.0	100.0	100.0	98.2	97.6	97.6	94.1	87.1	87.1	90.9	82.5
Khulna	99.5	99.5	99.5	99.5	99.5	99.5	99.5	97.3	94.7	94.7	93.9	91.1
Kustia	100.0	100.0	100.0	100.0	98.2	97.4	97.4	94.3	88.4	88.4	92.1	84.8
Magura	100.0	100.0	100.0	100.0	100.0	99.4	99.4	97.7	94.6	94.6	91.4	87.6
Meherpur	100.0	99.3	99.3	99.3	98.6	98.6	98.6	97.6	90.3	90.3	91.4	83.4
Narail	99.5	99.5	99.5	99.5	97.9	97.9	97.9	94.7	92.5	92.5	89.5	87.2
Satkhira	100.0	99.5	99.5	99.5	97.6	97.6	97.6	95.2	92.5	92.5	91.1	88.1
KCC	98.6	98.1	98.1	98.1	96.2	96.2	96.2	93.8	91.0	91.0	88.8	85.9
Khulna Division	99.5	99.3	99.3	99.3	98.1	97.8	97.8	95.3	91.0	91.0	90.3	85.4
Bogra	100.0	99.5	99.5	99.5	99.5	99.5	99.5	98.3	92.7	92.7	95.5	89.6
Chapai Nawabganj	99.0	98.6	98.6	98.6	95.9	95.9	95.9	93.9	90.8	90.8	84.2	80.9
Dinajpur	100.0	100.0	100.0	100.0	99.5	99.5	99.5	98.4	88.8	88.8	94.1	84.2
Gaibandha	100.0	100.0	100.0	100.0	99.5	99.5	99.5	96.8	94.6	94.6	90.9	88.5
Joypurhat	100.0	100.0	100.0	100.0	99.5	99.5	99.5	97.5	93.4	93.4	93.2	89.0
Kurigram	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.3	88.7	88.7	94.2	83.5
Lalmonirhat	100.0	100.0	100.0	100.0	98.6	98.6	98.6	95.4	90.9	90.9	92.9	88.2
Naogaon	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.5	94.7	94.7	97.4	93.4
Nartore	99.0	99.0	99.0	99.0	99.0	99.0	99.0	97.1	92.7	92.7	94.9	90.1
Nilphamari	99.5	98.9	98.9	98.9	98.5	98.5	98.5	96.1	89.9	89.9	88.1	81.7
Pabna	100.0	100.0	100.0	100.0	99.0	99.0	99.0	95.5	93.4	93.4	88.1	85.8
Panchagarh	100.0	100.0	100.0	100.0	99.4	99.4	99.4	96.5	91.5	91.5	91.5	86.1
Rajshahi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.9	94.3	94.3	95.3	90.2

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Rangpur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.3	88.3	88.3	92.7	82.9
Serajganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.6	91.7	91.7	90.5	84.3
Thakurgaon	99.5	99.0	99.0	99.0	97.1	96.5	96.5	90.9	82.2	82.2	85.1	74.8
RCC	100.0	99.5	99.5	99.5	99.0	99.0	99.0	99.0	98.3	98.3	96.1	95.3
Rajshahi Division	99.8	99.7	99.7	99.7	99.0	99.0	99.0	96.9	91.6	91.6	92.0	86.3
Habiganj	98.6	98.6	98.6	98.6	96.5	96.5	96.5	93.8	89.2	89.2	92.2	87.4
Moulavibazar	95.7	95.2	95.2	95.2	94.3	94.3	94.3	90.7	85.7	85.7	82.4	76.8
Sunamganj	96.2	95.7	95.7	95.7	92.9	92.9	92.9	87.4	84.5	84.5	81.0	78.2
Sylhet	100.0	100.0	100.0	100.0	99.5	99.0	99.0	97.0	92.0	92.0	87.8	81.6
SCC	96.2	94.8	94.8	94.8	92.9	92.9	92.9	88.9	80.6	80.6	83.5	75.0
Sylhet Division	97.3	96.9	96.9	96.9	95.2	95.1	95.1	91.6	86.6	86.6	85.3	79.9
Barisal	99.0	99.0	99.0	99.0	98.6	97.9	97.9	95.1	88.8	88.8	90.4	83.2
Bhola	98.6	98.1	98.1	98.1	97.6	97.6	97.6	94.9	91.2	91.2	89.0	85.1
Barguna	100.0	99.5	99.5	99.5	97.9	97.9	97.9	94.6	91.8	91.8	88.2	85.2
Jhalokati	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.1	89.7	89.7	92.6	83.9
Patuakhali	99.5	99.5	99.5	99.5	98.9	98.9	98.9	97.0	89.0	89.0	93.7	85.4
Perojpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	97.3	93.5	93.5	90.7	86.5
BCC	99.0	99.0	99.0	99.0	96.9	96.9	96.9	95.5	90.6	90.6	89.4	83.5
Barisal Division	99.5	99.3	99.3	99.3	98.3	98.2	98.2	96.1	90.7	90.7	90.5	84.6
Bandarban	85.2	85.2	85.2	85.2	82.4	82.4	82.4	78.4	75.7	75.7	73.0	69.9
B.Baria	96.2	95.7	95.7	95.7	95.2	95.2	95.2	92.9	90.2	90.2	90.6	87.7
Chandpur	97.6	97.6	97.6	97.6	97.6	97.6	97.6	95.6	83.8	83.8	92.2	79.9
Chittagong	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.8	86.5	86.5	92.7	82.3
Comilla	99.5	99.5	99.5	99.5	97.4	97.4	97.4	95.7	89.8	89.8	94.3	88.2
Cox'sbazar	100.0	100.0	100.0	100.0	99.5	99.5	99.5	95.2	83.7	83.7	90.6	77.5
Feni	99.0	99.0	99.0	99.0	99.0	99.0	99.0	94.8	92.4	92.4	90.8	88.2
Khagrachari	91.9	91.9	91.9	91.9	88.6	88.6	88.6	87.1	82.2	82.2	81.1	75.8
Lakshmipur	97.1	96.7	96.7	96.7	95.7	95.7	95.7	91.3	87.5	87.5	84.3	80.1
Noakhali	96.7	96.2	96.2	96.2	94.3	94.3	94.3	89.0	79.4	79.4	79.0	68.7
Rangamati	94.8	94.3	94.3	94.3	92.4	92.4	92.4	91.4	87.9	87.9	82.5	78.8
CCC	99.0	99.0	99.0	99.0	98.6	98.6	98.6	96.9	89.4	89.4	91.3	83.6
Ctg Slum	98.6	98.1	98.1	98.1	94.9	94.9	94.9	90.1	84.4	84.4	79.9	73.2
Chittagong Division	96.4	96.3	96.3	96.3	95.0	95.0	95.0	92.1	85.8	85.8	86.8	80.0
National	98.9	98.7	98.7	98.7	97.6	97.5	97.5	94.7	89.4	89.4	89.2	83.4
Urban	99.2	98.8	98.8	98.8	97.5	97.5	97.5	95.2	89.9	89.9	89.1	83.4
Rural	98.8	98.6	98.6	98.6	97.6	97.5	97.5	94.7	89.4	89.4	89.2	83.4

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

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Noakhali	96.7	96.2	96.2	96.2	94.3	94.3	94.3	89.0	79.4	79.4	79.0	68.7
Bandarban	85.2	85.2	85.2	85.2	82.4	82.4	82.4	78.4	75.7	75.7	73.0	69.9
Dhaka Slum	98.6	98.6	98.6	98.6	97.1	97.1	97.1	89.9	85.0	85.0	77.4	72.3
Ctg Slum	98.6	98.1	98.1	98.1	94.9	94.9	94.9	90.1	84.4	84.4	79.9	73.2
Bagerhat	99.0	98.6	98.6	98.6	96.8	95.9	95.9	91.0	85.0	85.0	81.2	73.9
DCC	100.0	99.4	99.4	99.4	97.3	97.3	97.3	92.2	87.2	87.2	80.1	74.7
Thakurgaon	99.5	99.0	99.0	99.0	97.1	96.5	96.5	90.9	82.2	82.2	85.1	74.8
SCC	96.2	94.8	94.8	94.8	92.9	92.9	92.9	88.9	80.6	80.6	83.5	75.0
Khagrachari	91.9	91.9	91.9	91.9	88.6	88.6	88.6	87.1	82.2	82.2	81.1	75.8
Madaripur	99.0	99.0	99.0	99.0	98.1	98.1	98.1	95.1	88.3	88.3	83.0	76.4
Moulavibazar	95.7	95.2	95.2	95.2	94.3	94.3	94.3	90.7	85.7	85.7	82.4	76.8
Cox'sbazar	100.0	100.0	100.0	100.0	99.5	99.5	99.5	95.2	83.7	83.7	90.6	77.5
Gazipur	100.0	99.5	99.5	99.5	99.0	98.3	98.3	94.9	82.1	82.1	93.4	78.0
Sunamganj	96.2	95.7	95.7	95.7	92.9	92.9	92.9	87.4	84.5	84.5	81.0	78.2
Manikganj	98.6	97.8	97.8	97.8	95.4	95.4	95.4	88.7	87.1	87.1	80.3	78.5
Rajbari	100.0	100.0	100.0	100.0	100.0	100.0	100.0	93.8	86.9	86.9	86.5	78.7
Rangamati	94.8	94.3	94.3	94.3	92.4	92.4	92.4	91.4	87.9	87.9	82.5	78.8
Faridpur	99.0	99.0	99.0	99.0	99.0	99.0	99.0	94.2	84.7	84.7	90.0	79.4
Chandpur	97.6	97.6	97.6	97.6	97.6	97.6	97.6	95.6	83.8	83.8	92.2	79.9
Netrokona	99.0	99.0	99.0	99.0	95.9	94.2	94.2	86.2	84.5	84.5	83.8	80.0
Lakshmipur	97.1	96.7	96.7	96.7	95.7	95.7	95.7	91.3	87.5	87.5	84.3	80.1
Shariatpur	99.0	98.6	98.6	98.6	96.7	96.7	96.7	94.4	87.3	87.3	87.6	80.2
Chapai Nawabganj	99.0	98.6	98.6	98.6	95.9	95.9	95.9	93.9	90.8	90.8	84.2	80.9
Sylhet	100.0	100.0	100.0	100.0	99.5	99.0	99.0	97.0	92.0	92.0	87.8	81.6
Mymensingh	99.0	99.0	99.0	99.0	96.2	96.2	96.2	91.9	87.4	87.4	86.3	81.6
Nilphamari	99.5	98.9	98.9	98.9	98.5	98.5	98.5	96.1	89.9	89.9	88.1	81.7
Jamalpur	100.0	99.0	99.0	99.0	98.1	98.1	98.1	93.8	90.6	90.6	85.2	81.9
Chittagong	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.8	86.5	86.5	92.7	82.3
Jhenaidah	100.0	100.0	100.0	100.0	98.2	97.6	97.6	94.1	87.1	87.1	90.9	82.5
Rangpur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.3	88.3	88.3	92.7	82.9
Barisal	99.0	99.0	99.0	99.0	98.6	97.9	97.9	95.1	88.8	88.8	90.4	83.2
Chuadanga	99.0	99.0	99.0	99.0	97.4	97.4	97.4	96.4	90.8	90.8	89.3	83.2
Meherpur	100.0	99.3	99.3	99.3	98.6	98.6	98.6	97.6	90.3	90.3	91.4	83.4
Kurigram	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.3	88.7	88.7	94.2	83.5
BCC	99.0	99.0	99.0	99.0	96.9	96.9	96.9	95.5	90.6	90.6	89.4	83.5
Tangail	98.6	98.6	98.6	98.6	96.5	95.2	95.2	93.6	87.7	87.7	91.4	83.5
CCC	99.0	99.0	99.0	99.0	98.6	98.6	98.6	96.9	89.4	89.4	91.3	83.6
Gopalganj	98.6	98.6	98.6	98.6	98.1	97.4	97.4	96.0	91.7	91.7	89.2	83.6
Jhalokati	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.1	89.7	89.7	92.6	83.9
Norsingdhi	100.0	100.0	100.0	100.0	99.3	99.3	99.3	95.7	92.3	92.3	87.6	84.0
Dinajpur	100.0	100.0	100.0	100.0	99.5	99.5	99.5	98.4	88.8	88.8	94.1	84.2
Serajganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.6	91.7	91.7	90.5	84.3
Kustia	100.0	100.0	100.0	100.0	98.2	97.4	97.4	94.3	88.4	88.4	92.1	84.8

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Bhola	98.6	98.1	98.1	98.1	97.6	97.6	97.6	94.9	91.2	91.2	89.0	85.1
Kishoreganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	92.2	92.2	92.2	85.2
Barguna	100.0	99.5	99.5	99.5	97.9	97.9	97.9	94.6	91.8	91.8	88.2	85.2
Patuakhali	99.5	99.5	99.5	99.5	98.9	98.9	98.9	97.0	89.0	89.0	93.7	85.4
Pabna	100.0	100.0	100.0	100.0	99.0	99.0	99.0	95.5	93.4	93.4	88.1	85.8
KCC	98.6	98.1	98.1	98.1	96.2	96.2	96.2	93.8	91.0	91.0	88.8	85.9
Panchagarh	100.0	100.0	100.0	100.0	99.4	99.4	99.4	96.5	91.5	91.5	91.5	86.1
Perojpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	97.3	93.5	93.5	90.7	86.5
Narail	99.5	99.5	99.5	99.5	97.9	97.9	97.9	94.7	92.5	92.5	89.5	87.2
Habiganj	98.6	98.6	98.6	98.6	96.5	96.5	96.5	93.8	89.2	89.2	92.2	87.4
Munshiganj	100.0	100.0	100.0	100.0	99.3	98.6	98.6	96.6	93.0	93.0	91.8	87.4
Magura	100.0	100.0	100.0	100.0	100.0	99.4	99.4	97.7	94.6	94.6	91.4	87.6
Sherpur	100.0	99.4	99.4	99.4	99.0	99.0	99.0	95.6	94.4	94.4	88.9	87.6
Dhaka	99.5	99.5	99.5	99.5	99.5	99.5	99.5	96.1	91.2	91.2	92.9	87.6
B.Baria	96.2	95.7	95.7	95.7	95.2	95.2	95.2	92.9	90.2	90.2	90.6	87.7
Satkhira	100.0	99.5	99.5	99.5	97.6	97.6	97.6	95.2	92.5	92.5	91.1	88.1
Comilla	99.5	99.5	99.5	99.5	97.4	97.4	97.4	95.7	89.8	89.8	94.3	88.2
Feni	99.0	99.0	99.0	99.0	99.0	99.0	99.0	94.8	92.4	92.4	90.8	88.2
Lalmonirhat	100.0	100.0	100.0	100.0	98.6	98.6	98.6	95.4	90.9	90.9	92.9	88.2
Gaibandha	100.0	100.0	100.0	100.0	99.5	99.5	99.5	96.8	94.6	94.6	90.9	88.5
Narayanganj	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.0	93.6	93.6	94.2	88.7
Joypurhat	100.0	100.0	100.0	100.0	99.5	99.5	99.5	97.5	93.4	93.4	93.2	89.0
Jessore	99.0	98.5	98.5	98.5	98.1	98.1	98.1	95.8	92.3	92.3	93.2	89.4
Bogra	100.0	99.5	99.5	99.5	99.5	99.5	99.5	98.3	92.7	92.7	95.5	89.6
Nartore	99.0	99.0	99.0	99.0	99.0	99.0	99.0	97.1	92.7	92.7	94.9	90.1
Rajshahi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.9	94.3	94.3	95.3	90.2
Khulna	99.5	99.5	99.5	99.5	99.5	99.5	99.5	97.3	94.7	94.7	93.9	91.1
Naogaon	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.5	94.7	94.7	97.4	93.4
RCC	100.0	99.5	99.5	99.5	99.0	99.0	99.0	99.0	98.3	98.3	96.1	95.3
National	98.9	98.7	98.7	98.7	97.6	97.5	97.5	94.7	89.4	89.4	89.2	83.4
Urban	99.2	98.8	98.8	98.8	97.5	97.5	97.5	95.2	89.9	89.9	89.1	83.4
Rural	98.8	98.6	98.6	98.6	97.6	97.5	97.5	94.7	89.4	89.4	89.2	83.4

