Annual Report 2012
Communicable Disease Control (CDC)
Bangladesh

Disease Control Unit
Directorate General of Health Services
Ministry of Health and Family Welfare
Government of the Peoples’ Republic of Bangladesh
Annual Report 2012
Communicable Disease Control (CDC)

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Directorate General of Health Services
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Acknowledgement:

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### ABBREVIATIONS

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<td>ABC</td>
<td>Animal Birth Control</td>
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<tr>
<td>AHI</td>
<td>Assistant Health Inspector</td>
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<td>AI</td>
<td>Avian Influenza</td>
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<tr>
<td>ACT</td>
<td>Artemisinin Based Combination Therapy</td>
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<td>AMR</td>
<td>Antimicrobial Resistance</td>
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<td>APCRIB</td>
<td>Association for Prevention and Control of Rabies in Bangladesh</td>
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<td>API</td>
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<td>ARV</td>
<td>Anti-Rabies Vaccine</td>
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<td>BARA</td>
<td>Bangladesh Anti-Rabies Alliance</td>
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<td>BCC</td>
<td>Behavioral Change Communication</td>
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<td>BLRI</td>
<td>Bangladesh Livestock Research Institute</td>
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<td>BNVLA</td>
<td>Bangladesh National Women’s Layers Association</td>
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<td>BSL</td>
<td>Bio Safety Level</td>
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<td>CDC</td>
<td>Communicable Disease Control</td>
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<td>CDIL</td>
<td>Central Disease Investigation Laboratory</td>
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<tr>
<td>CHO</td>
<td>Chief Health Officer</td>
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<td>CKGF</td>
<td>Chikungunya Fever</td>
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<tr>
<td>CLT</td>
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</tr>
<tr>
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<td>Chittagong Medical College</td>
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<tr>
<td>CMRL</td>
<td>Central Malaria Reference Lab</td>
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<td>CMSD</td>
<td>Central Medical Store Department</td>
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<tr>
<td>CS</td>
<td>Civil Surgeon</td>
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<td>CSR</td>
<td>Communicable Disease Surveillance and Response</td>
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<tr>
<td>DCC</td>
<td>Dhaka City Corporation</td>
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<tr>
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<td>Deputy Civil Surgeon</td>
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<td>DD</td>
<td>Deputy Director</td>
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<tr>
<td>DDT</td>
<td>Dichlorodimethyltrichloroethane</td>
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<td>DG</td>
<td>Director General</td>
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<tr>
<td>DGHS</td>
<td>Director General of Health Services</td>
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<tr>
<td>DHF</td>
<td>Dengue Haemorrhagic Fever</td>
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<td>DLS</td>
<td>Department of Livestock Services</td>
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<td>DMCC</td>
<td>District Multisectoral Coordination Committee</td>
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<tr>
<td>DPM</td>
<td>Deputy Program Manager</td>
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<td>DRRT</td>
<td>District Rapid Response Team</td>
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<tr>
<td>DRS</td>
<td>District Reserve Stores</td>
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<tr>
<td>Abbreviation</td>
<td>Description</td>
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<td>DSS</td>
<td>Dengue Shock Syndrome</td>
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<td>District Veterinary Hospital</td>
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<tr>
<td>EDCT</td>
<td>Early Diagnosis and Complete Treatment</td>
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<tr>
<td>EDPT</td>
<td>Early Diagnosis and Prompt Treatment</td>
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<td>ELISA</td>
<td>Enzyme Linked Immuno Sorbent Assay</td>
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<tr>
<td>ERD</td>
<td>Emerging &amp; Re-emerging Diseases</td>
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<tr>
<td>FAO</td>
<td>Food and Agricultural Organization</td>
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<td>Forest Department</td>
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<td>FDIL</td>
<td>Field Disease Investigation Laboratory</td>
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<tr>
<td>GIS</td>
<td>Geographic Information System</td>
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<td>GoB</td>
<td>Government of Bangladesh</td>
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<td>GPS</td>
<td>Global Positioning System</td>
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<td>H.A</td>
<td>Health Assistant</td>
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<td>HAI</td>
<td>Hospital Acquired Infection</td>
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<td>Health Care Workers</td>
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<td>Health Inspector</td>
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<td>HIV</td>
<td>Human Immuno-Deficiency Virus</td>
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<td>HNPSP</td>
<td>Health, Nutrition and Population Sector Program</td>
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<td>HPAI</td>
<td>Highly Pathogenic Avian Influenza</td>
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<td>HPI</td>
<td>Human Pandemic Influenza</td>
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<td>HPNSDP</td>
<td>Health, Population and Nutrition Sector Development Program</td>
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<td>Humane Society International</td>
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<td>HW</td>
<td>Health Worker</td>
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<td>ICDDR, B</td>
<td>International Centre for Diarrheal Disease Research, Bangladesh</td>
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<td>Infectious Disease Hospital</td>
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<td>IDH</td>
<td>Integrated Disease Hospital</td>
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<td>IDRV</td>
<td>Intradermal Rabies Vaccine</td>
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<td>Integrated Disease Surveillance</td>
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<tr>
<td>IEC</td>
<td>Information, Education and Communication</td>
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<td>Institute of Epidemiology Disease Control &amp; Research</td>
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<td>IRS</td>
<td>Indoor Residual Spraying</td>
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<td>IFAT</td>
<td>Indirect Fluorescent Antibody Test</td>
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<td>International Health Regulation</td>
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<td>Influenza Like Illness in Bangladesh</td>
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<td>Full Form</td>
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<td>Information Technology</td>
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<td>ITN</td>
<td>Insecticide Treated Net</td>
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<td>Integrated Vector Management</td>
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<td>Joint Technical Committee</td>
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<td>Kala-azar</td>
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<td>KAB</td>
<td>Knowledge Attitude and Behaviour</td>
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<td>LGRD</td>
<td>Local Government &amp; Rural Development</td>
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<td>Long Lasting Insecticide Treated Nets</td>
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<td>Low Pathogenic Avian Influenza</td>
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<td>M&amp;E</td>
<td>Monitoring and Evaluation</td>
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<td>Medical Officer</td>
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<td>Medical College Hospital</td>
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<td>Malaria Control Program</td>
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<td>Millennium Development Goal</td>
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<td>Ministry of Health &amp; Family Welfare</td>
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<td>Ministry of Local Government &amp; Rural Development</td>
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<td>Malaria Research Group</td>
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<td>Notifiable Avian Influenza</td>
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<td>Newcastle Disease</td>
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<td>National Influenza Centre</td>
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<td>National Institute of Disease &amp; Chest Hospital</td>
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<td>National Malaria Control Programme</td>
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<td>Acronym</td>
<td>Description</td>
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<td>Quality Assurance</td>
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<td>SSG</td>
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<td>Technical Assistant Project Proposal</td>
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<td>TCV</td>
<td>Tissue Culture Vaccine</td>
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<td>Training of Trainer</td>
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<td>UH&amp;FWC</td>
<td>Union Health &amp; Family Welfare Centre</td>
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<td>United Nations Children Fund</td>
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<td>URRT</td>
<td>Upazila Rapid Response Team</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>USC</td>
<td>Union Sub Centre</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<tr>
<td>WSPA</td>
<td>World Society for Protection of Animal</td>
</tr>
</tbody>
</table>
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13. Dr. Muhammad Zahidur Rahim, National Consultant, WHO Bangladesh
Message

In most of the developing countries communicable disease is as a major public health problem. According to the original report (WHO, 2000) infectious disease accounts for 43% of the global burden of disease. Annually millions of peoples all over the world are affected with these preventable infectious diseases. Moreover, newer infectious disease emerges with more challenges and burden to individual and society. Over the last few decades development of new strategies, newer drugs, safe vaccines and better management has reduced both morbidity and mortality. But infectious disease still remains as a leading cause of disease burden in the resource limited countries of the world like Bangladesh.

The Annual report depicts the status of the common infectious diseases in Bangladesh. It also presents the strategies undertaken to control infectious disease and our achievements regarding prevention and control of communicable diseases. I hope the report will be an advantageous effort for taking further initiatives in health sector and for all level of physicians as well.

I congratulate all those experts and resource persons who participated and were involved in every endeavor in developing ‘The Annual report 2012, Communicable Disease Control (CDC) unit, DGHS, Bangladesh’.

I wish every success for the initiatives taken by the Disease control unit, Directorate general of Health services (DGHS) for betterment of our health system.

Joy Bangla, Joy Bangabandhu.
Long live Bangladesh!

Professor AFM Ruhal Haque, MP, FRCS, FCPS, FICS
Message

It is an excellent news for our gratification that Communicable Disease Control (CDC) Division of DGHS is publishing ‘The Annual report 2012, Communicable Disease Control unit, DGHS, Bangladesh’. Infectious disease remains as a major public health problem causing highest global disease burden in most of the developing countries. Infectious disease accounts for 43% of the global burden of disease (WHO, 2000). Furthermore, newer emerging infectious diseases create more challenges and burden our society. Recent advancement of health commodities, development of new strategies, drugs, vaccines and better management has reduced the morbidity and mortality both, but infectious disease is occupying the major section of disease burden in the resource limited countries like Bangladesh.

I am glad to know that the annual report represents the national strategies, ongoing and implemented actions and achievements in prevention and control of infectious disease in Bangladesh. I believe the achievements obtaining by CDC, DGHS will help us to meet the MDG goals.

I would like to congratulate and express my cordial thanks and gratitude to CDC, Division of DGHS and all those experts and resource persons, who participated and were involved in every endeavor in developing ‘The Annual report 2012, Communicable Disease Control (CDC) unit, DGHS, Bangladesh’.

I wish immense success for all initiatives taken by the Disease control unit, Directorate general of Health services (DGHS).

Joy Bangla, Joy Bangabandhu.
Long live Bangladesh!

Prof Sayed Modasser Ali
Advisor of Prime Minister
MOH&FW
Message

I am very much glad to know that Communicable Disease Control Division (CDC) of Director General of Health Services (DGHS) is going to publish ‘The Annual report 2012, Communicable Disease Control (CDC) unit, DGHS, Bangladesh’ which will be a resourceful document for all physicians, researchers and the persons involved with infectious disease and health system of Bangladesh.

Like other developing countries, infectious disease nests as a major health problem in Bangladesh. Annually millions of peoples all over the world are affected with these preventable infectious diseases. Recent development in the field of medicine has reduced both morbidity and mortality. However, infectious disease still remains as a leading cause of disease burden especially in the developing countries like Bangladesh.

I believe that “The Annual report, 2012, CDC, DGHS” portrait the status and our achievements regarding communicable diseases in Bangladesh could be very much useful for the planners, researchers and physicians.

I like to praise and express my heartiest thanks and gratitude to CDC, DGHS and all those experts and resource persons who were involved in every endeavor in developing ‘The Annual report 2012, Communicable Disease Control unit, DGHS, Bangladesh’.

I wish every success for the initiatives undertaken by the Disease control unit, DGHS for improving communicable disease control and health system in Bangladesh as well.

Joy Bangla, Joy Bangabandhu.
Long live Bangladesh!

Captain (RTD) Mujibur Rahman Fakir.MP
State minister
MOH&FW
Message

I am very much delighted to hear that Communicable Disease Control (CDC) Division of DGHS has published ‘The Annual report 2012, Communicable Disease Control unit, DGHS, Bangladesh’. Communicable disease (Infectious disease) is a major public health problem causing highest global disease burden. Though the morbidity and mortality has been reduced due to modernization of different health commodities and newer strategies, infectious disease still occupies the major section of disease burden in Bangladesh.

I am much more pleased that the annual report describes the national strategies, all approach and achievements in prevention and control of infectious disease in Bangladesh. I believe that CDC, DGHS will help us to meet the targets set by MDG.

I would like to praise and utter my heartfelt thanks and gratitude to CDC, DGHS in developing ‘The Annual report 2012, Communicable Disease Control (CDC) unit, DGHS, Bangladesh’.

I wish enormous success for all necessary steps taken by the CDC unit, DGHS for controlling infectious disease in our country.

M. M. Neazuddin
Secretary
MOH&FW
Message

I would like to express my great appreciation to the Disease control Unit, Communicable Disease Control, DGHS for publishing ‘The Annual report 2012, Communicable Disease Control (CDC) unit, DGHS, Bangladesh’ for common infectious disease in Bangladesh.

Among all leading causes of the burden of disease Bangladesh is still dominated by infectious (communicable) diseases. With successful strategy, guideline, advancement in diagnosis, management and preventive health education the morbidity and mortality of infectious diseases have been reduced in the whole world and Bangladesh as well, but the infectious disease burden still remains as an important public health problem in Bangladesh.

I would like to express my heartfelt thanks and gratitude to all resource persons, consultants, experts and physicians who gave their valuable time and contributed to the development of this important annual report which will be an advantageous document for the patient and all level of physicians, researchers and the persons involved with infectious disease and health system of Bangladesh as well.

I sincerely hope that this annual will be useful to improve the status of infectious disease at all level of medical care in Bangladesh.

I like to praise and wish unbound success for all necessary steps taken by the CDC unit, DGHS for betterment of infectious disease control in our country.

Prof. Dr. Khondaker Md. Shefyet Ullah
Director General
Directorate General of Health services
Preface

It’s my immense pleasure that the Communicable Disease Control Unit (CDC) of the Directorate General of Health Services (DGHS) of the Ministry of Health and Family welfare of Bangladesh is publishing ‘The Annual report 2012, Communicable Disease Control (CDC) unit, DGHS, Bangladesh’. This report especially represent the current status of communicable disease in Bangladesh, our goals, strategies, achievements and successes so far been attained by CDC unit. With successful strategies, guidelines, recent advancement in diagnosis, management and preventive health education the morbidity and mortality of infectious diseases have been reduced in the whole world and Bangladesh as well, but the infectious disease burden still remains as an important public health problem in Bangladesh.

I am expressing my sincere gratitude and thanks to the Director General of Health Services for leading us towards appropriate direction and tremendous assistance for the communicable disease control program and his interest for this report.

I would like to express my heartiest thanks to all the resource persons, consultants, experts and physicians who gave their valuable time, providing technical and financial support and contributing to the development of this important annual report within the shortest possible time.

I hope that the annual will be an advantageous document for the planners, researchers, all level of physicians and patients, and the persons involved with infectious disease control and health system of Bangladesh as well.

Prof. Be-Nazir Ahmed
Director
Disease Control & Line Director, CDC
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Executive Summary

Historically, the health status of the land has been greatly influenced by communicable diseases. Infant mortality, maternal mortality, life expectancy and many other health indicators were burdened by diseases like Cholera, Malaria, Kala-azar, tetanus, diphtheria. Contamination of water, prevalence of vectors, poor nutritional status and lack of hygienic living kept people vulnerable to sickness and death due to the communicable diseases. Various measures including provision of safe water, vector management, improvement of nutritional status, immunization etc brought improvement in health scenario of the country.

Most of the programs under CDC deal with those diseases termed as neglected tropical diseases (NTD) that affect the women, children and the poor. Presently, the communicable diseases of public health importance include malaria, Kala-azar, infestation with filarial and other worms. The country has been facing emergence of zoonotic diseases like Nipah, avian influenza and influenza by novel virus, anthrax, brucellosis and food and waterborne diseases like hepatitis due to viruses, diarrheal disorders, enteric fever and leptospirosis. The arthropod borne diseases like dengue and Chikungunya have the potential of epidemicity and endemicity. Of these Kala-azar, filarial and malaria affect the poorest and rural population.

The health goal of Vision 2021 is to have a nation of healthy citizen. The components under CDC are planned to reduce the incidence and mortality due to a number of major communicable diseases prevalent in the country. Under deworming program 22 million children are given anthelmentics twice a year with the objective to reduce helminthes thereby improves the nutritional and hemoglobin strata of the future citizen of the country. Filaria program is providing MDA in nineteen filarial endemic districts of the country and thereby reducing serious morbidity related to elephantiasis. After several round of MDA in the area the Mf result came down to less than 1% in 5 districts in 2011. On the basis of that result and following the WHO guideline MDA has been stopped officially from those 5 districts namely, Rajshahi, Dinajpur, Meherpur, Patuakhali and Barguna as a part of elimination. It is our one of the successes that Sirajgonj, Pabna, Kushtia, Chuadanga and Pirojpur districts have fulfilled the criteria of stopping MDA in the year of 2012. Remaining 9 districts are receiving MDA and the level of Mf rate has been declining to achieve elimination within 2015.

The country has been implementing the malaria control and has achieved remarkable success in terms of reduction in number of cases and deaths. Early diagnosis and prompt treatment through doorstep facilities provided by GO-NGO partnership with support of GFATM fund has been proved to be effective. Use of insecticide treated bed nets has supplemented the effort. These areas experience a perennial transmission of malaria with two peaks in pre-monsoon (March-May) and post-monsoon (September-November) periods. There is also reporting of outbreaks from bordering districts in the north and north-east. A total of 29,518 reported cases were diagnosed either by microscopy or RDT and treated according to national malaria treatment protocol. Among them 27,645 cases were P. falciparum (93%), 1,699 cases were P. vivax (6%) and 175 (1%) were mixed infection case. The interventions implemented so far have shown positive trends towards declination of malaria cases and death. In 2012 total no of reported cases were 29,518 and total deaths were 11 which were 42% and 70% reduction of cases and deaths from 2011. This is the impact of community based EDPT.

Bangladesh has set the target of elimination of Kala-azar from Bangladesh by 2015. The goal is to reduce the annual incidence of Kala-azar to less than 1 patient per 10 thousand
populations. The strategic objectives are to ensure early diagnosis and complete management of the cases, to implement integrated vector management, to have patient and vector surveillance and to conduct operational research. In Bangladesh Kala-azar patients are detected and treated mainly through primary health care center (Upazila Health Complexes- UHC). ICT based on ‘rK39’ is being used for the diagnosis and Oral Miltefosine for treatment of cases. Very recently we have been using single dose AmBisome on pilot basis to Fulbaria and Trishal upazilas and now going to scale up to all the remaining 98 upazilas very soon. Under IVM we conducted IRS to the 08 hyper endemic upazilas two rounds (pre & post monsoon) and LLINs has been distributed to the hyper endemic upazilas to control vector sand fly for interruption of disease transmission. After implementing the above mentioned activities under the guideline of KEP and its strategy paper it is found that PKA and PKDL cases are gradually decreasing and ultimately reach 1902 PKA cases this year 2012 from around 10,000 cases in 2006.

A new initiative of “Little Doctor” concept was introduced in May 2011. It will create a large number of 12,30,000 Little Doctor each year with the aim to develop ownership of the program among school children and motivating other children to swallow de-worming drug voluntarily this will remain sustainable for long run. Through the "Little Doctors" other students will learn on the above health related matters and in the process of delivering education the "Little Doctors" themselves will strengthen their understanding on those. In this process if even small portion of 22 million children or the Little Doctors adopt healthy life style throughout their lives, that will have huge positive impact in future health of the nation. The "Little Doctor" strategy can be applied for improving coverage of de-worming program of school and side by side for other health related issues like personal hygiene, health check-up, control and prevention of intestinal worm, Rabies, improvement of nutrition including vitamin-A supplementation and celebration of different health related days/week.

There are about two to three hundred thousand dog bites annually and 95% of rabies cases in the country are due to dog bite. Only suspected rabid dogs are thought to be responsible for rabies as dogs rarely can remain as healthy reservoir. Other animals that occasionally transmit in Bangladesh are cat, Fox, Monkey, jackal, and mongoose. National strategic plan for rabies elimination by the year 2020 has been adopted. A number of activities are being currently conducting to achieve the goal such as National Rabies Survey (NRS), setting up of National Rabies Prevention and Control Center (NRPCC), District Rabies Prevention & Control Center (DRPCC), initiation of Mass Dog Vaccination (MDV), dog population management (DPM) etc. In 2012 under rabies prevention and control mass dog vaccination done in 37 municipalities and 50% death reduction occurred.

A number of diseases under communicable disease control has been shown down trends for both mortality and morbidity and elimination is achievable within target time or even before time.
CHAPTER- I

Communicable Disease Control of Bangladesh

Introduction:

Communicable Diseases Control (CDC) persists to be one of the topmost public health precedence both nationally and internationally. Reduction in morbidity and mortality due to communicable diseases will have positive impact on a number of MDGs goals as these diseases often affect the children and mothers. The communicable diseases of public health importance include malaria, Kala-azar and infestation with filarial and other worms, avian influenza and influenza by novel virus. The country has been facing emergence of zoonotic diseases like Nipah, anthrax, brucellosis and food and waterborne diseases like hepatitis due to viruses, diarrheal disorders, enteric fever and leptospirosis. The arthropod borne diseases like dengue and chikungunya with proved and potential of epidemicity and endemicity. Bangladesh is a signatory of International Health Regulation (IHR) 2005 and has to build its capacity in terms of detection and responding to case and outbreak of emerging diseases and has to strengthen its capacity to deal with the public health emergency with national and international concern. The country has started a number of target oriented programs to alleviate the sufferings like that for malaria, Kala-azar, filarial, intestinal worms, avian and pandemic influenza etc. and has achieved some progresses.

The operational plan proposed for communicable diseases including disease surveillance will help the country to attain at different goals of MDGs and a medium earning country by 2021 during 50th anniversary of independence.

Bangladesh is at very high risk from climate change impacts, including those related to human health. It is estimated that the lives and livelihoods of 36 million people in the southern coastal regions will be affected by climate change, e.g. water and food-borne diseases (e.g. cholera and other diarrheal diseases); vector borne diseases (e.g. dengue and malaria); respiratory diseases due to increases in air pollution and aeroallergens; impacts on food and water security (e.g. malnutrition); and psychosocial concerns from the displacement of populations through sea level rise and after disasters and CDC will address the cross cutting issues related to climate change impact on health.

Disease control unit of Directorate General of Health Service (DGHS) under Ministry of Health and Family Welfare (MOHFW) has been taken some innovative approaches in all six existing program that will help and support to achieve the target of the programs. It is very remarkable that under Kala-azar Elimination Program we made two rounds IRS in 08 hyper endemic upazilas successfully with a limited resources, and LLINs has also been distributed first time in Bangladesh to all the PKA and PKDL cases of last five years in 08 hyper endemic upazilas.

Objectives:

1. To reduce malaria morbidity and mortality by 60% of the base line of 2008 within 2015 (OP/2016)
2. To eliminate filaria from endemic areas reducing the Mf prevalence to <1% by 2015 and to reduce the burden of soil transmitted helminthiasis to 15% by 2016
3. To eliminate Kala-azar reducing the burden to <1 per ten thousand population in the endemic area by 2016
4. To strengthen capacity for detection, containment and management of emerging diseases with special emphasis for reducing death related to rabies
5. To prevent and control avian and pandemic influenza and to prepare for reducing morbidity & mortality in human with the aim to minimize socio-economic & environmental impact
6. To facilitate efforts in reduction of disease burden by providing evidence in planning and implementation of public health activities through disease surveillance

Components:

Under this operational plan six (06) individual components will be implemented. The programs are as follows:

I. Malaria and other Vector Borne Disease Control Program
II. Filariasis Elimination & STH Control Program
III. Kala-azar Elimination Program
IV. Emerging & Re-emerging Disease Control Program
V. Avian and Pandemic Influenza Prevention and Control Program
VI. Integrated Disease Surveillance

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CHAPTER - 2

I. Malaria and other Vector Borne Disease Control Program

A. Introduction

Malaria is now a localized disease of Bangladesh endemic in 13 eastern and northern parts of the country. However, the three hilly districts account for 80 percent of the total burden of malaria of Bangladesh. During the last decade, the annual average number of reported cases was 54,679 of whom 44,491 (82%) are due *Plasmodium falciparum*. The rests are *Plasmodium vivax* and few cases are due to mixed infection. The overall prevalence of malaria in the thirteen endemic districts was 3.1 percent (Malaria Baseline Socioeconomic and prevalence Survey, 2007). Over 10.9 million people of Bangladesh are at high risk of malaria. Most vulnerable groups are <5 year children and pregnant woman. About 0.101 percent annual deaths in Bangladesh is attributed to malaria. The country has been implementing the malaria control and has achieved remarkable success in terms of reduction in number of cases and deaths. Early diagnosis and prompt treatment through doorstep facilities provided by GO-NGO partnership with support of GFATM fund has been proved to be effective. Use of insecticide treated bed nets has supplemented the effort. These areas experience a perennial transmission of malaria with two peaks in pre-monsoon (March-May) and post-monsoon (September-November) periods. There is also reporting of outbreaks from bordering districts in the north and north-east. The first line drug chloroquine has been replaced by Artemisinin based Combination Therapy (ACT) for treatment of falciparum malaria cases in 2004. *An. dirus*, *An. minimus* and *An. philipinensis* are the principal vectors and all are susceptible to malathion and synthetic pyrethroid. Promotion and use of ITNs/LLINs, selective IRS for containment of outbreaks and intensive IEC for increasing awareness of the people are the main components for vector control.
Goal: To reduce malaria morbidity and mortality until the disease is no longer a public health problem in the country.

B. General objectives:

1. To reduce malaria morbidity and mortality by 50% from the base line (2008) by 2015;
2. To prevent and contain malaria epidemics;
3. To empower community for malaria control and promote partnership with NGOs and the private sectors.

C. Specific objectives:

1. To provide early diagnosis and prompt treatment (EDPT) with effective drugs to 80% of malaria patients;
2. To provide effective malaria prevention to 80% of population at risk;
3. To strengthen malaria epidemiological surveillance system;
4. To establish Rapid Response Team (RRT) at national and district levels and increase preparedness and response capacity for containment of outbreaks;
5. To promote community participation, and strengthen partnership with private sector and NGOs for malaria control.

