



Government of the People's Republic of Bangladesh  
Ministry of Health and Family Welfare

# HEALTH BULLETIN 2015



Management Information System  
Directorate General of Health Services  
Mohakhali, Dhaka 1212  
[www.dghs.gov.bd](http://www.dghs.gov.bd)





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December 2015

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Mohakhali, Dhaka 1212  
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**We acknowledge, with gratitude, the contributions of all other personnel working in the public and private health systems of Bangladesh, who were involved directly or indirectly in the production of this bulletin by sending data or providing logistical support**

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**Honorable Minister**

Ministry of Health and Family Welfare

Government of the People's Republic of Bangladesh



## MESSAGE

I am pleased to know Health Bulletin 2015 is in the process of printing. This publication of the MIS-Health is an authentic document for us to assess the overall healthcare situation in the country and to identify our priority areas for future attention and actions.

Over the last few years, I have observed that Bangladesh made tremendous progress in the health sector under the present pro-people government led by our Honorable Prime Minister Sheikh Hasina. These achievements are the results of wise planning, careful implementation, and good monitoring and evaluation of health interventions.

After our internationally-recognized successes in achieving the targets of the Millennium Development Goals (MDGs) even with limited resources, it is now time for us to focus on the upcoming Sustainable Development Goals (SDGs) set by the United Nations as the post-2015 agenda. Since Bangladesh has become a role model for other developing countries in achieving the MDGs, I hope the country will continue to perform at least similarly, if not better, in achieving the targets of SDGs also.

Our goal to establish a 'Digital Bangladesh' has been achieved more markedly in the health sector due to innovative efforts made by the personnel of MIS-Health, under the leadership of Professor Dr. Abul Kalam Azad. I congratulate him and his colleagues and expect to see more of such innovations in the coming days.

I am also thankful to those who worked hard for bringing out this valuable publication on time.

Joy Bangla, Joy Bangabandhu.

**Mohammed Nasim, MP**



## Honorable State Minister

Ministry of Health and Family Welfare

Government of the People's Republic of Bangladesh



# MESSAGE

Health Bulletin has emerged as our flagship publication to highlight the overall health scenario in Bangladesh, and I am happy to know the 2015 Bulletin will be published on time.

I am really proud to see the achievements of Bangladesh in its health sector. The programs and projects undertaken by the present Awami League Government led by Honorable Prime Minister Sheikh Hasina have yielded remarkable positive impacts on having a healthy population. Our health services to the nation are continuously drawing global attention. International recognition in the recent past for our activities in the health sector has really been a matter of pride for us.

I congratulate the health personnel in all organizations under the Ministry of Health and Family Welfare for their dedication and achievements. The hard-working personnel of the MIS-Health guided by Professor Dr. Abul Kalam Azad deserve special mention for their relentless efforts in the digitalization of health services and record-keeping systems. The use of innovative technology in collecting field-level data, followed by careful processing, has made it possible to improve the quality of this publication year-by-year.

I am sure the information contained in this bulletin will help us in decision-making to prioritize health issues that deserve our special attention, especially when we are crossing the 2015 milestone after our remarkable successes in the MDGs and are ready to face the challenges of the upcoming Sustainable Development Goals set by the United Nations as part of post-2015 activities.

Thanks to those who worked hard for publication of this bulletin on time.

Joy Bangla, Joy Bangabandhu.

**Zahid Maleque, MP**



## Secretary

Ministry of Health and Family Welfare  
Government of the People's Republic of Bangladesh



# MESSAGE

Every year, I eagerly wait to see the Health Bulletin published by the Management Information System of the Directorate General of Health Services. This bulletin is, in fact, a yearbook that helps us understand what we have done in the past year(s) and what remains to be done. I hope Health Bulletin 2015 will not be an exception.

Health Bulletin 2015 is going to be published in a time when we need to know the areas that need our special attention before we start our work in setting the Sustainable Development Goals (SDGs) of the United Nations after 2015. Our historic achievements in the Millennium Development Goals (MDGs) will guide us to perform even better in the pursuit of SDGs.

Digitalization of the data-collection and record-keeping system has been of enormous help in visiting and revisiting our actual situations of the healthcare services in the country. I extend my appreciations for the innovative efforts made by the MIS-Health in this endeavor. I have no hesitation to extend my special thanks to Professor Dr. Abul Kalam Azad and his staff whose remarkable achievements in this digitalization process have helped us earn international recognitions.

I congratulate members of the publication team in MIS-Health for their creative and relentless efforts to improve the quality of Health Bulletin each year that has not escaped my notice.

**Syed Monjurul Islam**



## Director General

Directorate General of Health Services  
Mohakhali, Dhaka



# MESSAGE

I am delighted to present Health Bulletin 2015 to our distinguished readers on time. This annual publication of ours has been recognized as a useful document for all in the health sector, ranging from policy-makers and planners to the health managers and field workers. The reason is very evident and clear. Our Health Bulletin presents the overall picture of the health conditions of our people as well as the performance of all health institutions in the country to lessen the disease burden on the state.

The Directorate General of Health Services, especially its MIS-Health, has been continuously trying to collect accurate data from the field level and process these at the headquarters for inclusion in the yearly bulletin. The accuracy of data has a direct impact on understanding of the actual situation, which, in turn, affects the decision-making process. This is an enormous and difficult task but I am very happy that my colleagues at the MIS-Health are doing their jobs efficiently, even with limited resources.

I am grateful to the Honorable Minister, State Minister for Health, and the Secretary for their constant support to and guidance for our activities.

Probably, it did not escape the notice of our readers that quality of the Health Bulletin is improving bit-by-bit every year. This has been possible for the able leadership of my colleague Professor Dr. Abul Kalam Azad, the Additional Director General (Planning & Development) and Director-MIS. I extend my heartiest congratulations to him and members of the production team for their hard work in bringing out the Bulletin on time.

**Professor Dr. Deen Mohd. Noorul Huq**

# From Chief Editor's Desk

Despite the introduction of innovative digital means to collect information from the individual health facilities and organizations, editing of data for inclusion in the Health Bulletin remains a formidable task in itself. However, we are pleased to see that almost all the health facilities under the Directorate General of Health Services and other public health organizations have sent their data for publication in this central annual bulletin. Participation of the NGO and private health facilities in our effort to present a near-national scenario of healthcare is also on the rise. I am thankful to those who cooperated with us in this regard.

This publication primarily intends to highlight the activities and healthcare situation in Bangladesh during 2014 but, based on availability, 2015 data are also included in some cases.

2015 is a year of great significance in terms of newer public health visions, both for Bangladesh and other Member States of the United Nations. The UN Millennium Development Goals (MDGs) will conclude this December, and we will have to confront the challenges of the newly-set Sustainable Development Goals, abbreviated as SDGs. Health Bulletin 2015 makes specific mention of this transition, in relevant chapters. Our experiences with the MDGs will guide us in our pursuit of addressing the new challenges in the coming SDGs. One grand feature of this transition is the emphasis on universal access to data and information to be generated through country-led processes, the foundation of which was laid by the response to the recommendations of the Commission on Information and Accountability (COIA) for Women's and Children's Health, where we made remarkable achievements during the era of the Millennium Development Goals. The era ended with our pride of earning several international recognitions for digitalizing the information and communication network in the public health system. The latest development in this regard is the successful launch of the life-time electronic health-records in Kaliganj upazila of Gazipur district of Bangladesh on 18 November 2015 to be scaled gradually all over Bangladesh. We call this electronic platform "Shared Health Record" (SHR). This bulletin covers this issue in Chapter 17.

I am grateful to Mr. Mohammed Nasim, MP, Hon'ble Minister for Health and Family Welfare; Mr. Zahid Maleque, MP, Hon'ble State Minister for Health and Family Welfare; Syed Monjurul Islam, Secretary to the Ministry of Health and Family Welfare; and to my Director General Professor Dr. Deen Mohd. Noorul Huq, for their kind support and guidance in the timely publication of Health Bulletin 2015.

As always, we have tried our best to attribute a good look to the bulletin, both in terms of physical appearance and the quality of contents. My skilled colleagues in the MIS-DGHS, along with two external consultants, deserve special appreciations. I also acknowledge my colleagues working under the DGHS across the country and others who contributed data that constitute the heart of this bulletin.

In our constant attempts to improve the quality of this publication, we are always open to constructive criticism from readers and the media personnel.



**Professor Dr. Abul Kalam Azad**

Additional Director General (Planning & Development)  
and  
Director, Management Information System  
Directorate General of Health Services  
Government of the People's Republic of Bangladesh

# ACRONYMS

ADB	Asian Development Bank	CBHC	Community-based Healthcare
ADP	Annual Development Program	CABG	Coronary Artery Bypass Grafting
AEFI	Adverse Events Following Immunization	CBN	Cost of Basic Needs (method)
AFP	Acute Flaccid Paralysis	CC	Community Clinic
AHI	Assistant Health Inspector	CDC	Communicable Disease Control
AIDS	Acquired Immunodeficiency Syndrome	CDD	Control of Diarrheal Diseases
ALS	Average Length of Stay	CFP	Conceptual Framework Paper
AMC	Alternative Medical Care	CGA	Comptroller General of Accounts
ANC	Antenatal Care	CHCP	Community Healthcare Provider
APIR	Annual Program Implementation Report	CIDA	Canadian International Development Agency
APR	Annual Program Review	CIDD	Control of Iodine Deficiency Disorder
ARC	American Red Crescent	CMCH	Chittagong Medical College Hospital
ARI	Acute Respiratory Infection	CME	Centre for Medical Education
ART	Antiretroviral treatment /Antiretroviral therapy	CMMU	Construction, Maintenance and Management Unit
BBS	Bangladesh Bureau of Statistics	CMNS	Child and Mother Nutrition Survey
BCC	Behavior Change Communication	CMSD	Central Medical Stores Depot
BCG	Bacillus Calmette Guerin	CNP	Community Nutrition Promoter
BCPS	Bangladesh College of Physicians and Surgeons	CNS	Child Nutrition Survey
BCS	Bangladesh Civil Service	COPD	Chronic Obstructive Pulmonary Disease
BDHS	Bangladesh Demographic and Health Survey	CPR	Contraceptive Prevalence Rate
BDS	Bachelor of Dental Surgery	CRF	Chronic Renal Failure
BDT	Bangladeshi Taka	CS	Civil Surgeon
BEOC	Basic Emergency Obstetric Care	C-section	Cesarean Section
BGC	Bangladesh Geographic Survey	CSO	Community Support Organization
BHE	Bureau of Health Education		
BIDS	Bangladesh Institute for Development Studies	DAB	Diabetic Association of Bangladesh
BINP	Bangladesh Integrated Nutrition Project	DBRH	Demand-based Reproductive Health
BMA	Bangladesh Medical Association	DCA	Development Credit Agreement
BMI	Body Mass Index	DCM	Dilated Cardiomyopathy
BMMS	Bangladesh Maternal Mortality Survey	DDA	Directorate of Drug Administration
BMRC	Bangladesh Medical Research Council	DDC&H	Dhaka Dental College & Hospital
BNC	Bangladesh Nursing Council	DF	Dengue Fever
BNHA	Bangladesh National Health Accounts	DFID	Department for International Development
BRAC	Bangladesh Rural Advancement Committee	DG	Director General
BSA	Bangladesh Society of Anesthesiologists	DGFP	Directorate General of Family Planning
BSMMU	Bangabandhu Sheikh Mujib Medical University	DGHED	Directorate General of Health Engineering Department
BST	Bangladesh Standard Time	DGHEU	Directorate General of Health Economics Unit
BTRC	Bangladesh Telecommunication Regulatory Commission	DGHS	Directorate General of Health Services