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

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Dhaka Slum	98.6	98.6	98.6	98.6	97.1	97.1	97.1	89.9	85.0	85.0	77.4	72.3
DCC	100.0	99.4	99.4	99.4	97.3	97.3	97.3	92.2	87.2	87.2	80.1	74.7
Madaripur	99.0	99.0	99.0	99.0	98.1	98.1	98.1	95.1	88.3	88.3	83.0	76.4
Gazipur	100.0	99.5	99.5	99.5	99.0	98.3	98.3	94.9	82.1	82.1	93.4	78.0
Manikganj	98.6	97.8	97.8	97.8	95.4	95.4	95.4	88.7	87.1	87.1	80.3	78.5
Rajbari	100.0	100.0	100.0	100.0	100.0	100.0	100.0	93.8	86.9	86.9	86.5	78.7
Faridpur	99.0	99.0	99.0	99.0	99.0	99.0	99.0	94.2	84.7	84.7	90.0	79.4
Netrokona	99.0	99.0	99.0	99.0	95.9	94.2	94.2	86.2	84.5	84.5	83.8	80.0
Shariatpur	99.0	98.6	98.6	98.6	96.7	96.7	96.7	94.4	87.3	87.3	87.6	80.2
Mymensingh	99.0	99.0	99.0	99.0	96.2	96.2	96.2	91.9	87.4	87.4	86.3	81.6
Jamalpur	100.0	99.0	99.0	99.0	98.1	98.1	98.1	93.8	90.6	90.6	85.2	81.9
Tangail	98.6	98.6	98.6	98.6	96.5	95.2	95.2	93.6	87.7	87.7	91.4	83.5
Gopalganj	98.6	98.6	98.6	98.6	98.1	97.4	97.4	96.0	91.7	91.7	89.2	83.6
Norsingdhi	100.0	100.0	100.0	100.0	99.3	99.3	99.3	95.7	92.3	92.3	87.6	84.0
Kishoreganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	92.2	92.2	92.2	85.2
Munshiganj	100.0	100.0	100.0	100.0	99.3	98.6	98.6	96.6	93.0	93.0	91.8	87.4
Sherpur	100.0	99.4	99.4	99.4	99.0	99.0	99.0	95.6	94.4	94.4	88.9	87.6
Dhaka	99.5	99.5	99.5	99.5	99.5	99.5	99.5	96.1	91.2	91.2	92.9	87.6
Narayanganj	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.0	93.6	93.6	94.2	88.7
Dhaka Division	99.4	99.2	99.2	99.2	98.2	97.9	97.9	94.4	89.2	89.2	88.0	82.2
Bagerhat	99.0	98.6	98.6	98.6	96.8	95.9	95.9	91.0	85.0	85.0	81.2	73.9
Jhenaidah	100.0	100.0	100.0	100.0	98.2	97.6	97.6	94.1	87.1	87.1	90.9	82.5
Chuadanga	99.0	99.0	99.0	99.0	97.4	97.4	97.4	96.4	90.8	90.8	89.3	83.2
Meherpur	100.0	99.3	99.3	99.3	98.6	98.6	98.6	97.6	90.3	90.3	91.4	83.4
Kustia	100.0	100.0	100.0	100.0	98.2	97.4	97.4	94.3	88.4	88.4	92.1	84.8
KCC	98.6	98.1	98.1	98.1	96.2	96.2	96.2	93.8	91.0	91.0	88.8	85.9
Narail	99.5	99.5	99.5	99.5	97.9	97.9	97.9	94.7	92.5	92.5	89.5	87.2
Magura	100.0	100.0	100.0	100.0	100.0	99.4	99.4	97.7	94.6	94.6	91.4	87.6
Satkhira	100.0	99.5	99.5	99.5	97.6	97.6	97.6	95.2	92.5	92.5	91.1	88.1
Jessore	99.0	98.5	98.5	98.5	98.1	98.1	98.1	95.8	92.3	92.3	93.2	89.4
Khulna	99.5	99.5	99.5	99.5	99.5	99.5	99.5	97.3	94.7	94.7	93.9	91.1
Khulna Division	99.5	99.3	99.3	99.3	98.1	97.8	97.8	95.3	91.0	91.0	90.3	85.4
Thakurgaon	99.5	99.0	99.0	99.0	97.1	96.5	96.5	90.9	82.2	82.2	85.1	74.8
Chapai ..a a.ganj	99.0	98.6	98.6	98.6	95.9	95.9	95.9	93.9	90.8	90.8	84.2	80.9
Nilphamari	99.5	98.9	98.9	98.9	98.5	98.5	98.5	96.1	89.9	89.9	88.1	81.7
Rangpur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.3	88.3	88.3	92.7	82.9
Kurigra	100.0	100.0	.00.0	100.0	100.0	100.0	100.0	99.3	88.7	88.7	94.2	83.5
Dinsjp r	100.0	100.0	100.0	100.0	99.5	99.5	99.5	98.4	88.8	88.8	94.1	84.2
S rajganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.6	91.7	91.7	90.5	84.3
. si na	100.0	100.0	100.0	100.0	99.0	99.0	99.0	95.5	93.4	93.4	88.1	85.8
. an hagarh	100.0	100.0	100.0	100.0	99.4	99.4	99.4	96.5	91.5	91.5	91.5	86.1
Lalmonirhat	100.0	100.0	100.0	100.0	98.6	98.6	98.6	95.4	90.9	90.9	92.9	88.2
Gaibandha	100.0	100.0	100.0	100.0	99.5	99.5	99.5	96.8	94.6	94.6	90.9	88.5

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Joypurhat	100.0	100.0	100.0	100.0	99.5	99.5	99.5	97.5	93.4	93.4	93.2	89.0
Bogra	100.0	99.5	99.5	99.5	99.5	99.5	99.5	98.3	92.7	92.7	95.5	89.6
Nartore	99.0	99.0	99.0	99.0	99.0	99.0	99.0	97.1	92.7	92.7	94.9	90.1
Rajshahi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.9	94.3	94.3	95.3	90.2
Naogaon	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.5	94.7	94.7	97.4	93.4
RCC	100.0	99.5	99.5	99.5	99.0	99.0	99.0	99.0	98.3	98.3	96.1	95.3
Rajshahi Division	99.8	99.7	99.7	99.7	99.0	99.0	99.0	96.9	91.6	91.6	92.0	86.3
SCC	96.2	94.8	94.8	94.8	92.9	92.9	92.9	88.9	80.6	80.6	83.5	75.0
Moulavibazar	95.7	95.2	95.2	95.2	94.3	94.3	94.3	90.7	85.7	85.7	82.4	76.8
Sunamganj	96.2	95.7	95.7	95.7	92.9	92.9	92.9	87.4	84.5	84.5	81.0	78.2
Sylhet	100.0	100.0	100.0	100.0	99.5	99.0	99.0	97.0	92.0	92.0	87.8	81.6
Habiganj	98.6	98.6	98.6	98.6	96.5	96.5	96.5	93.8	89.2	89.2	92.2	87.4
Sylhet Division	97.3	96.9	96.9	96.9	95.2	95.1	95.1	91.6	86.6	86.6	85.3	79.9
Barisal	99.0	99.0	99.0	99.0	98.6	97.9	97.9	95.1	88.8	88.8	90.4	83.2
BCC	99.0	99.0	99.0	99.0	96.9	96.9	96.9	95.5	90.6	90.6	89.4	83.5
Jhalokati	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.1	89.7	89.7	92.6	83.9
Bhola	98.6	98.1	98.1	98.1	97.6	97.6	97.6	94.9	91.2	91.2	89.0	85.1
Barguna	100.0	99.5	99.5	99.5	97.9	97.9	97.9	94.6	91.8	91.8	88.2	85.2
Patuakhali	99.5	99.5	99.5	99.5	98.9	98.9	98.9	97.0	89.0	89.0	93.7	85.4
Perojpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	97.3	93.5	93.5	90.7	86.5
Barisal Division	99.5	99.3	99.3	99.3	98.3	98.2	98.2	96.1	90.7	90.7	90.5	84.6
Noakhali	96.7	96.2	96.2	96.2	94.3	94.3	94.3	89.0	79.4	79.4	79.0	68.7
Bandarban	85.2	85.2	85.2	85.2	82.4	82.4	82.4	78.4	75.7	75.7	73.0	69.9
Ctg Slum	98.6	98.1	98.1	98.1	94.9	94.9	94.9	90.1	84.4	84.4	79.9	73.2
Khagrachari	91.9	91.9	91.9	91.9	88.6	88.6	88.6	87.1	82.2	82.2	81.1	75.8
Cox'sbazar	100.0	100.0	100.0	100.0	99.5	99.5	99.5	95.2	83.7	83.7	90.6	77.5
Rangamati	94.8	94.3	94.3	94.3	92.4	92.4	92.4	91.4	87.9	87.9	82.5	78.8
Chandpur	97.6	97.6	97.6	97.6	97.6	97.6	97.6	95.6	83.8	83.8	92.2	79.9
Lakshmipur	97.1	96.7	96.7	96.7	95.7	95.7	95.7	91.3	87.5	87.5	84.3	80.1
Chittagong	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.8	86.5	86.5	92.7	82.3
CCC	99.0	99.0	99.0	99.0	98.6	98.6	98.6	96.9	89.4	89.4	91.3	83.6
B.Baria	96.2	95.7	95.7	95.7	95.2	95.2	95.2	92.9	90.2	90.2	90.6	87.7
Comilla	99.5	99.5	99.5	99.5	97.4	97.4	97.4	95.7	89.8	89.8	94.3	88.2
Feni	99.0	99.0	99.0	99.0	99.0	99.0	99.0	94.8	92.4	92.4	90.8	88.2
Chittagong Division	96.4	96.3	96.3	96.3	95.0	95.0	95.0	92.1	85.8	85.8	86.8	80.0
National	98.9	98.7	98.7	98.7	97.6	97.5	97.5	94.7	89.4	89.4	89.2	83.4
Urban	99.2	98.8	98.8	98.8	97.5	97.5	97.5	95.2	89.9	89.9	89.1	83.4
Rural	98.8	98.6	98.6	98.6	97.6	97.5	97.5	94.7	89.4	89.4	89.2	83.4

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

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Dhaka	99.5	99.5	99.5	99.5	99.5	99.5	99.5	98.6	98.6	98.6	94.3	94.3
Faridpur	99.0	99.0	99.0	99.0	99.0	99.0	99.0	98.6	98.6	98.6	94.8	94.8
Gazipur	100.0	99.5	99.5	99.5	99.0	99.0	99.0	98.1	98.1	98.1	95.2	95.2
Gopalganj	98.6	98.6	98.6	98.6	98.1	98.1	98.1	98.1	98.1	98.1	94.8	94.8
Jamalpur	100.0	99.0	99.0	99.0	98.1	98.1	98.1	93.8	93.8	93.8	88.6	88.6
Kishoreganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5	99.5	95.7	95.7
Madaripur	99.0	99.0	99.0	99.0	98.1	98.1	98.1	98.1	98.1	98.1	89.5	89.5
Manikganj	98.6	98.6	98.6	98.6	96.2	96.2	96.2	91.9	91.9	91.9	83.8	83.8
Munshiganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5	99.5	94.8	94.8
Mymensingh	99.0	99.0	99.0	99.0	97.6	97.6	97.6	97.1	97.1	97.1	88.6	88.6
Narayanganj	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.0	99.0	99.0	95.7	95.7
Norsingdhi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.1	97.1	97.1	91.9	91.9
Netrokona	99.0	99.0	99.0	99.0	97.6	97.6	97.6	95.7	95.7	95.7	91.4	91.4
Rajbari	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.6	98.6	98.6	91.9	91.9
Shariatpur	99.0	98.6	98.6	98.6	97.6	97.6	97.6	96.2	96.2	96.2	87.6	87.6
Sherpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.1	98.1	98.1	94.8	94.8
Tangail	98.6	98.6	98.6	98.6	97.1	97.1	97.1	96.2	96.2	96.2	94.3	94.3
DCC	100.0	100.0	100.0	100.0	98.6	98.6	98.6	96.7	96.7	96.7	91.0	91.0
Dhaka Slum	98.6	98.6	98.6	98.6	97.1	97.1	97.1	94.8	94.8	94.8	87.6	87.6
Dhaka Division	99.4	99.3	99.3	99.3	98.6	98.6	98.6	97.3	97.3	97.3	92.1	92.1
Bagerhat	99.0	98.6	98.6	98.6	97.6	97.6	97.6	95.2	95.2	95.2	87.6	87.6
Chuadanga	99.0	99.0	99.0	99.0	98.6	98.6	98.6	97.6	97.6	97.6	96.7	96.7
Jessore	99.0	99.0	99.0	99.0	98.1	98.1	98.1	97.6	97.6	97.6	95.7	95.7
Jhenaidah	100.0	100.0	100.0	100.0	99.5	99.5	99.5	98.6	98.6	98.6	97.1	97.1
Khulna	99.5	99.5	99.5	99.5	99.5	99.5	99.5	98.6	98.6	98.6	98.1	98.1
Kustia	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.6	98.6	98.6	96.7	96.7
Magura	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5	99.5	95.2	95.2
Meherpur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.2	96.2
Narail	99.5	99.5	99.5	99.5	98.6	98.6	98.6	97.6	97.6	97.6	96.7	96.7
Satkhira	100.0	99.5	99.5	99.5	97.6	97.6	97.6	97.1	97.1	97.1	93.3	93.3
KCC	98.6	98.1	98.1	98.1	96.2	96.2	96.2	93.8	93.8	93.8	91.0	91.0
Khulna Division	99.5	99.4	99.4	99.4	98.6	98.6	98.6	97.6	97.6	97.6	94.9	94.9
Bogra	100.0	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	98.1	98.1
Chapai Nawabganj	99.0	98.6	98.6	98.6	97.1	97.1	97.1	95.7	95.7	95.7	91.4	91.4
Dinajpur	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.5	99.5	99.5	97.6	97.6
Gaibandha	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.0	99.0	99.0	93.3	93.3
Joypurhat	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5
Kurigram	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Lalmonirhat	100.0	100.0	100.0	100.0	99.5	99.5	99.5	98.1	98.1	98.1	94.8	94.8
Naogaon	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.5	99.5	99.5	98.6	98.6
Natore	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	97.6	97.6
Nilphamari	99.5	99.5	99.5	99.5	99.0	99.0	99.0	96.7	96.7	96.7	91.9	91.9
Pabna	100.0	100.0	100.0	100.0	99.0	99.0	99.0	99.0	99.0	99.0	95.7	95.7
Panchagarh	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.2	96.2

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Rajshai	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5	99.5	97.1	97.1
Rangpur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.6	98.6	98.6	94.8	94.8
Sirajganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.7	96.7
Thakurgaon	99.5	99.0	99.0	99.0	97.1	97.1	97.1	95.2	95.2	95.2	91.0	91.0
RCC	100.0	99.5	99.5	99.5	99.0	99.0	99.0	99.0	99.0	99.0	98.6	98.6
Rajshahi Division	99.8	99.7	99.7	99.7	99.3	99.3	99.3	98.6	98.6	98.6	96.1	96.1
Habiganj	98.6	98.6	98.6	98.6	97.1	97.1	97.1	95.7	95.7	95.7	92.9	92.9
Moulvibazar	95.7	95.2	95.2	95.2	94.3	94.3	94.3	92.9	92.9	92.9	84.8	84.8
Sunamganj	96.2	95.7	95.7	95.7	92.9	92.9	92.9	89.0	89.0	89.0	83.3	83.3
Sylhet	100.0	100.0	100.0	100.0	99.5	99.5	99.5	98.1	98.1	98.1	92.4	92.4
SCC	96.2	94.8	94.8	94.8	92.9	92.9	92.9	91.9	91.9	91.9	86.7	86.7
Sylhet Division	97.3	96.9	96.9	96.9	95.3	95.3	95.3	93.5	93.5	93.5	88.0	88.0
Barisal	99.0	99.0	99.0	99.0	98.6	98.6	98.6	98.6	98.6	98.6	93.3	93.3
Bhola	98.6	98.1	98.1	98.1	97.6	97.6	97.6	97.1	97.1	97.1	92.9	92.9
Barguna	100.0	99.5	99.5	99.5	98.6	98.6	98.6	96.7	96.7	96.7	91.9	91.9
Jhalokati	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.1	98.1	98.1	97.6	97.6
Patuakhali	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.0	99.0	99.0	97.1	97.1
Perojpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.6	98.6	98.6	96.2	96.2
BCC	99.0	99.0	99.0	99.0	97.6	97.6	97.6	96.2	96.2	96.2	93.8	93.8
Barisal Division	99.5	99.3	99.3	99.3	98.6	98.6	98.6	97.8	97.8	97.8	94.7	94.7
Bandarban	85.2	85.2	85.2	85.2	82.4	82.4	82.4	81.9	81.9	81.9	77.6	77.6
Brahmanbaria	96.2	95.7	95.7	95.7	95.2	95.2	95.2	94.3	94.3	94.3	92.9	92.9
Chandpur	97.6	97.6	97.6	97.6	97.6	97.6	97.6	97.1	97.1	97.1	97.1	97.1
Chittagong	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.0	99.0	99.0	99.0	99.0
Comilla	99.5	99.5	99.5	99.5	98.6	98.6	98.6	98.1	98.1	98.1	94.3	94.3
Cox'sbazar	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5
Feni	99.0	99.0	99.0	99.0	99.0	99.0	99.0	96.7	96.7	96.7	93.3	93.3
Khagrachari	91.9	91.9	91.9	91.9	88.6	88.6	88.6	87.1	87.1	87.1	83.8	83.8
Lakshimpur	97.1	96.7	96.7	96.7	95.7	95.7	95.7	92.9	92.9	92.9	87.6	87.6
Noakhali	96.7	96.2	96.2	96.2	94.3	94.3	94.3	91.0	91.0	91.0	83.8	83.8
Rangamati	94.8	94.3	94.3	94.3	92.4	92.4	92.4	91.4	91.4	91.4	84.3	84.3
CCC	99.0	99.0	99.0	99.0	98.6	98.6	98.6	97.6	97.6	97.6	92.9	92.9
CCC Slum	98.6	98.1	98.1	98.1	95.7	95.7	95.7	93.3	93.3	93.3	85.7	85.7
Chittagong Division	96.4	96.3	96.3	96.3	95.1	95.1	95.1	93.9	93.9	93.9	90.5	90.5
National	98.9	98.7	98.7	98.7	97.9	97.9	97.9	96.9	96.9	96.9	93.2	93.2
Urban	99.2	99.0	99.0	99.0	97.8	97.8	97.8	96.6	96.6	96.6	93.3	93.3
Rural	98.8	98.7	98.7	98.7	98.0	98.0	98.0	96.9	96.9	96.9	93.2	93.2
Slum Total	98.6	98.3	98.3	98.3	96.4	96.4	96.4	94.0	94.0	94.0	86.7	86.7
Other Urban	99.7	99.6	99.6	99.6	98.7	98.7	98.7	97.6	97.6	97.6	94.5	94.5

Table 3a: Crude Vaccination Coverage among 12-23 Months Old Children according to Survey Units by District, City Corporation (Fully Vaccinated Arranged in Ascending Order by All districts)