D. Program strategies:

Malaria control activities are done through HNPSP/HPNSDP and GFATM funding. The activities under HNPSP/HPNSDP are carried out by health service while activities under FATM are accomplished by GO-NGO partnership. The strategies are as follows:

- Disease prevention
- Disease management (quality diagnosis and effective treatment)
- Surveillance
- IEC and community mobilization
- Research and training
- Strengthening district health system
- Strengthening partnership in malaria control
- Monitoring and evaluation
- New strategy: Malaria Pre-elimination of Four Hypo-endemic Districts

E. Malaria control activities

- Expanding malaria diagnostic and treatment services at the community level
- Distributing long lasting insecticidal nets (LLINs)
- Treating/retreating existing ordinary bed nets
- Scaling up of current advocacy, communication and social mobilization (ACSM) activities
- Strengthening vector control measures and
- Strengthening partnership and coordination between government, NGOs and private sector

F. Partnership:

The activities are being implemented through public-private partnership model between PR-GoB (M&PDC) and PR-NGOs. The partnership mechanism includes broad representation from GoB, NGOs, WHO and private sectors.
Different units and Activities under NMCP:

a) Training, b) Procurement, Supply and Management, c) Management Information System, d) Monitoring & Evaluation and e) Behavior Change Communication (BCC)

Activity Carried Out 2012: Training

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Name of the Training</th>
<th>Duration (Days)</th>
<th>Batch</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Training on severe malaria management for nurses</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Training on severe malaria management for doctors</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>Orientation of private practitioners on malaria management</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>Training of field staff on EDPT</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>Training on EDPT for doctors of reproductive health care and IMCI</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Training on MIS for MIS personnel</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>Training on Inventory management and store management</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>Program Manager Training for Program Implementation &amp; Management</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>Training on MIS reporting for private hospitals</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>Training on Malaria Microscopy for laboratory technologist</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>11</td>
<td>Malaria Microscopy Quality Assurance</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Workshop on Malaria Pre-elimination</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>13</td>
<td>Workshop on Micro-stratification in 4 districts</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>Training on Malaria Microscopy Maintenance</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>Training on management of Malaria for Pharmacist</td>
<td>2</td>
<td>7</td>
</tr>
</tbody>
</table>
b) Procurement, Supply and Management (PSM):

Under PSM plan, GoB has signed a Memorandum of Understanding (MoU) with WHO for procuring Drugs, Diagnostics, LLINs, Insecticides and GoB has taken the responsibilities of procuring vehicles and other logistics and M&PDC under DGHS has done this procurement following the Public Procurement Rule (PPR)-2008 and Public Procurement Act (PPA)-2006. A PSM Working Group has been formed with the member of M&PDC, BRAC & WHO for monitoring the stock positions, distribution system, forecasting the requirements, identify the problem & recommend solutions on PSM issues.

<table>
<thead>
<tr>
<th>Name of the Items</th>
<th>Items procured</th>
<th>Items distributed</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>LLINs</td>
<td>3.124 million</td>
<td>3.124 million</td>
<td>Global Fund</td>
</tr>
<tr>
<td>ITNs</td>
<td>2.785 million</td>
<td>2.785 million</td>
<td></td>
</tr>
<tr>
<td>KO Tab 123</td>
<td>1.57 million</td>
<td>1.57 million</td>
<td></td>
</tr>
<tr>
<td>RDTs</td>
<td>6,62500</td>
<td>6,62500</td>
<td></td>
</tr>
<tr>
<td>Coartem (Artemether-Lumefantrin)</td>
<td>3,04530</td>
<td>3,04530</td>
<td>HNPSP/HPNSDP</td>
</tr>
<tr>
<td>PAN-RDTs</td>
<td>2,00000</td>
<td>2,00000</td>
<td></td>
</tr>
<tr>
<td>LLINs</td>
<td>2,00000</td>
<td>2,00000</td>
<td></td>
</tr>
</tbody>
</table>

c) Monitoring and Evaluation (M&E) :
To monitor and evaluate malaria control activities, a detailed Monitoring and Evaluation (M&E) system has already been developed after a comprehensive national M&E system assessment. M&E work plan outlined in this assessment is being implemented since the year 2008. Subsequently a three M&E plan named national and GF specific M&E plans were developed. The program is being continuously monitored and evaluated with routine tracking of the key elements of program performance (usually inputs and outputs) through record keeping, regular reporting, health facility observation and surveys, evaluation studies, supportive supervision and data auditing and operation researches.

**Accomplishment under Monitoring and Evaluation (M&E):**

- Established and functioning CCM and Technical Committee: CCM is the apex body related to the GFATM at country level
- Monitoring tools for implementation training
- Data verification: Currently, malaria recording and reporting formats are integrated within the HMIS formats of Directorate General of Health Services (DGHS).
- Review meeting at Central, District and Upazila level: A quarterly performance review meeting at central level is organized by M&PDC.
- Supportive Supervision and Data Auditing
- Supervisory Visit and Observation: on going activities done at different levels.
- GO-NGO Coordination meeting at different level
- Review meeting with RCH and IMCI

**Operational research done by NMCP on 2012 (M & E):**

- Therapeutic efficacy study (Coartem)- 100% (Assessment of therapeutic efficacy of Coartem-2012)
- Net Retention Survey- Net Retention Rate- 95%
- Knowledge, Attitude & Practice on prevention of Malaria among the community people in a selected Malaria-endemic area of Rangamati Hill District.
- Seasonal variation of Spread, Morbidity and Mortality of Malaria in an endemic area of Bangladesh
- Entomological baseline Survey in 5 hypo-endemic Upazila- Razibur, Kurigram; Jheenaigati, Shepur; Dhobaura, Mymensingh; Kalmakanda, Netrokona; Durgapur, Netrokona.
- Bioassay test- Kaptai, Rangamati; Sadar, Rangamati; Alikodom, Bandarban; Bashkhali, Chittagong; Durgapur, Netrokona; Panchori, Khagrachori.
- Susceptibility test- Sadar, Rangamati; Alikodom, Bandarban; Bashkhali, Chittagong; Durgapur, Netrokona

**Entomological Activities:**

The Entomology Section of M&PDC unit of Disease Control Division under Directorate general of Health Services conducted the following operational researches in order to take appropriate control measures and to know the present susceptible status of confirm and suspected malaria vectors.

a. **Bio-efficacy of Long Lasting Insecticidal Nets (LLINs) in malaria endemic areas of Bangladesh:**

Bio-assay tests carried out in six places of Bangladesh gave varied results. Two types of net, Deltamethrin treated Polyethylene and polyester net were tested in only Durgapur of Netrokona. Normal net dipped with K- O TAB 123 was tested. The mortality rate was found
low 9.2% in Panchori, Khagrachori and Highest 76 in Sadar, Rangamati Polyester nets. The lowest mortality for Polyethylene is 19% in Bashkhali, Chittagong and highest 44% in Sadar, Rangamati. The mortality rate for ITNs is 31.2% in Durgapur, Netrokona. It is said earlier that due to policy of the program. ITNs were stopped in the three Hill District and not possible to do bio-assay test.

b. Susceptibility level of Confirm and suspected malaria vectors and others Anophelines species in Bangladesh:

Susceptibility tests carried out with the field collected anopheline mosquitoes in the Malaria endemic area. The test was carried out in Durgapur, Netrokona; Bashkhali, Chittagong; Alikodom, Bandarban and Sadar, Bandarban. The mortality rate for Deltamethrin and Permethrin varied from 50% to 98% in all areas. The figure shows that the mortality for Fenitrothion and Lambdacyhalothrin are 98% to 100%. In Durgapur the mortality for Deltamethrin and Permethrin 50% & 58%, which indicate the resistance to insecticide. Bio-assay tests carried out in six places showed varied results. The overall performance of Deltamethrin Treated Polyester & Polyethylene nets and ordinary nets treated with K-O TAB 123 showed not satisfactory. The species mortality also varied from place to place.

VII. Achievement of malaria control program in 2012:

A total of 29,518 reported cases were diagnosed either by microscopy or RDT and treated according to national malaria treatment protocol. Among them 27,645 cases were P. falciparum (93%), 1,699 cases were P. vivax (6%) and 175 (1%) were mixed infection case. The interventions implemented so far have shown positive trends towards declination of malaria cases and death. In 2012 total no of reported cases were 29,518 and total deaths were 11 which were 42% and 70% reduction of cases and deaths from 2011. This is the impact of community based EDPT.

<table>
<thead>
<tr>
<th>District wise Malaria Cases in 2012</th>
<th>UM</th>
<th>SM</th>
<th>VM</th>
<th>Total Cases</th>
<th>Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sherpur</td>
<td>46</td>
<td>-</td>
<td>27</td>
<td>73</td>
<td>-</td>
</tr>
<tr>
<td>Mymensingh</td>
<td>165</td>
<td>2</td>
<td>1</td>
<td>168</td>
<td>-</td>
</tr>
<tr>
<td>Netrokona</td>
<td>266</td>
<td>-</td>
<td>19</td>
<td>285</td>
<td>-</td>
</tr>
<tr>
<td>Kurigram</td>
<td>38</td>
<td>-</td>
<td>63</td>
<td>101</td>
<td>-</td>
</tr>
<tr>
<td>Sylhet</td>
<td>364</td>
<td>-</td>
<td>72</td>
<td>436</td>
<td>-</td>
</tr>
<tr>
<td>Hobigonj</td>
<td>60</td>
<td>-</td>
<td>12</td>
<td>72</td>
<td>-</td>
</tr>
<tr>
<td>Sunamgonj</td>
<td>467</td>
<td>32</td>
<td>41</td>
<td>540</td>
<td>-</td>
</tr>
<tr>
<td>Moulvibazar</td>
<td>235</td>
<td>49</td>
<td>137</td>
<td>421</td>
<td>-</td>
</tr>
<tr>
<td>Chittagong</td>
<td>991</td>
<td>5</td>
<td>99</td>
<td>1,095</td>
<td>-</td>
</tr>
<tr>
<td>Khagrachori</td>
<td>5,443</td>
<td>329</td>
<td>225</td>
<td>5,997</td>
<td>6</td>
</tr>
<tr>
<td>Rangamati</td>
<td>7,650</td>
<td>72</td>
<td>259</td>
<td>7,981</td>
<td>1</td>
</tr>
<tr>
<td>Bandarban</td>
<td>7,659</td>
<td>457</td>
<td>345</td>
<td>8,461</td>
<td>3</td>
</tr>
<tr>
<td>Cox's bazar</td>
<td>2,978</td>
<td>511</td>
<td>399</td>
<td>3,888</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>26,362</td>
<td>1,457</td>
<td>1,699</td>
<td>29,518</td>
<td>11</td>
</tr>
</tbody>
</table>
Malaria Pre-elimination of Four Hypo-endemic Districts:

**Pre-elimination:**
Pre-elimination stage is to reduce the malaria burden to manageable levels at an annual malaria incidence of less than 1 case per 1000 people at risk. This is achievable by perfecting the quality and targeting of case management and vector control operations, an introducing/ maintaining activities aimed at consistently reducing the onward.

“Implementation of Pre- elimination in the four Hypo endemic Districts through Community participation”

**Community Participation:**
It is the process by which communities influence the decisions and resources that directly affect them. The introduction of interventions into communities should take into account all actors, their roles, competence and experience, as well as their environment. The goal of communication is to bring behavioral change through information and empowerment of people through community participation. The considerable scope for communities is to participate and own the program of malaria under the umbrella of National Malaria Control Program.

**Goal:**
Interruption of local transmission of malaria in four malaria hypo-endemic districts of Bangladesh.

**Objectives:**
• To reduce number of locally acquired cases to zero in the four hypo-endemic Districts of the country by 2015
• To reduce number of active foci to zero in the four hypos-endemic Districts of the country by 2015
• To strengthen community participation to ensure participation of different stake holder in the pre-elimination of malaria.
• Intersectoral coordination and collaboration which will lead to reduce onwards transmission from existing cases

Programmatic Issues:-
• Regional initiative – Formation of Core Committee for malaria pre-elimination
• Local initiative – Formation of pre-elimination committee at upazila level.
• Formation of malaria working group
• Selection of community volunteers
• Orientation of the volunteers
• Reorientation of health facility staff
• Mobilization of domestic funding

Monitoring and Evaluation:-
• GIS based database on cases and foci
• Elimination database
• Central record Bank
• Genotyping, isolate Bank
• Malaria surveys
• Immediate notification of cases

III. Event & Observation

World Malaria Day:

• The observance of the 5th World Malaria Day on April 25, 2012 was organized by the National Malaria Control Program in 13 malaria endemic districts, 70 upazila of Bangladesh in befitting manner through press conference, workshops, seminar, rally, TV show, radio talk, special feature, write up in the print media with all stakeholders of the malaria control program. The slogan of this year was “Sustain Gains, Save Lives: Invest in Malaria”. In 2012, the World Malaria Day observed in Dhaka at Ruposhi Bangla Hotel. Health Advisor, Health Minister, State Minister, Senior Secretary Health, Additional Secretary Health, DG were present on that meeting.
IX. Challenges:

- Geographical inaccessibility
- High rate of infection in border and hill tract districts
- Vector control in hard-to-reach areas
- Sustaining of coverage and achievement
- Linguistic barriers – Multitude of tribal languages
- Growing trend of insecticide resistance
- Non immune travelers
- Asymptomatic malaria
- Drug resistance particularly ACT in neighboring countries
- Delay in referral due to poor communication and socio-economic condition of marginalized patient

X. Way forward:

- Health system strengthening– strengthening of community clinic, referral linkage, PPP;
- Community participation in malaria prevention, early care seeking and vector management
- To take initiative for targeting hard to reach area (Mobile Team)
- To revise treatment regimen for pre-referral treatment
- Local government participation and ownership
- To improve data quality by involving private hospitals and practitioners
- To increase diagnosis facility
- To conduct more operational research.

XI. Future Vision:

“Elimination of Malaria from the 8 malaria hypo-endemic districts of Bangladesh”
Dengue Prevention and Control in Bangladesh in 2012

Dengue Situation in Bangladesh

Dengue re-emerged in Bangladesh in 2000 after an earlier outbreak as Dhaka Fever in 1960s. The re-emergence generated huge number of cases along with morbidity and mortality of public health concern. Bangladesh demonstrated appreciable competency in managing the causes with continued decline in mortality. Training of the health care providers on dengue management and increased awareness might have contributed in this achievement. The prevalence trend to show upward trend twice a year; once during May-June and the other Sept-Oct. Cases are found in other months of the year too. Bangladesh has the highest population density with rapid and large demand of urbanization. Also the process of urbanization is largely unplanned and urban lifestyle is many a times not environment friendly. Expansion of urban lifestyle to peri-urban area extended the risk. All these are contributing to abundance of breeding place for breeding of aedes mosquito. The transport system of the country is mainly based on roads with high number of motor vehicle giving rise to huge number of used up tyres which leads the harboring breeding places. Self centered life in urban area with little responsibility and care for the community also renders more breeding places.

There is continuous breeding of Aedes aegypti. Some areas in Dhaka city where water is stored in large jars or drums due to erratic water supply, allows aedes breeding during dry months. These weak links ensures continuous breeding of aedes population. This is one of the possible reasons of continuous transmission of dengue virus. Lack of awareness about vector control during inter outbreak period.

Two entomological surveys were done in 2011 and 2012; few others were also done as a part of a joint research. Based on the findings of Larval Survey conducted in August, 2012, activities carried out during the period of September to December, 2012.

Goal

To reduce the burden of Dengue in Bangladesh (To contribute to the reduction in morbidity and mortality from dengue fever/ DHF to such an extent that they are no longer major public health problems in Bangladesh by 2016).

Objective

1. To strengthen capacity to implement effective integrated vector management.
2. To address programmatic issues and gaps that requires new or improved tools for effective dengue prevention and control.
3. To increase the health workers capacity to diagnose and treat patients and improve health seeking behavior of communities.
4. To promote collaboration among affected communities, national health agencies and major stakeholders to implement dengue program for behavioral change
5. To increase capacity to predict ,detect early and respond to dengue outbreaks
6. To increase the capacity to monitor trends and reduce dengue transmission

Activities and Achievements

- Capacity building; Tot and training for Consultants, Assistant Professors, Registers, MOs and Senior Staff Nurses on Clinical Management of Dengue are continuing.
• Boy’s scouts and girl’s guides have been trained for increasing awareness of the people in control and prevention of dengue.
• Epidemiological and Entomological surveillance is ongoing.
• The existing guidelines are being updated based on the evidences and a technical group is working on that.
• Local Government involved in IEC activities: Distribution of leaflets, posters, milking etc.
• Mass media including both electronic and print media are involved in IEC activities.
• Responsive clinical management; Responsive system of diagnosis and treatment in hospitals.
• Effective disease surveillance; Improved and effective disease and vector surveillance.
• BCC- COMBI to foster mass awareness using multi-sectoral approach.
• Networking and collaboration; Aedes aegypti mosquito control with community participation and multi-sectoral action.

**Dengue Cases and Deaths in Bangladesh (2000-2012)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Cases</th>
<th>Deaths</th>
<th>CFR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>5551</td>
<td>93</td>
<td>1.67</td>
</tr>
<tr>
<td>2001</td>
<td>2430</td>
<td>44</td>
<td>1.81</td>
</tr>
<tr>
<td>2002</td>
<td>6132</td>
<td>58</td>
<td>0.95</td>
</tr>
<tr>
<td>2003</td>
<td>486</td>
<td>10</td>
<td>2.05</td>
</tr>
<tr>
<td>2004</td>
<td>3934</td>
<td>13</td>
<td>0.33</td>
</tr>
<tr>
<td>2005</td>
<td>1048</td>
<td>04</td>
<td>0.38</td>
</tr>
<tr>
<td>2006</td>
<td>2200</td>
<td>11</td>
<td>0.50</td>
</tr>
<tr>
<td>2007</td>
<td>466</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>2008</td>
<td>1153</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>2009</td>
<td>474</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>2010</td>
<td>409</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td>1362</td>
<td>06</td>
<td>0.44</td>
</tr>
<tr>
<td>2012</td>
<td>671</td>
<td>01</td>
<td>0.1</td>
</tr>
</tbody>
</table>

**Dengue Cases and Deaths in Bangladesh (2000-2012)**

![Dengue Cases and Deaths](image-url)
Joint Venture Dengue Prevention and Control Activities

Anti-Dengue Campaign / Community Drive

Based on the findings of Larval Survey conducted in August 2012, activities carried out during the period of September to December 2012.

In 2012 a joint venture Anti-Dengue Campaign had been demonstrated through the collaboration and active participation of different stakeholders namely DGHS, Local Government, City Corporations, Municipalities, Civic Societies, Print and Electronic Media, Red Crescent Society, Scouts, Girl Guides, UPHCSDP, USAID’s Smiling Suns, Urban NGOs, WHO, ICDDR,B and Local People, Local Representative, School Children, stakeholders, implementers, researchers, public society and the community conducted the anti dengue campaign during the dengue season through the following tasks:

- Rally & Milking in the community and groups representation from all participant stakeholders for community mobilization, awareness and demonstration.
- HHs visit, door to door Visit and Demonstration of activities with the community.
- Band Party
- Banner, Poster, Leaflet
- Community participation by NGO staff
- Involvement of School children, Garments, Clinic, Rickshaw Garage, Slums.
- Survey (Baseline, datasheet, data collection report writing )
- Meeting with all concerns
- Coordination and collaboration
- IEC materials distribution
- Training clinical, other orientation
- Orientation for Role and Responsibilities of all stakeholders including School Children on how to implement the activities on joint venture Dengue prevention and control activities.
- Assign staffs to make contacts with different concerned authority and community.
- Arrange training for all stakeholders on how to mobilize the community to maintain cleanliness and how to remove stagnant water.
- Cleaning of water bodies every quarterly round the year.
- Keeping drains flowing to prevent any mosquito breeding.
- Application of larvicides in the drains and water bodies.
- Fogging for killing adult mosquito.
- Special drive for control of Aedes mosquito prior to onset of monsoon.
- Cleanliness drive for household and premises.
- Reduce breeding places, clean domestic breeding containers, and destroy disposable artificial containers.

A proactive approach that means moving from Response-Driven Activities to Long Term Prevention and Preparedness-Driven Activities needed for the community, with the community and by the community with individuals, communities, private sector, and government agencies joint effort only can fight dengue.
## Larval Survey-2012

<table>
<thead>
<tr>
<th>Sl</th>
<th>Name of Area</th>
<th>Indexes</th>
<th>positive Breeding sources</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pallabi</td>
<td>HI: 20.83 CI: 28.13 BI: 37.5</td>
<td>Plastic bucket/ball/pot, Card pot, poly bag, cock sheet</td>
<td>20 areas BI are high</td>
</tr>
<tr>
<td>2</td>
<td>Shewrapara</td>
<td>HI: 33.33 CI: 55.56 BI: 33.33</td>
<td>Tyres, Mud pot, Ceramic pot, Plastic drum</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Kazipara</td>
<td>HI: 20 CI: 33.33 BI: 20</td>
<td>Plastic drum, Mud pot</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Mohammadpur</td>
<td>HI: 16.67 CI: 25 BI: 30</td>
<td>Tyres, Plastic drum, Earthen pot</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Jigatala</td>
<td>HI: 26.67 CI: 63.16 BI: 80</td>
<td>Plastic drum, Cock sheet, Lead of drum</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Galtali</td>
<td>HI: 22.22 CI: 7.46 BI: 18.52</td>
<td>Tyres, Earthen Jar, Metal bucket</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Basabo</td>
<td>HI: 16.67 CI: 31.58 BI: 20</td>
<td>Cock sheet, Flower tub, Plastic drum, Curd pot, Freeze tray</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Syedabad</td>
<td>HI: 13.33 CI: 66.67 BI: 13.33</td>
<td>Tyres, Earthen pot, plastic drum</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Jatrabari</td>
<td>HI: 6.67 CI: 25 BI: 6.67</td>
<td>Plastic drum</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Bonosree</td>
<td>HI: 40 CI: 47.83 BI: 73.33</td>
<td>Plastic mug/ pot, Cement water tank, Metal drum, Floor stagnant water, Flower tub</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>East Rampura</td>
<td>HI: 6.67 CI: 8.33 BI: 6.67</td>
<td>Paint pot</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Uttora, Sect-1&amp;3</td>
<td>HI: 20.69 CI: 29.17 BI: 24.14</td>
<td>Flower tub, Drum, Plastic bucket, Flower tub tray</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Uttora, Sect-6&amp;7</td>
<td>HI: 43.33 CI: 63.33 BI: 63.33</td>
<td>Flower tub, Flower tub plastic tray, Tyres, Tin bucket, Earthen pot, Cement tank</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Mohakhali B.T</td>
<td>HI: 66.67 CI: 89.36 BI: 28</td>
<td>Tyres, Battery cell, Water jar</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>East Nakhalpara</td>
<td>HI: 13.33 CI: 25 BI: 13.33</td>
<td>Earthen pot</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Gulshan-I</td>
<td>HI: 16.67 CI: 30 BI: 20</td>
<td>Flower Tub, Ant trap</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Gulshan-2</td>
<td>HI: 34.62 CI: 37.5 BI: 46.15</td>
<td>Plastic pot, Plastic drum, Floor stagnant water, ICE Cream cup, Tyres</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Farmgate</td>
<td>HI: 60 CI: 78.95 BI: 100</td>
<td>Earthen pot, Plastic bucket</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Monipuripara</td>
<td>HI: 13.33 CI: 50 BI: 13.33</td>
<td>Plastic pot</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Moghbazar</td>
<td>HI: 26.67 CI: 38.46 BI: 33.33</td>
<td>Earthen pot, Plastic pot, flower tub</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Noyatala</td>
<td>HI: 20 CI: 33.33 BI: 20</td>
<td>Plastic drum, coconut shell</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Mintu Road</td>
<td>HI: 70 CI: 82.76 BI: 240</td>
<td>Plastic pot, Ice cream pot, flower tub</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Baily Road</td>
<td>HI: 63 CI: 84 BI: 200</td>
<td>Flower tub, Plastic pot</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Lalbagh</td>
<td>HI: 20 CI: 33.33 BI: 20</td>
<td>Plastic pot, freeze tray</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Azimpur</td>
<td>HI: 20 CI: 12 BI: 20</td>
<td>Plastic drums, flower tub</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Johnson Road</td>
<td>HI: 20 CI: 33.33 BI: 20</td>
<td>Cement water tank, Tyres</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Laxsmibazar</td>
<td>HI: 13.33 CI: 15.38 BI: 13.33</td>
<td>Cement water tanks, plastic pot</td>
<td></td>
</tr>
</tbody>
</table>
Strengths:

Joint venture coordinated action against dengue; Strong GO-NGO and Other stakeholders collaboration and active participation of different stakeholders namely DGHS, Local Government, City Corporations, Municipalities, Civic Societies, Print and Electronic Media, Red Crescent Society, Scouts, Girl Guides, UPHCSDP, USAIDS’s Smiling Suns, Urban NGOs, WHO, ICDDR,B, and Local People, Local Representative, school Children.

The community-based dengue vector control strategy includes IEC (information and education campaign) household distribution, one-on-one dengue education campaign, space spraying in houses and community clean-up drives.

Weakness:

The activities for dengue prevention and control are linked with malaria and other vector borne disease control programs a part of the Operational Plan of the Communicable Disease Control of HPNSDP in MOHFW.