DH	District Hospital	GUADCH	Government Unani and Ayurvedic Degree College & Hospital
DHF	Dengue Hemorrhagic Fever		
DMC	Dhaka Medical College		
DMCH	Dhaka Medical College Hospital	HA	Health Assistant
DNS	Directorate of Nursing Services	HDI	Human Development Index
DOTS	Directly-observed Treatment-Short Course	HDS	Health and Demographic Survey
DP	Development Partner	HEB	Health Education Bureau
DPA	Direct Project Aid	HEU	Health Economics Unit
DPHE	Department of Public Health Engineering	HFWC	Health and Family Welfare Center
DSF	Demand-side Financing	HI	Health Inspector
		HIES	Household Income and Expenditure Survey
ECNEC	Executive Committee of National Economic Council	HIU	Health Information Unit
EDPT	Early Diagnosis and Prompt Treatment	HIV	Human Immunodeficiency Virus
EmOC	Emergency Obstetric Care	HIV/AIDS	Human Immunodeficiency virus/Acquired Immunodeficiency Syndrome
EPI	Expanded Program on Immunization	HKI	Helen Keller International
EPI CES	Expanded Program on Immunization–Coverage Evaluation Survey	HLIC	High-level Inter-ministerial Committee
EPR	Emergency Preparedness	HSM	Hospital Services Management
ERD	Economic Relations Division	HMPD	Health Manpower Development
ESD	Essential Service Delivery	HNP	Health, Nutrition and Population
ESP	Essential Service Packages	HNPSP	Health, Nutrition and Population Sector Program
ETT	Exercise Tolerance Test	HPNSDP	Health, Population and Nutrition Sector Development Program
EU	European Union	HR	Human Resource
FCPS	Fellow of College of Physicians and Surgeons	IAPB	International Association for Prevention of Blindness
FEP	Filariasis Elimination Program		
FMAU	Financial Management and Audit Unit		
FMRP	Financial Management Reforms Project	ICD-10	International Statistical Classification of Diseases and Related Health Problems, 10th Revision
FP	Family Planning	ICMH	Institute of Child and Mother Health
FSNSP	Food Security Nutritional Surveillance Project	ICOVED	Integrated Control of Vector-borne Diseases
FSW	Female Sex Worker		
FWA	Family Welfare Assistant	ICT	Information and Communication Technology
FY	Financial Year	IDA	Iron-deficiency Anemia
		IDD	Iodine-deficiency Disorder
GAVI	Global Alliance for Vaccine and Immunization	IDH	Infectious Diseases Hospital
GDP	Gross Domestic Product	IEC	Information, Education and Communication
GFTAM	Global Fund to Fight AIDS, Tuberculosis and Malaria	IEDCR	Institute of Epidemiology, Disease Control and Research
GHDCH	Government Homeopathic Degree College Hospital		
GO	Government Organization	IHSM	Improved Hospital Services Management
GOB	Government of Bangladesh	IHT	Institute of Health Technology
GMT	Greenwich Mean Time	IMCI	Integrated Management of Childhood Illness
GTC	Government Tibbia College		



IMED	Implementation, Monitoring and Evaluation Division	MCPS	Member of College of Physicians and Surgeons
IMF	International Monetary Fund	MCWC	Maternal and Child Welfare Center
IMHR	Institute of Mental Health and Research	MDA	Mass Drug Administration
IMR	Infant Mortality Rate	MDG	Millennium Development Goal
IOL	Intraocular Lens	MICS	Multiple Indicator Cluster Survey
IPGMR	Institute of Postgraduate Medicine and Research	MIS	Management Information System
IPH	Institute of Public Health	MMR	Maternal Mortality Ratio
IPHN	Institute of Public Health Nutrition	MNC	Maternal, Neonatal and Child Health
IPM	Individual Performance Management	MNH	Maternal and Neonatal Health
i-PRSP	Interim Poverty Reduction Strategy Paper	MNHC	Maternal and Neonatal Healthcare
IRS	Indoor Residual Spraying	MO	Medical Officer
ISP	Internet Service Provider	MOHFW	Ministry of Health and Family Welfare
IST	In-service Training	MOLGRDC	Ministry of Local Government, Rural Development and Cooperatives
IT	Information Technology	MoU	Memorandum of Understanding
ITHC	Integrated Thana Health Complex	MP	Member of Parliament
ITMN	Insecticide-treated Mosquito Net	MSA	Management Support Agency
IUD/IUCD	Intra-uterine Device/Intra-uterine Contraceptive Device	MSD	Medical Subdepot
IVM	Integrated Vector Management	MSM	Men who have sex with men
IYCF	Infant and Young Child Feeding	MSW	Male Sex Worker
		MTR	Mid-term Review
		MWM	Medical Waste Management
JICA	Japan International Cooperation Agency		
		NCD	Non-communicable Diseases
KMCH	Khulna Medical College Hospital	NEMEW	National Equipment Maintenance and Engineering Workshop
		NGO	Non-governmental Organization
LAN	Local Area Network	NICRH	National Institute of Cancer Research and Hospital
LBW	Low Birthweight	NICVD	National Institute of Cardiovascular Diseases
LD	Line Director	NID	National Immunization Day
LHB	Local Health Bulletin	NIDCH	National Institute of Diseases of Chest and Hospital
LLIN	Long-lasting Insecticidal Net	NIKDU	National Institute of Kidney Diseases and Urology
LLP	Local-level Planning	NICRH	National Institute of Cancer Research & Hospital
LTSO	Long-term Strategy Options	NIMHR	National Institute of Mental Health and Research
M&E	Monitoring & Evaluation	NINH	National Institute of Neurology & Hospital
M/F	Male/Female Ratio	NIO	National Institute of Ophthalmology
MATS	Medical Assistant Training School	NIPORT	National Institute of Population Research and Training
MBDC	Mycobacterial Disease Control		
MC	Medical College		
MCH	Maternal and Child Health		
MCH	Medical College Hospital		

NIPSOM	National Institute of Preventive and Social Medicine	SBTP	Safe Blood Transfusion Program
NITOR	National Institute of Traumatology, Orthopedics and Rehabilitation	SDG	Sustainable Development Goals
NASP	National AIDS and STD Program	SEARO	South-East Asian Regional Office
nm	Nautical mile	STD	Sexually Transmitted Diseases
NMSS	National Micronutrients Status Survey	SVRS	Sample Vital Registration System
NNS	National Nutrition Services	TAST	Technical Assistance Support Team
NNP	National Nutrition Program	TEMO	Transport & Equipment Maintenance Unit
NTP	National TB Program	TB	Tuberculosis
		TT	Tetanus Toxoid
OP	Operational Plan	TTU	Technical Training Unit
OPD	Outpatient Department		
ORS	Oral Rehydration Salt	UESDS	Utilization of Essential Service Delivery Survey
ORT	Oral Rehydration Therapy	UHC	Upazila Health Complex
OT	Operation Theater	UHFPO	Upazila Health and Family Planning Officer
PH	Public Health	UHFWC	Union Health and Family Welfare Center
PKDL	Post Kala-azar Dermal Leishmaniasis	UNICEF	United Nations Children's Fund
PLIV	People living with HIV	UNFPA	United Nations Population Fund
PMIS	Personnel Management Information System	UNAIDS	Joint United Nations Programme on HIV/AIDS
PMMU	Program Management & Monitoring Unit	UNGASS	United Nations General Assembly Special Session
PRSP	Poverty Reduction Strategy Paper	USC	Union Subcenter
PSM	Preventive and Social Medicine	USD	United States Dollar
PSTN	Public Switched Telephone Network	USI	Universal Salt Iodization
PWID	People who inject drugs		
		VAC	Vitamin A Capsule
RDU	Research and Development Unit	VAD	Vitamin A Deficiency
RADP	Revised Annual Development Program		
RPA	Reimbursable Project Aid	WAZ	Weight-for-age z-score
RCHCIB	Revitalization of Community Healthcare Initiative in Bangladesh	WB	World Bank
RHC	Rural Health Center	WCBA	Women of Childbearing Age
		WHO	World Health Organization
		WiMAX	Worldwide Interoperability for Microwave Access

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# 1

## BANGLADESH

### At a Glance

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Although the highly-dense population of the country was once considered a burden, it is now turning out to be the greatest asset of the country

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#### History

Before emerging as an independent nation in 1971 through a bloody battle, Bangladesh was a province of Pakistan and used to be called East Pakistan. After the fall of Nawab Sirajuddowla in the Battle of Plassey on 23 June 1757, this part of the Indian Subcontinent was ruled by the British from 1757 to 1947. In 1947, the British colonial rule ended, and the Indian Subcontinent was divided into two independent nations—India and Pakistan. Profound disparities in governance between East and West Pakistan led to the craving for independence among the East Pakistanis since the Language Movement in 1952, followed by series of mass upsurge at various times during the 1960s and early 1970s and a 9-month War of Liberation under the leadership of Bangabandhu Sheikh Mujibur Rahman, and Bangladesh emerged as a sovereign nation in 1971.

#### Geographical location

Bangladesh has a total land area of 147,570 square kilometers (56,977 square miles). The country borders India on three sides with the Indian states of West Bengal, Tripura, Assam, and Meghalaya. Only a small strip in the southeast shares a border with Myanmar. The Bay of Bengal lies to the south. Bangladesh comprises primarily floodplains, with scattered hills in the eastern and northern parts. Large rivers and an intricate web of canals and rivers form this Ganges Delta, the largest delta in the world.

#### Climate

Bangladesh is a tropical country with a hot and rainy summer (March to June), a warm and rainy monsoon (June to October), and a mild dry winter (October to March). January is the coldest month, with an average temperature of 26°C (78.8°F). April is the hottest month, with temperatures ranging from 33°C to 36°C (91.4°F to 96.8°F).

Major part of Bangladesh receives more than 1,525 mm of rainfall a year, with areas near the hills receiving more than 5,000 mm, primarily during the monsoon (June-October). The humidity varies from 73% to 86% and is the highest during the monsoon and the lowest in the winter.

## Religion and Culture

Majority (approx. 89%) of the population is Muslim. Hindus, Buddhists, and Christians comprise 9.6%, 0.6%, and 0.3% of the population respectively. Over 98% of the people speak Bangla. English is also widely spoken. Bangladesh's rich cultural traditions are displayed in archaeological sites, sculptures, terracotta, architecture, museums, archives, libraries, classical music, dance, paintings, dramas, folk arts, festivals, and ethnic cultural activities.

## Population and Demography

In 2011, the Bangladesh Bureau of Statistics (BBS) conducted the national population census and according to the census, total population of Bangladesh was 149,772,364 on 15 March 2011. With annual population growth rate of 1.37% (SVRS 2013), the population on 3 December 2015 was 159.71 million. Although the highly-dense population of the country was once considered a burden, it is now turning out to be the greatest asset of the country. Bangladesh is now going through a demographic transition and the proportion of the population in the agile labor force (15–59 years age-group) has increased resulting in a reduction of the dependency ratio. The steady economic growth amid global recession and sporadic natural calamities in the country indicates that the hard-working people of Bangladesh are efficiently taking advantages of the demographic dividend.

## Governance

Bangladesh is divided into 7 administrative divisions. Formation of a new division has been recently approved by the Government and, hence, the number will be raised to 8. Each division is divided into several districts; each district is



**Figure 1.1. Map of Bangladesh**

further subdivided into several upazilas, each upazila into several unions, and each union into nine wards (Figure 1.2). Wards are divided into several villages. However, ward is the lowest administrative unit of the local government, having at least one representative elected for 5 years by popular vote. The city corporations and municipalities are designated as urban areas, with 12 city corporations and 324 municipalities across the country. Bangladesh is a non-federal country governed by parliamentary democracy. The National Parliament is called Bangladesh Jatiya Sangsad. There are about 40 ministries. A ministry is headed by a minister, with a secretary to head the bureaucrats. Some ministries are divided into functional divisions, with each division having a secretary to head the bureaucrats of the respective divisions. There are 21 such functional divisions. The Ministry of Health and Family Welfare is one of the largest ministries of the Government of Bangladesh.