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Bandarban	85.2	85.2	85.2	85.2	82.4	82.4	82.4	81.9	81.9	81.9	77.6	77.6
Sunamganj	96.2	95.7	95.7	95.7	92.9	92.9	92.9	89.0	89.0	89.0	83.3	83.3
Manikganj	98.6	98.6	98.6	98.6	96.2	96.2	96.2	91.9	91.9	91.9	83.8	83.8
Khagrachari	91.9	91.9	91.9	91.9	88.6	88.6	88.6	87.1	87.1	87.1	83.8	83.8
Noakhali	96.7	96.2	96.2	96.2	94.3	94.3	94.3	91.0	91.0	91.0	83.8	83.8
Rangamati	94.8	94.3	94.3	94.3	92.4	92.4	92.4	91.4	91.4	91.4	84.3	84.3
Moulavibazar	95.7	95.2	95.2	95.2	94.3	94.3	94.3	92.9	92.9	92.9	84.8	84.8
Ctg Slum	98.6	98.1	98.1	98.1	95.7	95.7	95.7	93.3	93.3	93.3	85.7	85.7
SCC	96.2	94.8	94.8	94.8	92.9	92.9	92.9	91.9	91.9	91.9	86.7	86.7
Shariatpur	99.0	98.6	98.6	98.6	97.6	97.6	97.6	96.2	96.2	96.2	87.6	87.6
Dhaka Slum	98.6	98.6	98.6	98.6	97.1	97.1	97.1	94.8	94.8	94.8	87.6	87.6
Bagerhat	99.0	98.6	98.6	98.6	97.6	97.6	97.6	95.2	95.2	95.2	87.6	87.6
Lakshmipur	97.1	96.7	96.7	96.7	95.7	95.7	95.7	92.9	92.9	92.9	87.6	87.6
Jamalpur	100.0	99.0	99.0	99.0	98.1	98.1	98.1	93.8	93.8	93.8	88.6	88.6
Mymensingh	99.0	99.0	99.0	99.0	97.6	97.6	97.6	97.1	97.1	97.1	88.6	88.6
Madaripur	99.0	99.0	99.0	99.0	98.1	98.1	98.1	98.1	98.1	98.1	89.5	89.5
DCC	100.0	100.0	100.0	100.0	98.6	98.6	98.6	96.7	96.7	96.7	91.0	91.0
KCC	98.6	98.1	98.1	98.1	96.2	96.2	96.2	93.8	93.8	93.8	91.0	91.0
Thakurgaon	99.5	99.0	99.0	99.0	97.1	97.1	97.1	95.2	95.2	95.2	91.0	91.0
Netrokona	99.0	99.0	99.0	99.0	97.6	97.6	97.6	95.7	95.7	95.7	91.4	91.4
Chapai Nawabganj	99.0	98.6	98.6	98.6	97.1	97.1	97.1	95.7	95.7	95.7	91.4	91.4
Norsingdhi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.1	97.1	97.1	91.9	91.9
Rajbari	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.6	98.6	98.6	91.9	91.9
Nilphamari	99.5	99.5	99.5	99.5	99.0	99.0	99.0	96.7	96.7	96.7	91.9	91.9
Barguna	100.0	99.5	99.5	99.5	98.6	98.6	98.6	96.7	96.7	96.7	91.9	91.9
Sylhet	100.0	100.0	100.0	100.0	99.5	99.5	99.5	98.1	98.1	98.1	92.4	92.4
Habiganj	98.6	98.6	98.6	98.6	97.1	97.1	97.1	95.7	95.7	95.7	92.9	92.9
Bhola	98.6	98.1	98.1	98.1	97.6	97.6	97.6	97.1	97.1	97.1	92.9	92.9
B.Baria	96.2	95.7	95.7	95.7	95.2	95.2	95.2	94.3	94.3	94.3	92.9	92.9
CCC	99.0	99.0	99.0	99.0	98.6	98.6	98.6	97.6	97.6	97.6	92.9	92.9
Satkhira	100.0	99.5	99.5	99.5	97.6	97.6	97.6	97.1	97.1	97.1	93.3	93.3
Gaibandha	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.0	99.0	99.0	93.3	93.3
Barisal	99.0	99.0	99.0	99.0	98.6	98.6	98.6	98.6	98.6	98.6	93.3	93.3
Feni	99.0	99.0	99.0	99.0	99.0	99.0	99.0	96.7	96.7	96.7	93.3	93.3
BCC	99.0	99.0	99.0	99.0	97.6	97.6	97.6	96.2	96.2	96.2	93.8	93.8
Dhaka	99.5	99.5	99.5	99.5	99.5	99.5	99.5	98.6	98.6	98.6	94.3	94.3
Tangail	98.6	98.6	98.6	98.6	97.1	97.1	97.1	96.2	96.2	96.2	94.3	94.3
Comilla	99.5	99.5	99.5	99.5	98.6	98.6	98.6	98.1	98.1	98.1	94.3	94.3
Faridpur	99.0	99.0	99.0	99.0	99.0	99.0	99.0	98.6	98.6	98.6	94.8	94.8
Gopalganj	98.6	98.6	98.6	98.6	98.1	98.1	98.1	98.1	98.1	98.1	94.8	94.8
Munshiganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5	99.5	94.8	94.8
Sherpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.1	98.1	98.1	94.8	94.8
Lalmonirhat	100.0	100.0	100.0	100.0	99.5	99.5	99.5	98.1	98.1	98.1	94.8	94.8
Rangpur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.6	98.6	98.6	94.8	94.8
Gazipur	100.0	99.5	99.5	99.5	99.0	99.0	99.0	98.1	98.1	98.1	95.2	95.2

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Magura	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5	99.5	95.2	95.2
Kishoreganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5	99.5	95.7	95.7
Narayanganj	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.0	99.0	99.0	95.7	95.7
Jessore	99.0	99.0	99.0	99.0	98.1	98.1	98.1	97.6	97.6	97.6	95.7	95.7
Pabna	100.0	100.0	100.0	100.0	99.0	99.0	99.0	99.0	99.0	99.0	95.7	95.7
Meherpur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.2	96.2
Panchagarh	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.2	96.2
Perojpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.6	98.6	98.6	96.2	96.2
Chuadanga	99.0	99.0	99.0	99.0	98.6	98.6	98.6	97.6	97.6	97.6	96.7	96.7
Kustia	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.6	98.6	98.6	96.7	96.7
Narail	99.5	99.5	99.5	99.5	98.6	98.6	98.6	97.6	97.6	97.6	96.7	96.7
Sirajganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.7	96.7
Jhenaidah	100.0	100.0	100.0	100.0	99.5	99.5	99.5	98.6	98.6	98.6	97.1	97.1
Rajshahi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5	99.5	97.1	97.1
Patuakhali	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.0	99.0	99.0	97.1	97.1
Chandpur	97.6	97.6	97.6	97.6	97.6	97.6	97.6	97.1	97.1	97.1	97.1	97.1
Dinajpur	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.5	99.5	99.5	97.6	97.6
Nartore	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	97.6	97.6
Jhalokati	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.1	98.1	98.1	97.6	97.6
Khulna	99.5	99.5	99.5	99.5	99.5	99.5	99.5	98.6	98.6	98.6	98.1	98.1
Bogra	100.0	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	98.1	98.1
Naogaon	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.5	99.5	99.5	98.6	98.6
RCC	100.0	99.5	99.5	99.5	99.0	99.0	99.0	99.0	99.0	99.0	98.6	98.6
Chittagong	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.0	99.0	99.0	99.0	99.0
Joypurhat	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5
Cox'sbazar	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5
Kurigram	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Manikganj	98.6	98.6	98.6	98.6	96.2	96.2	96.2	91.9	91.9	91.9	83.8	83.8
Shariatpur	99.0	98.6	98.6	98.6	97.6	97.6	97.6	96.2	96.2	96.2	87.6	87.6
Dhaka Slum	98.6	98.6	98.6	98.6	97.1	97.1	97.1	94.8	94.8	94.8	87.6	87.6
Jamalpur	100.0	99.0	99.0	99.0	98.1	98.1	98.1	93.8	93.8	93.8	88.6	88.6
Mymensingh	99.0	99.0	99.0	99.0	97.6	97.6	97.6	97.1	97.1	97.1	88.6	88.6
Madaripur	99.0	99.0	99.0	99.0	98.1	98.1	98.1	98.1	98.1	98.1	89.5	89.5
DCC	100.0	100.0	100.0	100.0	98.6	98.6	98.6	96.7	96.7	96.7	91.0	91.0
Netrokona	99.0	99.0	99.0	99.0	97.6	97.6	97.6	95.7	95.7	95.7	91.4	91.4
Norsingdhi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	97.1	97.1	97.1	91.9	91.9
Rajbari	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.6	98.6	98.6	91.9	91.9
Dhaka	99.5	99.5	99.5	99.5	99.5	99.5	99.5	98.6	98.6	98.6	94.3	94.3
Tangail	98.6	98.6	98.6	98.6	97.1	97.1	97.1	96.2	96.2	96.2	94.3	94.3
Faridpur	99.0	99.0	99.0	99.0	99.0	99.0	99.0	98.6	98.6	98.6	94.8	94.8
Gopalganj	98.6	98.6	98.6	98.6	98.1	98.1	98.1	98.1	98.1	98.1	94.8	94.8
Munshiganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5	99.5	94.8	94.8
Sherpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.1	98.1	98.1	94.8	94.8
Gazipur	100.0	99.5	99.5	99.5	99.0	99.0	99.0	98.1	98.1	98.1	95.2	95.2
Kishoreganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5	99.5	95.7	95.7
Narayanganj	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.0	99.0	99.0	95.7	95.7
Dhaka Division	99.4	99.3	99.3	99.3	98.6	98.6	98.6	97.3	97.3	97.3	92.1	92.1
Bagerhat	99.0	98.6	98.6	98.6	97.6	97.6	97.6	95.2	95.2	95.2	87.6	87.6
KCC	98.6	98.1	98.1	98.1	96.2	96.2	96.2	93.8	93.8	93.8	91.0	91.0
Satkhira	100.0	99.5	99.5	99.5	97.6	97.6	97.6	97.1	97.1	97.1	93.3	93.3
Magura	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5	99.5	95.2	95.2
Jessore	99.0	99.0	99.0	99.0	98.1	98.1	98.1	97.6	97.6	97.6	95.7	95.7
Meherpur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.2	96.2
Chuadanga	99.0	99.0	99.0	99.0	98.6	98.6	98.6	97.6	97.6	97.6	96.7	96.7
Kustia	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.6	98.6	98.6	96.7	96.7
Narail	99.5	99.5	99.5	99.5	98.6	98.6	98.6	97.6	97.6	97.6	96.7	96.7
Jhenaidah	100.0	100.0	100.0	100.0	99.5	99.5	99.5	98.6	98.6	98.6	97.1	97.1
Khulna	99.5	99.5	99.5	99.5	99.5	99.5	99.5	98.6	98.6	98.6	98.1	98.1
Khulna Division	99.5	99.4	99.4	99.4	98.6	98.6	98.6	97.6	97.6	97.6	94.9	94.9
Thakurgaon	99.5	99.0	99.0	99.0	97.1	97.1	97.1	95.2	95.2	95.2	91.0	91.0
Chapai Nawabganj	99.0	98.6	98.6	98.6	97.1	97.1	97.1	95.7	95.7	95.7	91.4	91.4
Nilphamari	99.5	99.5	99.5	99.5	99.0	99.0	99.0	96.7	96.7	96.7	91.9	91.9
Gaibandha	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.0	99.0	99.0	93.3	93.3
Lalmonirhat	100.0	100.0	100.0	100.0	99.5	99.5	99.5	98.1	98.1	98.1	94.8	94.8
Rangpur	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.6	98.6	98.6	94.8	94.8
Pabna	100.0	100.0	100.0	100.0	99.0	99.0	99.0	99.0	99.0	99.0	95.7	95.7
Panchagarh	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.2	96.2
Sirajganj	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.0	99.0	99.0	96.7	96.7
Rajshahi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5	99.5	97.1	97.1
Dinajpur	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.5	99.5	99.5	97.6	97.6
Nartore	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	97.6	97.6
Bogra	100.0	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	98.1	98.1

Survey Units	BCG	OPV1	DPT1	HB1	OPV2	DPT2	HB2	OPV3	DPT3	HB3	Measles	FVC
Naogaon	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.5	99.5	99.5	98.6	98.6
RCC	100.0	99.5	99.5	99.5	99.0	99.0	99.0	99.0	99.0	99.0	98.6	98.6
Joypurhat	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5
Kurigram	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Rajshahi Division	99.8	99.7	99.7	99.7	99.3	99.3	99.3	98.6	98.6	98.6	96.1	96.1
Sunamganj	96.2	95.7	95.7	95.7	92.9	92.9	92.9	89.0	89.0	89.0	83.3	83.3
Moulavibazar	95.7	95.2	95.2	95.2	94.3	94.3	94.3	92.9	92.9	92.9	84.8	84.8
SCC	96.2	94.8	94.8	94.8	92.9	92.9	92.9	91.9	91.9	91.9	86.7	86.7
Sylhet	100.0	100.0	100.0	100.0	99.5	99.5	99.5	98.1	98.1	98.1	92.4	92.4
Habiganj	98.6	98.6	98.6	98.6	97.1	97.1	97.1	95.7	95.7	95.7	92.9	92.9
Sylhet Division	97.3	96.9	96.9	96.9	95.3	95.3	95.3	93.5	93.5	93.5	88.0	88.0
Barguna	100.0	99.5	99.5	99.5	98.6	98.6	98.6	96.7	96.7	96.7	91.9	91.9
Bhola	98.6	98.1	98.1	98.1	97.6	97.6	97.6	97.1	97.1	97.1	92.9	92.9
Barisal	99.0	99.0	99.0	99.0	98.6	98.6	98.6	98.6	98.6	98.6	93.3	93.3
BCC	99.0	99.0	99.0	99.0	97.6	97.6	97.6	96.2	96.2	96.2	93.8	93.8
Perojpur	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.6	98.6	98.6	96.2	96.2
Patuakhali	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.0	99.0	99.0	97.1	97.1
Jhalokati	100.0	100.0	100.0	100.0	99.0	99.0	99.0	98.1	98.1	98.1	97.6	97.6
Barisal Division	99.5	99.3	99.3	99.3	98.6	98.6	98.6	97.8	97.8	97.8	94.7	94.7
Bandarban	85.2	85.2	85.2	85.2	82.4	82.4	82.4	81.9	81.9	81.9	77.6	77.6
Khagrachari	91.9	91.9	91.9	91.9	88.6	88.6	88.6	87.1	87.1	87.1	83.8	83.8
Noakhali	96.7	96.2	96.2	96.2	94.3	94.3	94.3	91.0	91.0	91.0	83.8	83.8
Rangamati	94.8	94.3	94.3	94.3	92.4	92.4	92.4	91.4	91.4	91.4	84.3	84.3
Ctg Slum	98.6	98.1	98.1	98.1	95.7	95.7	95.7	93.3	93.3	93.3	85.7	85.7
Lakshmipur	97.1	96.7	96.7	96.7	93.7	95.7	95.7	92.9	92.9	92.9	87.6	87.6
B.Baria	96.2	95.7	95.7	95.7	95.2	95.2	95.2	94.3	94.3	94.3	92.9	92.9
CCC	99.0	99.0	99.0	99.0	98.6	98.6	98.6	97.6	97.6	97.6	92.9	92.9
Feni	99.0	99.0	99.0	99.0	99.0	99.0	99.0	96.7	96.7	96.7	93.3	93.3
Comilla	99.5	99.5	99.5	99.5	98.6	98.6	98.6	98.1	98.1	98.1	94.3	94.3
Chandpur	97.6	97.6	97.6	97.6	97.6	97.6	97.6	97.1	97.1	97.1	97.1	97.1
Chittagong	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.0	99.0	99.0	99.0	99.0
Cox'sbazar	100.0	100.0	100.0	100.0	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5
Chittagong Division	96.4	96.3	96.3	96.3	95.1	95.1	95.1	93.9	93.9	93.9	90.5	90.5
National	98.9	98.7	98.7	98.7	97.9	97.9	97.9	96.9	96.9	96.9	93.2	93.2
Urban	99.2	99.0	99.0	99.0	97.8	97.8	97.8	96.6	96.6	96.6	93.3	93.3
Rural	98.8	98.7	98.7	98.7	98.0	98.0	98.0	96.9	96.9	96.9	93.2	93.2

PERCENTAGE OF THE NEWBORN PROTECTED AT BIRTH AGAINST TETANUS BY DISTRICT 2010

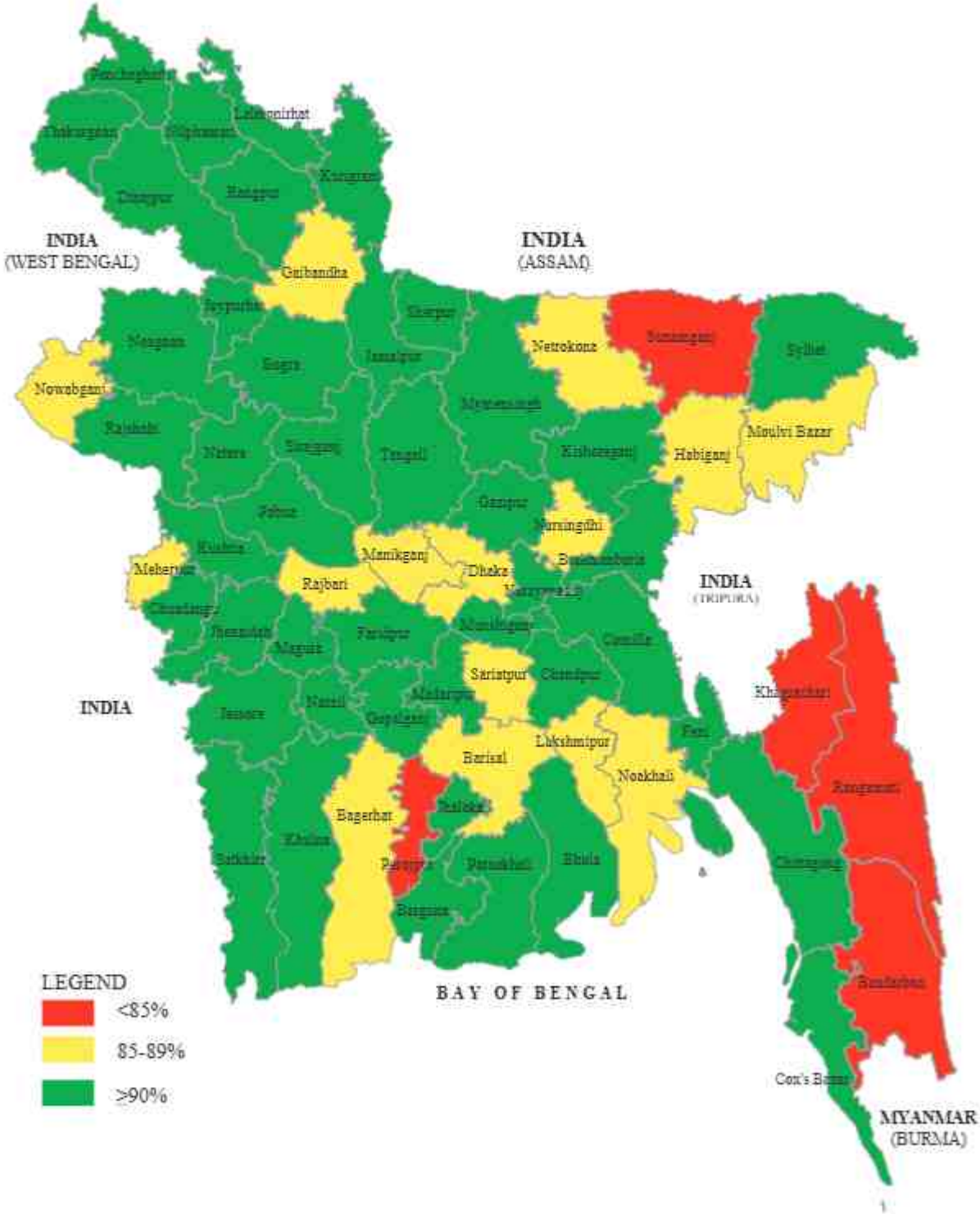


Table 4: Valid TT Coverage among Mothers with 0-11 Months Old Children by Survey Units, according to Divisions