There is no routine program for surveillance of aedes population densities;

During outbreaks, surveillance work is done in selected areas of Dhaka and sometimes in other cities;

Lack of community involvement;

No policy, plan, and strategy for dengue prevention and control;
Lack of emphasis on research and development of IVM for aedes control.

**Way Forward:**

- A proactive approach that means moving from Response-Driven Activities to Long Term Prevention and Preparedness-Driven Activities needed for the community with the community and by the community approach with individuals, communities, private sector, and government agencies joint effort only can fight dengue.
- Existing vector control tools have several limitations in terms of cost, delivery and long-term sustainability. The effectiveness of the vector control program, laboratory capacity, stockpiling and applied research needs.
- In order to develop a meaningful preparedness plan during the inter-epidemic period, it is important to estimate the population at risk, expected admission rates, the equipment, supplies and personnel required for vector control and patient management and to document the location of resources.
- Community Involvement Is A Critical Element In Dengue Prevention and Control. Everyone Has A Role To Play. Public education must continue to reinforce how important it is for people to seek medical attention if they have dengue symptoms and should stress the need to reduce larval habitats and the options for personal protection.
CHAPTER – 3
Filariasis Elimination and Soil Transmitted Helminthes (STH) Control Program

Executive Summary

Filariasis is a global problem. It is major social and economic burden in the tropics and subtropics of Asia, Africa, Western Pacific and parts of Americas, affecting over 120 million people in 83 countries. It is estimated that about 700 million people are living in areas endemic for lymphatic filariasis in SEAR. About 60 million people infected in the region and about 31 million people have clinical manifestation of the disease.

Bangladesh is known to be surrounded by endemic area of filariasis particularly the north-east border area of India which is adjacent to the Assam, Bihar and West Bengal. In Bangladesh the disease is present all over the country with highest endemicity in northern part of the country. Out of 147 million people, about 20 million people of the area have been suffering from the disease most of which are children. The exact figures of filariasis in Bangladesh are not known, but it is endemic in 34 out of 64 districts of the country as revealed by ICT by LQAS done in 2002 and 2004. There is high endemicity of filariasis in Nilphamari, Thakurgaon, Dinajpur, Rangpur, Panchagar, Kurigram, Gaibandha, Chapai Nawabganj, Rajshahi and Lalmonirhat. It is estimated that about 70 million are at risk of infection, while 10 million people are with various forms of clinical deformity and another 10 million people are microfilaremics.

Mass Drug Administration (MDA) was launched in November 2001 (1st round) among at risk population of Panchagar district and thereafter the program gradually scaled up to 19 districts by 2008 following the result of base line mf survey. After several round of MDA in the area the Mf result came down to less than 1% in 5 districts in 2011. On the basis of that result and following the WHO guideline MDA has been stopped officially from those 5 districts namely Rajshahi, Dinajpur, Meherpur, Patuakhali and Barguna as a part of elimination. It is our one of the successes that Sirajgonj, Pabna, Kushtia, Chuadanga and Pirojpur districts have fulfilled the criteria of stopping MDA in the year of 2012. Remaining 9 districts are receiving MDA and the level of Mf rate has been declining to achieve elimination within 2015.

All the risk factors for STH transmission are common throughout Bangladesh and the available evidence points to a severe public health problem with high levels of transmission in many areas. Three rapid surveys were carried out across the country in 2005 to assess both the prevalence and intensity of infection in school children. Stool samples were collected from each child as well as nutritional indicators and general information from each school. The results found 79.8% of the children were infected. Based on the results it was possible to decide on a national strategy including the necessary frequency of treatment and identification of priority target areas.

School aged children are the priority target group for STH treatment as they are the most heavily infected group in a community and suffer the most in terms of health. Schoolchildren should be the first group for treatment followed by attention to pre-school children.

Nationwide de-worming program was started in November 2008 through all primary level institutions (gvt., non-govt., Primary, registered, formal, non-formal kindergarten, madrasa, moktab etc). Meanwhile 9th round of de-worming has been completed with over 98% reported coverage. The de-worming tablet was distributed among all targeted children by the teacher in each round of de-worming. It was observed that the children became afraid of such type of distribution and also with the drug. They could neither refuse nor swallow the drug without any hesitation. Considering that situation a new initiative of “Little Doctor” concept was introduced.
in May 2011. It will create a large number 12,30,000 Little Doctor each year with the aim to
develop ownership of the program among school children and motivating other children to
swallow de-worming drug voluntarily this will remain sustainable for long run. Through the "Little
Doctors" other students will learn on the above health related matters and in the process of
delivering education the "Little Doctors" themselves will strengthen their understanding on
those. In this process if even small portion of 22 million children or the Little Doctors adopt
healthy life style throughout their lives, that will have huge positive impact in future health of the
nation. The "Little Doctor" strategy can be applied for improving coverage of de-worming
program of school and side by side for other health related issues like personal hygiene, health
check- up, control and prevention of intestinal worm, Rabies, improvement of nutrition including
vitamin-A supplementation and celebration of different health related days/ week.

Introduction:

Lymphatic filariasis (LF) is a vector borne parasitic disease caused by tissue nematodes. 
Wuchereria bancrofti is the most common parasite and Culex mosquitoes are the main vectors for
transmission in Bangladesh. It is one of the Neglected tropical diseases (NTDs) in Bangladesh.

Filariasis is a global problem. It is major social and economic burden in the tropics and subtropics
of Asia, Africa, Western pacific and parts of Americas affecting over 120 million people in 73
countries. More than 1.1 billion people live in the areas where there is a risk of infection. It is
estimated that about 700 million people are living in areas endemic for lymphatic filariasis in
SEAR. About 60 million people infected in the region and about 31 million people have clinical
manifestation of the disease.

The consequences of filarial infection are many. A large number of afflicted persons exhibit
physical and mental disabilities, an impaired ability to work, and a compromised quality of life.
These problems arise not only from the disease process, but also from social stigma directed
among the afflicted persons. All of these problems moreover, have a cumulative adverse effect at
the individual, household, community and national levels.

Bangladesh is known to be surrounded by endemic area of filariasis particularly the north-east
border area of India which is adjacent to the Assam, Bihar and West Bengal. In Bangladesh the
disease is present all over the country with highest endemicity in northern part of the country.
Out of 147 million people about 20 million people of the area have been suffering from the
disease, most of which are children. The exact figures of filariasis in Bangladesh are not known,
but it is endemic in 33 districts out of 64 districts of the country as revealed by ICT by LQAS,
done in 2002 and 2004. There is high endemicity of filariasis in Nilphamari, Thakurgaon, Dinajpur,
Rangpur, Panchagarh, Kurigram, Gaibandha, Chapai Nawabganj, Rajshahi and Lalmonirhat. It is
estimated that about 70 million are at risk of infection, while 10 million people are with various
forms of clinical deformity and another 10 million people are microfilariaemic. Recent Microfilaria
survey done in March - May 2006 revealed that it is present in 33 districts and clinical cases are
reported from 49 districts.

Filariasis was integrated with the Malaria and Vector Borne Disease Control (M&VBDC) unit in
the DGHS till 2000. As filariasis is to be eliminated by 2020 as per 50th WHA resolution of May
1997, GOB is also committed to eliminate it by 2015 and accordingly filariasis elimination
program was separated from M&VBDC unit of DGHS on 7 January 2001 by MOH&FW, A
National plan was approved for its elimination by 2015 starting from Panchagarh district. Filariasis
elimination program is aimed at mass drug administration, social mobilization, community based
IEC activities, morbidity control and training to health & para-medical health personnel including
volunteers & NGOs for MDA and morbidity control services.
Mass Drug Administration (MDA) was held in November 2001 (1st round) at Panchagar district and in 2002 (2nd round) MDA was done among 5.1 million populations in four districts—Thakurgaon, Nilphamari, Lalmonirhat and Panchagar.

**Update on mapping of the distribution of lymphatic filariasis:**

There are a total 64 districts in Bangladesh with 147 million populations. 34 districts as mentioned below as endemic with about 74 million populations as per ICT done in May–June 2004 & mf survey till reporting date.

List of 34 districts Positive for Filariasis by ICT done in May–June 2004 & mf survey till 2008 are as follows:

<table>
<thead>
<tr>
<th>Division</th>
<th>District</th>
<th>Division</th>
<th>District</th>
<th>Division</th>
<th>District</th>
<th>Division</th>
<th>District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rangpur</td>
<td>Panchagar</td>
<td>Rajshahi</td>
<td>Rajshahi</td>
<td>Khulna</td>
<td>Meherpur</td>
<td>Dhaka</td>
<td>Dhaka</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thakurgaon</td>
<td>Chapai</td>
<td>Nawabgonj</td>
<td>Narail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nilphamari</td>
<td>Sirajgonj</td>
<td></td>
<td>Bagerhat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lalmonirhat</td>
<td>Pabna</td>
<td></td>
<td>Chuadanga</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rangpur</td>
<td>Bogra</td>
<td></td>
<td>Jhenaidaha</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kurigram</td>
<td>Barisal</td>
<td>Pirojpur</td>
<td>Kushtia</td>
<td></td>
<td>Jamalpur</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dinajpur</td>
<td>Jhalokathi</td>
<td>Barguna</td>
<td>Feni</td>
<td>Narayanganj</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Barisal</td>
<td>Laxmipur</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bandarban</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Patuakhali</td>
<td>Sylhet</td>
<td>Habigonj</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Goal:

Elimination of Filariasis by 2015

Objectives:

1. To reduce microfilaria prevalence <1%.
2. To relieve sufferings of the lymphoedema patients caused by filariasis.

Strategy:

- Mass Drug Administration (MDA) among at risk population once in a year for successive five years through door to door household registration except pregnant women, children < 2 years of age and severely ill patients.

- Alleviate suffering of lymphoedema patients by community based morbidity control.

Major activities:

b. Morbidity control & Hydrocele repair.

Mass drug Administration (MDA):

Elimination strategy advocates that everyone in the community from the age of 2 years upwards is treated with DEC plus one tablet of Albendazole once a year for the next 5 consecutive years.

Door to door drug distribution and direct administration was done by government field staff including some trained volunteers both in rural and urban areas. The person who was present in the house only, he/she was given and swallowed the drugs in presence of field staff. On the following day there was supervised visit by supervising staff to administer the drugs to left out cases. Drugs were also distributed and administered directly to mobile people as in school, college, madrasa, mosque, cinema hall, market/shopping areas, slum, roads etc. In some cases, drugs were left out for member of the house who was absent.

Advocacy, Communication & Social Mobilization (ACSM):

To achieve a high MDA coverage, following IEC activities were carried out by the support of USAID in the locality of endemic regions

i) Information related to MDA period, delivery of drugs, causes of disease transmission were known to the people of the community through loud speaker (miking) covering 268 unions of 5 high priority districts (Thakurgaon, Nilphamari, Lalmonirhat, Panchagarh, Kurigram).

ii) Advertisement was published in the National newspapers including radio and TV channels

iii) Banner and poster containing LF information were hanged in the locality throughout the MDA period.

iv) A total of 172 film shows were organized in the locality of 7 districts (Lalmonirhat, Panchagar, Kurigram, Rangpur, Chapai Nawabgonj, Nilphamari and in Thakurgaon,) to aware people about the disease, its transmission and benefit of taking anti-filarial drugs.

JOCVs also played important role to increase awareness people in the districts of Panchagar, Thakurgaon, Nilphamari, Lalmonirhat and Rangpur. They performed following IEC activities by their direct supervision in the above-mentioned districts (IUs)

1. Broadcasting messages in television through local cable network.
2. Broadcasting messages through government local radio station.
3. Increase awareness community people through loud speakers of the local mosque by the help of Islamic Mission.
4. Publishing news of local film show in two daily news papers.

More over they were involved in distributing leaflets to the household members during their visits in the same area and doing miking in the locality by their mobile vehicle.
**Morbidity Control:**

TOT on morbidity control were conducted in 5 districts in 2012 where 247 participants attended.

The government field staffs were oriented about this special care of morbidity control and they are doing this work regularly. Practical demonstrations as well as taking care and doing regular exercises of the affected limbs were being taught to the patients in the centers through community based morbidity control services by Japanese Volunteers.

1500 Kit boxes containing necessary stuff were distributed to the poor patients free of cost to care their affected limbs.

A total of 240 hydrocele cases were operated under morbidity control program of which 60 in Lalmonirhat, 80 in Thakurgaon, 100 in Panchagar district.
Training/ Orientation:

Different training and orientation sessions were conducted during the year in order to orient the disease as well as strengthen their capacity to run the activities at field level. District Health and Administrative authorities, medical and paramedical personnel participated the training session

<table>
<thead>
<tr>
<th>Administrative level</th>
<th>Training on interruption of transmission</th>
<th>Training on disability prevention and control</th>
<th>Training on both interruption of transmission and disability prevention and control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of courses organized</td>
<td>No. of staff trained</td>
<td>No. of courses organized</td>
</tr>
<tr>
<td>National level</td>
<td>1</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>Provincial or regional level</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>District level</td>
<td>7</td>
<td>210</td>
<td>3</td>
</tr>
<tr>
<td>Sub-district level</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>240</td>
<td>3</td>
</tr>
</tbody>
</table>

Operational research:

- Survey to detect recent endemicity of areas adjoining to the filariasis endemic region, 2012.
- To determine the recent endemicity of previously identified low endemic districts in Bangladesh, 2012.

Monitoring & Evaluation:

MDA coverage survey, Mf and Transmission Assessment Survey (TAS) are the major components of monitoring and evaluation of LF Program

Strategies to strengthen implementation & supervision of MDA 2012:

To ensure drug administration, several new strategies were taken before November 2012 round.
- Development of micro-planning sheet, planning & reporting format for different level of supervision prior to MDA
- Considering the experiences of previous years, drug distribution has been implemented by HA instead of volunteers to improve drug coverage & ensure accountability.
- Strengthening of supervision at national, district, upazila & field level.
- In depth training of drug distributors to ensure drug administration to the at risk population of the endemic area.

c. Funding and collaboration:
Government:
Health, Population & Nutrition Sector Development Programme (HPNSDP)

<table>
<thead>
<tr>
<th>Financial year</th>
<th>Source of fund</th>
<th>Released (TK in lac)</th>
<th>Utilized (TK in lac)</th>
<th>% of utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011-2012</td>
<td>RPA</td>
<td>1066.00</td>
<td>1059.79</td>
<td>99.42</td>
</tr>
<tr>
<td></td>
<td>GOB</td>
<td>349.50</td>
<td>334.53</td>
<td>95.72</td>
</tr>
<tr>
<td></td>
<td>JDCF</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1415.50</td>
<td>1394.32</td>
<td>97.57</td>
</tr>
</tbody>
</table>

Technical support:
WHO, CNTD, USAID, GSK, JICA and Johnson and Johnson

Achievements:

Year wise MDA Round (2001 – 2012) with coverage:

<table>
<thead>
<tr>
<th>Year</th>
<th>District / IU</th>
<th>Total Population (million)</th>
<th>Reported Coverage by CS (%)</th>
<th>Observed Coverage in Survey (%)</th>
<th>Actual Coverage among eligible (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>1</td>
<td>0.81</td>
<td>95.5</td>
<td>93.0</td>
<td>ND*</td>
</tr>
<tr>
<td>2002</td>
<td>4</td>
<td>5.18</td>
<td>93.6</td>
<td>83.2</td>
<td>87.3</td>
</tr>
<tr>
<td>2003</td>
<td>6</td>
<td>8.73</td>
<td>93.3</td>
<td>ND*</td>
<td>ND*</td>
</tr>
<tr>
<td>2004</td>
<td>10</td>
<td>11.75</td>
<td>98.6</td>
<td>ND*</td>
<td>ND*</td>
</tr>
<tr>
<td>2005</td>
<td>12</td>
<td>20.16</td>
<td>90.3</td>
<td>78.0</td>
<td>82.2</td>
</tr>
<tr>
<td>2006</td>
<td>13</td>
<td>23.92</td>
<td>92.2</td>
<td>78.2</td>
<td>82.2</td>
</tr>
<tr>
<td>2007</td>
<td>17</td>
<td>31.0</td>
<td>91.5</td>
<td>82.4</td>
<td>84.3</td>
</tr>
<tr>
<td>2008</td>
<td>20</td>
<td>42.0</td>
<td>90.53</td>
<td>79.38</td>
<td>83.06</td>
</tr>
<tr>
<td>2009</td>
<td>19</td>
<td>35.0</td>
<td>96.87</td>
<td>83.33</td>
<td>85.76</td>
</tr>
<tr>
<td>2010</td>
<td>19</td>
<td>35.0</td>
<td>92.47</td>
<td>60.23</td>
<td>62.98</td>
</tr>
<tr>
<td>2011</td>
<td>14</td>
<td>29.70</td>
<td>97.14</td>
<td>92.35</td>
<td>94.90</td>
</tr>
<tr>
<td>2012</td>
<td>09</td>
<td>16.67</td>
<td>98.11</td>
<td>89.76</td>
<td>92.78</td>
</tr>
</tbody>
</table>

- Transmission Assessment Survey (TAS) conducted in 5 districts and MDA has been declared stopped following WHO protocol in Sirajgonj, Pabna, Kushtia, Chuadanga and Pirojpur district.
- MDA done among 16.67 million populations of 9 districts with >65% coverage on post MDA coverage survey.
- 2500 lymphoedema patients trained on morbidity control management.
- A total of 240 Hydrocele operations have been done in highly endemic districts with the assistance of WHO Biennium.
- 1500 kit boxes for morbidity control distributed among lymphoedema patients of 5 filariasis endemic districts.
- Training of doctors, paramedics, health workers, formal/ informal leaders, teachers, NGO workers and medical technologist conducted.
- TOT on morbidity control has been provided in 5 districts and trained 235 health personnel.
Developed training manual for field workers, scouts, leaflet, folders and IEC materials (docudrama, TV spot, Festoon, Moniflag etc) developed on Filariasis.

**Impact of MDA:**
Mf has been declining significantly in the endemic districts followed by several rounds of MDA from 16% to less than 3% as well as number of new clinical cases including, hydrocele and elephantiasis have also been declining steadily in the area.

**Declaration of Stopping MDA as part of Elimination:**
Transmission Assessment Survey (TAS) is the WHO recommended survey protocol to assess the status of elimination to stop MDA. Based on Mf survey report, Bangladesh ELF Program conducted TAS in five districts. The preconditions for conducting TAS are completion of at least sixth round of MDA, Mf result < 1%, MDA coverage is >65%. Result of TAS indicates that Bangladesh has achieved preliminary elimination in five districts. As per WHO protocol, MDA can be stopped in these five districts namely Sirajgonj, Pabna, Kushtia, Chuadanga and Pirojpur.

**Caption: Declaration of Elimination of Filaria in five districts:**

**Challenges:**
- Lack of social awareness due to inadequate Information, Education and Communication (IEC) Program.
- Elimination in some districts are delayed (e.g. Panchagar) in spite of good MDA coverage rate-79.38%.
- Frequent change of skilled manpower (LD/ Director, DPM, PM).
- Funding for Community Based Morbidity Control Program.
Lack of disease surveillance system/M&E.
- Lack of Capacity building- inadequate training.
- Lack of operational research/survey.
- Lack of adequate coordination among stakeholders (MOPME, MOE, DPHE, NGO forum).

**Future plan:**
- Strengthening IEC program
- Capacity building- Human resource, training
- Strengthening monitoring and evaluation
- New technology for morbidity control and expansion of program with involving govt. field staff in the community clinics
- Surveillance to see any resurgence of LF in LF free area

- Operational research
  - To see recent endemic status of LF in areas adjoining to endemic district
  - To evaluate recent endemic status of LF endemicity in previously detected low endemic area & disseminate result at national & international community

- Elimination of Lymphatic Filariasis through MDA by 2015

**Soil Transmitted Helminthes (STH) Control Program**

Soil Transmitted Helminthes (STH) Control is another component of Filariasis Elimination Program of CDC. STH Control Program has been integrated with Filariasis Elimination with the aim to minimize its operation cost. Albendazole is common for both Program as well as one of the de-worming rounds matches with the round of LF MDA in November each year particularly in LF endemic areas.

Globally, an estimated 4.5 billion individuals are at risk of Soil Transmitted Helminthes (STH) infection (Bethony et al., 2006, Lammie et al., 2006, Hotez et al., 2008). It is estimated that 450 million children fall ill due to infection with STH. The disease burden is estimated at 4.7-39.0 million DALYs. Endemicity levels are particularly high in Africa, Asia and Latin America. Almost all low-income countries are severely affected by the disease. Very high prevalence and intense infections are more common in impoverished areas, characterized by poor sanitary conditions and water resources and overcrowding. In Bangladesh all 64 districts are endemic with 78 million infected with Ascaris lumbricoides (Round worm) which constituted 55% of population. About 51 million people (35% of population) are infected with Hook worm and 66 million people are infected with Trichuris trichiura (Whip worm) (De Silva et al., 2003; Hotez et al., 2009). Among all the community 5-14 years age group are very vulnerable to the infection. It causes impairment of growth, development of cognition among Children. Hook worm and whip worm infection cause iron deficiency anemia.

I. **Background of de-worming program:**
In 2005, it was started with 3 districts, 16 till 2006 to June 2007, 24 till May 2008 and finally it was extended up to 64 districts by November 2008. Nationwide school De-worming Program has been started on 2008 with an aim to regular de-worming of 75-100% school age children (WHA resolution 54.19 of 2001). The first national de-worming day was observed on November 2008. Subsequently the Program was implemented every six months (May & November). From 2010 De-worming is conducted for a week instead of National de-worming Day and 5 years of age (baby class) group included as target. Single dose of Albendazole (400mg) or Mebendazole (500mg) is being administered at school with the help of school teachers. More than 19 million children studying class 1-5, or aged 5-12 years are targeted. All types of schools including Govt., Non-govt., NGOs, private, English medium schools, Madrasas etc. are included in the Program.

**Goal:**

To control intestinal helminthes among children

**Objective:**

De-worming 5 -12 years school aged children twice in a year (May and November)

**Program summary:**

- Total District : 64 (whole country)
- Target Group : 5– 12 years children
- Approach : Through Primary Schools
- National Program Started: November 2008
- Targeted children: about 22 million, including out of school children
- Targeted schools: All types- Govt. primary, Non Govt. primary, Private schools, NGOs Schools, Non-formal schools, Madrasas, English medium school, High school attached primary schools etc.
- Frequency of De-worming : Twice in a year (November and May)
- Total Round completed : 9

**Ongoing activities:**

- De-worming of school children throughout the country
- Development & dissemination of IEC materials- Documentary spot, Docudrama, Radio spot, TV spot, Message for print media
- Advocacy at national, district & upazila level for field managers (CS)/ implementer & orientation of school teachers before each round of MDA
- Supervision and Monitoring
- Report collection and compilation

**“Little doctor” Strategy in STH control program:**

**Concept of “Little Doctor”:**

Children can play important role in child to child education on hygiene, healthy life style, and prevention of diseases and promotion of health. There are about 82 thousands educational institutes of primary level having about 20 million students in Bangladesh. Selected senior students (Class IV-V level) identified as "Little Doctors" may be engaged to provide child to child education on important health related issues on limited scale without hampering their study. The issue may include personal hygiene, control and prevention of intestinal worm (Soil
Transmitted helminthes - STH), Rabies, improvement of nutrition including vitamin-A supplementation. The ‘Little Doctors’ may also play key role in health check up of the students and observance of health related days pertinent to children.

Through from the "Little Doctors" other students will learn on the above health related matters and in the process of delivering education the "Little Doctors" themselves will strengthen their understanding on those. In this process if even small portion of 20 million children or the Little Doctors adopt healthy life style throughout their lives, that will have huge positive impact in future health of the nation. "Little Doctor" can be applied for improving coverage of de-worming program of school and other health related issues.

Formation and Functioning of ‘Little Doctor’:
- A total of 18 students are being selected preferably from class four and five. They will be divided into six groups, one for each of the six classes including pre-primary. They will be regarded as “Little Doctor”.
- “Little Doctors” will be selected in the early of each year, be oriented and they will continue to work for the year.
- A guideline has been developed for selection, orientation and functioning of ‘Little Doctor’.

Role of Little Doctor
1. To provide health message to other students and parents.
2. To demonstrate health and hygiene practices
3. To participate in health check up of students (height, weight, eye sight)
4. To take active part in de-worming round
5. To take part in celebrating national health related days/week like De-worming week, World Health Day, Hand Washing day, Meena day etc.

Role of Little Doctor in De-worming week:
i) Providing information regarding worm infestation and prevention of infestation prior to distributing drugs during the de-worming week
   ii) Administering drugs during de-worming week
      a. Listing the student prior the week
      b. Administering de-worming tablet during the days of the week.
      c. Reporting any side-effect to the teacher
      d. Motivating absentees, dropped out and out of school children to take de-worming drug
      e. Keeping accounts of drug administration and handing over the report to the assigned teacher
Impact of ‘Little Doctor’:
1. Will create a huge number approx. 12,30000 of little doctor each year by the program
2. Will build a leadership mentality
3. Will sustain the knowledge for longer in their life
4. Will practice the de-worming in their life as well as among their family members
5. Will help them to engage in other health related as well as other social activities.