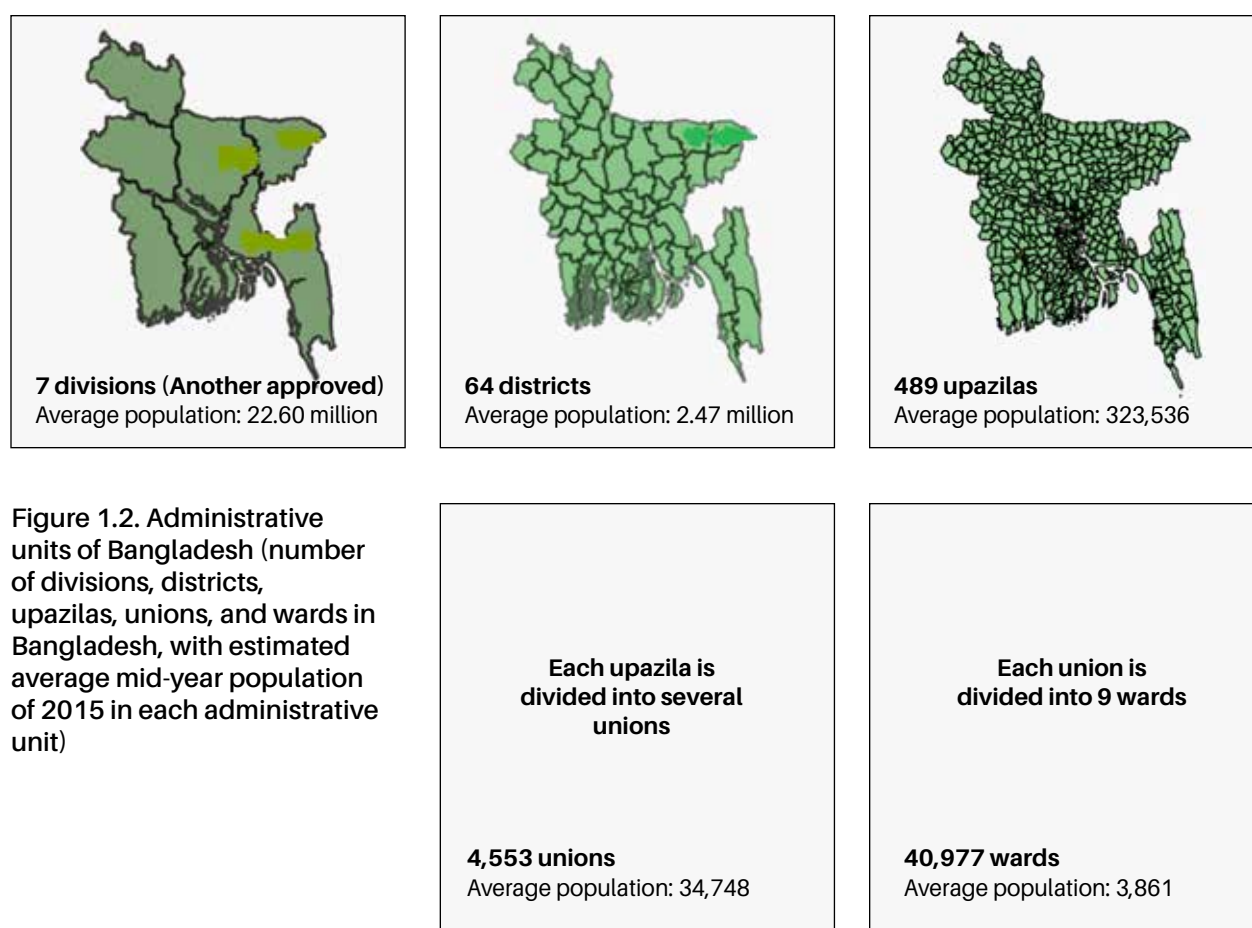


Figure 1.2. Administrative units of Bangladesh (number of divisions, districts, upazilas, unions, and wards in Bangladesh, with estimated average mid-year population of 2015 in each administrative unit)

## Economy

The agrarian sector still dominates the country's economy, accounting for majority of the rural labor force. The principal industries of the country include readymade garments, textiles, chemical fertilizers, pharmaceuticals, tea-processing, sugar,

and leather goods. The principal minerals include natural gas, coal, white clay, and glass-sand. Bangladesh has been utilizing a mixed system of public and private development, which operates on free-market principles. The GDP growth rate is 6.51% (BBS 2015).

# Some basic information and data on Bangladesh

(See List of Acronyms for the abbreviations; light shade includes source of data)

## GEOGRAPHY

**Bangladesh National Portal**  
3 December 2015

**Location:** Latitude between 20°34' and 26°38' North, Longitude between 88°01' and 92°41' East

**Boundary:** North and West: India; South: Bay of Bengal; East: India and Myanmar

**Border:** 4,246 km, Coastline: 580 km

**Area:** 147,570 sq. km (56,977 sq. miles), Land: 133,910 sq. km, Water: 10,090 sq. km

**Maritime boundary:** Contiguous zone: 18 nm; Economic zone: 200 nm; Territorial sea: 12 nm

**Average Temp:** Winter: 11°C-20°C; Summer: 21°C-38°C

**Rainfall:** 1,100 mm to 3,400 mm (June-August); Average: 203 mm/month

**Humidity:** Highest 99% (July); Lowest 36% (December-January)

**Standard time:** BST (GMT+ 6 hours)

## ADMINISTRATIVE UNITS

**Bangladesh Local Government Division, 2015**

Division: 7 (Another approved)

City corporation: 12

Metropolitan city: 4

Municipality: 324

District: 64

Upazila: 489

Union: 4,553

Ward: 40,977

Village (approx.): 87,310

## DEMOGRAPHY

**Population:** 159.71 million (BBS web portal, 3 December 2015)

**Population density (per sq. km):** 1,049 (SVRS 2013); 1,222 inland area (WB 2014)

**Population growth rate:** 1.37% (SVRS 2013)

**Sex ratio (M/F):** 102.6/100.0 (SVRS 2013)

**Adolescent birth rate (per 1,000 girls):** 83 (UN 2015)

## OTHER POPULATION CHARACTERISTICS

### SVRS 2013

Population by broad age-group

Age-group (years)	%		
	Both sexes	Male	Female
0-14	32.3	32.8	31.6
15-49	53.2	51.8	54.4
50-59	7.3	7.4	7.4
60+	7.3	8.0	6.4

**Dependency ratio (percent)**

Total: 58; Rural: 61, Urban: 50

**Child-woman ratio (per 1,000 women of 15-49 years)**

Total: 356; Rural: 367, Urban: 320

**Crude birth rate (per 1,000 population)**

Total: 19; Rural: 19.3, Urban: 18.2

**Total fertility rate (per woman of 15-49 years)**

Total: 2.11, Rural: 2.19, Urban: 1.84

Total: 2.1 (UN 2015)

**Age-specific fertility rate**

(per 1,000 women of reproductive age)

Age-group (years)	Rate
15-19	60
20-24	150
25-29	110
30-34	50
35-39	30
40-44	10
45-49	5

**General fertility rate:**

Total: 71, Rural: 73, Urban: 63

**Net reproduction rate (per woman of 15-49 years)**

Total: 1.01, Rural: 1.04, Urban: 0.9

**Crude marriage rate (per 1,000 population)**

Total: 1.01, Rural: 1.04, Urban: 0.9

**Mean age at marriage (years)**

Area	Male	Female
Total	24.3	18.4
Rural	24.1	18.2
Urban	24.6	18.9

## INFORMATION TECHNOLOGY

**BTRC, 24 December 2015**

**Internet subscribers (November 2015)**

Total: 53.941 million; Mobile Internet: 51.468 million; WiMAX: 0.154 million; ISP + PSTN: 2.318 million

**Mobile subscribers (November 2015)**  
133.163 million

## LITERACY

### SVRS 2013

**Literacy rate of population**

7+ years (%): Both sexes 57.2, Male 59.3, Female 55.1; 15+ years (%): Both sexes 61.0, Male 64.2, Female 57.8

## ECONOMY

**Bangladesh National Portal**  
3 December 2015

**GDP:** USD 1,314 (per capita in 2015), GDP Growth Rate (%): 6.51 (2014-2015) (BBS)

**Poverty Level:** 25% (people living with USD 2 per day)

**Foreign Grant Dependency:** 2%

**Principal Crops:** Rice, jute, tea, wheat, sugarcane, pulses, mustard, potato, vegetables

**Principal Industries:** Garments and textiles (2nd largest in the world), tea, ceramics, cement, leather, jute (largest producer in the world), chemicals, fertilizers, shrimp cultivation and processing, sugar, paper, electric and electronics, medicines, fishing.

**Principal Exports:** Garments, knitwear, frozen shrimps, tea, leather and leather products, jute and jute products, ceramics, IT outsourcing, etc.

**Principal Imports:** Wheat, fertilizers, petroleum goods, cotton, edible oil, etc.

**Principal Minerals:** Natural gas, oil, coal, white clay, glass sand, etc.

## HEALTH STATUS

**Stillbirth rate (per 1,000 total births):** 36 (UN 2015)

**Under-5 mortality rate (per 1,000 livebirths):** 46 (BDHS 2014); 38 (UN 2015)

**Infant mortality rate (per 1,000 livebirths):** 31 (SVRS 2013); 38 (BDHS 2014); 31 (UN 2015)

**Neonatal mortality rate (per 1,000 livebirths):** 28 (BDHS 2014); 23 (UN 2015)

**Maternal mortality ratio (per 100,000 livebirths):** 194 (BMMS 2010); 176 (UN 2015)

**Life-expectancy at birth (years):** Both sexes: 70.4; Male: 68.8; Female: 71.2 (SVRS 2013); Both sexes: 70.69 (WB 2015)



**Contraceptive prevalence rate (%)**: 62.4 (BDHS 2014); 62.4 (SVRS 2013)  
**Unmet need for family planning (%)**: 12.0 (BDHS 2014);

**Births attended by skilled health personnel (%)**: 42.1 (BDHS 2014), 42 (UN 2015)

**Antenatal care coverage (at least one visit by skilled health professional) (%)**: 63.9 (BDHS 2014)

**Antenatal care coverage (at least 4 visits) (%)**: 31.2 (BDHS 2014)

**Institutional delivery rate (%)**: 37.4%  
 Public facility: 12.8,  
 Private facility: 22.4,  
 NGO facility: 1.9 (BDHS 2014)  
**Home delivery rate**: 62.2% (BDHS 2014)  
**C-section rate (%)**: 22.9% (BDHS 2014)