Survey Units	TT1	TT2	TT3	TT4	TT5
National	96.9	95.3	82	60.7	38.9
Dhaka Division	97.4	95.8	83	61.3	38.7
Dhaka	97.6	95.7	79	54.3	33.8
Faridpur	95.7	91.4	82.9	61.4	30.5
Gazipur	99	98.1	83.8	64.3	35.7
Gopalganj	97.6	94.3	76.7	56.7	39.5
Jamalpur	99	96.7	82.9	62.9	36.2
Kishoreganj	97.6	96.7	82.9	63.3	43.8
Madaripur	97.6	96.7	82.4	56.2	30
Manikganj	95.2	93.3	80.5	56.7	36.2
Munshiganj	98.6	98.6	92.4	74.3	53.8
Mymensingh	97.6	95.7	78.6	52.9	29
Narayenganj	95.2	93.8	79	60	41.4
Norsingdhi	98.1	96.2	86.2	64.3	39.5
Netrokona	98.1	96.7	83.8	61.4	39.5
Rajbari	98.1	96.7	87.1	63.8	42.4
Shariatpur	96 .2	93.3	81.4	69	46.7
Sherpur	97.6	97.6	88.6	68.1	45.2
Tangail	95.2	93.3	88.1	69.5	45.7
DCC	99.5	99	77.1	44.8	26.7
Dhaka Slum	92.9	90	68.1	49.5	30.5
Khulna Division	97.6	96.1	83.4	62	39.3
Bagerhat	91	89	82.4	59.5	37.1
Chuadanga	98.6	98.6	82.9	59	41
Jessore	98.6	98.1	85.2	66.2	45.7
Jhenaidah	98.1	95.2	81.4	67.1	46.7
Khulna	97.1	97.1	88.1	75.2	50.5
Kustia	98.6	97.1	85.2	65.7	41.9
Magura	99.5	99.5	91	71.4	44.3
Meherpur	97.6	95.2	80.5	50.5	18.1
Narail	97.1	94.8	80	56.7	38.6
Satkhira	98.6	97.1	81	62.4	38.1
KCC	98.6	95.7	79.5	48.6	30
Rajshahi New Division	98.6	97.5	86.8	67.2	45.9
Bogra	99.5	97.6	90.5	73.8	47.1
Chapai Nawabganj	95.7	94.3	80.5	64.3	51
Joypurhat	99.5	99.5	91	66.7	44.8
Naogaon	99	98.6	91.4	75.2	54.8
Nartore	97.6	96.7	85.7	66.2	45.2
Pabna	99.5	99	87.1	68.6	41
Rajshahi	100	98.1	86.7	61.9	41.4
Serajganj	98.6	96.7	78.1	55.2	38.1
RCC	97.6	97.1	90.5	73.3	49.5
Sylhet Division	94.9	91.9	78.3	57.9	41.1
Habiganj	98.1	96.2	89.5	77.1	56.7
Moulavibazar	93.8	90	77.6	57.6	41
Sunamganj	90	86.2	70	48.1	37.1
Sylhet	98.1	94.3	80.5	57.1	39
SCC	94.3	92.9	73.8	49.5	31.9
Barisal Division	97.3	94.5	76.7	50.7	30.5
Barisal	94.8	92.4	75.2	52.4	29
Bhola	97.1	91.9	65.7	48.1	29.5

Survey Units	TT1	TT2	TT3	TT4	TT5
Barguna	99	94.3	73.3	39.5	21
Jhalokati	95.2	92.9	80.5	60.5	38.6
Patuakhali	98.6	98.1	73.8	41.9	22.9
Perojpur	97.6	95.2	84.3	62.4	42.9
BCC	99	96.7	83.8	50.5	29.5
Chittagong Division	94.4	93.1	78.5	58.4	37.1
Bandarban	81.4	79.5	63.3	46.7	32.4
B.Baria	96.7	96.2	81.9	57.1	32.9
Chandpur	99.5	99	83.8	69.5	53.8
Chittagong	100	100	91.9	74.8	49.5
Comilla	93.3	92.9	76.2	57.6	34.3
Cox'sbazar	97.6	96.7	87.1	72.9	50.5
Feni	99	97.6	91.9	75.7	47.6
Khagrachari	87.6	84.3	71.9	50.5	30
Lakshmipur	93.8	92.4	72.9	45.2	28.1
Noakhali	95.7	93.3	72.4	49	27.1
Rangamati	89	87.1	68.6	51	29.5
CCC	98.6	97.6	79.5	50.5	30
Ctg Slum	99.5	98.1	75.7	52.4	26.7
Rangpur Division	98	96.8	85	63.8	39.8
Dinajpur	99.5	98.6	89	71.4	46.7
Gaibandha	92.9	92.4	79	61.4	41.4
Kurigram	100	99	89	51	17.1
Lalmonirhat	98.1	97.6	89.5	64. 8	46.2
Nilphamari	98.6	97.6	79	57.1	31
Panchagarh	98.1	97.1	84.3	71	49.5
Rangpur	97.6	95.7	81	63.8	42.9
Thakurgaon	99	96.7	89	70	43.8
National	96.9	95.3	82	60.7	38.9
Urban	97.9	96.3	82.2	58.1	37.3
Rural	96.8	95.1	82	61.2	39.2

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

Survey Units	TT1	TT2	TT3	TT4	TT5
Dhaka Division	97.4	95.8	87.7	73.5	57.4
Dhaka	97.6	95.7	82.4	69.5	46.7
Faridpur	95.7	91.4	85.2	73.8	56.2
Gazipur	99	98.1	90	73.8	60
Gopalganj	97.6	94.3	83.8	71	55.7
Jamalpur	99	96.7	87.6	75.7	60
Kishoreganj	97.6	96.7	89	71.9	61.4
Madaripur	97.6	97.1	89.5	76.2	53.3
Manikganj	95.2	93.3	84.3	69	48.6
Munshiganj	98.6	98.6	94.8	83.8	71
Mymensingh	97.6	95.7	83.8	67.1	49.5
Narayanganj	95.2	93.8	87.6	72.4	62.9
Norsingdhi	98.1	96.2	89	72.9	60.5
Netrokona	98.1	96.7	87.6	76.2	57.1
Rajbari	98.1	96.7	90.5	75.7	60
Shariatpur	96.2	93.8	89	75.7	69
Sherpur	97.6	97.6	91.4	77.1	61
Tangail	95.2	93.3	89	77.6	63.8
DCC	99.5	99	84.3	63.8	35.7
Dhaka Slum	92.9	90.5	73.8	60.5	45.7
Khulna Division	97.6	96.2	87.5	71.6	54.4
Bagerhat	91	89	82.9	61.4	41.9
Chuadanga	98.6	98.6	89.5	71	55.7
Jessore	98.6	98.1	91.9	78.1	60.5
Jhenaidah	98.1	95.2	84.8	75.7	61.4
Khulna	97.1	97.1	92.4	82.9	64.8
Kustia	98.6	97.1	89	73.3	55.2
Magura	99.5	99.5	91.4	76.7	59.5
Meherpur	97.6	95.2	88.6	69.5	51.9
Narail	97.1	94.8	83.8	69.5	55.2
Satkhira	98.6	97.1	84.8	67.1	47.6
KCC	98.6	96.2	83.3	61.9	44.8
Rajshahi New Division	98.6	97.6	91	75.9	59.3
Bogra	99.5	98.1	93.8	82.4	65.7
Chapai Nawabganj	95.7	94.3	84.3	71.9	56.2
Joypurhat	99.5	99.5	94.3	74.8	60
Naogaon	99	98.6	92.4	78.6	59.5
Nartore	97.6	96.7	87.6	76.7	59
Pabna	99.5	99	93.8	75.7	60
Rajshahi	100	98.1	91	74.8	55.7
Serajganj	98.6	97.1	90.5	68.6	54.8
RCC	97.6	97.1	91.4	79.5	62.9
Sylhet Division	94.9	91.9	81.8	65.3	52.6
Habiganj	98.1	96.2	91.9	84.3	68.6
Moulavibazar	93.8	90	79	59.5	46.7
Sunamganj	90	86.2	75.2	58.6	47.1

Survey Units	TT1	TT2	TT3	TT4	TT5
Sylhet	98.1	94.3	82.4	64.8	49.5
SCC	94.3	92.9	80.5	59.5	51
Barisal Division	97.3	94.8	83.5	66.9	49.6
Barisal	94.8	92.4	84.3	70	55.2
Bhola	97.1	93.3	77.1	52.9	36.2
Barguna	99	94.3	81.9	62.9	48.1
Jhalokati	95.2	93.3	84.8	69.5	52.4
Patuakhali	98.6	98.1	81	66.7	42.4
Perojpur	97.6	95.2	87.6	76.2	62.4
BCC	99	96.7	87.6	70.5	50.5
Chittagong Division	94.4	93.2	83.1	70	55.8
Bandarban	81.4	79.5	69	54.3	43.8
B.Baria	96.7	96.2	86.2	71	61.9
Chandpur	99.5	99	85.2	75.7	62.9
Chittagong	100	100	93.8	85.7	63.3
Comilla	93.3	93.3	82.4	71	56.7
Cox'sbazar	97.6	97.1	89	78.1	64.3
Feni	99	97.6	94.8	86.2	70.5
Khagrachari	87.6	84.3	75.7	58.6	42.9
Lakshmipur	93.8	92.4	81.9	63.3	52.4
Noakhali	95.7	93.3	78.6	64.3	49.5
Rangamati	89	87.1	71.4	60	42.4
CCC	98.6	98.1	88.6	71.9	58.6
Ctg Slum	99.5	98.1	84.3	66.7	52.9
Rangpur Division	98	96.8	87.7	71.1	51.1
Dinajpur	99.5	98.6	91.9	82.4	64.3
Gaibandha	92.9	92.4	81	65.7	45.2
Kurigram	100	99	89.5	51.4	18.6
Lalmonirhat	98.1	97.6	92.9	76.2	59
Nilphamari	98.6	97.6	79.5	59.5	38.1
Panchagarh	98.1	97.1	87.1	78.6	61.9
Rangpur	97.6	95.7	88.6	78.1	64.8
Thakurgaon	99	96.7	91.4	76.7	57.1
National	96.9	95.4	86.5	71.4	55
Urban	97.9	96.4	86.7	70.1	53.4
Rural	96.8	95.2	86.4	71.6	55.3

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

Survey Units	TT1	TT2	TT3	TT4	TT5
Dhaka Division	93.5	90.3	76.1	53.3	32.8
Dhaka	95.2	91.9	71.4	48.6	32.4
Faridpur	93.8	93.3	79	50	28.6
Gazipur	95.2	91.9	75.2	45.2	22.4
Gopalganj	97.1	93.3	78.6	47.6	28.6
Jamalpur	97.1	93.8	76.2	54.8	35.7
Kishoreganj	96.7	93.8	87.1	71.9	51
Madaripur	92.9	89	75.7	46.7	31.4
Manikganj	88.1	85.2	67.1	46.7	27.1
Munshiganj	97.1	96.2	87.6	71.9	45.7
Mymensingh	91	87.6	65.7	43.3	23.3
Narayanganj	93.8	89.5	72.9	47.6	26.7
Norsingdhi	90	87.1	74.8	47.6	23.8
Netrokona	92.9	89	79	59.5	32.9
Rajbari	93.3	88.6	73.8	48.1	27.1
Shariatpur	91.9	91	83.3	66.7	48.6
Sherpur	95.2	94.8	84.8	66.2	43.3
Tangail	84.8	79	68.1	52.4	32.9
DCC	96.7	90.5	69.5	45.2	28.6
Dhaka Slum	88.6	84.3	61	41	18.6
Khulna Division	93.5	89.9	73.9	50.5	30.3
Bagerhat	81	79	64.8	38.6	22.9
Chuadanga	95.7	91	70	46.7	24.8
Jessore	91.4	87.6	68.6	41.9	23.3
Jhenaidah	91	86.2	70	46.7	25.2
Khulna	95.7	92.9	82.4	61	43.3
Kustia	94.3	89.5	76.2	54.8	34.3
Magura	99	98.1	84.8	59	32.4
Meherpur	88.6	82.9	59	32.9	11.4
Narail	93.8	90	74.3	54.3	32.9
Satkhira	98.6	94.3	78.1	56.2	35.7
KCC	99	97.1	84.3	63.8	47.6
Rajshahi New Division	94	91.9	82	63.7	42.4
Bogra	96.2	95.2	90.5	70	47.1
Chapai Nawabganj	97.1	92.9	76.2	60	41
Joypurhat	100	100	95.7	82.4	51
Naogaon	100	99	93.3	81.4	50.5
Nartore	92.9	91	80.5	57.1	33.8
Pabna	99.5	98.6	88.6	70.5	53.3
Rajshahi	94.3	90.5	78.1	54.3	32.4
Serajganj	76.2	71.9	54.8	31.9	23.8
RCC	90	87.6	80	65.2	48.6
Sylhet Division	88.7	85.4	71.6	54.3	35.7
Habiganj	97.1	96.7	90	69.5	46.7
Moulavibazar	81	78.1	62.9	47.1	30.5
Sunamganj	85.2	79	64.8	50	29
Sylhet	94.8	91.4	74.8	58.1	42.4

Survey Units	TT1	TT2	TT3	TT4	TT5
SCC	85.2	81.9	65.7	46.7	30
Barisal Division	91.6	87.9	73	45.4	25.9
Barisal	88.6	83.3	66.7	42.4	23.8
Bhola	89.5	84.3	69.5	42.4	26.2
Barguna	93.8	89.5	67.1	38.1	14.3
Jhalokati	91.9	89	77.6	56.2	36.2
Patuakhali	93.3	92.9	81.9	48.1	30.5
Perojpur	90.5	86.2	75.7	51.9	27.6
BCC	93.3	90	72.4	39	22.9
Chittagong Division	87.2	85	72.3	50.7	31.3
Bandarban	75.2	74.3	64.3	46.7	32.4
B Baria	93.8	91.9	81	56.7	32.4
Chandpur	70.5	69.5	60.5	46.7	36.7
Chittagong	100	99.5	88.6	71	50
Comilla	87.1	86.2	75.2	48.1	28.6
Cox'sbazar	93.3	91.9	78.6	60	36.2
Feni	90.5	89	77.1	51	24.3
Khagrachari	85.7	82.9	69	46.7	26.7
Lakshmi pur	89	86.7	70	42.4	24.3
Noakhali	85.7	78.6	63.3	42.9	28.1
Rangamati	87.1	83.8	69	51.9	35.2
CCC	88.1	86.2	71	44.8	21
Chittagong Slum	91.9	89.5	69.5	42.9	22.4
Rangpur Division	94.2	91	78.2	56.8	33.7
Dinajpur	91.9	91	76.7	61.4	38.1
Gaibandha	94.3	92.9	80.5	66.7	46.7
Kurigram	100	100	89.5	57.6	32.4
Lalmonirhat	96.2	91.4	74.3	53.3	30.5
Nilphamari	92.4	89.5	74.3	52.9	29
Panchagarh	88.1	82.4	72.9	55.7	31.9
Rangpur	95.2	88.1	76.2	54.3	33.8
Thakurgaon	95.2	92.9	81	52.4	27.1
National	92	89	75.5	53.4	33
Urban	93.4	90.3	76.3	53.7	34.4
Rural	91.8	88.8	75.3	53.4	32.7

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

Survey Units	TT1	TT2	TT3	TT4	TT5
Dhaka Division	93.5	90.4	80.1	65.3	48.4
Dhaka	95.2	91.9	76.7	57.6	41.4
Faridpur	93.8	93.3	82.9	67.1	47.1
Gazipur	95.2	91.9	77.6	65.7	43.8
Gopalganj	97.1	93.3	80	60	38.6
Jamalpur	97.1	93.8	81.9	68.6	54.3
Kishoreganj	96.7	93.8	89.5	79	62.4
Madaripur	92.9	89	79.5	58.6	43.3
Manikganj	88.1	85.2	69.5	54.8	40.5
Munshiganj	97.1	96.2	91.9	79.5	62.9
Mymensingh	91	87.6	72.4	58.6	47.6
Narayanganj	93.8	89.5	81	67.6	49.5
Norsingdhi	90	87.1	80.5	66.7	52.9
Netrokona	92.9	89	82.9	71.9	47.1
Rajbari	93.3	89.5	81	67.6	50.5
Shariatpur	91.9	91	83.8	68.6	57.6
Sherpur	95.2	94.8	88.6	69.5	53.3
Tangail	84.8	79	69.5	60	44.8
DCC	96.7	90.5	73.3	54.3	32.9
Dhaka Slum	88.6	84.3	68.6	48.1	29.5
Khulna Division	93.5	90	77.1	60	42.6
Bagerhat	81	79	65.7	39.5	25.7
Chuadanga	95.7	91	76.7	64.3	45.2
Jessore	91.4	88.1	74.8	52.9	38.6
Jhenaidah	91	87.1	75.2	55.7	38.6
Khulna	95.7	92.9	86.7	72.4	53.3
Kustia	94.3	89.5	77.1	61.4	41.4
Magura	99	98.1	86.7	72.4	46.2
Meherpur	88.6	82.9	65.2	51	37.1
Narail	93.8	90	75.7	63.3	49
Satkhira	98.6	94.3	80	58.6	40
KCC	99	97.1	84.8	68.6	53.3
Raj shahi New Div	94	91.9	84.6	69.7	51.9
Bogra	96.2	95.2	92.9	78.6	56.7
Chapai Nawabganj	97.1	92.9	78.1	65.7	49
Joypurhat	100	100	96.7	85.7	60.5
Naogaon	100	99	93.8	83.3	58.6
Nartore	92.9	91	83.3	62.9	46.2
Pabna	99.5	98.6	90.5	76.2	63.3
Rajshahi	94.3	90.5	80.5	60	42.4
Serajganj	76.2	72.4	63.3	45.7	37.1
RCC	90	87.6	81.9	69.5	53.3
Sylhet Division	88.7	85.4	74.1	60.2	45.3
Habiganj	97.1	96.7	90	80	61.4
Moulavibazar	81	78.1	64.8	49	33.8
Sunamganj	85.2	79	67.1	55.7	38.6
Sylhet	94.8	91.4	77.1	62.9	52.9
SCC	85.2	81.9	71.4	53.3	40

survey Units	TT1	TT2	TT3	TT4	TT5
Barisal Division	91.6	88	78.1	61	46.1
Barisal	88.6	83.3	72.9	59	45.7
Bhola	89.5	84.8	72.9	47.1	36.2
Barguna	93.8	89.5	79.5	62.9	47.6
Jhalokati	91.9	89	79.5	64.8	48.1
Patuakhali	93.3	92.9	83.3	68.1	51
Perojpur	90.5	86.2	81.4	62.4	49.5
BCC	93.3	90.5	77.1	62.9	44.8
Chittagong Division	87.2	85	75.5	60.8	45.5
Bandarban	75.2	74.3	66.7	52.4	41.4
B.Baria	93.8	91.9	84.3	69	54.3
Chandpur	70.5	69.5	63.3	53.3	44.3
Chittagong	100	99.5	90	75.7	56.2
Comilla	87.1	86.2	77.6	64.3	47.1
Cox'sb azar	93.3	91.9	80	64.8	46.7
Feni	90.5	89	81.9	71.4	54.8
Khagrachari	85.7	82.9	71	55.2	35.7
Lakshmipur	89	86.7	74.3	53.3	35.7
Noakhali	85.7	78.6	67.1	45.2	31.9
Rangamati	87.1	83.8	71	58.1	45.7
CCC	88.1	86.2	79	66.2	51.9
Ctg Slum	91.9	89.5	76.7	57.6	40
Rangpur Division	94.2	91.1	80.7	64.4	43.8
Dinajpur	91.9	91	79.5	70	50.5
Gaibandha	94.3	92.9	83.8	71.9	51.4
Kurigram	100	100	89.5	59	34.8
Lalmonirhat	96.2	91.4	76.2	57.6	31.9
Nilphamari	92.4	89.5	77.1	58.6	36.2
Panchagarh	88.1	82.4	74.8	61.4	41.4
Rangpur	95.2	88.6	81	66.7	49.5
Thakurgaon	95.2	92.9	83.8	70	54.8
National	92	89.1	78.9	63.4	46.5
Urban	93.4	90.4	80.1	64.4	46.8
Rural	91.8	88.8	78.6	63.2	46.4