De-worming by other program:
- De-worming of 2-5 years children along with Vitamin- A plus Campaign (IPHN)
- De-worming of Adolescent girls and malnourished mother through National Nutrition Service (NNS)

Social awareness:
Information Education & Communication (IEC) is an integral part of STH Control Program. To make the program successful extensive social awareness is being implemented before every national De-worming program. De-worming Program has been inaugurated by Honorable Minister, Ministry of Primary & Mass education and Honorable State Minister, Ministry of Health & Family Welfare in November 2012. Before de-worming round extensive social awareness program including film show, docudrama, talk show, advertisements in newspaper, TV and radio were conducted with the assistance of USAID through FHI 360 and CNTD, Liverpool, UK.

Along with De-worming Social awareness Program highlighted health education to improve hygiene and sanitation for community especially for children. It is also recommended to ensure de-worming for all family members by the own efforts on the same day of De-worming of school children. De-worming twice in a year and improved sanitation can ensure worm free environment. Orientation meeting and miking was organized to aware the people to participate actively in the Program. Moreover, for the population of rural and remote area film show and cinema campaign has also been arranged. Round table meeting has been organized to aware electronic and print media personnel about the National De-worming Day and STH control Program.
**Achievements:**

School based de-worming program covered every primary level institutions of the country to de-worm all 5-12 years school aged children twice in a year. The report of treatment coverage sent by the civil surgeon’s office of the concerned districts shown in the table below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Round</th>
<th>No. of Districts Covered</th>
<th>No. of children</th>
<th>Reported Coverage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Targeted</td>
<td>Treated</td>
</tr>
<tr>
<td>2008</td>
<td>November</td>
<td>64</td>
<td>15,743,159</td>
<td>15,482,778</td>
</tr>
<tr>
<td>2009</td>
<td>May</td>
<td>64</td>
<td>19,303,404</td>
<td>19,101,496</td>
</tr>
<tr>
<td></td>
<td>November</td>
<td>64</td>
<td>19,303,404</td>
<td>18,782,212</td>
</tr>
<tr>
<td>2010</td>
<td>May</td>
<td>64</td>
<td>19,837,612</td>
<td>19,440,860</td>
</tr>
<tr>
<td></td>
<td>November</td>
<td>64</td>
<td>2,19,71,611</td>
<td>2,17,45,757</td>
</tr>
<tr>
<td>2011</td>
<td>May</td>
<td>64</td>
<td>2,20,70,512</td>
<td>2,17,35,040</td>
</tr>
<tr>
<td></td>
<td>November</td>
<td>64</td>
<td>2,20,82,923</td>
<td>2,19,92,383</td>
</tr>
<tr>
<td>2012</td>
<td>May</td>
<td>64</td>
<td>2,22,63,213</td>
<td>2,20,40,581</td>
</tr>
<tr>
<td></td>
<td>November</td>
<td>64</td>
<td>2,22,63,192</td>
<td>2,20,38,334</td>
</tr>
</tbody>
</table>

Table: School De-worming Program showing reported overage

**Impact of the program:**

Overall, STH prevalence among school children has been reduced which is about 27.2%, according to a survey conducted by STH control Program in 2010 (shown in figure below). Similar findings are also found in the study by other organizations.

**STH prevalence at base line and in 2011:**

An indication of the impact of the school-based MDA program is available from a study carried out by Haque and Mondal (2011). The study was carried out in Mymensingh district after 4 rounds of MDA and overall prevalence in the children of *A. lumbricoides*, *T. trichiura*, hook worm and *Strongyloides stercoralis* was 32.0%, 6.1%, 0.6% and 0.2% respectively. The prevalence varied widely across different areas and the highest prevalence of *A. lumbricoides* and *T. trichiura* recorded was 44% and 25% respectively. However, the overall prevalence was much less than that reported by many studies including the one conducted by the national program (Figure 4). These lower rates are obviously due to the impact of the school based MDA program against the STHs.
Reporting and Supervision:

After observance of the De-worming day reports were collected from 64 districts in specific format and compiled by the Program. Upazila & District managers are involved to supervise and monitor the distribution of logistics from district to school. Moreover, officials from Filariasis Elimination Program and CDC of DGHS supervise the program in different districts.

Monitoring and Evaluation:

A monitoring system has been designed to systematically track the number of children treated in each district annually. The uniform reporting format has been distributed to collect report from 64 districts. Still there are some difficulties to get the report on time. Sometimes, it is noted that collected reports have some error in setting the target. This area need to be improved for better monitoring. It is planned to conduct treatment validation survey after de-worming and evaluation of reporting system and the Program.

Stakeholders:

There is a group of dedicated agencies who work for De-worming and water & sanitation Program like IPHN, LGED, DPHE, City Corporations, WFP, UNICEF, CWW, Save the Children, BRAC, NGO Forum etc. All stakeholders including Public Representative, Administration, NGOs, CBOs, and Volunteers, Local Government institutions, health and education sector work together to make the Program successful. There is a very good coordination among the stakeholders at local level. High level officials of Ministry of Primary and Mass Education, Directorate of Primary Education and LGED have been incorporated in the National Task force for Lymphatic Filariasis (NTF-ELF).

Strengths:

- Integrated approach of LF Elimination & STH control program
- Albendazole in November round is common for both programs so it is cost effective.
- Very good Govt. infrastructure and GO-NGO collaboration
- Community participation with strong partnership at local level
- Active participation of school teachers
- Reported drug coverage is 98%.

Issues and Challenges for STH:

- To cover 75%- 100% school age (5-12 yrs.) children under de-worming program
- Coordination with partners working on STH control
• Improvement of water, sanitation, hygiene and health education through school based approach for parasite control
• Development of M & E strategies and improvement of reporting system
• Strengthening of supervision, monitoring and evaluation
• Strengthening of Advocacy, IEC and advertisement
• Capacity building- training, retention of experienced manpower/ experts
• Inclusion of out of school children.

• Operational research.

II. Future plan:

• Strengthening Information, Education and Communication (IEC) program
• Inclusion of out of school children and extending the age group up to 14 years as targeted by WHO
• Capacity building
• Strengthening of monitoring and evaluation
• Co-ordination of national De-worming day with NID/ Vit. A Plus campaign.
CHAPTER – 4

Kala-Azar Elimination Program

Executive Summary

In Bangladesh Kala-azar is prevalent in about 100 countries that threaten 350 million people of the world and among them 90% of the disease burden belongs to 5 countries: India, Bangladesh, Nepal, Sudan and Brazil. It is also notable that estimated Kala-azar cases are around 2.5 million, Incidence 500,000/ year and 59,000 deaths/ year. It is estimated that around 147 million people are at risk in three countries- Bangladesh, India and Nepal with about 100,000 cases occurring annually.

Bangladesh has set the target of elimination of Kala-azar from Bangladesh by 2015. The goal is to reduce the annual incidence of Kala-azar to less than 1 patient per 10 thousand populations. The strategic objectives are to ensure early diagnosis and complete management of the cases, to implement integrated vector management, to have patient and vector surveillance and to conduct operational research.

In Bangladesh Kala-azar patients are detected and treated mainly through primary health care center (Upazila Health Complexes- UHC). ICT based on ‘rK39’ is being used for the diagnosis and Oral Miltefosine for treatment of cases. Injection Sodium stibogluconate (SSG) had long been used for treatment of Kala-azar and PKDL cases and now to be phased out. Very recently we have been using single dose AmBisome on pilot basis to Fulbaria and Trishal upazilas and going to scale up to all the remaining 98 upazilas very soon.

We have started vector management with indoor residual spray (IRS) from post monsoon 2011 through piloting in five unions of Fulbaria upazila. We have scaled up village wise blanket IRS to 8 hyper-endemic upazilas of first and second rounds both in pre-monsoon, 2012 and post-monsoon, 2012 respectively. First round (pre-monsoon’12) IRS has also been done in 26 low endemic upazilas. We are planning to scale up the IRS (both focal and blanket) to all the remaining moderate and low endemic upazila.

Kala--azar case monthly reporting and case search is running regularly under active and passive surveillance of KA cases. In addition as a part of vector surveillance we are doing pre and post IRS vector bionomics and susceptibility test on regular basis. Moreover, we did some operational research like pharmacovigilance, vector bio-assay test etc.

After implementing the above mentioned activities under the guideline of KEP and its strategy paper it is found that PKA and PKDL cases are gradually decreasing and ultimately reach 1902 PKA cases this year from around 10,000 cases in 2006.
Introduction & Background:

Kala-azar is a neglected tropical disease affecting the marginalized rural population of the society. Though prevalent in about 100 countries that threatens 350 million people of the world and among them 90% of the disease burden belongs to 5 countries: India, Bangladesh, Nepal, Sudan and Brazil. It is also notifiable that estimated Kala-azar cases are around 2.5 million, Incidence 500,000/ year and 59,000 deaths/ year. It is estimated that around 147 million people are at risk in three countries- Bangladesh, India and Nepal with about 100,000 cases occurring annually. In the ministerial meeting held in Maldives in 2004, the three countries expressed their commitment to eliminate Kala-azar from the Indian subcontinent by the year 2015 (Report of the 22nd Meeting of Health Ministers of SEAR countries, Maldives; September 5-6, 2004). A Regional Technical Advisory Group (RTAG) was formed by WHO, SEARO for Kala-azar elimination. Kala-azar transmission can be interrupted since humans are the only reservoir and *Phlebotomus argentipes* is the only vector. For these reasons, Kala-azar elimination from these three countries is feasible and will contribute to alleviation of poverty in this region.

Kala-azar (KA) is a vector borne parasitic disease caused by *Leishmania donovani* and transmitted by the sandfly vector, *Phlebotomus argentipes*. Kala-azar is also known as visceral leishmaniasis (VL) having the manifestations of primary Kala-azar (PKA) and the sequelae, post Kala-azar dermal leishmaniasis (PKDL). PKA has the classical manifestations of fever, anemia, weakness and splenomegaly and PKDL has skin manifestations of maculo-papulo nodular lesion. PKA is by itself fatal if not treated. PKDL though by itself is not morbid but serves as the reservoir of KA and throws challenge against the elimination program. Kala-azar is one of the major public health problems in Bangladesh and the disease is endemic for many decades. The estimated prevalence is about 45,000 cases with annual reporting of nearly 10,000 cases.

The habitat of *Phlebotomus argentipes* is restricted to the domiciliary and peri-domiciliary areas. It prefers cattle blood but feeds on human blood if the former is unavailable. The sandflies are endophilic and endophagic. They take short erratic hops and seldom rise 1.8 m above the ground with dispersal of less than 300 m. The vector has been found to be susceptible to DDT, Malathion and Deltamethrin.

In Bangladesh Kala-azar patients are detected and treated mainly through primary health care centers (Upazila Health Complexes-UHC). ICT based on ‘rK39’ is being used for the diagnosis and Oral Miltefosine for treatment of cases. Injection Sodium stibogluconate (SSG) had long been used for treatment of Kala-azar and PKDL cases and now to be phased out.

In the context of the current situation of Kala-azar in Bangladesh, the strategic plan has been revised and updated incorporating rapid diagnostic methods, newer effective drugs, active surveillance, indoor residual spraying and interventions those are needed for successful implementation of Kala-azar elimination program.
**Goal:**
To eliminate Kala-azar from Bangladesh and contribute to an improved health status of the vulnerable groups and the population at risk.

**Impact objective:**
1. To reduce annual incidence of Kala-azar to less than one per 10,000 population of endemic upazila by 2015 through
2. Reducing the risk of transmission of Kala-azar with particular attention for the vulnerable, poor and unreached populations in endemic areas.
3. Reducing the incidence of Kala-azar and PKDL
4. Reducing case fatality from Kala-azar
5. Reducing the parasite reservoir by treating the PKDL cases
6. Preventing the emergence of KA-TB, KA-HIV co-infections
7. Raising awareness on Kala-azar and taking measures for sustenance of awareness

**Process objectives:**
1. To improve the effectiveness of the program management with a focus on policy, planning and regulation
2. To ensure early diagnosis and complete management of Kala-azar and PKDL cases
3. To establish effective disease (Kala-azar and PKDL) and vector surveillance system
4. To reduce vector density through integrated vector management with focus on indoor residual spraying
5. To ensure community participation and multi-sectoral collaboration
6. To conduct operational research on important elements of elimination program
7. To strengthen partnership and collaboration with relevant institutions, organizations and medical colleges
8. To raise awareness about Kala-azar through health promotional activities.

**Strategies:**

a) **Early diagnosis and complete treatment**
   - It can help to reduce the risk of transmission, morbidity and mortality from Kala-azar
   - It also requires trained health care providers, diagnostic facilities and adequate supply of effective medicines

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**Figure – 1: Trends of Kala-azar Cases and Death**

- **Kala azar Cases and Death 2000 - 2012**

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7. To strengthen partnership and collaboration with relevant institutions, organizations and medical colleges
8. To raise awareness about Kala-azar through health promotional activities.

**Strategies:**

a) **Early diagnosis and complete treatment**
   - It can help to reduce the risk of transmission, morbidity and mortality from Kala-azar
   - It also requires trained health care providers, diagnostic facilities and adequate supply of effective medicines
• Patient management will be done at the primary (upazila), secondary (district) or tertiary (medical college) hospital
• Kala-azar will be diagnosed on the basis of clinical presentation and ‘rK39’ based Immuno-chromatography Test (ICT).
• PKDL cases will be diagnosed on the basis of clinical presentation, ‘rK39’ based ICT and microscopy of slit skin smear.

b) Integrated vector management
• It include indoor residual spraying (IRS), promotion of insecticide treated bed nets, microenvironment management and community participation
• The IRS should be preceded and followed by entomological assessment to ascertain the efficacy of IRS
• The spraying would be done twice (March-April & August-September) annually with maximum coverage of endemic areas.
• An intensive mapping of areas through Geographical Mapping and updating this annually needs to be done.
• To complement IRS, insecticide treated nets (ITN) or long lasting insecticide treated nets (LLINs) will be promoted
• In addition, microenvironment management will be undertaken through community participation.

c) Disease and vector surveillance:
• Effective surveillance will have to be ensured through organizing a system of data collection, regular reporting, analysis, review and feedback of information.
• Regular reporting and exchange of information should be organized upwards, downwards and laterally in the system that comprise government, private sector, NGOs and the community as partners.
• Web based surveillance will be used in this program
• Mapping of the cases and vectors will be made
• Periodical entomological surveys to assess vector density, distribution, vector bionomics and susceptibility to insecticide will have to be done along with Post spray bioassay tests should be carried out to monitor the residual effect of insecticides on different surfaces to plan vector control interventions.

d) Operational Research:
• Estimation of disease burden and vector density
• Improving the care seeking behavior of the affected population to maximize the utilization of available services for the diagnosis and treatment of Kala-azar/ PKDL
• Evaluation of diagnostics, drugs and insecticides recommended for the Kala-azar elimination program
• Exploring the best mechanism to make the surveillance system responsive to specific situation that may prevail in an endemic area

e) Social mobilization and building partnerships:
• Social mobilization and building partnership will be an integral part of the Kala-azar elimination program.
• Community participation is necessary for early diagnosis and treatment compliance, effective IRS and reduction of human vector contact.
• Partnerships and multi-sectoral collaboration among government, NGOs and private sectors will be required for best utilization of the available resources.
• Advocacy is necessary to develop an enabling environment to influence political leaders, elected representatives, planners, policy makers, corporate sector, organized sectors, professional bodies and the media (both electronic & printing)
A well designed IEC material & campaign will be launched to motivate people and raise their awareness for adopting preventive methods and seeking treatment early.

**Implemented Activities (January’2012 – December’2012)**

**Early diagnosis and complete treatment:**
- For capacity development of the service provider this year we organized and conducted 12 Batches of training for MO (DC), Nurses & HIs and another 07 Batches for MO (DC) & Nurses organized and conducted on (Sep-Oct)’12

With the aim of strengthening effective program implementation (special focused on national scale up of AmBisome) and increased the management capacity of the Medical Officer (Disease Control), Senior Staff Nurse of UHC and HIs these training (19 Batches) has been organized and conducted covering 85 upazilas under 24 districts. At the local level Civil Surgeon and UHFPO, and Director, Disease Control & LD, CDC, DGHS; Deputy Program Manager, KEP, CDC, DGHS; AD, CDC, DGHS; Consultant (KEP) & Medical Officer (KEP) from central level were present as resource persons. The duration of training was three days and venue was being selected at the district level.

**Training Goal:**
- To assist and develop the participants in achieving the national goal of the Kala-azar elimination program and that is to reduce the annual incidence rate of Kala-azar to less than one case per 10,000 populations in the endemic upazila by the year 2015.

**Training Objectives:**
By the end of the workshop, participants will be able to:
- Identify & diagnose the Kala-azar & PKDL cases at the upazila as well as community level
- Management of diagnosed Kala-azar & PKDL cases by Inj. AmBisome and Tab. Miltefosine
- IRS implementation successfully for vector control
- Distribution of LLINs for blocking Kala-azar transmission
- Operationalized Disease and Vector Surveillance
- Conduct Operational Research
- Conduct Monitoring and Supervision activities

**Expected Outcomes:**
- Identify the Kala-azar and PKDL cases at early stage
- Management of the identified cases efficiently and effectively (both Kala-azar and PKDL)
- IRS activities done successfully
• Operationalized Disease and Vector Surveillance
• Institutionalized Operational Research, Monitoring and Supervision activities

**Training Outline:**

- Goal and objectives of Training
- Strategies of KEP
- Diagnosis of Kala-azar
- Management of Kala-azar
- Search Camp
- IRS implementation for vector control
- Distribution of LLINs for blocking Kala-azar transmission
- Operationalized Disease and Vector Surveillance
- Conduct Operational Research
- Monitoring and Supervision activities

**Methodology of Training:**

At the beginning upazila level managers were asked to send a participants list for the said training after getting the budget allocation for conducting the training. After that we compiled the list for planning and scheduling. Following steps and activities done to organized and conduct the training:

- Work plan development
- Prepare training schedule
- Venue selection and confirmation
- Letter send from central office to upazila level with the attachment of participant list to upazilas manager
- Ensure resource person and participants presence on the day of training
- Training conducted by Resource persons by using multimedia through Power point presentation
- It was two way communication
- Practical session and demonstration was there
- Feedback taken from the participants

**Achievement after Training:**

- MO (DC) and SSN are now able to diagnose PKA and PKDL correctly
- They can treat the patient as per treatment guideline
- Surveillance activities now in a good shape
- Some operational research done by their technical assistance
- Post monsoon IRS done successfully by their direct and indirect monitoring and supervision
• Now they are able to develop micro planning for IRS implementation and took part in preparing micro plan

Kala-azar Camp organized and conducted in 26 Upazilas and 15 Districts including 94 Camp has been organized and conducted

<table>
<thead>
<tr>
<th>District</th>
<th>Upazila</th>
<th>KA/PKDL case before search camp</th>
<th>New case found during search camp</th>
<th>At present total case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KA</td>
<td>PKDL</td>
<td>KA</td>
<td>PKDL</td>
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<tr>
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<tr>
<td>Total</td>
<td>162</td>
<td>8</td>
<td>43</td>
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In 2012 we have been identified 1902 PKA cases and there has no death occurred due to Kala-azar.

**Integrated vector management**

Two round IRS done in 08 hyper-endemic upazila in April-May'12 and Oct-Nov'12. Also a planned has been made to do blanket IRS, Focal Spray and search camp among the 15 moderately endemic upazila and remaining 77 low endemic upazila on January'13 to February'13.

**Indoor Residual Spraying (IRS):**
IRS is the mainstay of vector control.

**Objective:**

**General Objectives:**
The objective of IRS is to ensure safe and correct application (uniform and complete) of blanket and focal spray among all 100 KA endemic upazilas and finally to reach the program objectives by 2015.

**Specific Objectives:**
- All endemic upazilas need to be covered by applying blanket and focal spraying
- To ensure safe and correct application (uniform and complete)
- Ensure deltamethrin spray up to the height of 2 meter (6 feet)
- On indoor surfaces of houses and animal shelters
- Other important outdoor resting sites, e.g. cattle troughs, outdoor base (plinth) of houses, chicken houses, pigeon holes etc.

**Timing of IRS:**
- Two complete rounds of IRS in each year
- For three consecutive years
  - one round of IRS should be done in the month of March- April
  - another round in August- September

**Insecticide**
- Synthetic pyrethroid-deltamethrin 5% WP has been used for IRS

**Dose of deltamethrin**
- 25 mg/ sq. m
- Inform household of spraying schedule
  - Purpose
  - Time to prepare
  - Vacate house
Inform household of spraying schedule

- Occupant must leave house
- (if sick people inside – do not spray)

Safety measure taken during IRS: To ensure safety measure of both blanket and focal spray we have been taken following measures to reach the objectives of IRS:

- Remove all items whenever possible
- Cover all unmovable items during IRS
- Move, cover or remove furniture to have access to spray wall
- Cage and remove all pets/ domestic animals
- Do not eat, drink or smoke (while working)
- Wash hands and face with soap and water (after spray, before eating, smoking or drinking)
- Shower/ bathe after day’s work
- Change to clean clothes
- Wash Overall and other PPE after work day
- Use soap and water
- Separate from family’s clothes
- Inform supervisor if not feeling well

Safety measure for personnel: For safety measure of the spray man and team leader we ensured to use the following materials during spraying:

- Apron
- Mask
- Cap
• Spectacles
• Shoes

Safety measure of Environment:

Disposal of materials:
• After spraying, tanks are to be emptied and cleaned
• After the day’s work, wash sprayer and flush out the system.
  ✓ Collect reinstate and pour to ground
  ✓ Microorganism will proliferate and negate efficacy of chemical
• Supervisor should be knowledgeable on local disposal guidelines
• Never pour insecticides into rivers, pools or drinking water source
• Advise occupant to stay out until the spray is dry
• Instruct householder: Sweep or mop floor before children are allowed to re-enter & not to clean the sprayed surfaces/ wall
• Decontaminate containers where possible.
• Glass, plastic or metal container to be triple rinsed
• Empty packaging to be returned to supervisor for SAFE disposal according to local guideline

• Never re-use empty insecticide containers

• Empty containers should not be burned

**Personnel Involved:** During IRS around 1,140 spray man, 218 team leader and 205 supervisors were involved to cover the target areas in each round blanket IRS. During IRS monitoring & supervision done in four tires and from above downwards these are central, district, upazila and community level. In central level Director, Disease Control; DPM, KEP, DGHS monitor the IRS closely; C/S or DCS monitor at District level; UHFPO & MO (DC) at Upazila and HI & AHI monitor at the community level.

**Methodologies:** Pre and Post monsoon Blanket IRS in 08 hyper-endemic upazila has been organized and conducted during April- May, 2012 & October- November, 2012 respectively. Before starting of IRS a series of activities has been done that includes collection of village wise previous five years (2008- 2012 yr), Kala-azar cases report of each hyper endemic upazila, selection of villages for blanket IRS, prepare logistics demand, recruitment of Spray man and Team leader, arrange 02 days training for Entomologist, Ento-technician, HI, AHI; 03 days training for Spray man & Team Leader, procurements of logistics and supply them to corresponding hyper endemic upazila as per their requirements including record, report and monitoring format. During selection of villages for blanket spray we considered cases and no. of HH in each village, such as if any village have more than 500 HH & 1- 3 cases in 2008- 2012 yrs they are selected for focal spray and if villages have 03 or more cases and HH is less than 500 they have been selected for blanket IRS.
Monitoring and Evaluation:

- Efficacy of IRS by entomological investigation: twice a year (May- June and October).
- Methods: vector density by light trap, bioassay and susceptibility status
- Observe the whole process & filled up the monitoring checklist in four tire from community level to central level during IRS

Table 2 showed the IRS performance at a glance

<table>
<thead>
<tr>
<th>District</th>
<th>Upazila</th>
<th>HH Target for IRS</th>
<th>No. of Villages covered</th>
<th>Total Deltamethrin used</th>
<th>Achievemen of Pre monsoon IRS</th>
<th>Achievement of Post monsoon IRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mymensingh</td>
<td>Muktagacha</td>
<td>33556</td>
<td>45</td>
<td>2181 Kg</td>
<td>33620</td>
<td>33233</td>
</tr>
<tr>
<td></td>
<td>Trishal</td>
<td>70933</td>
<td>67</td>
<td>4611 Kg.</td>
<td>75245</td>
<td>80582</td>
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<tr>
<td></td>
<td>Fulbaria</td>
<td>82747</td>
<td>61</td>
<td>5379 Kg.</td>
<td>91621</td>
<td>92627</td>
</tr>
<tr>
<td></td>
<td>Goforgaon</td>
<td>23241</td>
<td>90</td>
<td>3406 Kg.</td>
<td>54146</td>
<td>56566</td>
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<tr>
<td></td>
<td>Bhaluka</td>
<td>52876</td>
<td>37</td>
<td>3437 Kg.</td>
<td>53588</td>
<td>55598</td>
</tr>
<tr>
<td>Jamalpur</td>
<td>Madarganj</td>
<td>52396</td>
<td>25</td>
<td>1511 Kg.</td>
<td>23235</td>
<td>26450</td>
</tr>
<tr>
<td>Tangail</td>
<td>Nagorpur</td>
<td>9607</td>
<td>17</td>
<td>624 Kg.</td>
<td>9510</td>
<td>9607</td>
</tr>
<tr>
<td>Khulna</td>
<td>Terokhada</td>
<td>5774</td>
<td>11</td>
<td>375 Kg.</td>
<td>5514</td>
<td>5990</td>
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<tr>
<td>Total</td>
<td></td>
<td>353</td>
<td></td>
<td>21524 Kg.</td>
<td>346746</td>
<td>360659</td>
</tr>
</tbody>
</table>

- Focal- spray followed by Kala-azar Camp organized and conducted in 26 Upazilas and 15 Districts including 94 Camp has been organized and conducted.