**Malaria positive case/1,000 population (in endemic areas)**: 4.3 (DGHS 2015)

**Malarial death rate/1,000 population (in endemic areas)**: 0.003 (DGHS 2015)

**TB (all forms) prevalence rate/100,000 population**: 404 (NTP 2015)

**TB death rate/100,000 population**: 51 (NTP 2015)

**New smear+ve TB case detection rate under DOTS (%)**: 68 (NTP 2015)

**TB cure rate (%) with DOTS**: 94 (NTP 2015)

**Mortality rate among HIV+ve TB patients (per 100,000 population)**: 0.11 (WHO 2015)

**HIV prevalence among most-at-risk population group**: 0.7% (DGHS 2015)

**HIV prevalence among key populations in 2014**: PWID: 1.1 %; FSW: 0.3%; MSW: 0.4%; MSM: 0.4%; Hijra: 1% (UNAIDS 2015)

**People living with HIV (PLIV) in 2014**: 8,900 (NASP 2015)

**New HIV infection reported in 2015 (up to November)**: 469 (NASP 2015)

**Antiretroviral treatment (ART) coverage among adults needing ART**: 14% (UNFPA 2015)

**Number of ART recipients in 2014**: 1,287 (UNFPA 2015)

**Estimated number of ART recipients in 2015**: 1,428 (UNFPA 2015)

**Knowledge of at least one mode of transmission of HIV/AIDS among population (%)**: 60.1 (SVRS 2013)

## IMMUNIZATION (Valid vaccine coverage)

### EPI CES 2014

**≤12 months old children**: BCG 99.2%; OPV1 95.8%; OPV2 95.1%; OPV3 92.7%; Penta1 92.6%; Penta2 93.3%; Penta3 93%; Measles 86.6%; Full vaccination: 81.6%

**≤23 months old children**: BCG 99.2%; OPV1 95.8%; OPV2 95.2%; OPV3 93.3%; Penta1 92.6%; Penta2 93.4%; Penta3 93.2%; Measles 90.1%; Full vaccination: 84.7%

**Tetanus toxoid coverage (%) among women of childbearing age**: TT1 95.1%; TT2 93.2%; TT3 85.4%; TT4 70.8%; TT5 53.2% (EPI CES 2014)

## VITAMIN A AND OTHER COVERAGE

### EPI CES 2014

#### Vitamin A coverage

Infant (6-11 months): 85.4%

Children (12-59 months): 93.7%

Postpartum women: 41.4%

Percentage of women taking iron tablets during the last pregnancy: 70.8%

Percentage of women taking calcium tablets during the last pregnancy: 59.0% (EPI CES 2014)

## HOUSEHOLD CHARACTERISTICS AND UTILITIES

### SVRS 2013

**Household-size (no. of persons)**: 4.4

Male-headed: 88.4%

Female-headed: 11.6%

#### Water and sanitation (% households)

##### A. Drinking-water:

Access to tap and tubewell water  
97.5

##### B. Toilet facility:

Sanitary: 63.3; Others: 34.5; None: 2.2

Source of Light (% household):

Source	Total	Rural	Urban
Kerosene	32.3	39.6	8.5
Electricity	66.9	59.59	1.3
Others	0.8	1.00	0.2

## HEALTH SERVICE AND MEDICAL EDUCATION

### DGHS 2015

Total number of government hospitals under the DGHS: 612

Government hospitals of secondary and tertiary levels under the DGHS: 128

Government hospitals under the DGHS at the upazila and union levels: 484

No. of private registered hospitals and clinics under the DGHS: 4,280

No. of private registered diagnostic centers under the DGHS: 9,061

No. of hospital beds under the DGHS (functional): 46,964

No. of hospital beds under DGFP: 1,593 (DGFP 2015)

No. of hospital beds in the private-sector (in private hospitals registered by the DGHS: 74,620)

Total functional beds (in the DGHS and DGFP run hospitals and registered private hospitals): 123,177

Population per hospital bed (total beds in the DGHS, DGFP, and registered private hospitals against population, as of 3 December 2015): 1,297

#### Teaching/training institutions for healthcare

No. of postgraduate medical teaching institutions: 33; Government: 23; Private: 10

No. of medical colleges: Total 100; Government: 36 (run by DGHS:30, run by Bangladesh Armed Forces: 6) Private: 64

No. of dental colleges: Total 33; Government: 9; Private: 24

No. of degree/diploma colleges for alternative medicines: Total 64; Government: 3; Private: 61

No. of nursing colleges offering basic BSc Nursing course: Total: 39; Government: 14; Autonomous: 1; Private: 24

No. of nursing colleges offering post-basic BSc Nursing course: Total 24; Government 4; Autonomous: 1; Private 19

No. of nursing institutions: Total 131; Government 57; Private 68

No. of institutions providing junior midwifery training: Total 45; Government 31; Private 14

No. of medical assistants training schools: Total 176; Government 8; Private 168

No. of institutes of health technology (IHT): Total 116; Government 8; Private 104; Government-private: 4

#### Available seats for medical degrees

Postgraduate medical degree (MD, MS, Diploma, M Phil, etc.): Total: 2,439; Government: 2,068; Private: 169

(Fellowships/memberships offered by BCPS do not have any fixed number)

MBBS: Total 9,679; Government: 3,729; Private: 5,950

BDS: Total 1,832; Government: 517; Private 1,315

Bachelor of Unani and Ayurvedic Medicine: 50

Bachelor of Homeopathic Medicine: 50

#### Medical assistant:

Total 13,051; Government 716; Private 12,335

Medical technologist: Total 16,042;  
Government 2,596; Private 13,266;  
Government-Private 180

## HEALTH WORKFORCE

No. of total sanctioned posts under the  
DGHS: 126,727 (DGHS 2015)

No. of existing personnel under the DGHS:  
106,162 (DGHS 2015)

No. of registered physicians: 74,099  
(BMDC, 5 October 2015)

Estimated no. of existing registered  
physicians in the country: 60,761  
(indirect estimate from no. of total  
registered physicians) (DGHS 2015)

No. of registered dental surgeons: 6,481  
(BMDC, 5 October 2015)

No. of doctors under the DGHS  
(existing) 21,840 (DGHS 2015)

Total no. of doctors in MOHFW (DGHS  
and DGFP): 22,318 (DGHS 2015)

Distribution of doctors:

MOHFW: 36.73 %; Other ministries: 3%;  
Private sector 60.27% (DGHS 2015)

Doctors under DGFP (No. of sanctioned  
posts given in parenthesis):

MO (MCH-FP): 276 (721); MO (clinic): 56  
(63); MO (FW): 125 (250); MO (others):  
21 (41); Total: 478 (sanctioned: 1,075)  
(DGFP 2015)

No. of Sub-assistant Community  
Medical Officers (SACMO) under DGFP:  
2,322 (sanctioned: 2,500) (DGFP 2015)

No. of pharmacists under DGFP: 775  
(sanctioned: 806) (DGFP 2015) (DGFP  
2015)

No. of assist. nursing attendant under  
DGFP: 106 (sanctioned: 110) (DGFP  
2015)

No. of FWVs under DGFP: 4,898  
(sanctioned: 5,710) (DGFP 2015)

No. of FWAs under DGFP: 21,083  
(sanctioned: 23,500) (DGFP 2015)

No. of registered diploma nurses:  
39,041 (BNC 2015)

No. of registered BSc nurses: 3,512  
(BNC 2015)

No. of registered nurses with Diploma in  
Cardiac Nursing/ Intensive Care Nursing:  
200 (BNC 2015)

No. of registered assistant nurses: 2,425  
(BNC 2015)

No. of registered family welfare visitors  
(FWV): 6,318 (BNC 2015)

No. of registered junior midwives: 1,932  
(BNC 2015)

No. of registered community skilled birth  
attendants: 7,858 (BNC 2015)

No. of nurses currently available under  
the MOHFW: 18,366 (DNS 2014)

No. of medical technologists under  
the DGHS (existing) (DGHS 2015):  
Total: 6,029; Sanitary inspectors: 439;  
Dental technologists: 501; Laboratory  
technologists: 1,642; Pharmacy  
technologists: 2,113; Radiographers:  
644; Physical therapists: 147

No. of SACMO under DGHS: 4,684  
(DGHS 2015)

Community healthcare providers for  
community clinics 13,822 (DGHS 2015)

No. of domiciliary workers under the  
DGHS: Total 22,820; Health inspectors  
(HI) 1,282; Assistant health inspectors  
(AHI) 4,006; Health assistants (HA)  
17,532 (DGHS 2014)

Total community-level health workers  
under the MOHFW: 66,623

## POPULATION-HEALTH WORKFORCE RATIO

### DGHS 2014

(Current population of 159.71 million has  
been considered as the denominator)

Population per physician: 2,628

No. of physicians per 10,000 population:  
3.8

Population per MOHFW's nurse: 8,696

No. of MOHFW's nurses per 10,000  
population: 1.15

Population per medical technologist  
under the DGHS: 26,490

No. of medical technologists under the  
DGHS per 10,000 population: 0.38

Population per MOHFW's community  
health worker: 2,550

No. of MOHFW's community health  
workers per 10,000 people: 3.92

# 2

## HEALTHCARE NETWORK UNDER MOHFW OF BANGLADESH

From Health Ministry to Community Clinics

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The Ministry of Health and Family Welfare (MOHFW) is the lead agency responsible for formulating national-level policy, planning, and decision-making in the provision of healthcare and education

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The intricate web of healthcare network spread across the country comprises entities ranging from policy-making bodies to healthcare facilities down to the community level. In addition to the public health departments of the Government, various NGOs, and private institutions constitute a large proportion of this web. The Ministry of Health and Family Welfare (MOHFW) is the lead agency responsible for formulating national-level policy, planning, and decision-making in the provision of healthcare and education. The national-level policies, plans, and decisions are translated into actions by various implementing authorities and healthcare delivery systems across the country. The Ministry and its relevant regulatory bodies also have indirect control over the healthcare system of the NGOs and the private sector. However, this chapter gives primarily a brief description of the organizational structure of the Directorate General of Health Services (DGHS). The roles and responsibilities of the Directorate, its reporting units, and other affiliated organizations in the provision and promotion of healthcare services and health education are described.

### **Hierarchy of Personnel in the Ministry of Health and Family Welfare**

The Ministry of Health and Family Welfare is headed by the Honorable Minister. S/he is assisted by the Honorable State Minister. As the principal executive of the Ministry, the Secretary works with a team of officials, including Additional Secretary, Joint Secretaries/Joint Chief, Deputy Secretaries/ Deputy Chiefs, Senior Assistant Secretaries/ Senior Assistant Chiefs, and others (Figure 2.1).