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

Districts	Protected at birth (%)
National	91.9
Dhaka Division	91.6
Dhaka	89.5
Faridpur	90.5
Gazipur	96.2
Gopalganj	92.4
Jamalpur	95.2
Kishoreganj	93.3
Madaripur	90
Manikganj	86.2
Munshiganj	95.2
Mymensingh	93.3
Narayanganj	92.4
Norsingdhi	86.7
Netrokona	88.6
Rajbari	86.2
Shariatpur	89.5
Sherpur	96.7
Tangail	90.5
DCC	96.2
Dhaka Slum	88.1
Khulna Division	93.2
Bagerhat	88.6
Chuadanga	95.2
Jessore	96.2
Jhenaidah	96.7
Khulna	96.2
Kustia	96.7
Magura	94.3
Meherpur	88.6
Narail	90.5
Satkhira	93.8
KCC	89
Rajshahi New Division	95.2
Bogra	94.3
Chapai Nawabganj	86.7
Joypurhat	98.1
Naogaon	98.6
Nartore	95.7
Pabna	99.5
Rajshahi	95.2
Sirajganj	92.9
RCC	96.2
Sylhet Division	87
Habiganj	89.5
Moulavibazar	89
Sunamganj	78.6
Sylhet	90

Districts	Protected birth (%)
SCC	87.6
Barisal Division	90.6
Barisal	88.1
Bhola	91.4
Barguna	91.4
Jhalokati	91.9
Patuakhali	96.2
Perojpur	82.4
BCC	92.9
Chittagong Division	90.1
Bandarban	74.3
B.Baria	93.8
Chandpur	96.7
Chittagong	99.5
Comilla	91.4
Cox'sbazar	93.8
Feni	97.1
Khagrachari	80.5
Lakshmipur	88.6
Noakhali	85.7
Rangamati	84.8
CCC	95.2
Ctg Slum	94.8
Rangpur Division	94.3
Dinajpur	97.1
Gaibandha	89
Kurigram	96.2
Lalmonirhat	95.7
Nilphamari	92.9
Panchagarh	98.1
Rangpur	92.4
Thakurgaon	92.9

Table 9: OPV Coverage among 0-5 Months Old Children in the 18th NID by Districts and City Corporations

Survey Units	During 18th NID	During Measles Campaign	Both Round
National	96.6	92.7	91.2
Dhaka Division	97.4	93.1	92
Dhaka	98.6	91.4	91.4
Faridpur	97.6	95.2	95.2
Gazipur	96.7	95.7	95.7
Gopalganj	96.2	91.9	89
Jamalpur	96.2	95.7	92.9
Kishoreganj	95.2	90.5	88.1
Madaripur	98.6	95.2	94.8
Manikganj	97.6	100	97.6
Munshiganj	98.6	95.2	93.8
Mymensingh	98.6	95.7	95.2
Narayanganj	94.8	84.3	83.8
Norsingdhi	93.3	91.9	89.5
Netrokona	99.5	92.4	92.4
Rajbari	94.8	85.7	82.4
Shariatpur	99.5	93.8	93.8
Sherpur	99	96.7	96.7
Tangail	98.6	91.4	90.5
DCC	99	93.3	93.3
Dhaka Slum	98.6	95.2	94.3
Khulna Division	97.4	94	92.8
Bagerhat	95.2	90	87.6
Chuadanga	96.2	95.7	95.2
Jessore	95.2	92.9	91
Jhenaidah	98.1	94.3	92.4
Khulna	99	98.1	98.1
Kustia	98.1	86.7	85.7
Magura	99	94.8	94.3
Meherpur	99	97.6	97.1
Narail	99	99	98.1
Satkhira	96.7	89	86.7
KCC	96.2	95.7	94.8
Rajshahi Division-New	97.6	96.3	95.2
Bogra	99	93.8	92.9
Chapai Nawabganj	94.8	93.8	91.4
Joypurhat	100	100	100
Naogaon	100	99.5	99.5
Natore	94.8	94.8	92.9
Pabna	97.1	96.7	95.2
Rajshahi	93.3	90.5	88.1
Serajganj	100	99	99

	During 18th NID	During Measles Campaign	Both Round
RCC	99.5	98.6	98.1
Rangpur Division	97.1	93.3	91.6
Dinajpur	97.1	94.8	92.4
Gaibandha	96.2	97.1	95.2
Kurigram	93.3	85.7	82.4
Lalmonirhat	99	96.7	96.7
Nilphamari	98.1	96.7	95.7
Panchagarh	98.6	94.8	93.3
Rangpur	94.3	88.1	84.3
Thakurgaon	100	92.9	92.9
Sylhet Division	96.6	91.5	90.7
Habiganj	98.6	91	90.5
Moulavibazar	95.7	93.8	93.8
Sunamganj	93.8	79.5	77.6
Sylhet	97.1	97.6	96.2
SCC	97.6	95.7	95.2
Barisal Division	94.5	91.2	87.8
Barisal	92.9	80	75.7
Bhola	91.9	92.4	85.2
Barguna	90.5	97.1	89.5
Jhalokati	97.6	96.7	94.8
Patuakhali	96.7	94.3	93.8
Perojpur	96.7	92.9	91.4
BCC	95.2	85.2	84.3
Chittagong Division	95	88.9	87.6
Bandarban	83.8	74.3	71.4
B.Baria	96.7	94.8	92.9
Chandpur	97.1	95.7	94.8
Chittagong	99.5	100	99.5
Comilla	96.2	96.2	95.7
Cox'sbazar	97.6	91	90
Feni	95.7	90.5	87.1
Khagrachari	91	90	90
Lakshmipur	95.7	81	79
Noakhali	96.2	82.9	81.4
Rangamati	93.3	77.6	77.6
CCC	97.1	93.3	91.9
Ctg Slum	97.6	73.3	72.9
National	96.6	92.7	91.2
Urban	97.7	93.9	93.2
Rural	96.4	92.4	90.9

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

	Vitamin A Supplementation Coverage		Vitamin A Coverage Infants 9-11	Anthelmintic Coverage Children 24 - 59 Months
	Post Partum Women	Children 12 - 59		
Survey Units		Months	months	
Dhaka Division	32.2	97.1	92.1	94.4
Dhaka	29	97.1	94.3	94.3
Faridpur	13.8	97.1	94.8	96.2
Gazipur	75.2	96.7	95.2	93.3
Gopalganj	31.4	95.7	94.8	94.8
Jamalpur	43.3	93.8	88.6	86.7
Kishoreganj	35.2	94.3	95.7	88.6
Madaripur	11	99	89.5	99
Manikganj	21.4	97.6	83.8	97.6
Munshiganj	21.9	100	94.8	99.5
Mymensingh	48.1	98.6	88.6	96.7
Narayanganj	29	95.2	95.7	95.2
Norsingdhi	39	93.3	91.9	90
Netrokona	28.6	99.5	91.4	99
Rajbari	18.1	95.7	91.9	87.6
Shariatpur	9	98.6	87.6	95.2
Sherpur	57.6	98.6	94.8	96.7
Tangail	31.9	98.1	94.3	96.2
DCC	36.7	98.6	91.0	92.9
Dhaka Slum	26.2	97.6	87.6	95.7
Khulna Division	36.2	96.4	94.9	93.2
Bagerhat	51.4	95.2	87.6	95.7
Chuadanga	53.8	94.3	96.7	89.5
Jessore	48.1	95.2	95.7	93.8
Jhenaidah	37.1	93.3	97.1	88.1
Khulna	47.1	99	98.1	97.6
Kustia	20	97.6	96.7	96.7
Magura	20.5	99	95.2	95.7
Meherpur	27.6	96.7	96.2	81.4
Narail	14.3	98.1	96.7	99
Satkhira	29.5	95.7	93.3	93.3
KCC	49	95.7	91.0	94.8
Rajshahi New Division	43.4	96.9	97.0	95.3
Bogra	45.7	99.5	98.1	98.6
Chapai Nawabganj	20.5	93.8	91.4	91.9
Joypurhat	75.7	98.6	99.5	98.1
Naogaon	15.7	100	98.6	99.5
Nartore	29	94.3	97.6	92.9
Pabna	39.5	94.8	95.7	93.8
Rajshahi	24.8	92.4	97.1	86.2
Ser ajganj	85.7	99	96.7	99
RCC	53.8	99.5	98.6	97.6
Sylhet Division	25.6	96	88.0	94.4

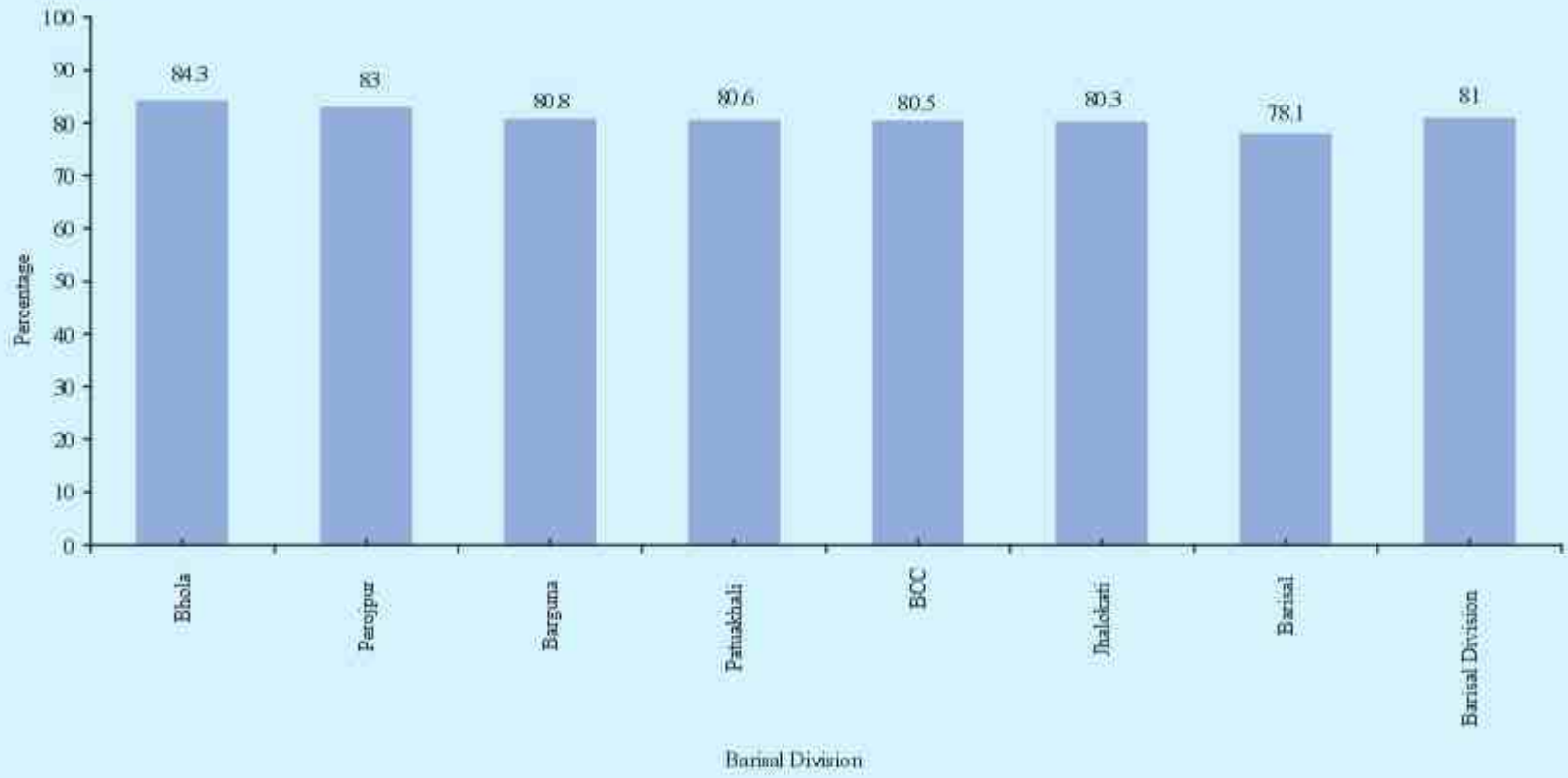
Survey Units	Vitamin A Supplementation Coverage		Vitamin A Coverage Infants 9-11	Anthelmintic Coverage
	Post Partum Women	Children 12-59 Months	months	Children 24 - 59 Months
Habiganj	20	98.1	92.9	95.2
Moulavibazar	46.2	95.7	84.8	94.8
Sunamganj	13.3	92.9	83.3	92.4
Sylhet	22.9	96.7	92.4	96.2
SCC	25.7	96.7	86.7	96.7
Barisal Division	44.1	94.5	94.6	85.9
Barisal	30.5	93.3	93.3	81
Bhola	49	92.9	92.9	85.2
Barguna	45.2	95.2	91.9	84.8
Jhalokati	27.1	96.2	97.6	81.9
Patuakhali	69	94.3	97.1	91.9
Perojpur	37.6	95.7	96.2	91.4
BCC	50.5	93.8	93.8	85.2
Chittagong Division	42.1	94.6	90.4	91.3
Bandarban	44.3	83.8	77.6	81.4
B.Baria	42.4	96.7	92.9	90
Chandpur	24.8	97.6	97.1	97.1
Chittagong	93.3	99.5	99.0	100
Comilla	81.9	96.2	94.3	90
Cox'sbazar	21	96.7	99.5	95.2
Feni	35.7	94.3	93.3	89
Khagrachari	47.6	91	83.8	91
Lakshmipur	18.6	94.3	87.6	92.4
Noakhali	16.7	95.7	83.8	92.4
Rangamati	44.8	92.9	84.3	91.4
CCC	33.8	96.2	92.9	85.2
Ctg Slum	33.3	97.6	85.7	94.3
Rangpur Division	48.1	94.7	94.9	86
Dinajpur	49.5	96.2	97.6	88.6
Gaibandha	33.8	96.2	93.3	90
Kurigram	96.7	92.9	100.0	90.5
Lalmonirhat	50	99	94.8	99
Nilphamari	63.8	97.1	91.9	92.4
Panchagarh	26.2	93.3	96.2	86.7
Rangpur	46.2	86.7	94.8	51.4
Thakurgaon	18.6	96.2	91.0	89.5
National	38.5	95.9	93.2	92
Urban	43.1	97.1	93.2	92.9
Rural	37.7	95.7	93.2	91.9

Table 11: Measles Coverage among Children 9-59 Months old during Measles Follow-up Campaign by Districts and City Corporations

Districts	Measles (%)
National	88.2
Urban	89.3
Rural	88
Dhaka Division	88.7
Dhaka	85.2
Faridpur	95.2
Gazipur	95.2
Gopalganj	89
Jamalpur	88.6
Kishoreganj	82.9
Madaripur	94.3
Manikganj	98.1
Munshiganj	92.9
Mymensingh	85.7
Narayanganj	75.2
Norsingdhi	86.2
Netrokona	80.5
Rajbari	82.4
Shariatpur	87.6
Sherpur	95.2
Tangail	89
DCC	92.9
Dhaka Slum	82.9
Khulna Division	88.5
Bagerhat	94.8
Chuadanga	83.3
Jessore	86.2
Jhenaidah	81
Khulna	96.7
Kustia	79.5
Magura	94.3
Meherpur	86.2
Narail	97.1
Satkhira	89
KCC	85.2
Rajshahi Division-New	92.9
Bogra	89
Chapai Nawabganj	86.7
Joypurhat	100
Naogaon	99.5
Natore	88.6
Pabna	93.3
Rajshahi	83.8
Serajganj	99
RCC	95.7
Rangpur Division	90.4
Dinajpur	91.9