Focal Spray & case search:

Under IVM Focal Spray (village level) and Active Case search through Kala-azar camp approach has been done. 1st round Focal spray and active case search camp organized and conducted during May- June, 2012 in 26 low endemic Upazilas and total 94 camps has been organized.

Goal: To eliminate Kala-azar from low endemic focus area through case search and focal spray.

Objectives:

1. To find out the Kala-azar focal area in low endemic Upazila
2. To find out Kala-azar and PKDL cases through camp approach in the identified focal area
3. To treat the detected cases for reducing the sources of KA
4. To do focal spray for insecticides in the identified areas
5. To create awareness on treatment seeking for KA and vector management

**Methodology:**
- Drafting of the protocol by the members of the core group
- Identification of focal area through record review
- Orientation of Civil Surgeon, UH&FPO, MO (DC), Entomologist, Ento. Technician etc. done to strengthen their capacity development to support the activities setting into the protocol
- Resource mobilization including logistics (insecticides, spray machine, transportation and other necessary materials)

**Implemented activities under Focal Spray & Kala-azar search Camp:**
A series of activities has been planned by following the methodology mentioned above to achieve the goals and objectives of the active case detection and integrated vector management in Kala-azar low endemic area. The implemented activities have been given below:

At the beginning of the preparation of the protocol for active case detection and integrated vector management a Kala-azar core group has been formed for drafting the proposal. The members of the core group sit together in a workshop to develop the protocol after a fruitful discussion within the core group members. After that a series of meeting has been organized to develop the protocol and finally a draft has been made for final approval. At last the final draft has been finalized for implementing a series of activities that will help to meet the goal and objectives of the active case detection and integrated vector management in Kala-azar low endemic area.

- Collection of monthly records and reviews them critically to identify the low endemic upazila has been done. After finalization of the list of low endemic upazila the Kala-azar core group will sit together with the list to select the upazila (List Pre Elimination Upazila) along with the focal person (consists of Entomologist and Ento. Technician) those who will search the Kala-azar cases for focal spray. In this regards a workshop will be organized and conducted with the participation of Kala-azar core group. After that one day orientation training will be held with the participation of the focal person of (Entomologist and Ento. Technician) for active and reported case search by using a preset format (Kala-azar case investigation) made by the Kala-azar core group or technical working group. Finally the focal person proceeds further for active and reported case search as a preparatory work of focal spray and Kala-azar camp.

- After completion of the search activities the micro-plan has been made for focal spray and camp. We considered 40 HH around each Kala-azar cases for focal spray as per WHO guide line, and a camp will be organized and conducted for each village. During each camp a team containing MO (DC), Lab. Technician, Entomologist, HA/ AHI will be
involved to make the camp successful for diagnosis and treatment of Kala-azar. In addition focal spray will be done during camp for each newly diagnosed Kala-azar cases as per WHO guideline mentioned above.

- A training has been organized and conducted with the participation of C.S, UH&FPO and MO (DC), Entomologist, Ento. Technician etc. to develop their capacity to manage the Kala-azar cases by diagnosing properly and treatment given accordingly to reach the goals and objectives of the protocol.
- A schedule of focal spray and camp activities including the duration and no. of camp along with the focal/ contact person has been made for successful implementation of the active case search and integrated vector management. Moreover a logistics demand has been made for smooth running of the focal spray and Kala-azar camp.

Distribution of LLINs at 08 hyper endemic Upazila:
In addition for consolidating the measures of interruption of Kala-azar transmission, distribution of long lasting insecticide impregnated net (LLIN) has been undertaken. Patients have been traced back from 2008 and all the households were given LLIN. One additional LLIN was donated along with one LLIN for each of the patients of the household.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>District</th>
<th>Upazila</th>
<th>Total KA &amp; PKDL cases (2008-2012)</th>
<th>No. of LLINs supplied</th>
<th>No. of LLINs distributed</th>
<th>Present Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mymensingh</td>
<td>Fulbaria</td>
<td>4403</td>
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<td>2</td>
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<td>1843</td>
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<td>4</td>
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<td>5</td>
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<td>Maderganj</td>
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<td>850</td>
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<td>20</td>
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<td>7</td>
<td>Tangail</td>
<td>Nagarpur</td>
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<td>300</td>
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<tr>
<td>8</td>
<td>Khulna</td>
<td>Terokhada</td>
<td>136</td>
<td>300</td>
<td>272</td>
<td>28</td>
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An important thrust of the program during the project period will be promoting the use of Long Lasting Insecticidal Nets (LLINs) to achieve the goals and objectives of the KEP. Areas consistently reporting high Annual Parasite Incidence (API) in all age-groups (indicating intra-domiciliary transmission) will be given priority in this regard, with a target of achieving 80 percent coverage. The success of this thrust will require effective Behavior Change Communication (BCC) strategies for proper use and demand generation. Current BCC activities lack focus in objectives, media, messages and target audiences; there is a lack of clear articulation of the behaviors to be changed and most BCC activities are input based with limited attention to desired outcomes. A BCC strategy and Action Plan will be prepared. LLINs would, in the first years, normally be distributed by the public sector free of charge (possibly through performance
contracts with NGOs), but it is expected that a progressively larger share of nets will be distributed through public-private initiatives (social marketing), with the government providing a partial subsidy, depending on household economy in a given area.

Goal:
- To ensure distribution of LLINs to Kala-azar and PKDL patients for reduction of human sand fly contacts and thus it will help to achieve the goal and objectives of KEP

Objectives:
- To reduce the transmission of Kala-azar from the PKDL cases
- To reduce mortality and morbidity from Kala-azar and other vector borne diseases in populations living under the conditions of moderate/high risk;
- Awareness building in the community
- Identification of new KA and PKDL cases

Plan of actions:
- Baseline data collection
- Case identification from 2008 to 2012
- Referral slip/treatment card modification and or ensure distribution to all enlisted Kala-azar & PKDL patient (both old and new patient)
- Need assessment
- Development of distribution strategy and Micro plan
- Development of BCC materials—(leaflet, brochure, etc)
- Procurement of logistics
- Active case search along with Union/Village wise campaign for distribution of LLINs among new and old cases
- Monitoring and evaluation and follow-up

Issues and Challenges:
There are several issues regarding operational implementation of the LLINs program. While they vary from country to country, some of the major issues to be considered are:

- Commercial availability of ITNs or LLINs at central or local level
- Establishing specifications for institutional procurement of nets and their quality control
- Production of nets especially of LLINs including transfer of LLIN technology
- Regulation of taxes/tariffs
- Ensuring availability of insecticide formulations especially in small packaging for single/retail use
- Preparing a national database on the manufacturers/suppliers of nets and insecticides, providing technical and institutional support including developing local guidelines on (re-)treatment of nets, their use, upkeep, washing, environmental safety and human toxicity
- Partnerships within healthcare services, with non-health sectors, NGOs, aid agencies, industry and research organizations are loose at the best
Databases on potential partners and networking with them at the local, regional, national and international levels are required.

Advocacy for ITN promotion and resource mobilization in favor of this intervention and generation of awareness among communities and those at risk need significant attention.

Need to take a policy decision to include ITNs/LLINs in their vector management strategy.

It is also necessary for country-specific national ITN scaling up plans to be drawn up and implemented.

1st Round LLINs distribution and promotion strategy:
Selection of Upazila:
All endemic Upazila would be selected for distribution of LLINs. At first we are considering Fulbaria Upazila as a pilot Upazila for distributing LLINs on 15th September, 2012 then all the hyper-endemic and moderate endemic upazilas would be selected for distribution of LLINs throughout the 2012-2013 financial years.

Client selection for LLINs distribution:
All Kala-azar & PKDL patients enlisted since 2008 to till to date will be eligible for distribution of LLINs. Village wise Clint list has been prepared & develop for each upazila before distribution.

LLINs Program Stages:

- **Catch-up:** Make sure that everyone gets a net
- **Hang-up:** People hang & use the nets
- **Keep-up:** Replace old nets, give nets to new people

Distribution Strategy:

1.) Union/ Village wise approaches would be followed to distribute LLINs. Patient of KA & PKDL will be informed and referral cards/ treatment card would be distributed before inauguration of the distribution camp & field staff would ensured them to come to the distribution centre with taking referral cards/ treatment cards with them during the LLINs distribution campaigning. An advocacy meeting at the upazila level would be organized to create mass awareness on LLINs with the participation of local leaders, local elites and other stakeholders (such as personnel from teachers, agriculture dept., security dept., businessman etc.) followed by inauguration of the LLINs distribution campaigning would be organized.
2.) Union wise booth would be prepared for distribution point and HIs and HAs would be responsible for overall management of each booth.

3.) One LLIN for each patient and extra one for his/her family members has to be distributed. If there is any family having more than two patients in that case extra one LLIN has to be given for each patient.

Follow up at LLINs:
LLIN use should be follow up by the respective healthy assistant/ AHI as per their monthly field tour. This follow up would be monitor by the HI & SI at the union level. At the upazila level UH & FPO & at the district level C/S would be responsible for monitoring the whole distribution & follow up of LLIN. At the central level Director, Disease Control & Line Director, CDC, and AD, DD, DPM, Kala-azar, Consultant (Kala-azar) and MO (Kala-azar) would monitor and supervise time to time to ensure the LLINs distribution and its follow-up.

BCC activities before & after LLINs distribution:
- BCC materials like leaflet, poster, banner, sticker etc has to be developed before distribution of LLIN.
- All BCC materials has be distributed & displayed 1 - 2 days before distribution of LLIN.
- Miking at the community level would be done before LLINs distribution campaign at the union/village level.
- Need to ensure IPC before and after organizing LLINs distribution campaign.

How to Use and Care for Nets:
- Handle the nets gently to avoid tearing them
- Fold/ tie up the net during the day to avoid damage
- Regularly inspect the net for holes; repair holes, if found
- LLINs last for three to five years or 20 washes, but may expire sooner if washed too often
  - Wash only when very dirty, no more than a few times a year
  - Wash nets with gentle soap, NOT detergent
  - Dry nets in the shade—no sun because it will destroy the chemical
- Keep LLINs away from smoke, fire, direct sunlight

Routine LLINs Distribution:
After completion of 1st round, the LLINs would also be kept available through routine services like antenatal care (ANC), EPI session etc. An approval by the UH&FPO and MO (DC) is essential during routine distribution of LLINs to the old and new Kala-azar and PKDL patients.

Record keeping and reporting:
Record Keeping:
A register has to be maintained during mass and routine distribution of LLINs separately for prevention of misuse and proper reporting of Kala-azar and PKDL cases. UH&FPO and MO (DC) will check the register regularly to prevent the misuse of LLINs.

**Reporting:**
UH&FPO is responsible for prepare the report and also to send the report to the central level that is office of the DPM, KEP, CDC, DGHS, Mohakhali, Dhaka.

**Environmental management (EVM):**
Environmental management refers to the modification of environmental factors to minimize vector propagation and reduce man-vector contact. In case of sand fly, the EVM methods are generally directed at the elimination of breeding and resting sites in and around houses.

**People in villages can do the following activities for environment management:**
- Walls and plinths of dwellings and cattle sheds should be plastered regularly to close cracks and crevices (if IRS done, after 6 months of IRS).
- The side walls of troughs should be plastered.
- Cattle shed floors should be cleaned at regular interval.
- Plant extracts, such as neem may be applied to cracks and crevices.
- Rooms should be kept clean and airy.
- Various household materials should be kept in orderly fashion and containers used for storing food grain should be kept covered so that sand flies do not get resting sites.
- Loose soil of cattle shed rich in organic materials should be removed daily.
- Heaps of rubbish and other probable breeding sites should be eliminated by cleaning regularly.

**Surveillance**
It includes patient and vector surveillance. We have an established system of monthly collection of data on suspected and detected PKA and PKDL, drug compliance and KA death. There is scope to strengthen the disease surveillance in terms of generation, transmission, analysis and response.
Supervision, Monitoring and Evaluation:
Routine monitoring, periodic assessment and evaluation were done by the program at all levels to ensure implementation as per plan. A set of objectively verifiable indicators will be used to measure progress and assess the achievement of elimination program in line with regional strategy. External independent evaluation will be done to assess the progress and thereby indicate necessary modification in strategies of program implementation. World Health Organization or any other competent authority will do external evaluation.

Operational Research:
In last few years, a number of researches have been conducted on different aspects of Kala-azar. It is encouraging that, many scientists of home and abroad is getting interest in this field. The important ones include the various types of drug trial. Some important operational research has been mentioned below to reach the goal of the Kala-azar elimination program:

- Estimation of disease burden and vector density
- Assessment of best approaches to increase awareness about Kala-azar and its vector
- Improving the care seeking behavior of the affected population to maximize the utilization of available services for the diagnosis and treatment of Kala-azar/ PKDL
- Pharmacovigilance
- Evaluation of diagnostics, drugs and insecticides recommended for the Kala-azar elimination program
- Evaluation of interventions for vector control
- Access to interventions for Kala-azar
- Maximizing utilization of all available resources for Kala-azar elimination through effective public private partnerships
- Exploring the best mechanism to make the surveillance system responsive to specific situation that may prevail in an endemic area

Impact of Deltamethrin 5% WP for controlling Kala-azar vector by Indoor Residual Spraying in hyper endemic upazila of Bangladesh
Introduction
There are different vector borne diseases found in Bangladesh, Kala-azar is one of them. It is causing both morbidity and mortality. Now it has spread to 26 out of 64 districts of the country. For vector control, Indoor Residual Spraying (IRS) with insecticide was taken as one of the three methods of Integrated Vector Management (IVM) and also treatment of cases. With this in view, after performing all the official formalities, Indoor Residual Spraying started in April 2012 as 1st round and 2nd round was performed in October, 2012 the program was launched to kill the Vector of Kala-azar and thus eliminate the disease.

Operation area
- Indoor Residual Spraying (IRS) was conducted in Fulbaria, Trishal, Bhaluka, Goforgaon and Muktagacha of Mymensingh District; Mathergonj of Jamalpur District; Nagorpur of Tangail District and Terokhada of Khulna District as hyper-endemic upazila.

Methodology:
Preparatory activities:
- Selection of sprayed villages, Selection of houses according to GR, Manpower from Disease Control unit and local people, Training for all levels, logistics, Baseline case and Entomological survey.
- Susceptibility test: Susceptibility tests were conducted according to WHO methods. All the logistics were used as WHO recommendation. WHO test kits were used.

Spraying Activities:
- Deltamethrin 5% WP was sprayed. The dose was 25 mg/ square meter (m²). Insecticide was sprayed up to 6 feet from the floor of the walls. Program squads, each comprised of 5 spray men and one squad leader. IRS was conducted in Pre-monsoon (April/12) and Post-monsoon (October/12)

Entomological activities carried out during the operation period
- Collections of sandflies were made in both the sprayed and unsprayed villages with in 1st month. Collection records were kept in proper forms. Collected sand flies from unsprayed villages were used for bioassay tests in the next morning. Sandflies searches were made to see the effectiveness of spraying with Deltamethrin, in each Upazila 5 Unions, one village from each union, each surveyor 5 human dwellings and 3 cattle sheds from one village, were searched for sand flies in the morning and evening. One technician spent 12 minutes for one human dwelling/ cattle shed.

Bioassay test:
- The main activity of the spraying operation, the bioassay tests were started after spraying within 1st month. This was done so, to see the residual effectiveness of Deltamethrin 5%WP on the walls of houses made of different materials (mud, brick, tin and wood). The bioassay test was carried out as per WHO instruction and methodology.

Results:
- Susceptibility test: The tests showed 100% mortality sand fly within 8 hours.

Baseline selected for sprayed villages
- Average 227 sand flies were caught in human dwellings & the collection rate was average 7.57 man 'hour'. and average 275 sand flies were caught in the cattle sheds & the collection rate was average 15.35 man 'hour'.

Annual Report Book CDC 2012
**Baseline selected for unsprayed villages**

- Average 233 sandflies were caught in human dwellings & the collection rate was 7.77 man\textsuperscript{1} hour\textsuperscript{-1} and 306 sand flies were caught in the cattle sheds & the collection rate was 17.03 man\textsuperscript{1} hour\textsuperscript{-1}.

**Sprayed villages:**

- After 1\textsuperscript{st} round spraying no sand flies were caught in human dwellings & the collection rate was 0 man\textsuperscript{1} hour\textsuperscript{-1} and average 1.75 sandflies were caught in the cattle sheds & the collection rate was 0.10 man\textsuperscript{1} hour\textsuperscript{-1}.

**Unsprayed villages:**

- Average 233 sandflies were caught in human dwellings & the collection rate was 7.75 man\textsuperscript{1} hour\textsuperscript{-1} and 311 sandflies were caught in the cattle sheds & the collection rate was 17.29 man\textsuperscript{1} hour\textsuperscript{-1}.

**Sprayed villages:**

- After 2\textsuperscript{nd} round spraying no sandflies were caught in human dwellings & the collection rate was 0 man\textsuperscript{1} hour\textsuperscript{-1} and 2.75 sandflies were caught in the cattle sheds & the collection rate was 0.25 man\textsuperscript{1} hour\textsuperscript{-1}.

**Unsprayed villages:**

- Average 230 sand flies were caught in human dwellings & the collection rate was 7.68 man\textsuperscript{1} hour\textsuperscript{-1}. 296 sand flies were caught in the cattle sheds & the collection rate was 16.14 man\textsuperscript{1} hour\textsuperscript{-1}.

**Bioassay test after 1\textsuperscript{st} & 2\textsuperscript{nd} round:**

- The bioassay tests were shown effective results (98-100%) in 1\textsuperscript{st} & 2\textsuperscript{nd} round spraying (April/ 12 & October/ 12) on different types of building materials.

**Discussion:**

- We observed that 1\textsuperscript{st} & 2\textsuperscript{nd} round spraying were effective if compared with the data of baseline and unsprayed areas. Sand flies that rest indoors can be effectively controlled by spraying the inside surfaces of walls with residual insecticides (WHO 1997).

**Conclusion:**

- Several rounds of Indoor Residual Spraying can be controlled sandflies for a long period and thus control the disease (Kala-azar).

**Establishment and Functioning of Surya Kanta Kala-azar Research Center (SKKRC), Mymensingh, Bangladesh:**
Surya Kanta Hospital (SK Hospital) is the old hospital from where Mymensingh Medical College Hospital (MMCH) has been shifted to new premises at the city center. There are about four old fashioned buildings (mostly un-utilized) currently used for services to cases of TB and other infectious diseases. The ministry of Health & Family Welfare (MOHFW), Government of Bangladesh (GOB), has allocated one building as an outreach center of Bangladesh Institute of Tropical and Infectious Diseases (BITID) for treatment and research of Kala-azar cases through a government order (Ref # MONFW/Hosp-2/Misc-14/2007/799, dated 30-12-2008).

The building of the SK hospital which had been allocated was a severely damaged (>100 years old, renewable) two-storey old building with about 8000 square feet of usable space per floor. Drugs for Neglected Diseases Initiative (DNDi), a voluntary non-profit organization with its head office in Geneva, through an MOU with the DG, DGHS, contributed necessary funds for the renovation of the designated building of the SK Hospital. The renovation work was completed in 2009 and handed over to the MMCH in 2010. Around the same time Japan International Co-operation Agency (JICA) had an MOU signed with icddr,b to establish a center of excellence for neglected tropical diseases at icddr,b premises. DNDi established communication with JICA at home and in Japan and could convince JICA to donate a portion of the funds for the SKKRC. Since then JICA continued to contribute towards development of the research infrastructure in collaboration with icddr,b.

There are now two general wards, accommodating up to 20 general beds. There are also necessary doctor/nurses rooms and toilets attached to individual wards. There is a small room for emergency and two other similar rooms for out-patient services. The laboratory facilities have been accommodated in one large and four small rooms. JICA in collaboration with icddr,b have already provided various high-tech instruments for establishment of a BSL-2 laboratory at the center. SKKRC now equipped with freezer room, molecular lab, ELISA lab, Culture lab and Microscopy lab etc. Some more equipment will be required for performing biochemistry and hematological tests for the in and out patients of Kala-azar and are expected to be provided by the GoB. The fully functioning laboratory is expected to offer laboratory services and research support for researchers on all infectious diseases in addition to Kala-azar in the greater Mymensingh district.

In KRC two medical officers, three nurses, one laboratory technologist, one MLSS and one security guard are now working in SKKRC hospital. It took a relatively long lag time before starting because of various reasons. SKKRC have started offering referral and routine services for VL and PKDL cases since 1st December, 2011 for both indoor and outdoor cases. SKKRC has following services available now:-

1. Outpatient services for Kala-azar cases six days per week
2. Inpatient services seven days per week
3. Tertiary referral services and routine care for Kala-azar cases
4. Special Investigations for Kala-azar (six days per week)- ‘rk39’ for Kala-azar, ICT for Malaria, splenic aspiration for LD bodies, bone marrow biopsy and skin biopsy for LD body.
5. Most types of anti Leishmania drugs including the Amphotericin B are available.
6. Routine investigations and reporting on samples are done in MMCH
SKKRC is currently headed by Director, Disease Control at the DGHS as outlined in the Organizational Structure. Director, Mymensingh Medical College Hospital is working as the local administrative head of the SKKRC and an Assistant Professor of Pathology (Dr. Motiur Rahman Bhuiyan) is working as head of the center. Other government and non-government institutions from Bangladesh and other countries may be involved with the activities of SKKRC to achieve the goal and objectives, in order to make it a Centre of Excellence in Kala-azar and other tropical infectious diseases. The following activities are expected from SKKRC in the near future as detailed in the concept paper-

1. The centre will assist the national government towards the elimination of Kala-azar from the country.
2. Will provide clinical (diagnostic & therapeutic) services for cases of Kala-azar and PKDL cases in the region.
3. Will provide training of different levels of health care workers (doctors, nurses, laboratory technologists and paramedics) involved in the elimination program.
4. Will develop capacity for undertaking clinical and basic research to support evidence based implementation of methods towards the elimination of Kala-azar from the country.
5. Will support the clinical and epidemiological research in the field of other tropical diseases in the region.
6. Will mobilize the community towards elimination of KA from the region

**Challenges of KEP:**

- Inadequate Budget Allocation
- Manpower Constraints
- Inadequate dedicated staff
- Lack of interest by PHC Medical Officers
- Prolonged treatment schedules
- Non-compliance by the patients
- Inadequate information on vector bionomics
- Asymptomatic carriers
- Chronic manifestation
- Lack of awareness on Kala-azar

**Future Plan of Action:**

- To strengthen severe Kala-azar treatment support by providing refresher training
- To improve data quality by involving private hospitals and practitioners
- To increase access and quality diagnostics facility
- To conduct more operational research to see the vector density, drugs susceptibility, etc.
- Strengthen community ownership by involving & participation of community people in different activities
- Raised the policy and advocacy issues to policy maker for any change of existing policy and or implement any new policy after taking prior approval
- Strengthen surveillance, monitoring and evaluation activities

**Multi-sectoral collaboration:**

**MSF:**

**WHO:**

**PATH:**

### Impact Assessment of major activities:

<table>
<thead>
<tr>
<th>Input/Activities done</th>
<th>Immediate Output</th>
<th>Outcome</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training on KEP for MO, Staff Nurse and HI</td>
<td>584 MO, 584 SSN and 520 HI has been trained on KEP</td>
<td>ALL the trained MO &amp; SSN are now able to manage the PKA and PKDL cases. In addition all the HIs are able to conduct on awareness, IRS, monitoring and surveillance activities</td>
<td>PKA and PKDL cases are now diagnosed earlier and achieve with a good treatment compliance</td>
</tr>
<tr>
<td>Two round both pre &amp; post monsoon IRS</td>
<td>Two round spraying done with safe and correct application in 08 hyper endemic upazilas</td>
<td>Spraying covered more than 90% HH of the 08 hyper endemic upazilas and killed sand fly with a mortality of more than 95%.</td>
<td>Block the transmission of disease agent (foci) from one individual to other by reducing the vector sand fly and finally the PKA and PKDL cases will be reduced in number.</td>
</tr>
<tr>
<td>Distribution of LLINs</td>
<td>LLINs have been distributed to all PKA and PKDL cases from 2008 to 2012 in 08 hyper endemic upazilas.</td>
<td>Correct use of LLINs by the PKA and PKDL cases causes blockage of disease transmission directly and also kills the vector sand fly.</td>
<td>Reduction of PKA and PKDL cases in 08 hyper endemic upazilas</td>
</tr>
<tr>
<td>Case search by organized camp in 26 upazilas</td>
<td>Identification of suspected PKA &amp; PKDL cases and referred them to Camp</td>
<td>Confirm diagnosis of suspected cases as early as possible by rK 39 test and treat them accordingly</td>
<td>Reduce case mortality and morbidity, and finally reduction of PKA &amp; PKDL cases.</td>
</tr>
</tbody>
</table>
Funding and collaboration:

Government:
Health, Population & Nutrition Sector Development Programme (HPNSDP)

<table>
<thead>
<tr>
<th>Financial year</th>
<th>Source of fund</th>
<th>Released (TK in lac)</th>
<th>Utilized (TK in lac)</th>
<th>% of utilization</th>
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</thead>
<tbody>
<tr>
<td>January–June' 2012</td>
<td>RPA</td>
<td>935.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GOB</td>
<td>317.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1253.18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July–December' 2012</td>
<td>RPA</td>
<td>685.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GOB</td>
<td>239.94</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Total</td>
<td>925.17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Technical support:
WHO, MSF, PATH, etc.