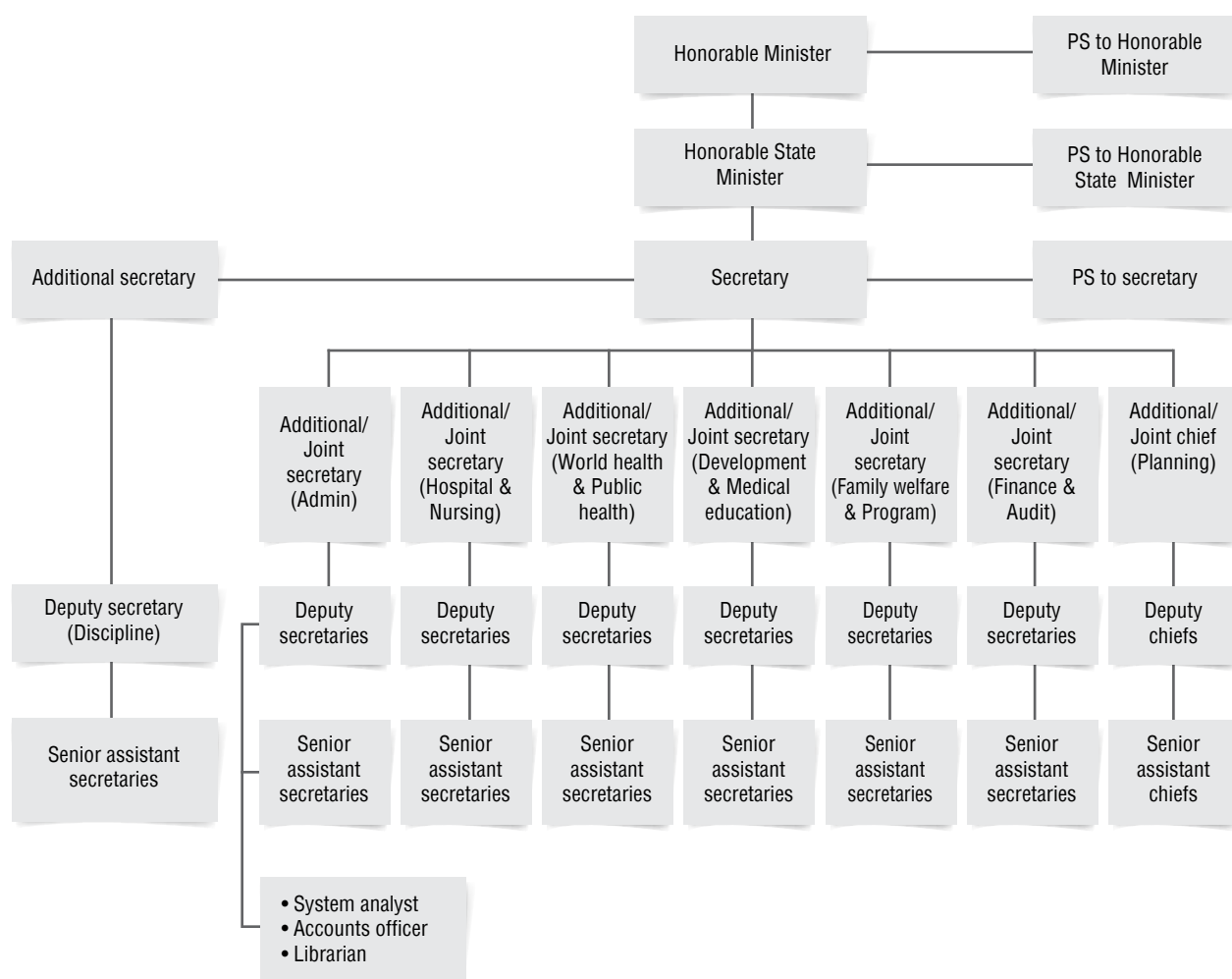


Figure 2.1. Hierarchy of personnel in the MOHFW

## Implementing authorities

Under the MOHFW, there are 9 implementing authorities. These are as follows:

1. Directorate General of Health Services (DGHS)
2. Directorate General of Family Planning (DGFP)
3. National Institute of Population Research & Training (NIPORT)
4. Directorate General of Drug Administration (DGDA)
5. Directorate General of Health Economics Unit (DGHEU)
6. Directorate General of Health Engineering Department (DGHEDE)
7. Directorate of Nursing Services (DNS)
8. Transport & Equipment Maintenance Organization (TEMO)
9. National Electro-medical & Engineering Workshop (NEMEWE)

Figure 2.2 shows the implementing authorities under the Ministry of Health and Family Welfare.

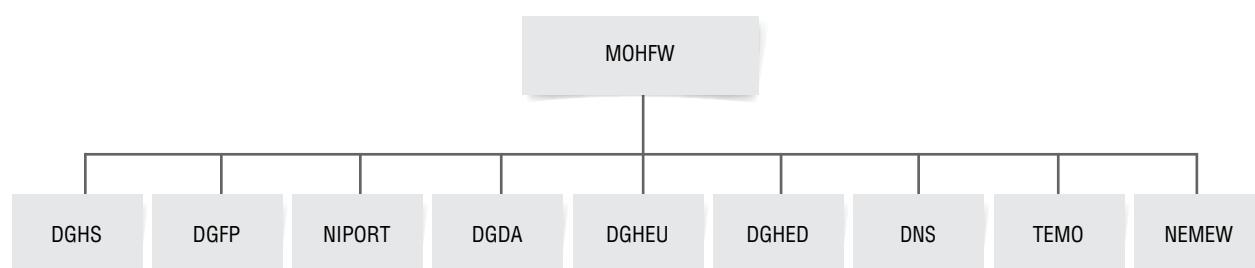


Figure 2.2. Implementing authorities under the Ministry of Health and Family Welfare (for full name of organization, see the section preceding this figure)

### Regulatory bodies

The regulatory bodies (Figure 2.3) under the MOHFW include:

1. Bangladesh Medical & Dental Council (BMDC)
2. Bangladesh Nursing Council (BNC)
3. State Medical Faculty (SMF)
4. Homeo, Unani and Ayurvedic Board
5. Bangladesh Pharmacy Council

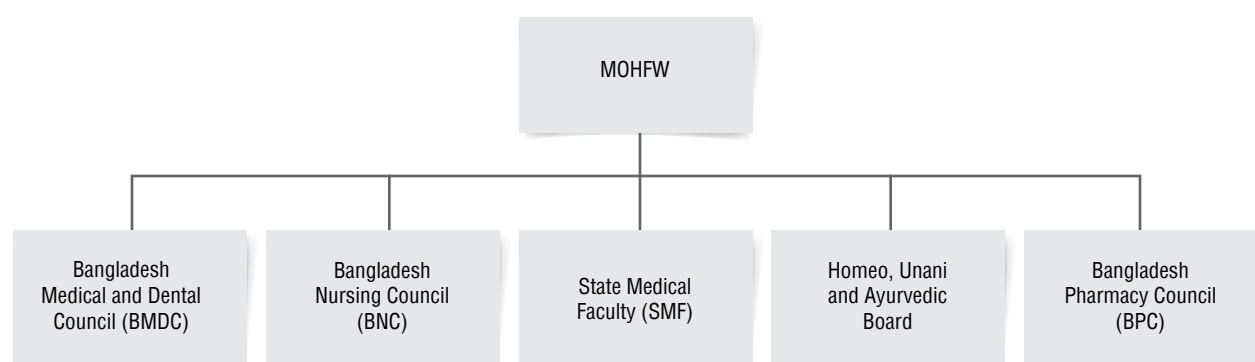


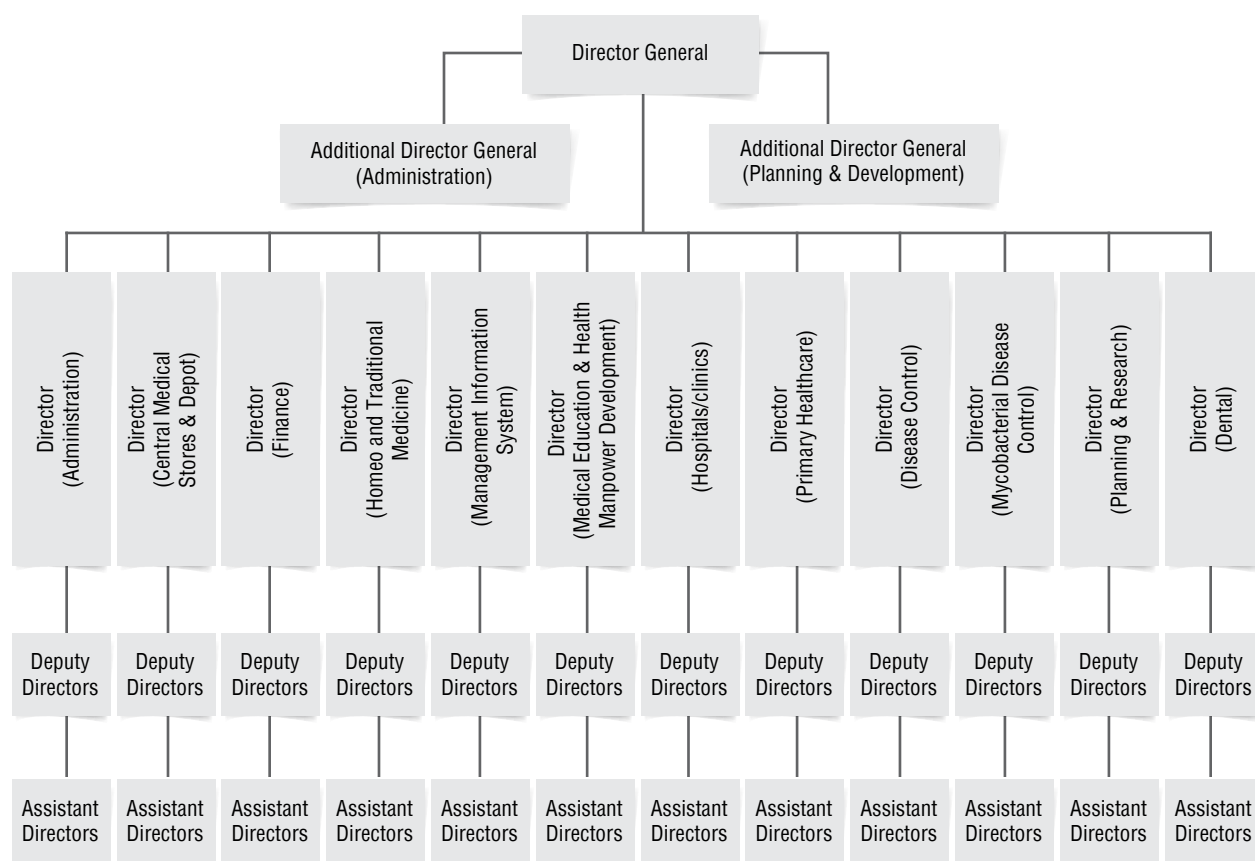
Figure 2.3. Regulatory bodies under MOHFW

### Directorate General of Health Services

With more than one hundred thousand officers and staff members, the Directorate General of Health Services (DGHS) is the largest implementing authority under the MOHFW. In addition to the operation of healthcare-delivery systems in the country, the DGHS provides technical assistance to the Ministry in undertaking new programs and interventions and for improvements in the existing ones. The

healthcare-delivery systems under the DGHS extend from national to the community level. The activities are implemented under regular revenue setups and the development programs. The development programs are designed following a sector-wide, multi-year approach.

The administrative setup of the DGHS, as presented in Figure 2.4, indicates the diversity of activities carried out by the Directorate.



**Figure 2.4. Administrative setup of the Directorate General of Health Services**

### Management structure and type of health facilities under the DGHS

The healthcare infrastructure under the DGHS comprises six tiers: national, divisional, district, upazila (subdistrict), union, and ward. At the national level, there are institutions both for public health functions as well as for postgraduate medical education/training and specialized treatment to patients.

A divisional director for health in each division governs activities and is assisted by deputy directors and assistant directors. There is one infectious disease hospital and one or more medical college(s) at the divisional headquarters. Each medical college has an attached hospital. Some divisional headquarters also possess

general hospitals and institutes of health technologies. Divisional institutes provide basically the tertiary-level care.

The civil surgeon (CS) is the district health manager responsible for delivering secondary and primary-care services. In each district, there is a district hospital. Some district hospitals have superintendents to look after the hospital management. In others, civil surgeons look after the district hospitals. Some of the district headquarters have medical colleges with attached hospitals, medical assistants training schools, and nursing training institutes.

The upazila health & family planning officer (UH&FPO) is the health manager at the upazila level. S/he manages all public-health programs,

especially the primary healthcare services in the upazila and also looks after the upazila hospital (having 30 to 50 beds). The upazila where the district headquarter is located does not have an upazila hospital, and there, the upazila hospital service is provided by the district hospital.

At the union level, three kinds of health facilities exist: rural health centers, union subcenters, and union health & family welfare centers (UHFWCs). Each union-level health facility employs a medical doctor among other staff. Mostly outdoor services are available at the union level. All union facilities have sub-assistant community medical officers to provide health services to the people.