Districts	Measles (%)
Gaibandha	96.2
Kurigram	85.7
Lalmonirhat	95.7
Nilphamari	95.7
Panchagarh	87.6
Rangpur	77.6
Thakurgaon	92.4
Sylhet Division	89
Habiganj	90
Moulavibazar	89.5
Sunamganj	77.6
Sylhet	97.6
SCC	90.5
Barisal Division	84.8
Barisal	81.9
Bhola	79
Barguna	83.8
Jhalokati	84.8
Patuakhali	93.8
Perojpur	90.5
BCC	79.5
Chittagong Division	83.9
Bandarban	51.9
B.Baria	86.7
Chandpur	95.7
Chittagong	100
Comilla	96.2
Cox'sbazar	86.2
Feni	82.9
Khagrachari	90
Lakshm ipur	79
Noakhali	78.6
Rangamati	77.1
CCC	82.9
Ctg Slum	72.4

Figure 1. Valid Full Vaccination by Age 12 Months among 12-23 Months Old Children by Districts in Barisal Division (Fully Vaccinated arranged in Descending Order by All Districts)



source: CES 2010

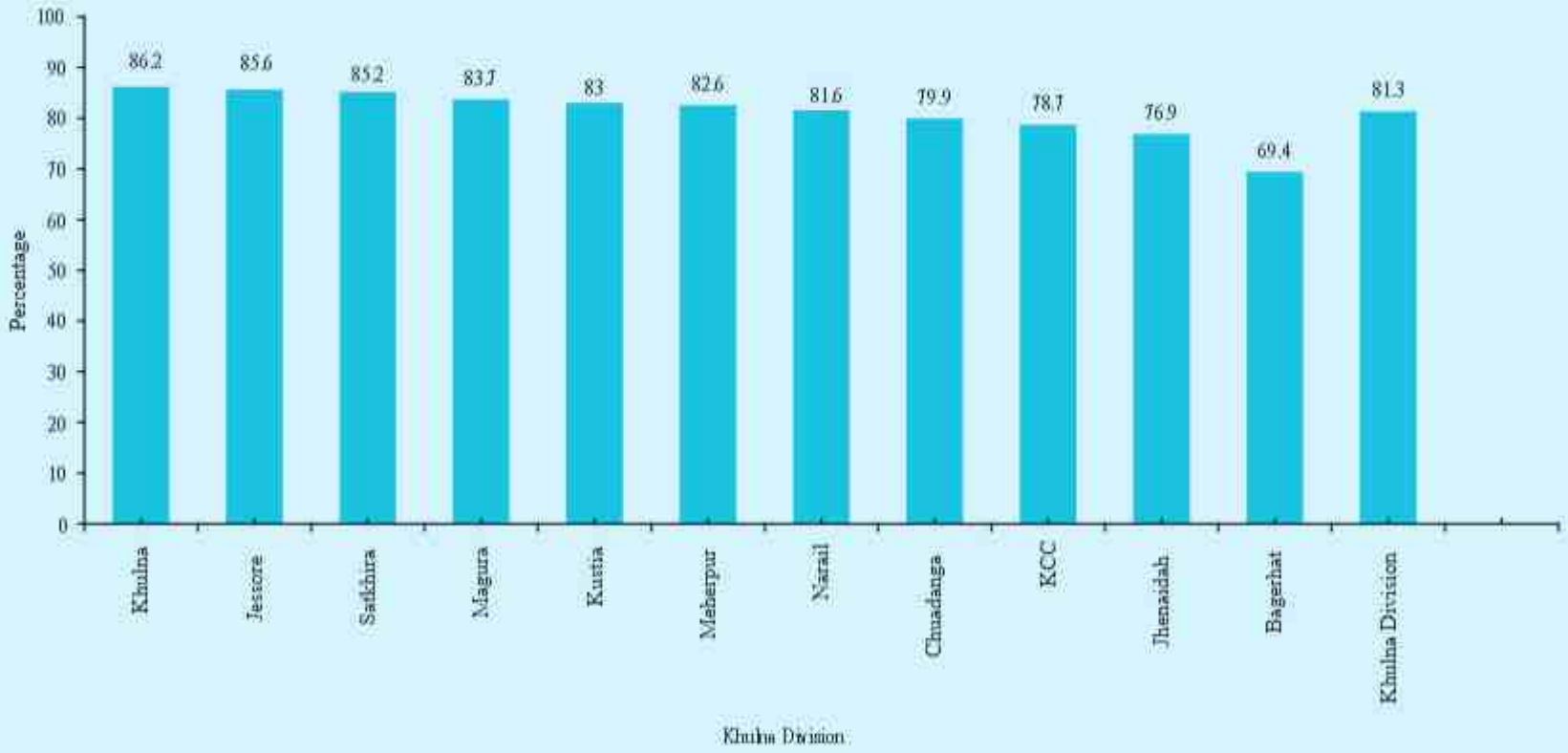
Figure 2. Valid Full Vaccination by Age 12 Months among 12-23 Months Old Children by Districts in Chittagong Division (Fully Vaccinated arranged in Descending Order by All Districts)

source: CES 2010

Figure 3. Valid Full Vaccination by Age 12 Months among 12-23 Months Old Children by Districts in Dhaka Division (Fully Vaccinated arranged in Descending Order by All Districts)

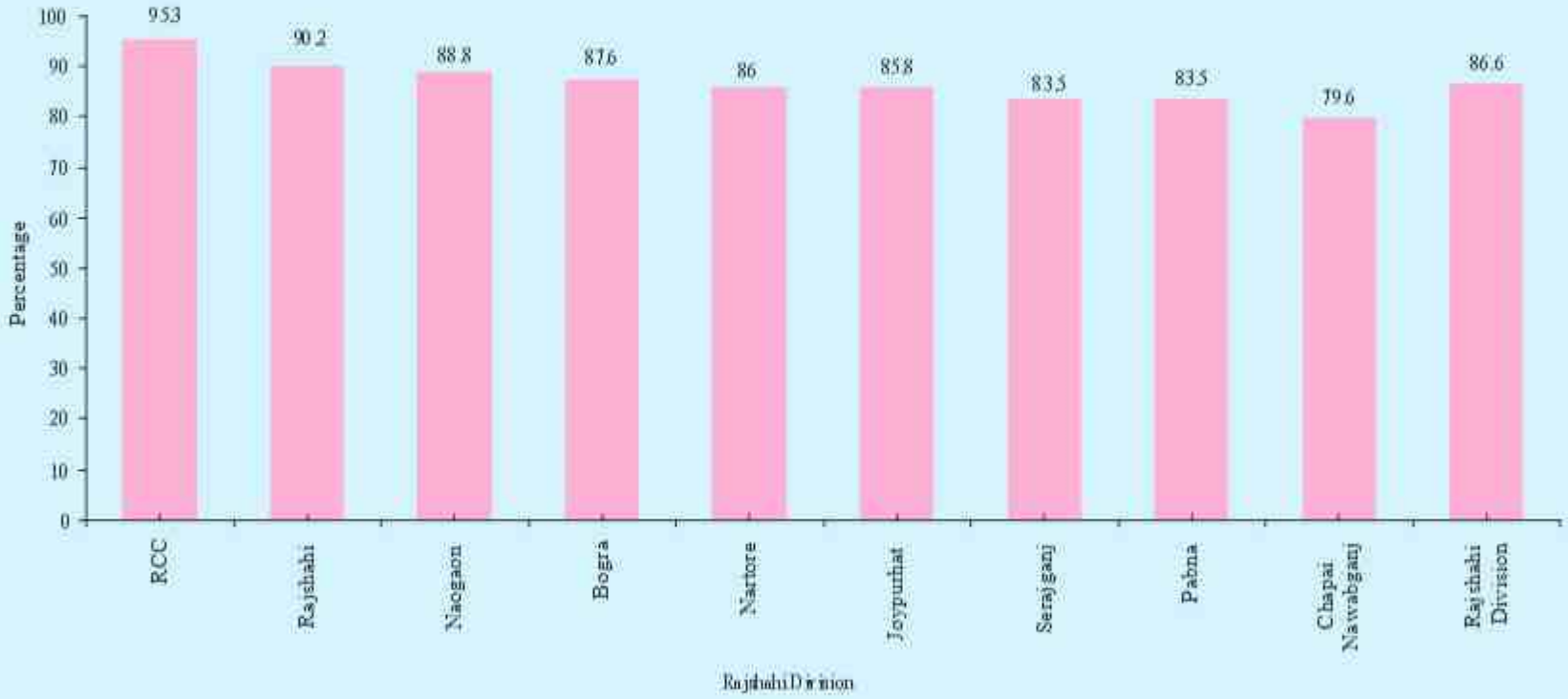
source: CBS 2010

Figure 4. Valid Full Vaccination by Age 12 Months among 12-23 Months Old Children by Districts in Khulna Division (Fully Vaccinated arranged in Descending Order by All Districts)



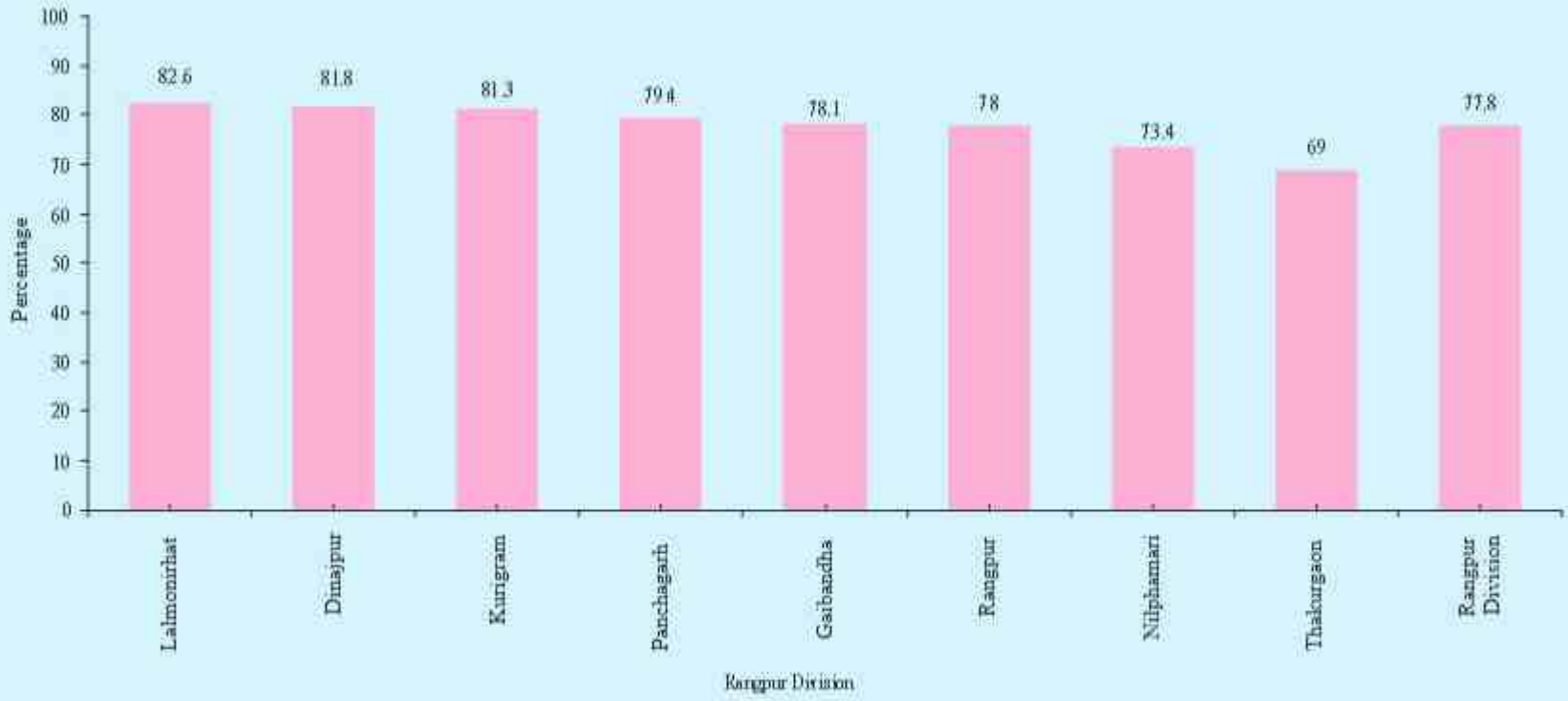
source: CES 2010

Figure 5. Valid Full Vaccination by Age 12 Months among 12-23 Months Old Children by Districts in Rajshahi Division (New)
(Fully Vaccinated arranged in Descending Order by All Districts)



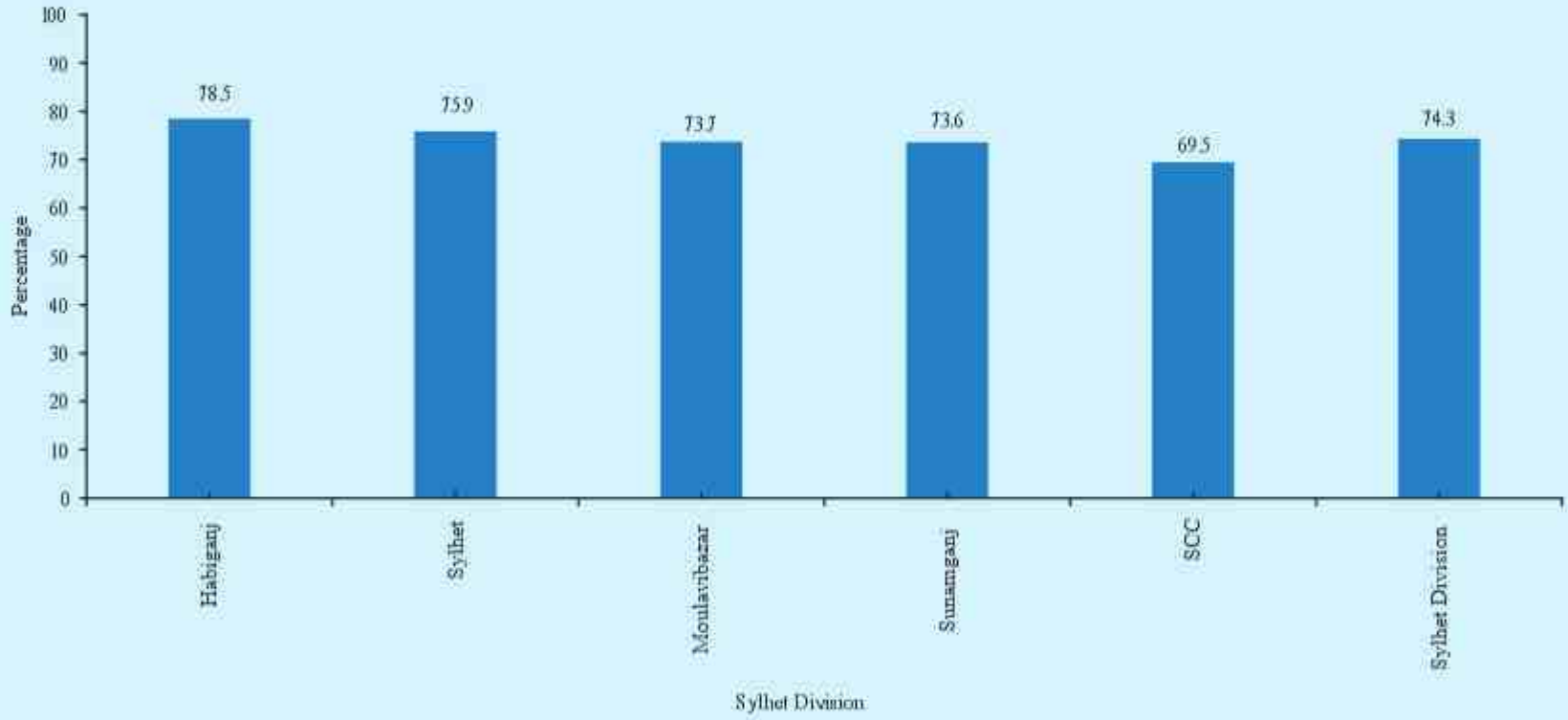
source: CES 2010

Figure 6. Valid Full Vaccination by Age 12 Months among 12-23 Months Old Children by Districts in Rangpur Division (Fully Vaccinated arranged in Descending Order by All Districts)



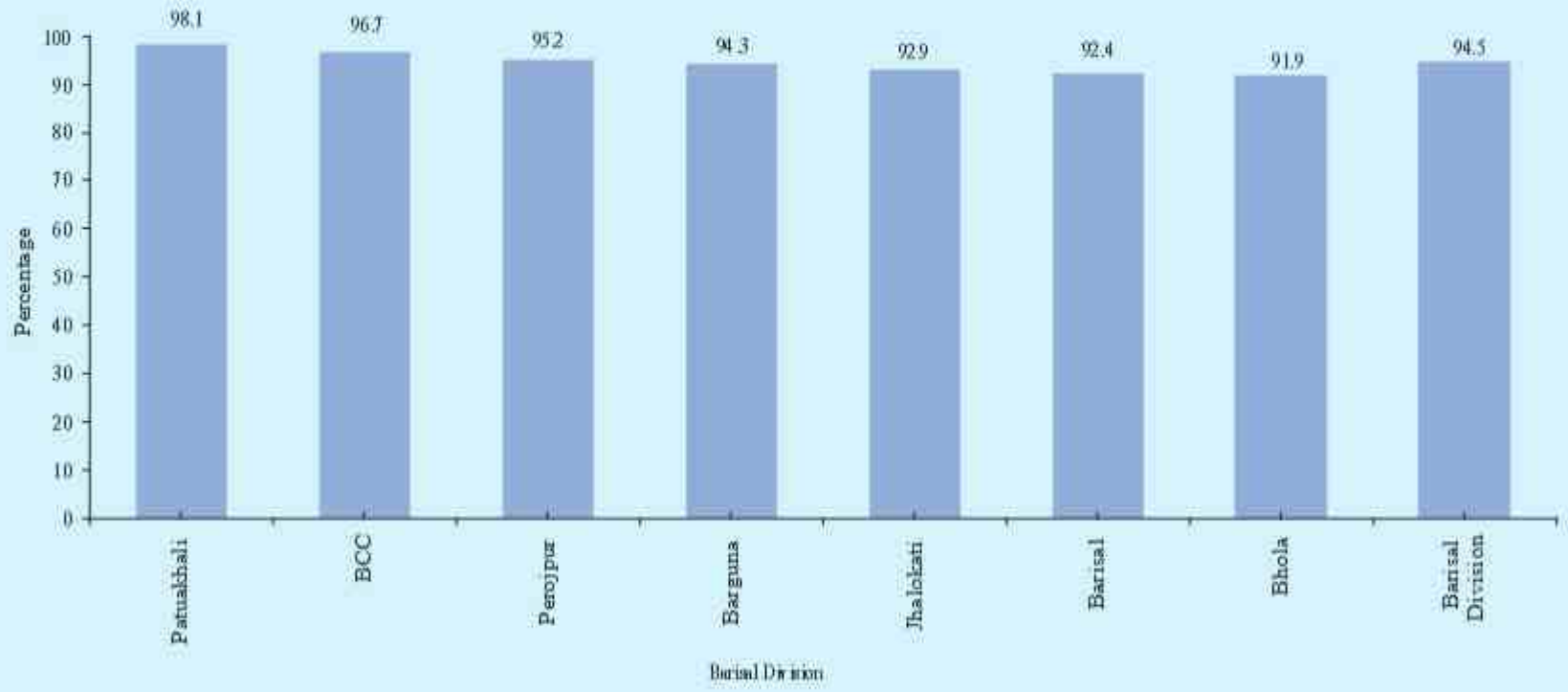
source: CES 2010

Figure 7. Valid Full Vaccination by Age 12 Months among 12-23 Months Old Children by Districts in Sylhet Division (Fully Vaccinated arranged in Descending Order by All Districts)