Conclusion:
A series of activities has been implemented to achieve the goal and objectives of Kala-azar elimination program and that needs to continue till 2015. In this regard surveillance and monitoring activities need to be strengthening more to identify any gaps and also to take the necessary corrective measures on time. By this way KEP in Bangladesh will be able to achieve the goals and objectives. In addition a multi-sectoral approach and partnership activities with the other national and international NGOs and donor organizations like WHO, MSF, PATH, One World Health etc. will help the KEP sustainable and will make it successful.
Emerging & Re-emerging Disease (ERD) Control including Rabies Elimination Program

I. Introduction:
In the last century there had been advances in medicine. This had led to many diseases being controlled and even small pox being eradicated from the face of the Earth. However, new diseases were discovered and vanquished ones are returning. These are called emerging & re-emerging diseases. To protect ourselves against emerging diseases the essential first step is effective global disease surveillance to give early warning of emerging infections. Emerging & Re-emerging Disease Control Program (ERD) is a subcomponent of Communicable Disease Control division of DGHS. The program is currently emphasizing mainly on rabies, anthrax, nipah, chikungunya and antimicrobial resistance. ERD has taken initiative to eliminate rabies from the country by the year 2020. Joint collaborative action plan is being formulating to combat zoonoses under ERD.

II. Emerging Diseases:
Emerging diseases are diseases that have newly appeared in a population or have existed but are rapidly increasing in incidence or geographic range. They include avian influenza H5N1, SARS, HIV/AIDS, Ebola, Lassa, Lyme disease and many more. Some of these diseases are new hence our body posses no defense mechanism against them.

III. Re-emerging Diseases:
Re-emerging diseases are age-old diseases that have increased its prevalence again. In Bangladesh, the diseases currently dealing under this program are namely Rabies, Anthrax, Nipah, antimicrobial resistance, Chikungunya and newly emerging diseases. Bangladesh has joined the international club of responding to the emerging diseases during last five years demonstrating appreciable competency in dealing with those. It has attained good capacity in investigation of case and outbreak, detection of causative agents, containment of outbreak and management of the cases.

IV. Rabies Elimination Program:
Rabies is a neglected topical zoonotic disease, which claims more than two thousand lives annually in the country. Now-a-days no other single infectious disease is responsible for so many deaths like Rabies. The disease is nearly 100% fatal but 100% preventable by taking appropriate preventive measures. Once the disease manifests there is no curable treatment. On the other hand, the disease can be eliminated through various ways and means. There are about two to three hundred thousand dog bites annually and 95% of rabies cases in the country are due to dog bite. Only suspected rabid dogs are thought to be responsible for rabies as dogs rarely can remain as healthy reservoir. Other animals that occasionally transmit the in Bangladesh are cat, fox, monkey, jackal, and mongoose. Other than humans, cattle heads numbering more than twenty five thousand (approx) succumb to rabies every year. National strategic plan for rabies elimination by the year 2020 has been adopted. A number of activities are being currently conducting to achieve the goal such as National Rabies Survey (NRS), setting up of National Rabies Prevention and Control Center (NRPCC), District Rabies Prevention Control Center (DRPCC), initiation of Mass Dog Vaccination (MDV), dog population management (DPM) etc.

A. Objectives:
To eliminate human rabies transmitted by dog in Bangladesh by 2020 and to verify and maintain rabies free status of the country.

**B. Activities done:**

- **National Rabies Survey (NRS):**
  NRS was conducted all over the country from 600 cluster areas, each cluster comprises 300 household and a total of 180,000 household samples were collected. This survey shall reveal the number of total dog population, number of annual dog bites and rabies cases.

- **Setup of National Rabies Prevention and Control Center (NRPCC):**
  ‘National Rabies Prevention and Control Center’ (NRPCC) has been established at Infectious Diseases Hospital (IDH), Mohakhali, Dhaka. A total of 350-450 dog-bite patients have been attending daily in this center. This is the national model dog-bite
management center. Anti-Rabies Vaccine (ARV) and Rabies Immunoglobulin (RIG) are given free of charge from this center.

Category III bite patients
• **Districts Rabies Prevention and Control Center (DRPCC):**
  Since beginning a total of 65 of Rabies Prevention and Control Center (DRPCC) have been established at 64 districts in the country, where dog bite patients are getting modern dog bite management facilities. Animal bite cases, within the district are attending the facility and receiving free ARV and RIG.

Map: DRPCC established and functioning in 65 centers of 64 districts

• **Mass Dog Vaccination (MDV):**
  Mass dog vaccination was first piloted at Cox’s Bazar Sadar municipality area in 2011, where 2nd round of MDV was also conducted in 2012. Utilizing lesions learned from Cox’s Bazar updated and revised version of 2nd and 3rd MDV were
piloted at Satkhira and Dhamrai, where the coverage were about 80%. Large scale MDV activities were scaled up to 37 districts of four (Dhaka, Rajshahi, Sylhet and Rangpur) divisions. Our ultimate aim of conducting MDV is creating herd immunity among dog population by ensuring over 70% coverage. MDV activities in 37 districts are given below. The achievement is given in Table:

**MDV coverage in 4 divisions in 2012:**

<table>
<thead>
<tr>
<th>Districts</th>
<th>Wards</th>
<th>Dog Counted</th>
<th>Dogs Vaccinated</th>
<th>Coverage in %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Rangpur Division</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Rangpur</td>
<td>15</td>
<td>2203</td>
<td>1907</td>
<td>86.6</td>
</tr>
<tr>
<td>Gaibandha</td>
<td>9</td>
<td>705</td>
<td>538</td>
<td>76.3</td>
</tr>
<tr>
<td>Kurigram</td>
<td>9</td>
<td>1105</td>
<td>845</td>
<td>76.5</td>
</tr>
<tr>
<td>Lalmonirhat</td>
<td>9</td>
<td>886</td>
<td>733</td>
<td>82.7</td>
</tr>
<tr>
<td>Nilphamari</td>
<td>9</td>
<td>1668</td>
<td>1353</td>
<td>81.1</td>
</tr>
<tr>
<td>Dinajpur</td>
<td>12</td>
<td>2036</td>
<td>1601</td>
<td>78.6</td>
</tr>
<tr>
<td>Panchagarh</td>
<td>9</td>
<td>2036</td>
<td>815</td>
<td>40.0</td>
</tr>
<tr>
<td>Thakurgaon</td>
<td>12</td>
<td>1150</td>
<td>950</td>
<td>82.6</td>
</tr>
<tr>
<td><strong>Total in 8 districts</strong></td>
<td>84</td>
<td>10784</td>
<td>9001</td>
<td>83.5</td>
</tr>
<tr>
<td><strong>2. Rajshahi division</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naogaon</td>
<td>9</td>
<td>1627</td>
<td>1485</td>
<td>91.3</td>
</tr>
<tr>
<td>Chapai Nawabganj</td>
<td>15</td>
<td>1298</td>
<td>1054</td>
<td>81.2</td>
</tr>
<tr>
<td>Bogra</td>
<td>21</td>
<td>3012</td>
<td>2591</td>
<td>86.0</td>
</tr>
<tr>
<td>Joypurhat</td>
<td>9</td>
<td>821</td>
<td>621</td>
<td>75.6</td>
</tr>
<tr>
<td>Natore</td>
<td>9</td>
<td>1257</td>
<td>954</td>
<td>75.9</td>
</tr>
<tr>
<td>Sreajganj</td>
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<td>1662</td>
<td>1446</td>
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</tr>
<tr>
<td>Pabna</td>
<td>15</td>
<td>1125</td>
<td>1084</td>
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</tr>
<tr>
<td>Rajshahi</td>
<td>12</td>
<td>5172</td>
<td>4397</td>
<td>85.0</td>
</tr>
<tr>
<td><strong>Total in 8 districts</strong></td>
<td>105</td>
<td>15974</td>
<td>13632</td>
<td>85.3</td>
</tr>
<tr>
<td><strong>3. Sylhet division</strong></td>
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<tr>
<td>Hobiganj</td>
<td>9</td>
<td>575</td>
<td>524</td>
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<tr>
<td>Moulvibazar</td>
<td>9</td>
<td>454</td>
<td>429</td>
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<tr>
<td>Sunamganj</td>
<td>9</td>
<td>629</td>
<td>560</td>
<td>89</td>
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<tr>
<td><strong>Total in 3 districts</strong></td>
<td>27</td>
<td>1658</td>
<td>1513</td>
<td>91.3</td>
</tr>
<tr>
<td><strong>4. Dhaka Division</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N. ganj</td>
<td>27</td>
<td>4243</td>
<td>3323</td>
<td>78.3</td>
</tr>
<tr>
<td>Gazipur</td>
<td>9</td>
<td>1826</td>
<td>1570</td>
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<tr>
<td>Narshingdi</td>
<td>9</td>
<td>1320</td>
<td>1250</td>
<td>94.7</td>
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<td>Shariatpur</td>
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<td>1055</td>
<td>976</td>
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<tr>
<td>Rajbari</td>
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<td>346</td>
<td>313</td>
<td>90.5</td>
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<td>Madaripur</td>
<td>9</td>
<td>770</td>
<td>625</td>
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<td>Gopalganj</td>
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<td>611</td>
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<td>Foridpur</td>
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<td>1059</td>
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<tr>
<td>Tangil</td>
<td>21</td>
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<td>956</td>
<td>80.8</td>
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<tr>
<td>Kishoreganj</td>
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<td>1341</td>
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<tr>
<td>Mymensingh</td>
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<td>1761</td>
<td>1510</td>
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<td>Netrokona</td>
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<td>1350</td>
<td>1173</td>
<td>86.9</td>
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<tr>
<td>Sherpur</td>
<td>9</td>
<td>755</td>
<td>635</td>
<td>84.1</td>
</tr>
<tr>
<td>District</td>
<td>MDV Count</td>
<td>New MD Count</td>
<td>Total MD Count</td>
<td>MDV %</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
<td>--------------</td>
<td>----------------</td>
<td>-------</td>
</tr>
<tr>
<td>Jamalpur</td>
<td>9</td>
<td>1125</td>
<td>1024</td>
<td>91.0</td>
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<td>Tongi</td>
<td>21</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>207</strong></td>
<td><strong>25257</strong></td>
<td><strong>21554</strong></td>
<td><strong>85.3</strong></td>
</tr>
<tr>
<td><strong>Grand total in 37 districts</strong></td>
<td><strong>423</strong></td>
<td><strong>53673</strong></td>
<td><strong>45700</strong></td>
<td><strong>85.1</strong></td>
</tr>
</tbody>
</table>

Photo: MDV activities 2012
Map: MDV completed 37 district municipalities in Dhaka, Rajshahi, Rangpur and Sylhet divisions (except Sylhet CC)
Workshop:
A number of both national and international workshops were held in 2012. Program specialists, public health and rabies experts from home and abroad attended the workshop. The aims of the workshops were raising awareness about rabies (ACSM), capacity building in terms of policy development and implementation.
International Workshop on Rabies, BRAC Inn Center, Dhaka

Rabies National Steering Committee meeting

National workshop and orientation meeting on rabies
Effect of IDRV:

Before introduction of tissue culture vaccine (TCV) animal bite cases were used to manage by locally produced nerve tissue vaccine (NTV) until October 19, 2011. Communicable Disease Control unit of DGHS initiated intra-dermal use of TCV for the first time in the country in July, 2010 at IDH, Dhaka. Gradually rabies prevention and control center established in all 64 districts in the country by 2012. Number of patients attending national rabies prevention and control center, located at IDH, Dhaka is ranging from 350-450 daily, while the figure was 175-200 before introduction of IDRV. Now, there are other more 64 rabies prevention and control centers offering animal bite management services at 64 districts. High number of patient's attendance rate has been observed in these days due to strengthening ACSM activities. The number of death due to rabies gradually declining in the recent years, which could be due to direct reflection of anti-rabies activities in the country.
C. Guiding principles:

Dog bite is a primary source of human rabies and depopulation of dogs as a part of human rabies prevention is not feasible due to existing socio-cultural factor. Human rabies elimination is possible through promotion of responsible dog ownership, dog bite management, mass dog vaccination and animal birth control program with partnership approach.
Animal bite is a medical urgency that requires thorough washing of wound as soon as possible, which is an important step needs to be promoted at community level through advocacy, awareness and education. It is the important part of wound management. Post-exposure rabies prophylaxis needs medical attention according to WHO guidelines and it should be easily accessible, affordable and available.

D. Strategic elements:

- Prevention: Introduce cost-effective public health intervention (dog population management, vaccination, ownership promotion; ACSM) techniques to improve accessibility, affordability and availability of post-exposure prophylaxis in human.

- Promotion: Improve understanding of rabies through advocacy, awareness, education and operational research.

- Partnership: Provide coordinated support for anti-rabies drive with the involvement of community, civil society, government and non-government sectors and international partners.

- Sustained political commitment at all levels and sectors of the government for adequate mobilization of human and financial resources

D. Strategic actions:

Human Health Component

- To promote early and appropriate post-exposure rabies prophylaxis to patients exposed to rabid or suspected rabid Dog.

- Training of professionals in animal (Dog) bite management

- Introduction of cost-effective vaccination schedule.
• To encourage pre-exposure prophylaxis of high risk groups (Health care providers dealing with animal bites, animal handlers, laboratory workers etc).

• To promote operational research to introduce cost-effective immuno-biological and shorter regimens of PEP.

**Animal Health Component**

• To carry out dog population survey and develop a strategic plan for mass dog vaccination campaign and dog population management with the involvement of national and international NGOs and professional organizations.

• To implement coordinated elimination program for human rabies through mass vaccination of dogs and dog population management.

• To promote operational research to introduce cost-effective tools and techniques in order to improve dog vaccination coverage and dog population management.

**E. Component involving inter-sectoral coordination:**

a) **Community involvement**

• To promote timely and appropriate animal bite management including wound washing with soap/detergent water for 15 minutes.

• To promote responsible dog ownership

• To help in mass vaccination of community/stray dogs

• Make awareness amongst the mass people against Rabies by ACSM.

b) **Strategy implementation**

c) **Policy and Planning**

d) **Defining area specific strategy taking in consideration local needs and socio-cultural acceptability**

e) Sustained and continuous political commitment.

f) Implementation of rabies elimination program by MOHFW with active collaboration with MOFL and MOLGRD

g) Assigning of roles and responsibilities to each sector

h) Identifying areas where the resources can be shared by developing inter-sectoral coordination

i) Mobilization of human and financial resources

**F. Accomplishment in 2012**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Activities</th>
<th>Perio d</th>
<th>Organization Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Update of IDRV Status in IDH, Dhaka as well as in 64 districts of Bangladesh</td>
<td>2012</td>
<td>CDC</td>
</tr>
<tr>
<td>2</td>
<td>Refreshers Training of doctors and nurses of 42 district and New training of all other districts</td>
<td>2012</td>
<td>CDC</td>
</tr>
<tr>
<td>3</td>
<td>Revised and update of National guideline of Dog bite management</td>
<td>2012</td>
<td>CDC</td>
</tr>
<tr>
<td>No.</td>
<td>Activity Description</td>
<td>Year</td>
<td>Organization</td>
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<td>-----</td>
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</tr>
<tr>
<td>4</td>
<td>Development of Rabies elimination Strategic plan</td>
<td>2012</td>
<td>CDC</td>
</tr>
<tr>
<td>5</td>
<td>National Rabies Survey (NSR) all over Bangladesh</td>
<td>2012</td>
<td>CDC</td>
</tr>
<tr>
<td>6</td>
<td>District level workshop on prevention and control of rabies at 64 districts</td>
<td>2012</td>
<td>CDC</td>
</tr>
<tr>
<td>7</td>
<td>Meeting of the National steering committee on Rabies</td>
<td>2012</td>
<td>MHFW</td>
</tr>
<tr>
<td>8</td>
<td>Meeting of Technical Working Group (TWG)</td>
<td>2012</td>
<td>CDC</td>
</tr>
<tr>
<td>9</td>
<td>Piloting of rabies control activities in Cox’s Bazar, Satkhira and Dhamrai (Mass dog vaccination, PEP-IDRV, awareness campaign, house hold and dog survey)</td>
<td>2011-12</td>
<td>CDC, WHO, WSPA, Obhoyaronno</td>
</tr>
<tr>
<td>10</td>
<td>Setup of National Rabies Prevention and Control Center (NRPCC) in IDH, Dhaka. 58298 vial ARV is given</td>
<td>2012</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td></td>
<td>One day Orientation meeting of UHFPO, ULO on Prevention and Control of Rabies</td>
<td>2012</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td></td>
<td>Setup of District Rabies Prevention and Control Center (DRPCC) in 65 centers of 64 Districts and 5o, 380 vials ARV is given.</td>
<td>2012</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td></td>
<td>Procurement of 10,000 Vial Rabies Immunoglobulin (RIG )</td>
<td>2012</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td></td>
<td>Started Supply of Tissue Culture Vaccine (TCV) in NRPCC &amp; DRPCC at free of cost</td>
<td>2012</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td></td>
<td>Dog sterilization piloting</td>
<td>2012</td>
<td>Obhoyaronno, HSI LGRD, FAO, DCC</td>
</tr>
<tr>
<td></td>
<td>Mass Dog Vaccination (MDV) 37 districts of 04 (Dhaka, Rajshahi, Sylhet &amp; Rangpur) division (mass dog vaccination, PEP-IDRV, awareness campaign, house hold and dog survey)</td>
<td>2012</td>
<td>CDC, WHO, WSPA, Obhoyaronno</td>
</tr>
<tr>
<td></td>
<td>Observation of world rabies day</td>
<td>2012</td>
<td>MHFW, MFLS, MLGRD, WHO, FAO, APCRIB, BARA, local pharmaceuticals, Obhoyaronno</td>
</tr>
<tr>
<td></td>
<td>Media sensitization</td>
<td>2012</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td></td>
<td>International Workshop on Rabies Elimination in Bangladesh</td>
<td>2012</td>
<td>CDC, DGHS; WSPA</td>
</tr>
</tbody>
</table>
19 Multisectoral collaboration 2012 MHFW, MFLS, MLGRD, WHO, FAO, WSPA, HSI, Local NGOs

20 Participation in National and international conference 2012 MHFW, MFLS

21 Three days training of Laboratory officials on Laboratory diagnosis, surveillance and reporting of rabies 2012 MH&FW, MoFL, WHO and FAO

One day Orientation meeting of CS, DLO and Mayors on rabies elimination in Bangladesh 2012 CDC, DGHS

Update of Rabies Elimination Strategic Plan 2012 CDC

Orientation meeting of CS, Hospital Super and AD of district hospital on Rabies 2012 CDC, DGHS

Fund allocation for ARV, RIG in HPNSDP 2011-12 MHFW, CDC

Procurement of sufficient amount of Anti Rabies vaccine for whole year 2012 CDC

Research on Hepatitis B & C virus infection among medical waste handlers in Bangladeshi 2012 CDC, DGHS

Antimicrobial sensitivity status in some selected public hospitals located at Dhaka, Bangladesh 2012 CDC, DGHS

Antimicrobial Resistance Study
• Training of doctors and nurses on antibiotic use.
• Orientation meeting on rational use of antibiotics 2012 CDC

Renovation of vaccination site and training venue at IDH 2012 CDC

In Cox’s Bazar- 2nd round MDV Completion 2012 CDC

G. Ongoing activities:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Activities</th>
<th>Period</th>
<th>Organization Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Refreshers Training of doctors, nurses and paramedics in the remaining districts on rabies</td>
<td>2012-13</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td>2.</td>
<td>Operationalization of District rabies prevention and control center throughout</td>
<td>2012-13</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td>Sl. No.</td>
<td>Activities</td>
<td>Period</td>
<td>Organization Involved</td>
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</tr>
<tr>
<td>4.</td>
<td>Orientation and advocacy meeting of Upazila Chairman, UH&amp;PBO, ULO, Mayor of Upazila on Rabies prevention and control &amp; MDV</td>
<td>2012-13</td>
<td>CDC, DGHS, DLS LGRD</td>
</tr>
<tr>
<td>10</td>
<td>Scaling-up of rabies elimination program throughout the country</td>
<td>2013-15</td>
<td>CDC, DGHS, LGRD, DLS, WSPA, WHO, HSI, NGOs</td>
</tr>
<tr>
<td>11</td>
<td>Country wide survey on animal bites and rabies</td>
<td>2012-</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td>12</td>
<td>Research and publication on rabies</td>
<td>2012-16</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td>13</td>
<td>Development of SOP for Rabies Prevention &amp; Control Center on animal bite management</td>
<td>2012-13</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td>14</td>
<td>Development of SOP for management of cases in Infectious Disease in Bangladesh</td>
<td>2012-13</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td>17</td>
<td>Awareness raising ACSM activities on rabies through Folk song, drama</td>
<td>2013</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td>18</td>
<td>Advocacy Communication &amp; Social Mobilization (ACSM) at national and district levels</td>
<td>2011-12</td>
<td>CDC, DGHS, NGOs, LGRD</td>
</tr>
<tr>
<td>19</td>
<td>Web-based reporting of rabies and dog bite</td>
<td>2012-</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td>21</td>
<td>IEC material development &amp; distribution</td>
<td>2011-13</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td>22</td>
<td>Two days Protocol Development Workshop of Program and Laboratory official on Laboratory diagnosis, surveillance and reporting of rabies</td>
<td>2012</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td>23</td>
<td>Introduction of “Little Doctor” concept on rabies and other communicable disease at school levels</td>
<td>2011-</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td>24</td>
<td>Orientation meeting of Director Health, CS, Consultant, RMO, MO and other health care providers on emergency management of Biswa Ijtema</td>
<td>2013</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td>25</td>
<td>Coordination and collaboration among stakeholders for rabies elimination</td>
<td>2011-</td>
<td>CDC, DGHS, NGOs (APCRIB, BARA, RIAF-B, Obhoyaronno)</td>
</tr>
</tbody>
</table>

**Future Plan:**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Activities</th>
<th>Period</th>
<th>Organization Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sustainable functioning of rabies prevention and control center</td>
<td>2012-</td>
<td>CDC, DGHS</td>
</tr>
<tr>
<td>2.</td>
<td>Orientation and advocacy meeting of CS, DLO, Mayor of district Municipality Sadar on Prevention and control of rabies &amp; MDV</td>
<td>2012-13</td>
<td>CDC, DGHS, DLS LGRD</td>
</tr>
<tr>
<td>3.</td>
<td>Dog sterilization and mass dog vaccination at DCC (North &amp; South)</td>
<td>2011-14</td>
<td>Obhoyaronno, HSI LGRD, CDC DGHS</td>
</tr>
<tr>
<td>4.</td>
<td>Functioning operation theatre at district</td>
<td>2011-</td>
<td>DLS</td>
</tr>
</tbody>
</table>
and upazila level Veterinary hospital for sterilization

5. Observation of World Rabies Day (WRD) 2011- CDC, DGHS, LGRD, DLS, NGOs

6. 3rd Round MDV at Cox’s Bazar district Municipalities 2011-13 CDC, DGHS, WHO, WSPA LGRD

7

8. Dissemination workshop of Rabies Control Pilot Project Cox’s Bazar 2012 CDC, DGHS, WHO

9. Documentary Film production and distribution on Rabies 2012-14 CDC, DGHS, WHO, FAO

10. Dog ownership promotion 2011-14 CDC, DGHS

H. Challenges:

- Achievement of Goal (make Rabies free Bangladesh) by 2020
- Uninterrupted Procurement of ARV-(TCV) and RIGs
- Completion of 3 round MDV throughout the country
- Control of animal rabies and country wide dog population management
- Involvement of key stakeholders in program implementation
- Adequate fund allocation sustain the ongoing activities

V. Anthrax:

Anthrax is caused by *Bacillus anthracis*, a bacterium that can form spores. Spores allow it to survive in the soil for long periods of time. Anthrax is primarily a disease of herbivorous mammals such as cattle, sheep, goats and buffaloes, which can ingest anthrax spores while grazing. Humans generally acquire the disease directly or indirectly from infected animals or occupational exposure to infected or contaminated animal products. Control in livestock is therefore the key to reduced incidence. There are no documented cases of person to person transmission. The disease’s impact on animal and human health can be devastating. The disease exists in animals and humans in most countries of Africa and Asia, in several southern European countries, in the Americas, and certain areas of Australia. Disease outbreaks in animals also occur sporadically in other countries. Prevalence of anthrax in Bangladesh was not well documented; however, since August 2009 IEDCR has investigated 14 outbreaks of cutaneous anthrax in three districts of Bangladesh (Pabna, Sirajgonj and Tangail). Recently, more and more outbreaks are being reported.

A. Anthrax in human:

There are 3 types of anthrax in humans: cutaneous anthrax, gastrointestinal tract anthrax, and pulmonary (inhalation) anthrax. The incubation period for the disease is approximately 2 to 7
days. In people, *cutaneous anthrax* accounts for about 95% of all infections and develops when *B. anthracis* comes in contact with the skin. Antibiotic treatment cures cutaneous anthrax; if appropriately treated, death is rare. *Intestinal anthrax* results from consumption of contaminated meat. Affected individuals may experience nausea, vomiting, and fever, followed by abdominal pain, blood in the vomitus, and severe diarrhea. Mortality is estimated at 25 to 75%. No case of intestinal anthrax has been reported in Bangladesh so far. *Inhalational anthrax* may initially present as a flu-like illness. A short period of improvement may follow, after which the patient rapidly deteriorates with high fever, respiratory distress, and shock. Fatalities approach 95% if not treated within the first 48 hours. It is very rare.