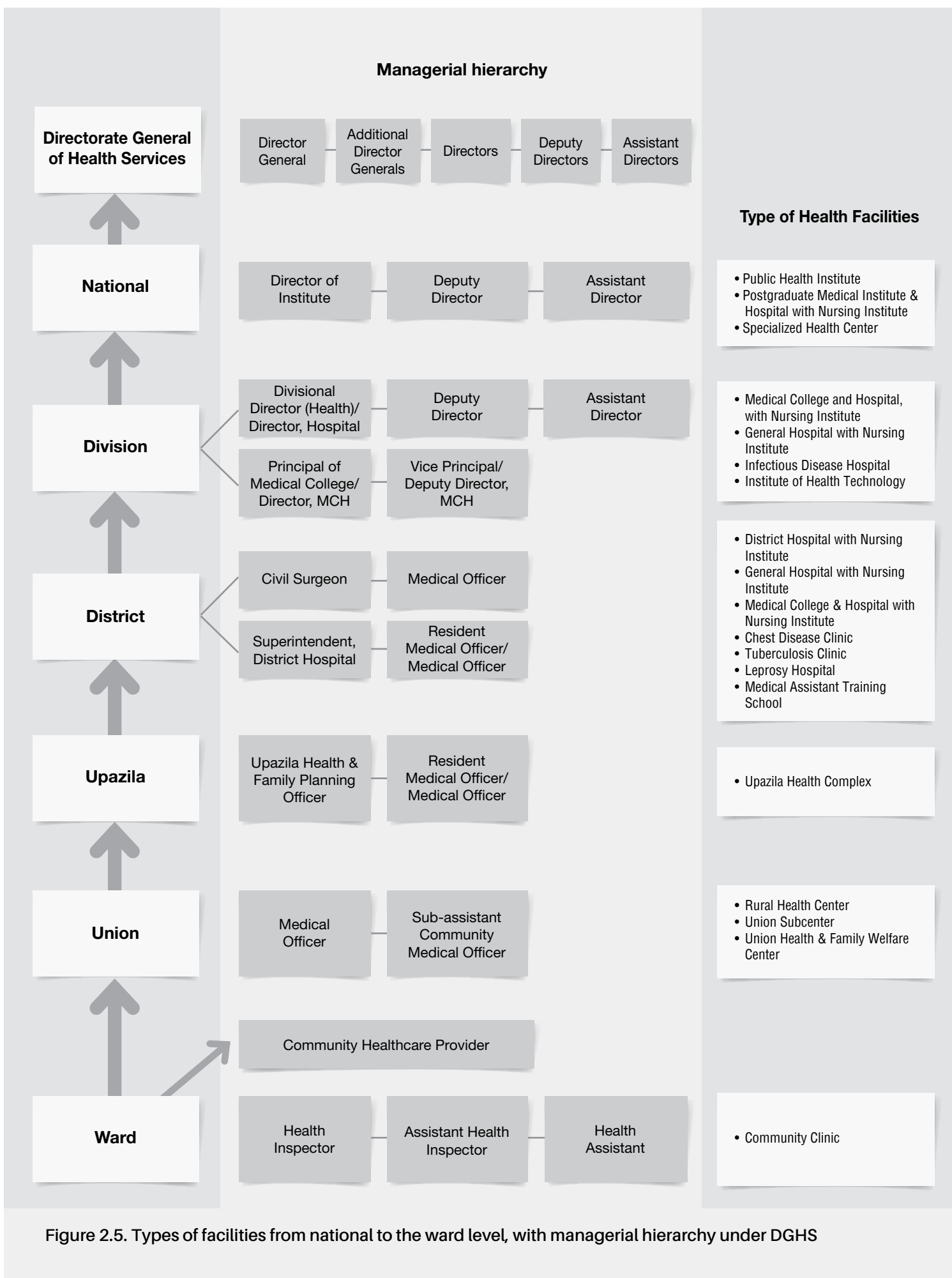
The MOHFW established community clinics (CCs) at the ward levels. One such community clinic is planned for every 6,000 people, with a total of 18,000 CCs in the country. The existing union and upazila facilities (~4,500) also provide community clinic services. Currently, 13,094 CCs are in operation. The RCHCIB project was responsible for operationalizing the CCs until June 2015. Now these are functioning under the operational plan of community-based healthcare. These facilities are mainly responsible for delivering primary healthcare services, like EPI, treatment for common diseases (pneumonia, fever, cough, etc), family planning services, health education, and first-aids and serve as the first contact points for patients. Some of the community clinics have also stated services for

normal delivery through CSBA at the community clinic. The MOHFW aims to develop the CCs as the unit of comprehensive healthcare-seeking behavior change in the respective local communities through a sense of ownership and provision of leadership by community people. At the ward or village level, there are also domiciliary health workers—one for every 5,000 to 6,000 people. There are 26,481 sanctioned posts of domiciliary workers under the DGHS: 20877 health assistants (HA), 4,205 assistant health inspectors (AHI), and 1,399 health inspectors (HI). The Directorate General of Family Planning (DGFP) also has domiciliary family planning staff working at the ward level. Currently, the domiciliary staff members from the DGHS and DGFP share the responsibility of running the independent community clinics, along with the community healthcare provider (CHCP).

Figure 2.5 shows the types of organizations and facilities under the DGHS from national to the ward level, with managerial hierarchy.

The Ministry so far recruited 13,822 full-time community healthcare providers against 13,861 sanctioned posts to run the community clinics. All of them have been trained to provide better care to the healthcare-seekers. The CHCPs have also been provided with laptop computers and Internet connection to update local health data; the online central databases upload these data for future use.





# 3

## HEALTH-RELATED MILLENNIUM DEVELOPMENT GOALS

Successes create new hope for Bangladesh in the SDG era

As we concluded the United Nations' Millennium Development Goals (MDGs) by 2015, we need to prepare ourselves to welcome the post-2015 Sustainable Development Goals (SDGs) 2030. We may now turn back our eyes to see what could Bangladesh perform to attain the health-related MDGs. In September 2000, leaders from 189 member-nations of the UN agreed to meet the following 8 development goals, five (MDG 1, 4, 5, 6, and 7) of which are health-related.

MDG 1: Eradicating extreme poverty and hunger (health-related)

MDG 2: Achieving universal primary education

MDG 3: Promote gender equality and empower women

MDG 4: Reduce child mortality (health-related)

MDG 5: Improve maternal health (health-related)

MDG 6: Combat HIV/AIDS, malaria, and other diseases (health-related)

MDG 7: Ensure environmental sustainability (health-related)

MDG 8: Develop a global partnership for development.

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Bangladesh made good progress in almost all of the health-related MDGs

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Bangladesh made good progress in almost all of the health-related MDGs. Some are already attained. In others, the country could not achieve the targets. In this chapter, an overview of the current progress of Bangladesh on health-related MDGs is presented. The tables show the specific health-related MDGs, country benchmark, current progress, and targets. Double asterisks (\*\*) have been used to indicate that the goal has been met.

## MDG 1 Eradicating extreme poverty and hunger

The progress of Bangladesh in MDG 1 is presented in Table 3.1. From 1990 prevalence of 66% underweight children, the figure came down to 32.6% by 2014, which is a 49% reduction against the required 50% reduction by 2015, i.e. almost close to meeting the target. According to the FAO 2015 report, the percentage of population having below minimum level of dietary energy consumption came down to 16.4% in 2015 from 32.8% in 1990. This is a 50% reduction against expected 50% by the year 2015, i.e. the target has been met.

## MDG 4 Reduce child mortality

The target of MDG 4 about reduction of child mortality rate was attained well ahead of the deadline. According to the United Nations estimate Bangladesh's under-5 mortality rate dropped to stunning 38 per 1,000 livebirths by 2015 from 144 per 1,000 livebirths in 1990 (Table 3.2). According to the same estimate (UN 2015), the current infant mortality rate in Bangladesh is 31 per 1,000 livebirths, and the neonatal mortality rate is 23 per 1,000 livebirths. One of the important indicators of MDG 4 is ensuring universal coverage of measles vaccination among the 1-year old children by 2015. Table 3.2 shows that the current coverage is 86.6%.

## MDG 5 Improve maternal health

According to the latest estimate by the United Nations (2015), the current maternal mortality is 176 per 100,000 livebirths. The Bangladesh Maternal Mortality Survey 2010 by NIPORT showed the MMR to be 194 per 100,000 livebirths which was 574 per 100,000 livebirths in 1990 (Table 3.3). According to the 2015 UN estimate, maternal mortality dropped by 68% against the 2015 target of 75% (143.5 per 100,000 livebirths). Other indicators, viz. births attended by skilled health personnel, birth rate among adolescent mothers, antenatal care coverage, and unmet need for family planning are improving but will require more attention (Table 3.3). The table also shows that the contraceptive prevalence rate is 62.4% against a national 2016 target of 72.0%.

## MDG 6 Combat HIV/AIDS, malaria, and other diseases

The progress of MDG 6 relating to HIV/AIDS, malaria, and tuberculosis. Bangladesh is consistently a low-prevalent country with regard to HIV/AIDS and STDs (Table 3.4). The National AIDS and STD Program (2013) estimates a current prevalence of <0.7% HIV/AIDS and STD-affected victims among the high-risk population.

**Table 3.1. Goal 1: Eradicate extreme poverty and hunger**

Target	Indicator	Benchmark (Year)	Current progress (Reference)	Target (Year)
Reduce by half the proportion of people who suffer from hunger	Prevalence of underweight among children <5 years of age (%)	66.0 (1990)	32.6 (BDHS 2014)**	33.0 (2015)
	Population having below minimum level of dietary energy consumption (%)	32.8 (1990)	16.4 (FAO 2015)**	16.4 (2015)

**Table-3.2. Goal 4: Reduce child mortality**

Target	Indicator	Benchmark (Year)	Current progress (Reference)	Target (Year)
Reduce by two-thirds the mortality rate among under-five children	Death rate among under-five children/1,000 livebirths	144.0 (1990)	41.0 (SVRS 2013)** 46.0 (BDHS 2014)** 38.0 (UN 2015)**	48.0 (2015)
	Infant mortality rate/1,000 livebirths	94.0 (1990)	31.0 (SVRS 2013)** 38.0 (BDHS 2014) 31.0 (UN 2015)**	31.3 (2015)
	1-year old children immunized against measles (%)	52.0 (1991)	86.6 (EPI CES 2014)	100.0 (2015)

**Table-3.3. Goal 5: Improve maternal health**

Target	Indicator	Benchmark (Year)	Current progress (Reference)	Target (Year)
Reduce by three-quarters the maternal mortality ratio	Maternal mortality ratio/100,000 livebirths	574.0 (1990)	194.0 (BMMS 2010) 176.0 (UN 2015)	143.5 (2015)
	Births attended by skilled health personnel (%)	7.0 (1990)	26.5 (BMMS 2010) 42.1 (BDHS 2014)	50.0 (2015)
Ensure, by 2015, universal access to reproductive healthcare	Contraceptive prevalence rate (%)	39.9 (1991)	62.4 (SVRS 2013) 62.4 (BDHS 2014)	72.0 (2016)
	Birth rate among adolescent mothers/1,000 women	144.0 (1991/93)	113.0 (BDHS 2014) 83.0 (UN 2015)	-
	Antenatal care coverage (at least one visit by skilled health professional) (%)	50.5 (2004)	63.9 (BDHS 2014)	100.0 (2015)
	Antenatal care coverage (at least four visits) (%)	16.7 (2004)	31.2 (BDHS 2014)	100.0 (2015)
	Unmet need for family planning (%)	21.6 (1993-94)	12.0 (BDHS 2014)	7.6 (2016)

There is a very slow rise in the number of victims. So, the situation is well. However, access to antiretroviral drugs among the population with advanced HIV infection will require improvement. In Bangladesh, malaria is endemic in only 13 districts out of 64, from where 80% of the national malaria burden is reported. The malaria prevalence and related death rate have been estimated based on the reported malaria cases and deaths as recorded at the Communicable Disease Control Department of the Directorate General of Health Services. Keeping in view the MDG 6 target, the national 2015 malaria target was

set at 50% reduction of malaria prevalence and deaths from 2008 levels. Current estimates show that both targets have been achieved (malaria positive case is now 4.3 per 1,000 population in the endemic areas and death rate is 0.003 per 100,000 population against the 2015 target of 0.053 per 100,000 population). Targets have also been achieved for some other indicators; 94.4% of under-five children sleep under insecticide-treated bednets against a target of 90%; and 89% of under-five children were treated for malaria against a target of 90%. Current TB (all forms) prevalence is 404 per 100,000 people (against the target of 320 per

100,000 people); TB death rate is 51 per 100,000 people (against a target of 38 per 100,000 population). TB case detection rate (%) and TB cure rate with DOTS (%) met the 2015 targets.