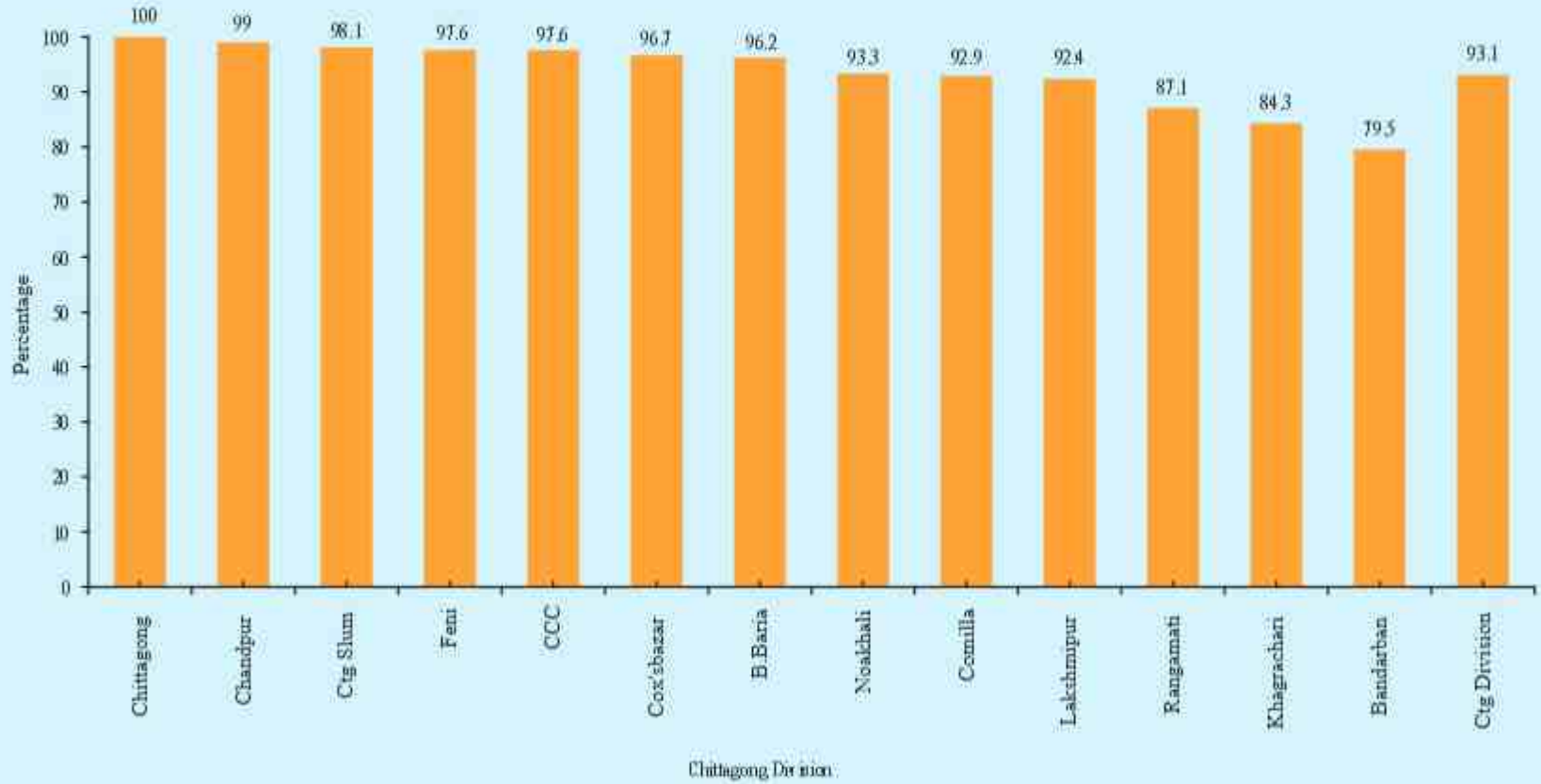
source: CES 2010

Figure 8. Valid TT2 Coverage among 15-49 Years Old Mothers with 0-11 Months Old Children by Districts in Barisal Division (Arranged in Descending Order by All Districts)



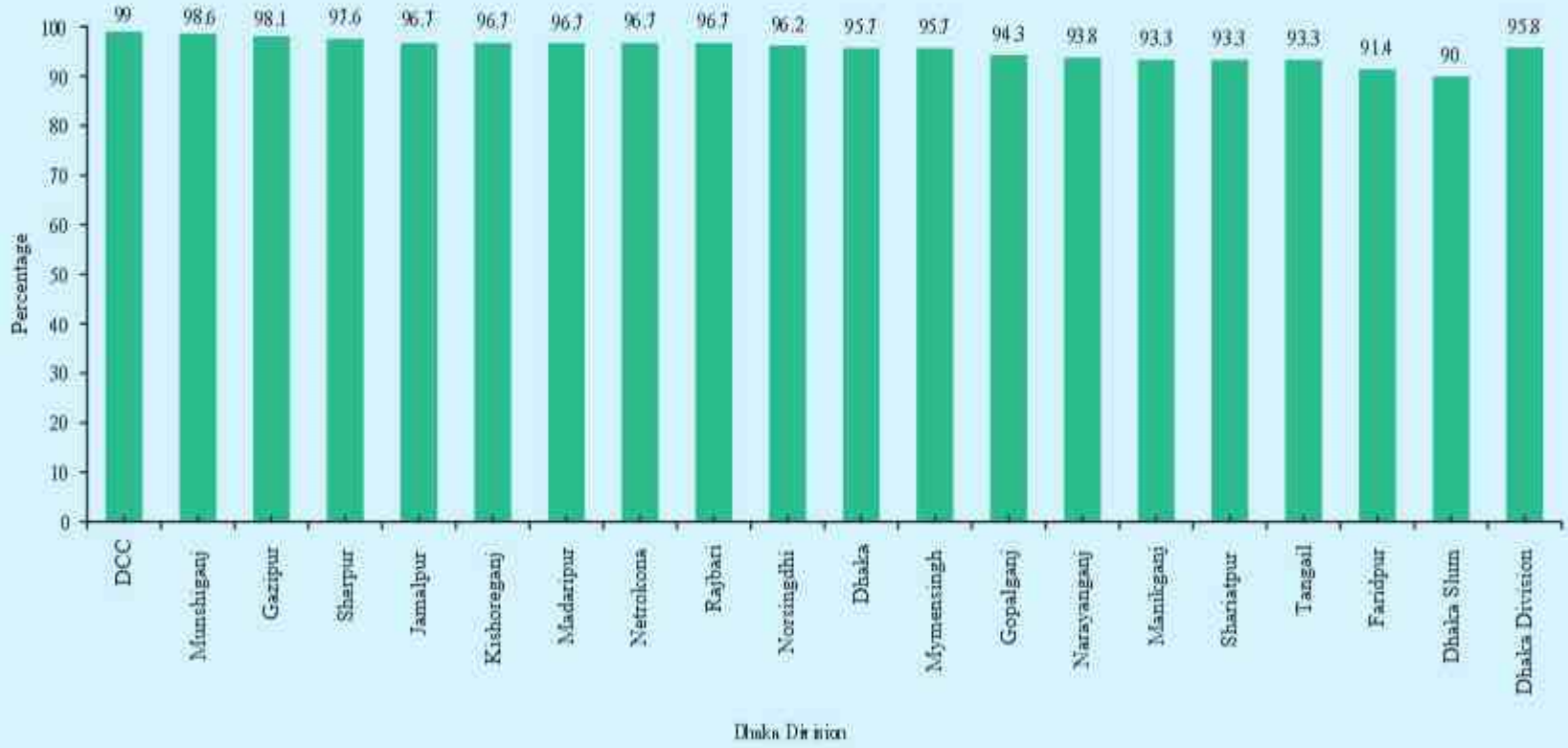
source: CES 2010

Figure 9. Valid TT2 Coverage among 15-49 Years Old Mothers with 0-11 Months Old Children by Districts in Chittagong Division (Arranged in Descending Order by All Districts)



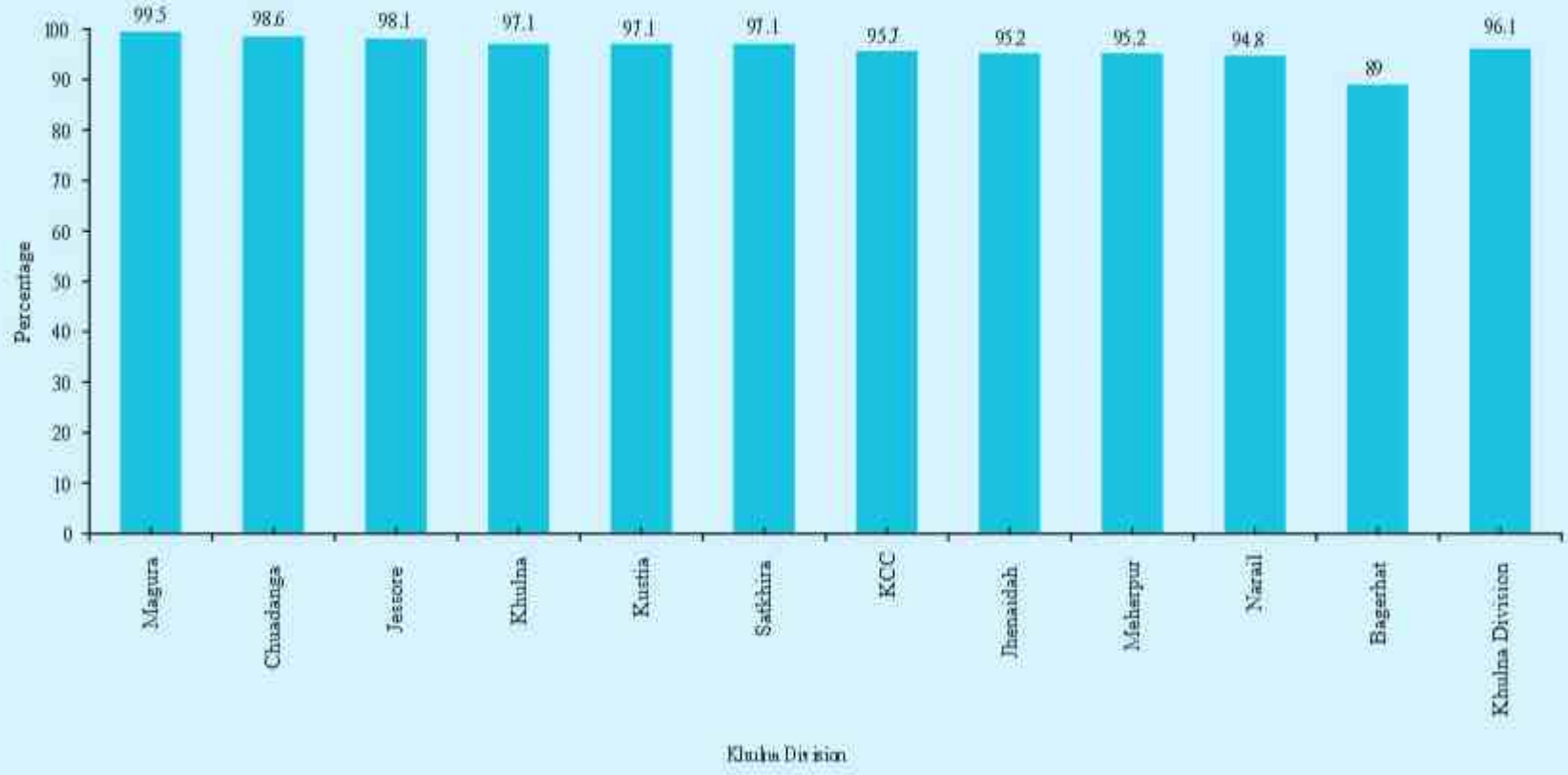
source: CES 2010

Figure 10. Valid TT2 Coverage among 15-49 Years Old Mothers with 0-11 Months Old Children by Districts in Dhaka Division (Arranged in Descending Order by All Districts)



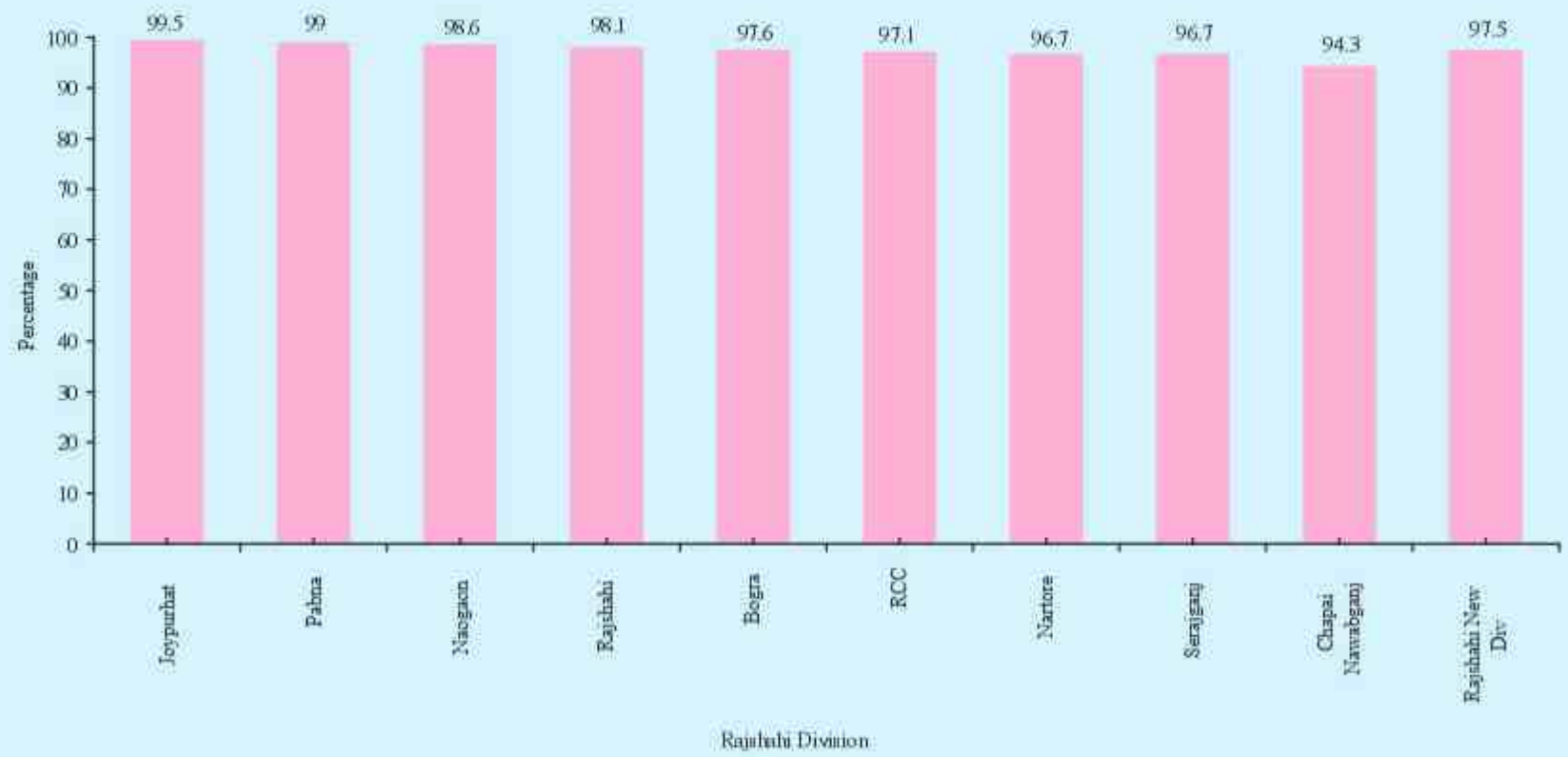
source: CES 2010

Figure 11. Valid TT2 Coverage among 15-49 Years Old Mothers with 0-11 Months Old Children by Districts in Khulna Division (Arranged in Descending Order by All Districts)