**B. Anthrax in animals:**

Anthrax infection in animals can be respiratory or intestinal. Clinical signs may include fever, respiratory difficulty, excitement followed by depression, incoordination, vomiting, diarrhea, bloody discharges, convulsions, and death.

**C. Challenges:**
- Prevention of slaughtering sick animals
- Community participation in prevention and control of anthrax

**VI. Nipah Prevention and Control:**

Among the emerging infections, Nipah is unique for Bangladesh, as the only country having Endemicity of the disease. The disease was first detected in Malaysia during 1998-99 with 265 cases and 105 (40%) deaths. The disease also occurred in Singapore in 1999 with 11 suspects and one death. From 2001 it has emerged as a new disease for Bangladesh. Bat of *Pteropus* genera is the healthy carrier. Consumption of raw date palm sap has been identified as the primary mode of transmission. The disease is also transmitted from man to man. It is manifested as encephalitis, ARS or as both. Up to 2011 there have been 143 suspects with 105 deaths. Awareness of Nipah along with ACSM for avoiding raw date palm sap could help in reducing the transmission in the endemic areas of the country. Improvement of patient care in isolation will also help the man to man transmission. Improved management of the cases in the hospital through critical care can save lives and reduce anxiety of the family and people in general.

**A. Activities done:**
- Development of treatment guideline by IEDCR
- Training of doctors and nurses managing Nipah cases
- ACSM
- Media dissemination
- Outbreak investigation through IEDCR
B. Future plan:

- Development of national guideline and strategy for Nipah
- Training of doctors, nurses and paramedics dealing with Nipah on case management and preventive control measures
- ACSM on Nipah and use of Date palm juice
- Survey and operational research on Nipah
- Outbreak investigation through IEDCR

Challenges:
Community involvement for taking appropriate preventive measures

VII. Chikungunya
A. Introduction:
Chikungunya fever (CKGF) a dengue like disease is emerging alarmingly in the country in the recent years which is an insect borne virus, it the genus Alpha virus vector borne viral disease. In the recent past, there were two outbreaks in Rajshahi and Pabna districts of Bangladesh. In 2011 suspected Chikungunya fever outbreaks was detected in Dohar upazila of Dhaka district and Shibgonj upazila of Chapainawabgonj district during August to October. No case fatality was observed. The disease does not claim mortality but persistent arthralgia may lead to patient’s sufferings. Diagnosis of CKGF is important to screen the suspected cases with dengue.

B. Objectives:
- To review the epidemiological situation and control measures existing in the country
- To identify the areas of research and new technologies to overcome the transmission of the diseases
- To develop National strategy for prevention & control of CKGF
- Control Strategies will include:
  - Strengthen the surveillance system for prediction, early detection, preparedness and early response to CKGF outbreak
  - Improve early detection and case management
  - Integrated vector management (IVM)
  - ACSM for preventive measure
  - Building partnership
  - Survey & Operational research to support prevention & control of CKGF

C. Key Preventive measures for CKGF
- Reducing the risk of mosquito bite
- Reducing mosquito breeding

D. The activities done
Meeting on current situation and preparation of national guideline and future action plan of CKGF with programme personnel, experts, WHO and key stakeholders.
E. Future plan

- Development of national CKGF Control Strategy Guideline
- Capacity building on CKGF case management and follow up
- ACSM: Organizing workshop, seminar, orientation training on CKGF
- Community involvement on preventive measure of CKGF outbreak

F. Challenges

- Procurement and supply of diagnostic kits for early detection and case management
- Fund allocation
- Summary: CKGF is viral disease that resembling dengue. The prognosis of CKGF is better than dengue, which requires early case detection and proper case management and subsequent health counselling for less disease disability. It is public health important because of affecting cluster of population & developments of post-disease prolong arthralgia.

VII. Antimicrobial Resistance

A. Introduction:
In the recent years, Antimicrobial resistance has become one of the talked issues around the world. Due to indiscriminate use of antibiotics many life saving antimicrobials are no more effective against the organisms. If adequate measure is not taken immediately, the world will have to face an antibiotic failure era in the years coming. AMR is an alarmingly growing problem around the world. Appropriate control measures are needed to tackle the situation right now. Otherwise, the country has to face an era of antibiotic failure. The expected era is no more away from now that already experienced in so many cases in current century. Country, regional and institutional specific policy and guideline can halt the rapid progression of AMR.

B. Objectives:
To develop National Guideline on country wide and institutional base antibiotic use and ultimately reduce and halt the development of resistance.

C. Activities done:

- Meeting on situation analysis of AMR and core group formation for preparation guideline of future action plan. Initial draft was formulated in this meeting.

- Meeting of Core Group for making further activities to be carried out (information collection from previously conducted pilot study on prevention of hospital acquired infection, institutional use of antibiotics etc).

D. Future Plan:
• Development of national and institutional guideline, strategy and antibiotic use policy and preventive measure of hospital acquired infection
• Orientation training of doctors, nurses and paramedics on AMR and prevention strategy of hospital acquired infection (HAI)
• Conduction of seminar, workshop, training on AMR and HAI
• Survey and research on AMR & HAI
• Piloting on AMR and HAI

Antimicrobial Resistance Containment (ARC)

The discovery of antimicrobials is one of the most important advances in the history of human health that alleviated suffering from infectious diseases and saved billions of lives. However, due to emergence of resistant pathogens, antimicrobials have been facing a compromised status regarding their life-saving power. In modern days, Antimicrobial resistance (AMR) of the microbial pathogens is a real threat for public health. Common microorganisms are now becoming widely resistant to first-line drugs. In some instances, resistance to second- and third-line agents is also seriously compromising the treatment outcome. Hospital-acquired infections (HAIs) by resistant Staphylococcus aureus, Esch.coli, Enterococci spp. and Pseudomonas aeruginosa as well as drug resistance in Malaria & Kala-azar parasites warranted towards a dreadful scenario regarding socio-cultural and monetary problems particularly for the poor and marginalized populations. Bangladesh as a member State convinced to develop sustainable systems to contain AMR as per the directions of WHO.

ARC Program Activity:

Antimicrobial Resistance Containment (ARC) is a new activity in CDC from 2011-2012 under emerging & re-emerging Program. Director disease control & line director, CDC has been nominated as National focal point. A notification by ministry of Health & family Welfare (MoHFW) issued on 15th October 2012 regarding implementation of Prevention & Control of ARC in Bangladesh (MoHFW/WHO-2/etc-03/2012/281, Dated: 15.10.2012).

Prevention and containment of AMR requires integrated and well-coordinated efforts among stakeholders at different levels of health, veterinary and fishery of both public and private sectors. For planning and coordination of activities, following committees are
being developed with their respective terms of reference (TOR).

1. National Steering Committee (NSC) at top national level with Honorable Minister, Ministry of Health & Family Welfare as Chairperson, Honorable Minister, Ministry of Ministry Fisheries & Livestock as co-Chairperson, and Senior Secretary, Ministry of Health & Family Welfare as Member-Secretary.

2. National Technical Committee (NTC) at directorate level with Director General of Health Services as Chairperson, Director Disease Control, DGHS & National Focal Point as Member-Secretary.

3. Core Working Group (CWG) at directorate level with Director (Disease Control), DGHS & National Focal Point as a Chairperson and one person from CDC as Member-Secretary.

Activities:

- Drafting of National Strategy for ARC
- Developing & Updating of Antibiotic Guidelines for Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka Medical College Hospital (DMCH) and Armed Forces Medical Services (AMS)

The Strategy provides the following aspects:

1. Establishing a multi-sectoral approach for planning and coordination of activities related to AMR;
2. Promoting and ensuring rational use of antimicrobials;
3. Promoting and strengthening infection prevention and control measures;
4. enacting the existing laws in the area of AMR;
5. Institutionalizing a surveillance system for AMR containment;
6. Promoting operational and basic research
7. Continuing education in the area of AMR;
8. Establishing advocacy, communication and social mobilization (ACSM);
9. Developing new AMs and vaccines.
Creation of effective national inter-sectoral task forces is considered pivotal to the success of implementation and monitoring of interventions. International interdisciplinary cooperation will also be essential. Much of the responsibility for implementation of the strategy will fall on the ministry of health and family welfare of Bangladesh.

**Goal:** Containment of antimicrobial resistance (AMR) to reduce infection related morbidity and mortality so that effectiveness of antimicrobial agents can be conserved and related economic burden will be minimized.

**Objectives**

1. To establish multi-sector approach for planning, coordination and implementation of antimicrobial resistance containment (ARC) activities;
2. To promote and ensure rational use of antimicrobial agents in human, animal health, in animal product, and fishery settings;
3. To promote and strengthen infection prevention and control measures to minimize the emergence and spread of AMR;
4. To enact the existing laws in the area of AMR;
5. To institute surveillance system for AMR containment;
6. To promote operational and basic research and education in the area of AMR;
7. To establish Advocacy, Communication and Social Mobilization (ACSM) for ARC activities.

**Rational use of antimicrobial agents**

One of the vital causes of AMR is irrational use of Antimicrobial Agents (AMs). The quality of AMs is also crucial for prevention & control of AMR. The use of substandard AMs results in prolonged infections and emergence of resistant microbes.

Rational use of drug involves using the correct drug with proper dose and duration keeping in mind the suitability, efficacy, safety and cost of that drug.

**Infection Prevention and Control (IPC) Measures:**

The IPC measures in healthcare facilities as well as in community reduce the risk of transmission of infections and minimize the need for AMs. These measures include hand
hygiene, use of personal protective equipment (PPE), maintaining a clean environment, 
use of antiseptics and disinfectants, decontamination, cleansing and sterilization (or high 
level disinfection) of instruments, improving safety in risky areas of the health facility, safe 
use and disposal of sharps, appropriate waste disposal, vaccination and isolation of 
infected patients when required.

**Surveillance**

Surveillance of AMR provides information on magnitude and trends in resistance, and for 
monitoring the effect of interventions. It is necessary to formulate policy decisions, 
update national formularies, lists of essential AMs & STGs, and make availability of 
appropriate AMs.

**Research and Education**

Researches on use of AMs, AMR and IPC are essential to contain the emergence and 
spread of AMR. Educational works are needed to alleviate the malpractice observed in 
the use of AMs. Recognition of AMR is limited among all levels of the population and 
therefore, educating health professionals, patients and public is the key strategy in 
addressing AMR issues.

Basic and operational researches provide knowledge to develop appropriate responses to 
emerging and spreading of AMR in human and animal. Education expands knowledge 
about AMR and helps in development of tools to counter and alleviate AMR.

**Advocacy, Communication and Social Mobilization (ACSM)**

Antimicrobial use is influenced by interplay of the knowledge, attitude and interactions of 
prescribers, patients and promoters of manufacturers, characteristics of the health 
system(s) and the regulatory environment. In this context, coordinated interventions are 
needed to encourage rational use of AMs.

**Key components:**

1. Public relations/ advocacy/ administrative mobilization for information sharing about 
   AMR among sectors and stakeholders;
2. Community mobilization:
8.1.2.1: Awareness building of mass population regarding AMs use and IP;

2.2: Awareness building and motivation regarding use of AMs among informal healthcare providers and all levels of drug sellers (licensed, registered, unregistered) of health, veterinary and fishery sector;

2.3: Awareness building and motivation among animal and poultry owners, feed and drug sellers including traditional healers regarding use of AMs;

2.4: Motivation of the health professionals to rationalize AMs prescribing, adhere to STG and infection control behaviors;

3: Sustain appropriate advertising via electronic and print media in massive, repetitive, intense and persistent (MRIP) fashion regarding IPC, use of AMs and AMR;

4: Community education regarding IPC;

5: Training of the community leaders, Imams, Teachers and other related persons on IPC, use of AMs and AMR at different levels
CHAPTER - 6
Avian and Pandemic Influenza Prevention and Control Program

I. Introduction:

Avian Influenza is a zoonotic viral disease caused by a sub type of Influenza-A known as Avian Influenza H5N1 (AI/ H5N1), which is highly contagious. The disease is also known as Bird Flu as it infects only birds. It spreads very rapidly through poultry flocks, causes disease affecting multiple internal organs and has a mortality that can reach up to 100% often within 48 hours. Though the virus is not easily transmitting from poultry to humans and from human to human, it is believed that a pandemic due to H5N1 virus or its genetically altered form is imminent. The situation is unfolding each day and every event gives a warning and a grim reminder of the devastation caused by influenza pandemics of 1918 (Spanish flu), 1957 (Asian flu), 1968 (Hong Kong flu), 1977 (H1N1 virus) and 2009 (H1N1 virus 'Swine Flu').

I. Global situation of Avian Influenza A/H5N1:

Avian Influenza A/ H5N1 first appeared as a potential threat to public health in 1996, when it was identified in a farmed goose in Guangdong Province, China. In 1997, it was identified as the cause of a large outbreak in poultry in Hong Kong associated with 18 human infections, including 6 deaths. Sporadic human cases were also identified in China in 2003. Infections in human often have serious consequences with a high case fatality rate averaging about 60%. According to WHO, 63 countries reported Avian Influenza in poultry and out of them 15 countries (including Bangladesh, Myanmar, Pakistan) reported human infection of virus. There have been total of 578 Avian Influenza human cases with 341 fatality around the world (January 18, 2012; for update www.who.int) Wide spread outbreaks of H5N1 in poultry and continued human infections have increased the chance of evolving a mutated strain or another novel virus having pandemic potentiality.
II. Bangladesh situation of Avian Influenza A/ H5N1:

Bangladesh is densely populated with more than 143.20 million (BBS, 2011) people. Bangladesh’s poultry industry is one of world’s largest, producing 220 million chickens and 37 million ducks annually. Approximately 50% of poultry are raised in backyards and 50% as commercial broilers and layers. The risk of AI (and other zoonotic disease) is considered as high because of (1) the high density of humans and animals, (2) the high number of ‘backyard farms’ and live markets, (3) mixed farming practice with low biosecurity (4) limited control over poultry movements (5) little regulation of slaughtering and processing of animal products and (6) sub-optimal veterinary public health infrastructure, surveillance systems and laboratory facilities. External risk factors include the long porous border (with significant cross-border movements of people and a lack of animal quarantine stations), importation of avian species particularly breeder chickens and the regular movement of companion animals from overseas by expatriates. To contain the disease in poultry awareness development, capacity building, multi-sectoral coordination and cooperation, hygienic measures at poultry, backyard and wet markets, surveillance and culling activities strengthening in live stock sector.

### Poultry outbreak till December 2011

<table>
<thead>
<tr>
<th>First Outbreak in poultry was reported on</th>
<th>March 22, 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Farms with confirmed H5 Virus</td>
<td>Commercial 473 + Backyard 57 = 530</td>
</tr>
<tr>
<td>No. of Districts with Confirmed H5 Virus</td>
<td>[UZ 161 + Metro16] = 52</td>
</tr>
<tr>
<td>No. of Culled Farms</td>
<td>790</td>
</tr>
<tr>
<td>Culling of birds</td>
<td>24,84,040</td>
</tr>
<tr>
<td>Total egg destroyed</td>
<td>31,73,810</td>
</tr>
</tbody>
</table>

***The table is an under representation of outbreaks are not reported).***

### Avian Influenza Outbreaks in 2011

![Avian Influenza Outbreaks in 2011 graph](image)

### Avian Influenza Human Cases Detected in Bangladesh:
<table>
<thead>
<tr>
<th>Case No</th>
<th>Location</th>
<th>Date of Sample Collection</th>
<th>Date of test result with institute</th>
<th>Comments</th>
<th>Age &amp; Sex</th>
<th>Fate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kamalapur, Dhaka</td>
<td>January 2008</td>
<td>May 2008 CDC Atlanta</td>
<td>15 month, Male</td>
<td>Recovered</td>
<td>Identified as H5N1</td>
</tr>
<tr>
<td>2</td>
<td>Kamalapur, Dhaka</td>
<td>March 14, 2011</td>
<td>March 14, 2011, IEDCR</td>
<td>13 month, Female</td>
<td>Recovered</td>
<td>Identified as H5N1</td>
</tr>
<tr>
<td>3</td>
<td>Kamalapur, Dhaka</td>
<td>March 15, 2011</td>
<td>March 15, 2011, IEDCR</td>
<td>31 month, Male</td>
<td>Recovered</td>
<td>Identified as H5N1</td>
</tr>
<tr>
<td>4</td>
<td>Kamalapur, Dhaka</td>
<td>February 26, 2011</td>
<td>March 24, 2011, Sequencing by CDC Atlanta</td>
<td>4 Years, Female</td>
<td>Recovered</td>
<td>Identified as H9N2</td>
</tr>
</tbody>
</table>

First human case of Avian Influenza in Bangladesh was declared in 22 May, 2008. All the cases were identified from Community based surveillance site at Kamalapur, which indicates that there may be more cases at different other sites.

III. Influenza Pandemic (H1N1) 2009 (Swine Flu):

Novel Influenza A (H1N1) is a new flu virus of swine origin that first caused illness in Mexico and the United States in March and April, 2009. On June 11, 2009 the World Health organization (WHO) declared pandemic Phase 6. According to WHO, as of 23 May, 2010 at least 18,114 deaths have been reported worldwide. The reported number of fatal cases was an under representation of the actual numbers as many deaths are never tested or recognized as influenza related.

First case of Influenza A (H1N1), 2009 (Swine Flu) was identified in Bangladesh on 18th June, 2009. Since then one thousand and fifty three (1,053) cases identified & seven (07) laboratory confirmed patients died.

On August 10, 2010 the World Health Organization (WHO) International Health Regulations (IHR) Emergency Committee and the WHO Director-General, Dr. Margaret Chan, declared an end to the 2009 H1N1 influenza pandemic. This declaration was based on strong indications that influenza, worldwide, is transitioning toward seasonal patterns of transmission. This does not mean that the H1N1 virus has disappeared. Rather, it means current influenza outbreaks including those primarily caused by the 2009 H1N1 virus; show intensity similar to that seen during seasonal epidemics. Pandemics, like the viruses that cause them, are unpredictable. WHO noted that continued vigilance is extremely important, and it is likely that the virus will continue to cause serious disease in younger age groups and pregnant women, at least in the immediate post-pandemic period.

IV. Avian and Pandemic Influenza prevention and control activities:

Avian Influenza is a new program reflected in operation plan of CDC from 2007-08. Formerly it was included in emerging & re-emerging diseases. From July 2007, it is a separated program & a DPM is posted. Appearance of Influenza A (H1N1) in 2009 as a novel virus with pandemic potentiality and chance of appearance new other virus with pandemic potentiality; the program AI now renamed as Avian Influenza and Pandemic Influenza Program.

- Implementation and review of national policy.
- Adaptation of international protocols & guidelines to Bangladesh.
- Development of Standard Operating Procedure (SOP)
- Evaluation of health services/ needs assessments.
- Health care facility upgrading.
• Improving diagnostic laboratory capacity.
• Upgrading of priority infrastructure of health surveillance services.
• Training of public health workers in disease surveillance.
• Reinforcement of rapid response teams for outbreak investigation.
• Providing rapid diagnostic kits to regional centers for preliminary diagnosis.
• Training of clinicians, health care workers & paramedics.
• Implementation and review of Communication strategy
• Table-top and field exercises.
• Purchase, storage & distribution of Antiviral, supportive medication and disinfectant
• Acquisition, storage & distribution of PPE sets.
• Technical assistance for pandemic planning.
• Equipments & materials for quarantine operations and mortuary issues.

V. Preparedness and Response for Pandemic Influenza:

A. Pandemic Plan:

The National Avian Influenza and Human Pandemic Influenza Preparedness and Response Plan 2006-2008 (1st Plan) was prepared by a National Multi-sectoral Planning Team from the Ministry of Fisheries & Livestock, Ministry of Health & Family Welfare, Ministry of Environment & Forest with joint technical support from the FAO and WHO. The 1st National Plan was approved by the Honorable Prime Minister of the People’s Republic of Bangladesh on 17 April, 2006. At that time Operational Plan (OP) revised to accommodate the Avian/ Pandemic Influenza as a component and World Bank has sanctioned 16.114 Million USD for this activity.

• Revised & Adopted “2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh, 2009-11”, with technical support from WHO, FAO & UNICEF.
• Revision of “2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh, 2011-16” is at final stage.
• Influenza Pandemic Management Contingency Plan developed: October 2009
• “National Guideline for Clinical Management of Pandemic H1N1 2009 Influenza” developed by Disease Control Unit & IEDCR in collaboration with Bangladesh Society of Medicine: September, 2009.
• National Pandemic Influenza Communication Strategy developed.
• Strategic plan for Influenza A (H1N1) 2009 Vaccine Deployment developed by Disease Control Unit, IEDCR, EPI & Other donor agencies which is implementing under supervision of EPI Program of PHC, from April, 2010.

B. Committees:

a. Formation of National Advisory Committee (NAC) chaired by Honorable Minister, National Multi-sectoral Task Force (NMTF) chaired by Secretary and National Technical committee (NTC) chaired by the Director General (Health Services) where Director (Disease Control) is the focal person. Avian Influenza Joint National Technical Committee (Health & Live stock) functioning.
• Rapid Response Team formed centrally, districts & upazila levels are working.

C. Manual/ Modules/ SOPs:
• Standard Operative Procedures (SOP) has been developed and printed on various aspects of avian and pandemic influenza.
• Training Module on Avian Influenza Preparedness and response for Prevention and Control developed by Disease Control Unit, DGHS; April 2008.
• 11 modules depicting all aspects of Avian and Pandemic Influenza developed by IEDCR with support from WHO.
• A Laboratory manual on Diagnosis of Avian Influenza has been published by IEDCR with support from Director (CDC), DGHS.
• A booklet in Bangla on Avian and Pandemic Influenza for popular use developed by IEDCR.

D. Influenza Surveillance and Outbreak Response in Bangladesh:

• Community based surveillance: At Kamalapur, Dhaka; since 2004. All the human cases were detected from this site.
• Hospital based surveillance: IEDCR and icddr,b are conducting influenza like illness surveillance in 12 medical colleges and district hospitals across the country since 2007.
• Web based ILI surveillance: It has been initiated in all district level hospitals and will be extended up to upazila level.
• ILI surveillance at live bird market: IEDCR with Dhaka City Corporation have started ILI surveillance among live bird handlers in wet markets.
• Event based surveillance: Event Based Disease Surveillance strengthened to detect more cases.
• High Risk Group: IEDCR conducting follow-up among the cullers (High Risk Group).
• Sentinel sites: Establishment of Sentinel surveillance at 14 district hospitals started and have plans to cover all 64 districts Hospitals phase wise for surveillance of Viral Pneumonia.

E. Training/ Orientation/ Awareness:

• All divisional, district and sub-district level health managers of the country were oriented on Avian and Pandemic Influenza through series of workshops (with support from UNICEF and WHO) during 2008.
• A high level bi-lateral consultation between Bangladesh and India on Avian Influenza were held on 27- 28 August, 2008 with support from WHO.
• ToT on Rapid Containment of Pandemic Influenza by IEDCR with technical support from SEARO, WHO in June, 2008.
• Master Trainers Training including Consultants of Medicine, Pediatrics & one medical officer nominated by civil surgeons of 64 districts by IEDCR during 2008.
• Multi-sectoral orientation workshop on AI in 64 districts by IEDCR during 2009.
• Training on rapid response to the Avian and Pandemic Influenza for 64 District Rapid Response Teams and 471 Sub-district Rapid Response Teams by IEDCR with support from UNICEF during 2009.
• 137 Microbiologist and Virologist were trained on Laboratory diagnosis on Avian Influenza by IEDCR during 2009.
• Training for the clinicians (about 1200) by NIDCH with support from WHO during 2008.
• More 5,349 physicians and 3,634 nurses were oriented/trained on Avian and Pandemic influenza by AI Program of CDC, DGHS during 2008-2009.
• 12,480 Health staffs (HI/ AHI/ HA) were oriented on Avian / Pandemic influenza by AI Program of CDC, DGHS during 2008-2009.
• Assistant Health Inspectors (AHI) assigned to help and work with Livestock department for surveillance purpose from March, 2009 for three months by CDC, DGHS.
• Refreshers training on Influenza A (H1N1) 2009 given to the Health Managers and about 9,000 doctors & nurses of various medical college, district & upazila are completed by Disease Control Unit, DGHS in collaboration with Bangladesh Society of Medicine during 2009-2010.
• Refreshers training on Avian & Pandemic Influenza and Hand Hygiene & infection prevention given to about 500 doctors & nurses of various medical college, district & upazila by Disease Control Unit, DGHS during 2010-2011.
• About 500 Health staffs (SI/ HI/ AHI) were oriented on Avian & Pandemic influenza by AI Program of CDC, DGHS during 2010-2011.

F. Stockpile of emergency Drugs, Masks, PPE:

<table>
<thead>
<tr>
<th>Name of Items</th>
<th>Previous Stock</th>
<th>Procurement during 2011-12</th>
<th>Distribution up to Upazila</th>
<th>Stock at CMSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cap. Osel tamivir</td>
<td>20,00,204</td>
<td>-</td>
<td>8,17,200</td>
<td>11,08,340</td>
</tr>
<tr>
<td>Surgical masks</td>
<td>5,00,000</td>
<td>-</td>
<td>3,500</td>
<td>4,96,500</td>
</tr>
<tr>
<td>N 95 Mask</td>
<td>61,500</td>
<td>-</td>
<td>25,910</td>
<td>35,590</td>
</tr>
<tr>
<td>PPE Apron</td>
<td>40,000</td>
<td>-</td>
<td>10,090</td>
<td>29,910</td>
</tr>
<tr>
<td>PPE Goggles</td>
<td>10,000</td>
<td>-</td>
<td>-</td>
<td>10,000</td>
</tr>
<tr>
<td>PPE Shoe cover</td>
<td>4,000</td>
<td>-</td>
<td>-</td>
<td>4,000</td>
</tr>
</tbody>
</table>

G. Vaccination:
• 15 million doses of Pandemic Influenza A (H1N1) Vaccine from WHO were given to the health workers and pregnant women at 3rd trimester during 2010.
• 29 thousands Seasonal Influenza Vaccine also given to health service provider all over the country during 2010.