## MDG 7 Ensure environmental sustainability

The target of access by all people to safe drinking-water is almost achieved. The Bangladesh Bureau of Statistics in its Report 2013 of Sample Vital Registration System shows that over 97.5% of the Bangladesh population has now access to safe drinking-water (Table 3.5). However, households with independent sanitary latrine facilities are 63.3% (SVRS 2013).

The post-2015 development goals have been named Sustainable Development Goals (SDGs), which will put Bangladesh to confront new challenges but, at the same time, it is a new opportunity for the country to improve health of its citizens

**Table-3.4. Goal 6: Combat HIV/AIDS, malaria, and other diseases**

Target	Indicator	Benchmark (Year)	Current progress (Reference)	Target (Year)
Halt and begin to reverse the spread of HIV/AIDS	HIV prevalence among population aged 15-24 years (%)	0.005 (1990)	0.7% (DGHS 2015)	Halt (2015)
Ensure, by 2010, universal access to treatment for HIV/AIDS for all those who need	Population with advanced HIV Infection, with access to ARV drugs (%)	-	45.0 (UNGASS 2012)	100.0 (2015)
Halt and begin to reverse the incidence of malaria and other major diseases	Malarial death rate/100,000 population	0.106 (2008)	0.003 (DGHS 2015) ** Based on reported deaths in endemic districts	0.053 (2015)
	Under-five children sleeping under insecticide-treated bednets in endemic areas (%)	81.0 (2008)	94.4 (DGHS 2012) **	90.0 (2015)
	Under-five children having fever treated with appropriate antimalarial drugs (%)	60.0 (2008)	89.0 (DGHS 2011)	90.0 (2015)
	TB (all forms) prevalence rate/100,000 population	639.0 (1990)	404.0 (NTP 2015)	320.0 (2015)
	TB death rate/100,000 population	76.0 (1990)	51.0 (NTP 2015)	38.0 (2015)
	New smear+ve TB case detection rate under DOTS (%)	21.0 (1994)	70.0 (NTP 2012) ** 68.0 (NTP 2015)	≥70.0 (2015)
	TB cure rate (%) with DOTS	73.0 (1994)	94.0 (NTP 2015) **	≥85.0 (2015)

**Table 3.5. Goal 7: Ensure environmental sustainability**

Target	Indicator	Benchmark (Year)	Current progress (Reference)	Target (Year)
Reduce by half the percentage of people without sustainable access to safe drinking-water and basic sanitation (%)	Population using improved drinking-water sources (%)	78.0 (1990)	97.5 (SVRS 2013)	100.0 (2015)
	Population using improved sanitation facility (%)	39.2 (2006)	63.3 (SVRS 2013)	100.0 (2015)

### Health development agenda in the post-2015 period—Sustainable Development Goals (SDGs)

The United Nations launched the post-2015 development agenda at a Summit in September 2015, which was elaborated through informal consultations of the UN General Assembly. The President of the General Assembly appointed two co-facilitators to lead these informal consultations. The process of arriving at formulation of the post-2015 development agenda was led by Member States, with broad participation from Major Groups and other civil society stakeholders. There has been numerous inputs to the agenda. Notable among these are a set of Sustainable Development Goals (SDGs) proposed by an open working group of the General Assembly, the report of an intergovernmental committee of experts on sustainable development financing, and General Assembly dialogues on technology facilitation.

The UN General Assembly (UNGA) on 25 September 2015 adopted following 17 goals as SDGs:

1. End poverty in all its forms everywhere;
2. End hunger, achieve food security and improve nutrition and promote sustainable agriculture;
3. Ensure healthy lives and promote well-being for all at all ages;
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all;
5. Achieve gender equality and empower all women and girls;
6. Ensure availability and sustainable management of water and sanitation for all;
7. Ensure access to affordable, reliable, sustainable and modern energy for all;
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all;
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation;
10. Reduce inequality within and among countries;
11. Make cities and human settlements inclusive, safe, resilient and sustainable;
12. Ensure sustainable consumption and production patterns;
13. Take urgent action to combat climate change and its impacts;
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development;
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss;
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels;
17. Strengthen the means of implementation and revitalize the global partnership for sustainable development.

The UN Statistics Division will propose the indicators for measuring the targets.

Goal 3 is proposed for health in the SDGs, which has been described as “Ensure healthy lives and promote wellbeing for all at all ages.” It has 13 proposed targets as follows:

- 3.1 By 2030, reduce global MMR to less than 70 per 100,000 livebirths;
- 3.2 By 2030, end preventable deaths of newborns and under-five children;
- 3.3 By 2030, end epidemics of AIDS, TB, malaria and NTD (neglected tropical diseases) and combat hepatitis, water-borne diseases, and other communicable diseases;
- 3.4 By 2030, reduce by one-third the premature mortality from NCDs through prevention and treatment and promote mental health and wellbeing of mental patients;
- 3.5 Strengthen prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol;
- 3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents;
- 3.7 By 2030, ensure universal access to sexual and reproductive healthcare services, including for family planning, information and education, and the integration of reproductive health into national strategies and programs;

- 3.8 Achieve universal health coverage, including financial risk protection, access to quality essential healthcare services and access to safe, effective, quality and affordable essential medicines and vaccines for all;
- 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals, air, water and soil pollution and contamination.

Four other additional targets as follows are proposed, totaling 13, for health-related goals:

- 3.a Strengthen implementation of WHO’s FCTC (Framework Convention for Tobacco Control);
- 3.b Support R&D of vaccines and medicines for CDs and NCDs;
- 3.c Substantially increase health financing and recruitment, development, training and retention of health workforce in developing countries;
- 3.d Strengthen capacity of all countries, in particular developing countries, for early warning, risk reduction, and management of national and global health risks.

The SDGs call for measurement, transparency, and accountability and put emphasis on each individual human being based on right, dignity, and equity. For the health sector in Bangladesh, the SDGs will create an opportunity for focusing on results through overcoming the challenges of the unfinished agenda of the MDGs.



# 4

## PRIMARY HEALTHCARE

### Healthcare at the doorstep

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Community clinics are the lowest-level static health facilities. These have upward referral linkages with health facilities located at the union and upazila levels

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Bangladesh is one of the top-ranking countries that provide free medical services to the people at the community level through various public health facilities. The primary healthcare is provided through an extensive network of health facilities extended down to the community level with upward referral linkages and government-paid community healthcare workers. Table 4.1 shows the public-sector network for primary healthcare under the Ministry of Health and Family Welfare.

Located at the ward level, the community clinics are the lowest-level static health facilities. These have upward referral linkages with health facilities located at the union and upazila levels.

There are 484 government hospitals at the upazila level and below, which altogether have 17,686 hospital beds. Altogether, there are 15,000 public health facilities at the upazila level and below. Table 4.1 presents the breakdown by type.

At the upazila level, there are 434 hospitals with 16,886 beds. Number of beds are shown as zero in some of the upazila health complexes because they were at different stages of construction at the time of this publication. At the union level, there are 50 hospitals with 800 beds and 1,362 health facilities for outpatient services only. So, at the union level, there are 1,412 health facilities. At the ward level, there are 13,094 community clinics in operation till date.

Community clinics deserve special mention due to the flagship nature of the program. In addition to the community clinics, important components of primary healthcare, among others, include domiciliary healthcare, essential service delivery, along with urban primary healthcare, maternal healthcare (inclusive of some screening programs for women's health), child healthcare, nutrition program, school health program, and adolescent health program.

**Table 4.1. Primary healthcare centers run by the DGHS at the upazila level and below, 2015**

Level	Type of facility	Type of service	Total no. of facilities	Total beds
Upazila	Upazila health complex (51-bed)	Hospital	1	51
	Upazila health complex (50-bed)	Hospital	211	10,550
	Upazila health complex (31-bed)	Hospital	191	5,921
	Upazila health complex (10-bed)	Hospital	11	110
	Upazila health complex (0-bed)*	Hospital	10	0
	<b>Subtotal of upazila health complexes</b>		<b>424</b>	<b>16,632</b>
	Upazila health office	Outdoor	60	0
	31-bed hospital	Hospital	4	124
	30-bed hospital	Hospital	1	30
	<b>Subtotal of hospitals outside health complexes</b>		<b>5</b>	<b>154</b>
Union	Trauma center (20-bed)	Hospital	5	100
	<b>Total of upazila-level facilities</b>		<b>494</b>	<b>16,886</b>
	20-bed hospital	Hospital	30	600
	10-bed hospital	Hospital	20	200
	<b>Subtotal of union-level hospitals</b>		<b>50</b>	<b>800</b>
	Union subcenter	Outdoor	1,275	-
	Union health and family welfare center	Outdoor	87	-
	<b>Subtotal of union outpatient centers</b>		<b>1,362</b>	<b>-</b>
	<b>Total of union-level facilities</b>		<b>1,412</b>	<b>800</b>
	Community clinic (functional at present)	Outdoor	13,094	-
Ward	<b>Grand total of hospitals (Upazila and below)</b>		<b>484</b>	<b>-</b>
	<b>Grand total of health facilities (Upazila and below)</b>		<b>15,000</b>	<b>17,686</b>

\*Not yet functional

The MIS-DGHS is playing the leading role in providing computers with Internet connections, which now extends down to the grassroots-level health facilities as well as to the frontline health workers. The union health centers and community clinics have laptop computers and wireless modems, and the community health workers have android tablets.