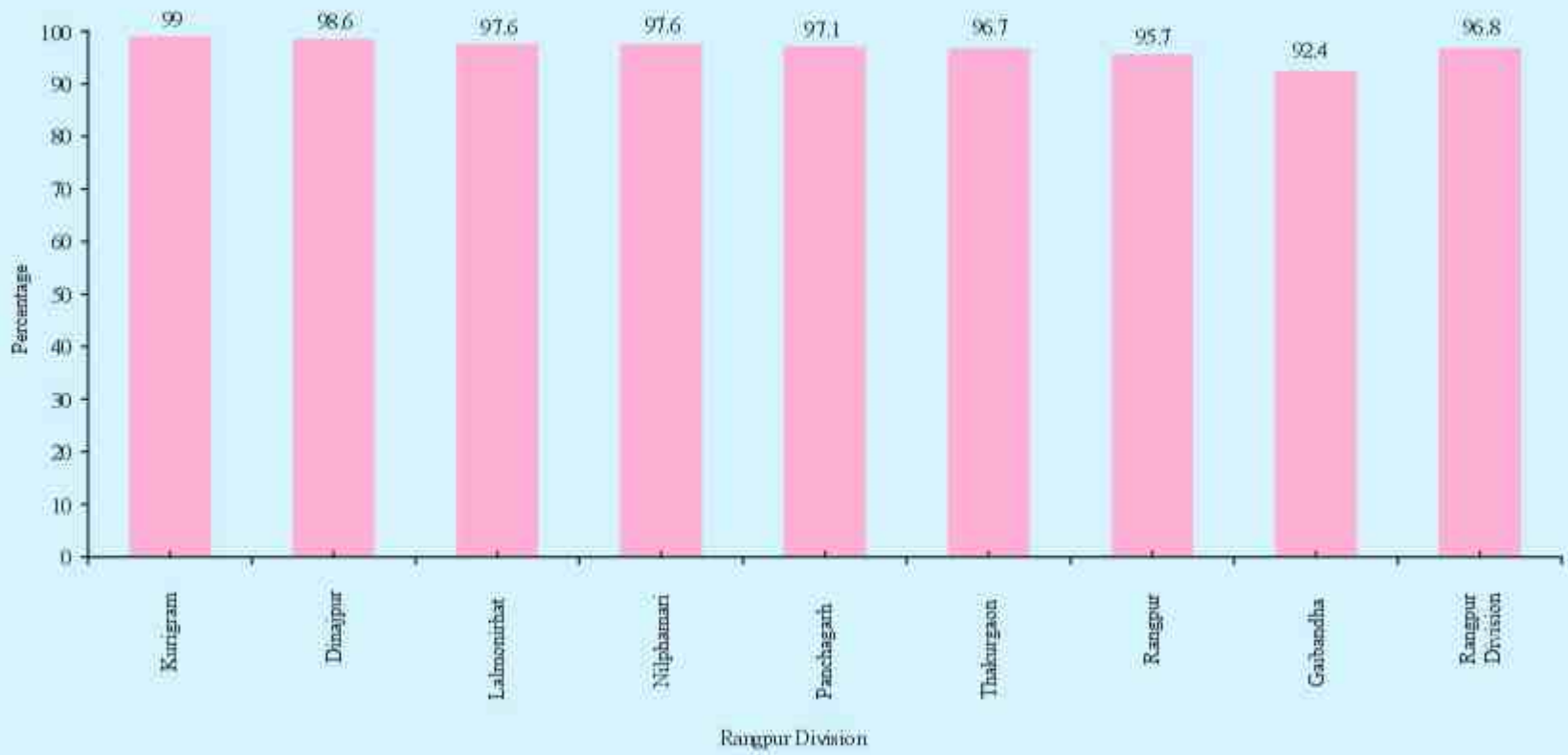
source: *CES 2010*

Figure 12. Valid TT2 Coverage among 15-49 Years Old Mothers with 0-11 Months Old Children by Districts in Rajshahi Division (Arranged in Descending Order by All Districts)



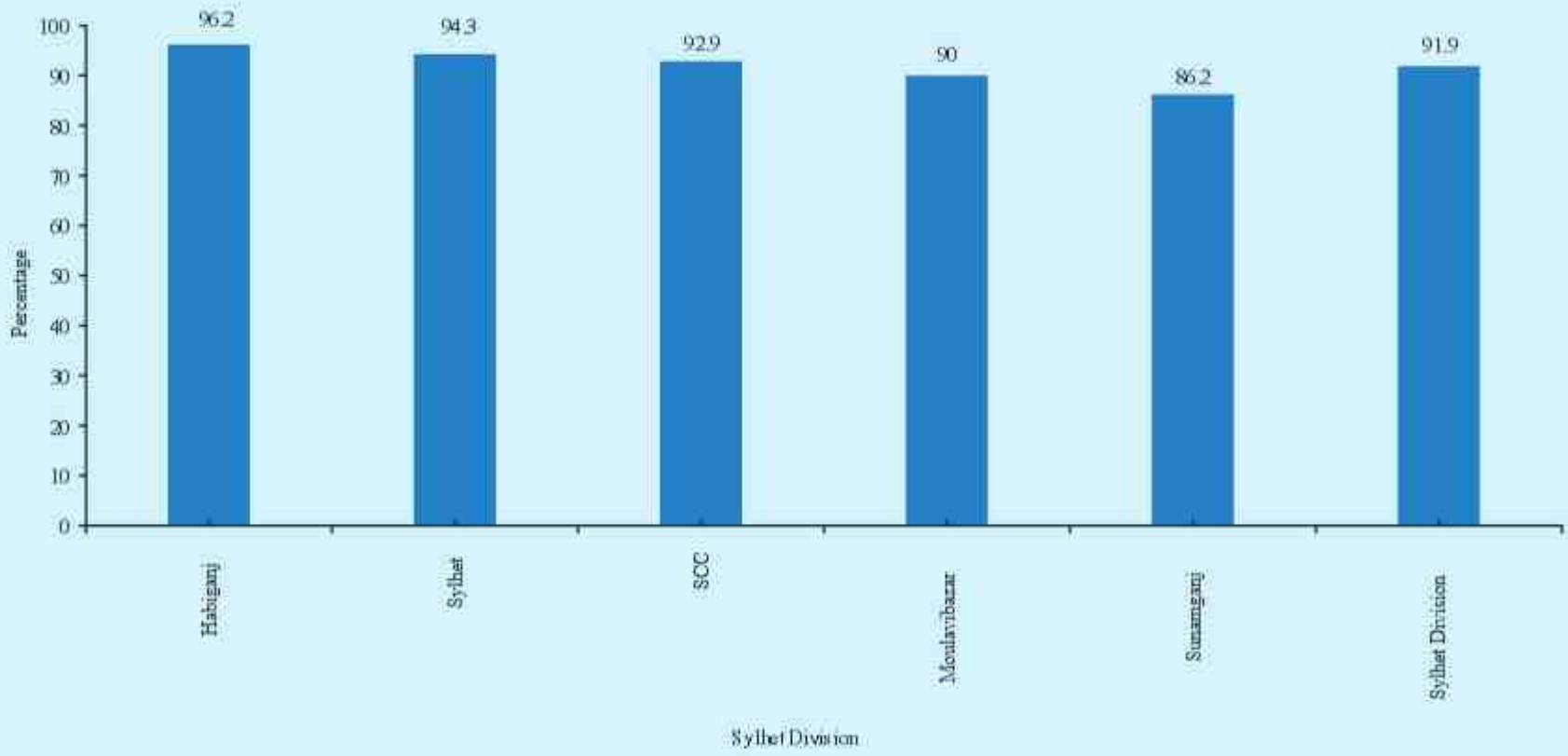
source: CES 2010

Figure 13. Valid TT2 Coverage among 15-49 Years Old Mothers with 0-11 Months Old Children by Districts in Rangpur Division (Arranged in Descending Order by All Districts)



source: CES 2010

Figure 14. Valid TT2 Coverage among 15-49 Years Old Mothers with 0-11 Months Old Children by Districts in Sylhet Division (Arranged in Descending Order by All districts)



source: CES 2010

QUESTIONNAIRE

People's Republic of Bangladesh
Expanded Program on Immunization (EPI)
Coverage Evaluation Survey 2010

		CENTRE									
PROJECT	EPI Coverage Evaluation Survey 2010										
Cluster No	Type: Urban = 1 Rural = 2	INTERVIEW TIME									
Area		START			END						
LANDMARKS											
NAME OF INTERVIEWER		Code									
CHECK DETAILS	Code	Accompany			Back Check			Scrutiny			
		Code	Sign	Date	Code	Sign	Date	Code	Sign	Date	
NAME OF FS		1			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 January 1, 2008 and December 31, 2008
(Applicable for those babies born in between 18 Poush 1414 and 17 Poush 1415)

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/Dhakil/ O level-4, HSC/Alim/ A level-5, Degree/Fazil-6, Masters/Kamil-7								
13. Academic qualification of the father of the child Illiterate -1, Primary-2, Secondary-3, SSC/Dhakil/ O level-4, HSC/Alim/ A level-5, Degree/Fazil-6, Masters/Kamil-7								
14. Occupation of the mother Housewife-1, Government employee-2, Non-government employee-3, Household works/day labour-4, Small business-5, Large business-6, Teacher-7, Professional -8, others								
15. Occupation of the father Agriculture-1, Government employee-2, Non-government employee-3, Day labor/rickshaw/van puller-4, Small business-5, Large business-6, Teacher-7, professional -8, driver (truck/bus/car)-9, others								
16. Number of family members								
		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 h ..ra..e)	;O: .I ' .. /P)								
		Skip to	1	2	3	4	5	6	.
20. ƆP₄ 1	;Ɔu e . .J)								
20.1 DᵥT1 Source	(J' :I ' .. /P)								
21. ƆPV 1	Dat_ . 0)								
22. Hɛₚᵓ'ᵢ's ₥1	D ıɛ←0)								
23. ƆP₄ 2	;Ɔuᵥe . J)								
24. ∪PV 2	D te←0;								
2ɔ. Hɛₚₐ .ris ₥2	D te←0;								
26. ƆP₄ 3	D ıa←0)								
2 /. ƆPV 3	;Ɔuᵥe . J)								
28. Hɛₚₐᵓᵢ's ₥3	,Ɔuᵥe . J)								
29. ∪PV 4	;Ɔate . J)								
30. Mea.le₅	;Ɔuᵥe . J)								
31. Vıɜmin A	;Ɔuᵥe . J)								
32. Has the child received all the vaccines	Rec..ıo..d all the vaccine₅	32.1				:1			
	Rec..ıo..d p rial vaccine₅	33				.2			
	Didn't receive any vaccine	33				:3			
32.1. Has the child received all the vaccineswithin the 12 months	Yes							:1	
	No							:2	
33. What side effect may occur if the child is vaccinated?									
34. After giving vaccine to your child, has there been any abscess at the place of vaccine?	Yes :1								
	No :2	35							
34.1 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					:2			
	Leff arm					:3			
	Others (specify)								
34.2 Did you feel discourage to give his/her rest vaccine due to abscess or any other problem?	Yes :1								
	No :2								
35. Have you ever given money for vaccination of your child? (please code)	Yes :1								
	No	35.3					:2		
	Not applicable :3								
35.1 If yes, , how much money did you pay?									
35.2 (If yes, then ask) As you given money, did you abstain yourself from giving rest vaccine to your child?	Yes					:1			
	No					:2			
	Don't know					:9			
35.3. 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

36. 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 absence at the place of vaccine	44	44	44	44	44	44	44
xvii. Faced difficulty after receiving vaccine	45	45	45	45	45	45	45
xviii. Vaccinator was not friendly	46	46	46	46	46	46	46
xix. The child was sick, so was not taken to the vaccination center	47	47	47	47	47	47	47
xx. The child was sick, so the vaccinator didn't give vaccine	48	48	48	48	48	48	48
xxi. Mother was sick	49	49	49	49	49	49	49
xxii. I thought the vaccinator would come home	50	50	50	50	50	50	50
xxiii. They charge money to take vaccine	51	51	51	51	51	51	51
xxivi. The session time was inconvenient	52	52	52	52	52	52	52x
4. Others (please specify)							
xxv.							
xxvi.							

Thank You

TT Form

Applicable for those women who gave birth to live or dead child between January 1, 2009 and December 1, 2009 (Who gave birth to live or dead child between 18 Poush 1415 and 17 Poush 1416)

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 yea)								
11.Academic qualification of the respondent Illiterate-1, Primary-2, Secondary-3, SSC/Dhakil/ O level-4, HSC/Alim/ A level-5, Degree/Fazil-6, Masters/Kamil-7								
12. Academic qualification of the husband Illiterate -1, Primary-2, Secondary-3, SSC/Dhakil/ O level-4, HSC/Alim/ A level-5, Degree/Fazil-6, Masters/Kamil-7								
13. Occupation of the respondent Housewife-1, Government employee-2, Non-government employee-3, Household works/day labour-4, Small business-5, Big business-6, Teacher-7, Professional -8, others								
14. Occupation of the husband Agriculture-1, Government employee-2, Non-government employee-3, Day labor/rickshaw/van puller-4, Small business-5, Big business-6, Teacher-7, professional -8, driver (truck/bus/car)-9,others								
15. Number of family members of the family								

16. How many times have you given birth to child? (live and dead)		Skip to	1	2	3	4	5	6	7
	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 cardthen 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 ldchi	(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 esthe following TT injection due to abscess or any other problem? :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? 37. What is the monthly income of your family? (include all source)	At home : 1 At vaccination centre : 2 At hospital : 3								

Vaccination code:	Source codes:
Date - Record date from vaccination card.	O = GOB Outreach (Community household, Community Clinics, Satellite Clinic, Club)
+ - history that the child was vaccinated. 0 - The child was not vaccinated	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/Dhakil/ O level-4, HSC/Alim/ A level-5, Degree/Fazil-6, Masters/Kamil-7									
12. Occupation of the respondents: Housewife-1, Government employee-2, Non-government employee-3,Household works-4, Small business-5, Large business-6, Student-7 Teacher-8, Professional -9, Others									
13. Total family member									
14. Have you ever received TT Injection?	Yes :1 No :2	28							
15. Do you have card for TT injection?	Yes :1 No :2	16 15.1							
15.1 (If the respondent does not have any card) were you ever given a card for TT injection?	Yes :1 No :2	15.2 16							
15.2 (if yes) ... hy did you not preserve the card?									

Instruction: 16-26 record the answer from card or history

16. TT1	(Date=0)								
16.1 Source of TT1?	(O/H/F/P)								
17. TT2	Date=0								
17.1 Source of TT2?	(O/H/F/P)								
17.2 Interval between TT-1 and TT-2?	(write in weeks)	____ Weeks	____ ...eeks	____ Weeks	____ ...eeks	____ 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 Interva l between TT9 and TT10	(write in months)		____ months	____ months	____ months	____ months	____ months	____ months	____ months
26. Last TT vaccine	(Date=/0)								
26.1 Interval betweenTT 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 No : 2	27.1 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 wa s 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 16/2/2005 and 10/01/2010

1. Cluster number										
2. Date										
3. Survey area										
4. Name of the child										
5. Name of the child's father										
6. Name of the child's mother										
7. Sl. no. of the child in this cluster			Skip to	1	2	3	4	5	6	7
8. Sex: Male –1 Female—2										
9. Date of birth of the child (Day/Month/Year)										
9a. Age in Month										
9b. Eligible for vaccine (/PM/PVM/PVAM)										
10. Ask mother/guardian. Did your child receive polio drops during the first round of NID held on 10th January, 2010 (or 4 days afterwards?"	Yes	1	10.1							
	No :2		10.2	: 2						
10.1. If yes, ask,where was the child vaccinated?	At fixed site	1	11							
	Child to Child Search	2	10.2							

			Skip to							
10.2. If the child (0-59 months) was not vaccinated at the fixed site held on 10th January, 2010ask "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 pre vious 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						: 08		
	There was a long queue	: 09								
	The centre was too far	: 10								
	Sessio n time was inconvenient	: 11								
	Fear of side effect	: 12								
	Waited for home visit	: 13					: 13			
	Religious/Social obstacles	: 14					: 14			
	Was not at home	: 15			: 15					
	Others (specify)									

Vitamin A

Applicable for those children who born in between 12/1/2005 and 10/1/2009

			Skip to	1	2	3	4	5	6	7
11. A k mother/guardian: Was your child (12-59 months) fed vitamin A during the 1st round of Jatiya Tika Dibosh held on 10th January, 2010	Yes	: 1	12							
	No	: 2	11.1							
11.1 If the child (12-59 months) was not fed Vitamin A during Jatiya Tika Dibosh held on 10thJanuary, 2010, then ask, Why the child wasn't fed Vitamin A during Jatiya Tika Dibosh held on 10th January, 2010) (If there come multiple answers, ask which one is more important and code accordingly)	Didn't know	: 99								
	Was very busy	: 01								
	Went on t raveling	: 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)									

Anthelmintic Tablet
Applicable for tho e children who born in between 12/1/2005 and 11/1/2008

			Skip to	1	2	3	4	5	6	7
12 Ask mother/guardian Was your child (24-59 months) fed antihelmenthic tablet during Jatiya Tika Dibosh held on 10thJanuary, 2010?	Yes	: 1	14							
	No	: 2	13.2							
12.1 If the child (24-59 months) was not fed Anthelmintic tablet during Jatiya Tika Dibosh held on 10thJanuary, 2010 then ask, Why the child wasn't fed Anthelmintic tablet during Jatiya Tika Dibosh held 10th January, 2010? (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			: 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)									

13. Ask mother/guardian How did you learn about the 'Jatiya Tika Dibosh' held on 10th January, 2010 (Please code)		1	2	3	4	5	6	7	
	GOB/ City corporations FW visit : 01								
	NGO worker Visit : 02								
	Teacher visit : 03								
	Other volunteers Visit : 04								
	Family\neighbor friends : 05								
	Television : 06								
	Radio : 07								
	Poster : 08								
	Newspaper : 09								
	Mobile Miking : 10								
	Mosque Miking : 11								
	Health Workers' home visit : 12								
	Told during first round : 13								
	Other (specify)								

Measles Follow-up Campaign

(Polio)

Applicable for those children who born in between 16/2/2005 and 10/1/2010

14. Ask mother/care taker, " Did your child receive polio drops during measles follow up campaign held on February 14 to February 28, 2010?	Yes:1	12.1								
	No :2	12.2		:2						
			Skip to	1	2	3	4	5	6	7
14.1 If the child (0-59 months) was not vaccinated during measles follow up campaign, ask "Why was not your child vaccinated during measles follow up campaign"? (If the response is more than one then ask " which of these is the most important reason and code accordingly)"	Was very busy : 01									
	Went in tr aveling : 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									
	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)									

Measles Follow-up Campaign

(Measles)

Applicable for those children who born in between 16/2/2005 and 20/5/2009

15. Ask mother/care taker, " Did your child Measles vaccine during measles campaign held on 14th February to 28th 2010?	Yes:1	12.1								
	No :2	12.2		:2						

15.1 If the child (09-59 months) was not vaccinated on 14th February to 28th February, 2010 then ask why the child was not vaccinated during measles campaign. If the answer is more then one then ask " which of those is the most important reason and code accordingly)"	Don't know about the campaign : 01								
	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								
	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	
16 Ask mother/guardian How did you learn about the 'measles follow up campaignheld on 14th February to 28th February 2010 (Please code)										
	GOB/ City corporations FW visit 01									
	NGO worker Visit	: 02								
	Teacher visit	: 03								
	Other volunteers Visit	: 04								
	Family/neighbor/friends	: 05								
	Television	: 06								
	Radio	: 07								
	Poster	: 08								
	Newspaper	: 09								
	Mosque Miking	: 11								
	Health Workers' home visit	: 12								
	Told during first round	: 13								
	Other (specify)									
17 What is the monthly income of your family? (include all source)										

Thank You