H. Waste Management:
10 Incinerator have been procured and installed at NIDCH and different district level health facilities. Plan has been taken to supply incinerator to all the tertiary level hospitals and district hospitals gradually.

I. Laboratory Facilities:
• During 2008-9 under HNPSP with collaboration of CDC Atlanta, a modern Influenza Referral Laboratory was set up at IEDCR with skilled laboratory personnel. A BSL-2 lab is functioning since 2007 and a prefabricated BSL3 lab installed and functioning from January 2012.
• A massive renovation work with construction
of 2nd floor done at IEDCR by Disease Control Unit of DGHS to accommodate BSL-2 & BSL3 laboratory facilities during 2008-9.

- Plan has laboratory facilities at divisional level Government Medical Colleges initiated to established BSL-2 / BSL3 and upgradation of pathological laboratory at district hospitals.
- Bangladesh is well capable of diagnosis of Influenza A (H1N1) at Laboratory of IEDCR and ICDDR,B with Real time RT-PCR to provide confirmatory results within 24 hours.
- IEDCR is acting as National Influenza Center (NIC), Bangladesh nominated by WHO. Arrangements have been made with CDC (USA) and WHO for further analysis of the viruses.

J. Hospital Facility Preparedness:

- a “Avian and Pandemic Influenza ward” has been established at Asthma Center of National Institute of Diseases of Chest and Hospital (NIDCH), Dhaka with support from WHO.
- Isolation unit at 64 district hospitals have been completed. A guideline prepared to use the isolation units when HPAI or Other Pandemic Influenza case detected and rest of the time the units will be used for other infectious diseases such as Nipah virus, Meningitis, Diphtheria, Encephalitis etc.
- Infectious disease hospital (IDH) at Dhaka also ready for the management of Pandemic Influenza patients and its proposed renovation work will be done soon.
- Separate outdoor and indoor facilities at Medical college hospitals & up to upazila hospitals are kept ready.
- A memorandum has been issued by the DGHS to all hospitals with more than 200-bed capacities to form Pandemic Influenza Management Committee (PIMC).

K. Screening at Port of entry (POE):

- Health Support Desk was started at 16 ports of entry (POE) during HINI 2009 Pandemic. At that time screening started at Hazrat Shahjalal International Airport from 29/04/2009.
- Orientation for the airport, seaport and land port health works completed by IEDCR & CDC, DGHS with support from WHO during 2009-10.
- Orientation given to Immigration Officials (about 275) of Hazrat Shahjalal International airport, Dhaka by IEDCR during 2009-10.

L. Communication/ Community awareness:

- Developed National Communication Strategy and Action Plan & guidelines
- A Risk Communication wing was formed under the Ministry of MOHFW.
• Health messages developed by IEDCR & CDC, DGHS with support from UNICEF & WHO during.
• IEC materials like TV Spots, poster, booklets, brochures and leaflets are prepared & distributed throughout the country with support from UNICEF & WHO.
• Messages are being disseminated through electronic (BTV and other private TV channels) & print media.
• Training of Red Crescent Health Personnel by IEDCR.
• Banners and leaflets with health messages served at every Port of entry (POE).
• During Holy EID & Durgapuja banners and leaflets with health messages distributed among passengers of all train, bus and launch terminals with support from UNICEF.
• Training of Red Crescent Health Personnel by IEDCR.
• IEDCR also developed a laminating picture card to train community level volunteers highlighting the prevention and awareness campaign message on AI.
• A total of 226,100 volunteers have been trained on prevention and control of AI with special emphasis on infection control with support from UNICEF.
• House to house awareness campaigns being conducted by the volunteers and approximately 28 million people have been oriented on AI by IEDCR with supports from UNICEF.
• Plan has been taken to give orientation to the Imam & other religious leaders and also school teachers by Disease Control Unit of DGHS.

M. Survey and Research:
• A research project is undergoing on Oseltamivir to see the drug resistance pattern in circulating influenza viruses by IEDCR and icddr,b.
• The National Influenza Centre (NIC), Bangladesh also in principle ready to share the isolate with other WHO International Referral Centers across the world.

N. Challenges:
• Wide spread increase outbreaks of H5N1 in poultry and continued human exposure have increased the chance of evolving a mutated strain or another novel virus having pandemic potentiality
• Shortage and delay in fund release
• Delayed & complicated Procurement process hamper supply of logistics in time and development of buffer stock.
• Auditing process is not supportive
• Facing difficulty in coordination between inter departmental and multi-sectoral authorities.
• Frequent transfer of skilled manpower
• Absence of performance evaluation system for promotion or appreciation.
CHAPTER - 7
Integrated Disease Surveillance

I. Introduction:

The disease surveillance in Bangladesh is conducted by different institutions like IEDCR, NIPSOM, IPH and other government and non-government organizations through Disease Control Unit of Directorate General of Health Services. The surveillance of communicable diseases namely Malaria, Filaria and Kala-azar are routinely done by their respective programs under disease control unit of DGHS.

All information are received at “National Crisis Management Centre and Control Room” of DGHS

II. Goal:

The overall goal of surveillance is to detect diseases including emerging and re-emerging cases with proper reporting and management.

I. Objectives:

1. To report the diseases of public health concern
2. To discover new disease entities
3. To detect sub-clinical cases
4. To identify the true incidence of disease
5. To introduce the new diagnostic tests
6. Reporting of surveillance data and encourage the use of these data

The Surveillance System conducts some routine as well as a number of disease-specific surveillances.

II. The routine disease surveillances:

- Web based Priority Communicable Disease Surveillance
- Institutional Disease Surveillance.
- Event based disease surveillance
- Surveillance through emergency outbreak investigations

A. The disease-specific surveillances:

- National HIV/AIDS Sero and Behavioral Surveillance in collaboration with icddr,b;
- Nipah Surveillance in collaboration with icddr,b;
- National Influenza Surveillance, Bangladesh (NISB)
- Community-based Avian/ Human Influenza Surveillance among poultry workers in H5-infected poultry farms;
- AI surveillance among the live bird-handlers in wet markets of city corporations;
- Acute Meningo-Encephalitis Surveillance (AMES), including Japanese B encephalitis in collaboration with IPH and icddr,b
- Hospital-based influenza surveillance in collaboration with icddr,b;
• Surveillance for hospital acquired respiratory infections in patients and healthcare workers in three tertiary-care facilities in collaboration with icddr,b;
• Salmonella surveillance.

Activities of 2012

Research
• Assessment of the impact of Hepatitis B vaccination in Bangladesh, a sero-prevalence study
• Safety and efficacy of Liposomal Amphotericin B (AmBisome) in Bangladesh patients with visceral leishmaniasis—A phase III clinical trial
• HIV, Syphilis & Hepatitis among pregnant women in selected health facilities of Greater Sylhet area of Bangladesh
• Assessment of the vulnerability of population and the health system in Bangladesh to the impact of climate change
• Effectiveness of Ghagra Shak poisoning prevention campaign in Sylhet: A post-test only intervention control study
• Mitigating the impact of climate change to reduce the burden of climate sensitive illnesses
• Assessing prevalence and risk factors of mild/asymptomatic H5N1 infections among persons exposed to H5N1 infected poultry
• Estimate the risk of mild human infection among persons exposed to H5N1 infected poultry

Surveillance
• Event based surveillance – outbreak investigation and response (outbreaks)
  o Cutaneous Anthrax
  o Chikungunya
  o Dengue
  o Japanese Encephalitis
  o Mass psychogenic illness
  o Nipah virus
  o Suspected pesticide
• Nipah surveillance
• Acute Meningo-Encephalitis Syndrome surveillance
• Hospital based influenza surveillance in 12 (tertiary care hospitals) sites
• National Influenza Surveillance, Bangladesh (NISB) in 14 district hospital
• Sero-prevalence of antibodies to avian influenza A viruses among Bangladeshi poultry market workers
• Surveillance for human infections with avian influenza A viruses among live bird market workers and their household members in Dhaka city area, Bangladesh
- Community based Avian/ Human Influenza surveillance among poultry workers in H5N1 infected poultry farms
- High risk group surveillance in wet markets in Dhaka City Corporation
- Surveillance for hospital acquired respiratory infections in patients and health care workers in three tertiary care facilities
- Web-based integrated disease surveillance up to upazila (sub-district) level
- Behavioral risk factor surveillance (BRFSS), Bangladesh through telephone interviews
- Hospital based dengue surveillance

**Trainings/ Workshops**

- Workshop on development of SOPs and updating of formats for integrated disease surveillance and early warning and alert system for epidemic prone diseases
- Workshop on review and updating of strategies and guidelines of integrated disease surveillance with development of plan of action: Collaborative workshop with IANPHI on mentorship and scientific writing
- Refreshers training for physicians on SOPs on avian influenza in humans
- Training on medical technologist on detecting emerging and reemerging disease
- Orientation of physician, nurses and auxiliary staff on the strategy and guideline for prevention, control and management of Nipah and other encephalitis
- Advocacy of multi-sectoral partners for IHR 2005 at all levels including POEs
- Workshop on development of strategy and guideline for networking among public health laboratories
- Orientation of journalists on emerging diseases
- Training on URRT members on emerging infectious diseases and outbreak investigation
- Training of physician of urban health centers on emerging infectious diseases
- Consultative meeting for inclusion of IHR in medical curriculum
- Advocacy on IHR 2005 for policy makers, health service providers and relevant agencies at all level
- Advocacy meetings on IHR 2005 for Academicians of all Medical Colleges and Institutes
- Capacity building of technical personnel under health, customs and immigration of PoEs for implementation of IHR (2005) at designated PoEs.
- Capacity building of NGO/DCC health personnel for strengthening wet market surveillance in City Corporation areas

**Others**

- Development of policy, strategies and guidelines
  - Strategy and guideline for prevention, control and management of Nipah and other encephalitis
  - Strategy and guideline for networking among public health laboratories
- SOP for we based Integrated Disease Surveillance and Early Warning and Alert System for epidemic prone diseases
- Guidelines on emerging infectious diseases and outbreak investigation

- Workshop on “Envisioning One Health for emerging infectious diseases and beyond: Developing the country level strategic framework and multi-year road map for Bangladesh”
- Workshop on “One Health for infectious diseases in Bangladesh: Validating the country level strategic framework and action plan”
- Update Health rules for designated POEs and national legislation, regulations and other instruments for IHR 2005 implementation
- Review and assessment of national legislation, regulations and other instruments for IHR 2005 implementation
- Developments of new law for implementations of IHR 2005
- Development of IEDCR compendium

III. Web Based Priority Communicable Disease Surveillance (PCDS):

- A web based Surveillance of priority communicable diseases are started with a view to build up an early warning system.
- Upazila Health and Family Planning Officer (UH&FPO) and Civil Surgeon (CS) are responsible for conducting this surveillance locally.
- The diseases selected for reporting under this surveillance are: (1) Diarrheal diseases (Acute watery diarrhea and Bloody dysentery), (2) Malaria, (3) Kala-azar, (4) Tuberculosis, (5) Leprosy, (6) Encephalitis and (7) Unknown diseases.
- These diseases were selected for reporting through web to the national head quarter on a weekly basis, but on a daily basis during an outbreak situation.

IV. Institutional Disease Surveillance (IDS):

- It is started with the objective to develop disease profiles in each institution for future planning of distribution of manpower and logistics.
- Directors and Superintendents of the hospitals and institutes are responsible for conducting this surveillance locally.
  It covers all the medical college hospitals and specialized institutes in Bangladesh. Both communicable and non-communicable diseases are selected for reporting from out (OPD) and inpatient department (IPD).
- Priority communicable diseases are scheduled for reporting on a weekly basis and other disease profiles on monthly basis.
V. Surveillance through emergency outbreak investigations:

- IEDCR responds to any unusual health events or diseases reported directly or indirectly to the Director, IEDCR on an emergency basis.
- National Rapid Response Team (NRRT), which is formed by the experts from IEDCR, conducts the outbreak investigations with the help of District Rapid Response Team (DRRT) and Upazila Rapid Response Team (URRT).
- Concerned UH&FPO, CS, Directors and Superintendants of the hospitals are responsible for reporting of any kind of outbreak situations.
- NRRT responds according to the requirement and situation of the specific outbreak.
- IEDCR is responsible for preparing the outbreak investigation report, disseminating to the concerned authority and take initiatives to contain the outbreak immediately.

VI. Hospital based Nipah surveillance:

- IEDCR in collaboration with icddr,b has started Nipah surveillance in ten selected hospitals since February 2006.
- Samples from the sites are collected and tested on a periodic basis. Data from the surveillance are stored and analyzed at the central level.
- The concerned surveillance physicians, Directors and Superintendants of the hospitals are responsible for sending monthly report according to the case definition of suspected Nipah cases in the prescribed form to the central level.

VII. National Influenza Surveillance, Bangladesh (NISB):

- IEDCR started influenza surveillance in 14 district hospitals across the country since April, 2009.
- Hospitals were distributed in such a way that it is spread all over the country.
- Samples from 14 hospitals are collected once in a month from each hospital.
- 10 influenza like illness (ILI) and severe acute respiratory infection (SARI) found at that time in hospitals will be collected in specific dates of month which is fixed by IEDCR.
- ILI samples are collected from Medicine and Pediatrics’ outdoor and SARI samples are collected from Medicine and Pediatrics’ indoor.

VIII. Event based disease surveillance:

- It is a process of investigating unofficial reports of disease events to verify the truth.
- This surveillance aims to decrease the potential for misinformation and misunderstanding and to inform the public and health officials about disease outbreaks, facilitate a rapid response, and promote public health preparedness.
- IEDCR has started the recording of any unusual health events from the daily newspaper, television, personal sources in addition to the local health authority.
- Following such kind of reports, IEDCR requests the local health authority to verify the truth immediately and initiate outbreak investigations from central level, if necessary.

XI. Acute meningo-encephalitis surveillance (AMES):

- Acute Meningo-Encephalitis Surveillance (AMES) started in Bangladesh with the objectives of expanding the ongoing vaccine-preventable diseases surveillance to include Meningo-encephalitis, strengthening national capacity to detect important causes of Meningo-
encephalitis and estimating incidence of vaccine-preventable causes of Meningo-
encephalitis to provide vaccination in future.
- AMES started from October, 2007 in collaboration with the partner organizations. Rajshahi, Khulna and Chittagong medical college hospitals were selected initially for the study.
- The concerned surveillance physicians, Directors and Superintendents of the selected hospitals are responsible for conducting the surveillance locally and sending the reports bi-weekly.

XII. Hospital Based Influenza Surveillance:

- IEDCR in collaboration with icddr,b conducts hospital based influenza surveillance in twelve selected hospitals across the country since May, 2007.
- Six of them are public and six are private hospitals. The objectives were to identify individuals and clusters of people who have life threatening infections with influenza virus and to identify clusters of patients/ health care workers/ poultry workers with severe acute respiratory illnesses (SARI) and influenza-like-illnesses (ILI).
- The concerned surveillance physicians, Directors and Superintendents of the hospitals are responsible for sending monthly report according to the case definition of SARI and ILI cases in the prescribed form to the central level. Samples from the sites are collected and tested on a periodic basis.
- Data from the surveillance are stored and analyzed at the central level.

XIII. High risk group avian influenza surveillance (among live-bird handlers):

- The live bird handlers are another high risk group for avian influenza other than the poultry workers and cullers.
- Considering the importance of follow-up of this high risk group, IEDCR started the wet market surveillance among the live bird handlers, initially confined to Dhaka city only.
- Two specific fixed markets from each zone of the city corporations are selected for the study. At the first stage, IEDCR started from Dhaka City Corporation. The health workers of the NGO/ health clinic are collecting data from the live bird handlers from the specific market on a weekly basis.
- They are sending these data through web-based disease surveillance system. IEDCR is responsible for the coordination of all activities and subsequent report preparation periodically.
- The concerned local NGO/ health clinic is responsible for conducting the surveillance locally.

III. High risk group Avian influenza surveillance (among cullers):

- IEDCR has started the monitoring of follow-up of poultry workers and cullers of the avian influenza (H5) infected poultry farms since January, 2008.
- When there is any report of confirmed H5 outbreak in any poultry farms from any districts, the local health authority immediately initiates the follow-up of those workers involved in that specific poultry.
- Those workers are given prophylactic anti-virals, tablet Oseltamivir daily for seven days and followed up for 14 days for development of any symptoms of influenza-like-illness (ILI).
- The concerned UH&FPO and the CS are responsible for sending the specific contact follow-up form daily by fax to the Director, IEDCR.
- If there is any report of suspected ILI case, IEDCR instructs the concerned local health authority for the necessary measures.
IV. **Future Plan:**

- Conducting epidemiologic surveillance of all health events with high priority
- Evaluating all surveillance activities regularly.
- Developing and evaluating improved methods for the collection, analysis, and dissemination of surveillance data.
- Maintaining and improving the expertise of health staffs.
CHAPTER- 8
Other Activities
International Health Regulation (IHR) 2005

I. Introduction:

The World Health Organization has revised International Health Regulation (2005) for preventing spread of disease across the world through development of national capacity for detection and response to disease outbreak and health events. Bangladesh is a signatory of IHR, 2005 and adopted it in 2007. The country has been implementing different activities under IHR, 2005 through multi-sectoral and One World, One Health approach. The Director, Disease Control has been nominated as the national focal point for IHR.

G. Goal

To develop a strong national public health system able to maintain active surveillance of diseases and public health events, able to rapidly investigate reports, assess public health risk, share information, and implement public health control measures.

H. General Objectives

To develop necessary national framework to prevent, detect, assess and provide a coordinated response to events that may constitute a Public Health Emergency of International Concern.

I. Specific Objectives

1. To formulate and revise/update legislation, laws, regulations, administrative requirements, policies or other government instruments as and where needed for implementation of IHR.

2. To develop the capacity of surveillance units at different levels so that they are efficient in the detection of unusual events, notification, report, verification, investigation and case management and infection control at source – especially preparedness of health care services at all levels throughout the country.

3. To develop the capacity of surveillance units at different levels so that they are efficient in the detection of unusual events, notification, report, verification, investigation and case management and infection control at source-especially preparedness of health care services at all levels throughout the country.

4. To strengthen infection control and prevention capacity at national, district and upazilla level.

5. To develop core capacity at designated points of entry in compliance with IHR (2005).

6. To establish coordination among governmental agencies, private sector and civil societies in compliance with IHR (2005)
J. Accomplishments

- The government has successfully combated the pandemic H1N1 2009 in line with the IHR, 2005 guidelines set by WHO

- Designation of IEDCR as IHR Focal Technical Institute of Bangladesh. (Approved by DGHS and pending MoH&FW approval)

- Assessed the core alert and response capacities of health facilities and ports in 2009 and 2011.


- Reviewed & assessed national legislation, regulations & other instruments for IHR 2005 implementation. Now drafting a new law in relation to implementation of IHR (ongoing)

- Drafted Strategy and Guideline for IHR (2005), Strategy and Guideline for Management of PHEIC at PoE and SOP on PHEIC (available at www.iedcr.org)

- IEDCR has conducted IHR related trainings with the technical support of WHO and CDC-Atlanta, for CS, UHFPOs, RRT members, Health Officers of PoEs, Clinicians/Pediatricians, Health administrators, Physicians of Tertiary Hospitals and Autonomous and Private Hospitals of Dhaka city

- Revised 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh: 2011-2016 in the context of IHR 2005

- Designated Shahjalal International Airport, Chittagong Sea port and Benapole land port with concurrence of relevant ministries: Ministries of Civil Aviation, Shipping and Customs (pending MoH&FW approval)

- Formation of IHR Committees & TOR (National IHR Coordination Committee, National IHR Technical Committee, National IHR Core Group (Approved by DGHS and pending MoH&FW approval)

K. Challenges

A. Administrative, Collaborative, and legal issues

- Development of specific National Plan for Multisectoral Public Health Emergency Preparedness and Response

- Approval of draft law for implementation of IHR (2005)

B. Laboratory capacities

Lack of capacity for detecting AI/H5N1, A/H1N1 (2009), Nipah, Polio or Anthrax at district level and no laboratory networking between human and animal health or inter-country agreement for laboratory networking

C. Infection Control and Prevention

- Neither Lack of National Infection Control Committee nor National Focal Point for Infection Control.

D. Core Capacities of Points of Entry (PoE)

- Building of minimum core capacity at designated PoEs as per IHR (2005) guideline within the timeframe of 2014.
Health Check up and Immunization of Hajj Pilgrimage

I. Introduction:

CDC provided health check up and immunization of hajj pilgrimage through civil surgeon, superintendent of hospitals and directors of medical college hospitals as prerequisite for qualifying to perform hajj. The medical team examines, vaccinate and provide international medical certificate to all the pilgrims. A make shift hospital is run at the hajji camp at Ashkona, Dhaka before and during the hajj. The pilgrimages are provided health care service along with vaccination for the left over cases.

II. Objectives:

- To provide health check-ups for the pilgrimage
- To immunize the pilgrimage
- To provide international health card
- To provide necessary health care services during staying in the hajj camp.

III. Activities done in 2011:

<table>
<thead>
<tr>
<th>Name of the events</th>
<th>Objectives</th>
<th>Venue</th>
<th>Remarks</th>
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Preparatory meeting with Director, CS and other stakeholders

- Preparation for providing services for the pilgrimage

| CDC, DGHS |

Orientation of health care providers

- To highlight the importance of hajj camp activities.
- Sharing of rules and responsibilities.

| IEDCR meeting room |

Vaccination - Meningitis - Influenza

- To prevent hajjis from meningitis and influenza

In the capital, districts and Hajj camp

| 120,000 hajjis were vaccinated (approx) |

Outpatients treatment

- To treat illness

Hajj camp

| 2614 treated |

Referral service

- To refer patient when required

Different hospitals of Dhaka city

| 2 ambulances were used |

3. Biswa Ijtema

I. Introduction:

Biswa Ijtema use to organize in every year with the devoted muslims participants from 80 different countries around the world at the bank of Turag River by using 160 acres of land at Tongi in Bangladesh. This is the second largest muslim religious gathering performs in three days and end up by the ending prayer. Because of its enormous number of peoples participation the Biswa Ijtema occasion has divided into 2 different schedules of time in January every year following the same procedure.

CDC has been taking responsibilities and coordinating activities in order to take care of the participants of Biswa Ijtema.

II. Objectives:

- To reduce the disease morbidity and mortality for the Ijtema participants
- To control and prevent diseases in the target area
- To ensure treatment for the Ijtema patients
- To refer patient if required

III. Accomplishments:

A. Infection Control Activities:

- Control and prevention of infection at the Ijtema area
- Hotel enlisted at the Ijtema area and ensures hygienic food preparation at hotels.
- Care during food preparation and distribution.
• Ensure safe water supply to prevent water borne diseases like diarrhea, dysentery, typhoid fever etc.
• Distribute leaflet for health education.

B. Temporary Health Service Centers:

a. Identification of general diseases
b. Emergency treatment
• Provide primary and general treatment
• Patient referral
• Provide health education

C. Special services

• Provided through 50 bedded hospital at Tongi, Gazipur
• Laboratory and pathological investigations for disease diagnosis
• Surgery if required
• Ensure plaster and splinter for bone fractures patients
• Refer to special hospital if required

D. Services at special hospitals:

• Immediate receive and admission of patients
• Send to respective ward by the shortest time
• Provide necessary treatment ASAP

E. Referral services:

14 ambulances were used round the clock during the Ijtema period in order to ensure the necessary services for the Biswa Ijtema participants. The ambulances were well equipped by trained doctors and necessary life saving items for e.g. oxygen cylinder, nebulizer, ambu-bag, steroid injection, IV saline and necessary medicines.
Organogram

Director, Disease Control, DGHS
Line Director
Communicable Disease Control

DD (CDC)
PM
Line Director
Communicable Disease Control

AD (CDC), DPM
APM A& PI

AD (DC), DPM
APM ERD

SSO, IEDCR
DPM
APM IDS

AD (Evaltn)
DPM
APM FE & STH

AD (M&PDC)
PM
DD (M&PDC)
DPM
APM KEP

AD (CMRL)
DPM
APM M&VBD

- DD: Deputy Director
- PSO: Principal Scientific Officer
- SSO: Senior Scientific Officer
- AD: Assistant Director
- PM: Program Manager
- DPM: Deputy Program Manager
- APM: Assistant Program Manager
- CDC: Communicable Disease Control
- DC: Disease Control
- M&PDC: Malaria and Parasitic Disease Control
- Evaltn: Evaluation
- CMRL: Central Malaria Reference Laboratory
- M&VBD CP: Malaria and other Vector Borne Disease Control Program
- FE&STH: Filariasis Elimination & STH Control Program
- KEP: Kala-Azar Elimination Program
- EDCP: Emerging & Re-emerging Disease Control Program
- A&PI PCP: Avian and Pandemic Influenza Prevention and control
- IDS: Integrated Disease Surveillance