### Community Clinics

The Government of Bangladesh, in 1996-2001, planned to establish 18,000 community clinics (CCs) for provision of primary healthcare services to rural people—13,500 as independent new clinics and 4,500 in the existing union and upazila-level health facilities. From 1998 to 2003,

The MIS-DGHS is playing the leading role in providing computers with Internet connections, which now extends down to the grassroots-level health facilities as well as to the frontline health workers

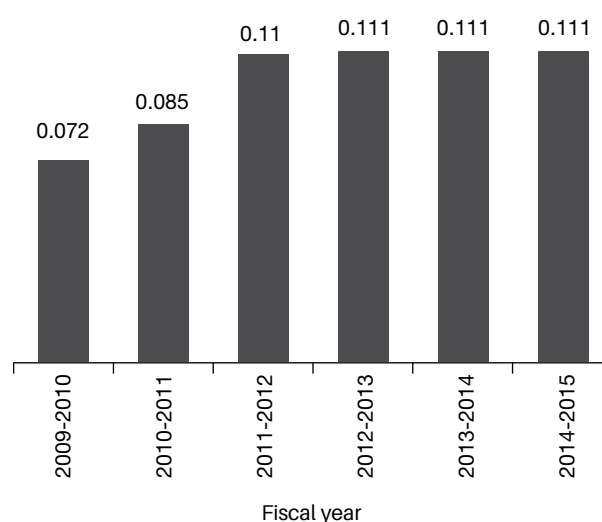
10,723 community clinics were constructed, of which 8,000 were made functional. After a period of discontinuation for political changes, the

Government resumed the community clinics under a project titled “Revitalization of Community-based Healthcare in Bangladesh.” As of now, 13,094 independent community clinics have been made functional; required community healthcare providers (CHCP), one for each CC, have also been recruited. In addition to the CHCP, the existing domiciliary staff members of the DGHS and DGFP also provide service to the community clinics three working days a week alternately. The community clinics provide the basic healthcare package to the community people, viz. maternal and child healthcare, reproductive health and family-planning services, immunization, nutrition education, micronutrient supplementation, health education and counseling, communicable disease control, treatment for minor ailments and first-aid, and referral to higher-level health centers. The community clinics are managed by a 13- to 17-member management committee selected from the respective communities. At least 4 members must be female. There are also three community support groups, each comprising 13-17 members, to work as community health volunteers (non-paid) to assist the management committee and community clinic. The local government representatives are included in the management committee. By April 2014, all community clinics received Internet connection through a laptop and wireless modem to help collection of local health-related data, provide telemedicine service, community health education, and certain other ICT-based health solutions. The use of ICT by the CCs for data and service is quite impressive. It may be mentioned that the project “Revitalization of Community-based Healthcare in Bangladesh” has ended in June 2015, and community clinics are now being run under an operational plan titled “Community-based Healthcare” of the Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016. For ensuring long-term sustainability and better operation of the community clinics, the Government of Bangladesh is trying to explore innovative ways. Such an exploration is underway as of now.

Figure 4.1 shows the government expenditure for supply of medicines to the community clinics

in different fiscal years. The amount of allocation per community clinic for medicine supply was about BDT 0.07 million in 2009-2010, BDT 0.09 million in 2010-2011, and BDT 0.11 million in each of 2011-2012 to 2014-2015. Items of medicines supplied in 2009-2010 were 25. In 2010-2011, the list included 28 items but, during 2011-2012, items were increased to 30.

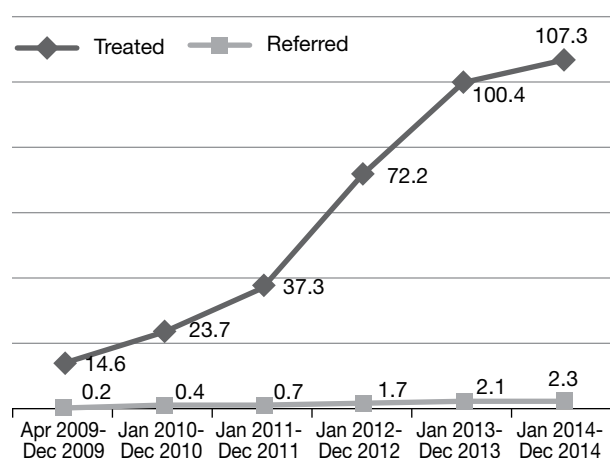
Figure 4.2 shows the number of patients given treatment in and referred from community clinics in different time periods. Number of service recipients is sharply increasing and almost



**Figure 4.1. Government expenditure (BDT in million) for supply of medicines to community clinics**

doubled from 2011 to 2012. Since re-inception in 2009, about 15 million patients received service from community clinics. It is estimated that 22 patients, on average, received service from each community clinic daily in 2013 but the figure was 12 patients per day per community clinic in 2009.

Community clinic is an unprecedented instance of community participation and public-private partnership. Being inspired by community participation, some UN agencies and NGOs have started working for the community clinics. Many other organizations are also coming forward to working as the days are passing.



**Figure 4.2. No. of clients (in million) treated in (total 355.5 million) and referred from (total 7.4 million) community clinics in different time periods**

Community clinic is certainly a pro-people health initiative led by the Government. If quality health services can be ensured near doorsteps even at the remotest corner of the country, people will spontaneously seek necessary service from the well-trained care providers at the health facilities, instead of the untrained traditional healers. It is expected that community clinics will ensure provision of quality healthcare for the mass people of rural Bangladesh, particularly the poor, vulnerable, and the underprivileged and will contribute to the achievement of the health development targets envisaged in the upcoming SDGs as these did in achieving the MDGs.

### **Domiciliary health service in rural Bangladesh**

There are domiciliary workers—one for every 5 to 6 thousand people at the ward or village level. Under the DGHS, there are 26,481 sanctioned posts of domiciliary workers, of which 20,877 are for health assistants (HA), 4,205 for assistant health inspectors (AHI), and 1,399 for health inspectors (HI). As of December 2014, 86% posts were filled up. More information is provided in Chapter 16. Like the DGHS, the DGFP also has domiciliary workers to work at the ward or village level. These staff members are called family planning inspectors (FPI) and family welfare assistants (FWA).

### **Essential service delivery and urban primary healthcare**

Under the Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016, there is an operational plan, namely “Essential Service Delivery” mainstreamed under the DGHS to help improve service, particularly at the upazila level and below and complement urban primary healthcare. The areas of services include limited curative care, support services and coordination, medical waste management, urban health, mental health, and tribal health. The urban primary healthcare in Bangladesh is principally the responsibility of the Ministry of Local Government, Rural Development and Cooperatives (MOLGRD), carried out through the city corporations and municipalities. These local bodies run a number of small to medium-sized hospitals and outdoor facilities. Besides, large-scale primary healthcare activities under Urban Primary Healthcare Project (UPHCP) and Smiling Sun Franchise Program are run by NGOs in collaboration with the city corporations and with the financial assistance from donors. The clients in the latter also share a part of the cost through service-charge. There is a concern among the public health communities that there is a need for better coordination between the two ministries, viz. MOHFW and MOLGRD, with regard to urban primary healthcare, although MOHFW contributes to urban primary healthcare

There is a concern among the public health communities that there is a need for better coordination between the two ministries, viz. MOHFW and MOLGRD, with regard to urban primary healthcare

through outpatient services distributed through its secondary, tertiary and specialized hospitals located in the urban settings. Besides, there are 35 urban dispensaries and 23 school health clinics in some of the bigger cities and municipalities. To respond to the concerns for the need of better coordination between MOHFW and MOLGRD with regard to urban primary healthcare, the MOHFW included in its HPNSDP 2011-2016 a component named “urban health” under the operational plan “Essential Service Delivery.” This urban health component aims at designing programs through maintaining better coordination and collaboration with the city corporations, municipalities, UPHCP, Smiling Sun Franchise Program, other NGOs, and stakeholders.

### Maternal healthcare

The Bangladesh Ministry of Health and Family Welfare, in collaboration with UNICEF, is undertaking facility-based Emergency Obstetric Care (EOC) Program in all the districts of Bangladesh to improve the maternal health situation. All the government medical college hospitals, district hospitals, upazila hospitals, and maternal and child welfare centers (MCWCs) provide obstetric care service, inclusive of emergency obstetric care. A number of private clinics or hospitals and health-related NGOs are also partners in this program. Obstetric care is classified into two categories in this program, viz. Comprehensive Emergency Obstetric Care (CEmOC) and Basic Emergency Obstetric Care (BEOC). Currently, all medical college hospitals, 59 district hospitals, 3 general hospitals, 132 upazila health complexes, and 63 MCWCs provide CEmOC, and rest of the upazila health complexes provide BEOC. The list also includes NGOs and private care providers from a number of districts. Under a program jointly operated by the Management Information System (MIS) of the DGHS and UNICEF, data are collected from the EOC facilities. For this publication, data extracted from Local Online Health Bulletins 2015 of MIS-DGHS for 561 sources, including 14 medical

college hospitals, 64 district/general hospitals, 423 upazila health complexes (data from UHC itself and other government, NGO and private facilities) and 59 upazila health offices (data from government, NGO and private health facilities) have been used for analysis. Table 4.2 summarizes the sources of data.

Figure 4.3 shows the number of different obstetric care encounters and clients served by the health facilities in Bangladesh.

**Table 4.2. Number of data sources used for understanding the obstetric care services (2014)**

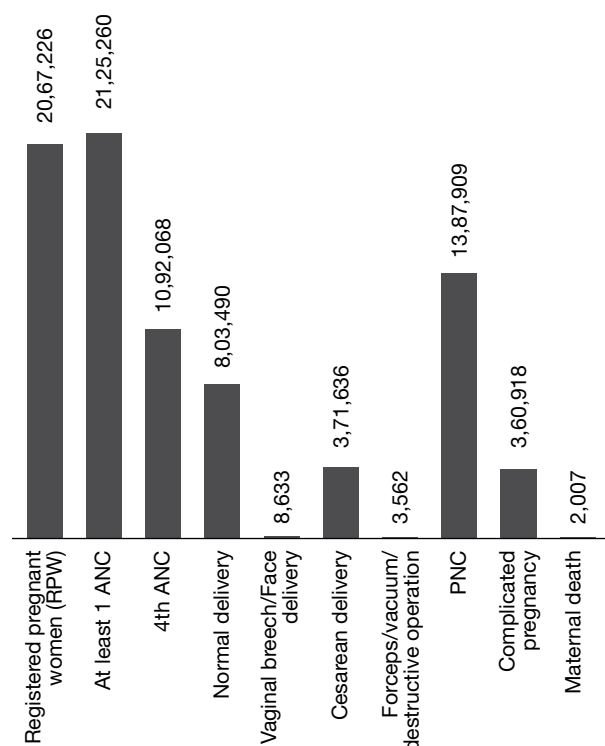
Data source	No.	%
Postgraduate institute hospital	1	0.2
Medical college hospital	14	2.5
District and general hospital	64	11.4
Upazila health complex (UHC itself and other government, NGO and private health facilities)	423	75.4
Upazila health office (Government, NGO and private health facilities in sadar upazila)	59	10.5
<b>Grand total</b>	<b>561</b>	<b>100.0</b>

Figure 4.4 reveals that 11,87,321 institutional deliveries were reported in 2014, of which normal delivery accounted for 67.7%, cesarean section accounted for 31.30%, vaginal breech/face delivery accounted for 0.7%, and forceps delivery collectively accounted for 0.3%.

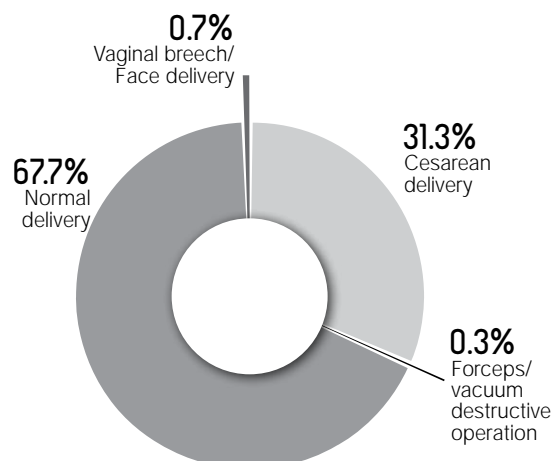
All the government medical college hospitals, district hospitals, upazila hospitals, and maternal and child welfare centers (MCWCs) provide obstetric care service, inclusive of emergency obstetric care

Table 4.3 shows the distribution of obstetric care services provided by the government and non-government healthcare facilities.

Figure 4.5 shows the distribution of normal, assisted, cesarean and total deliveries between



**Figure 4.3. Number of different obstetric care encounters or clients served by the healthcare facilities in Bangladesh, 2014**



**Figure 4.4. Distribution of reported institutional deliveries from government and non-government healthcare facilities by type (n=11,87,321), 2014**

government and non-government health facilities in 2014. While most of the total (59.6%) and normal deliveries (68.8%) took place in the government facilities, the percentage of cesarean section was more in private health facilities (60.1%).

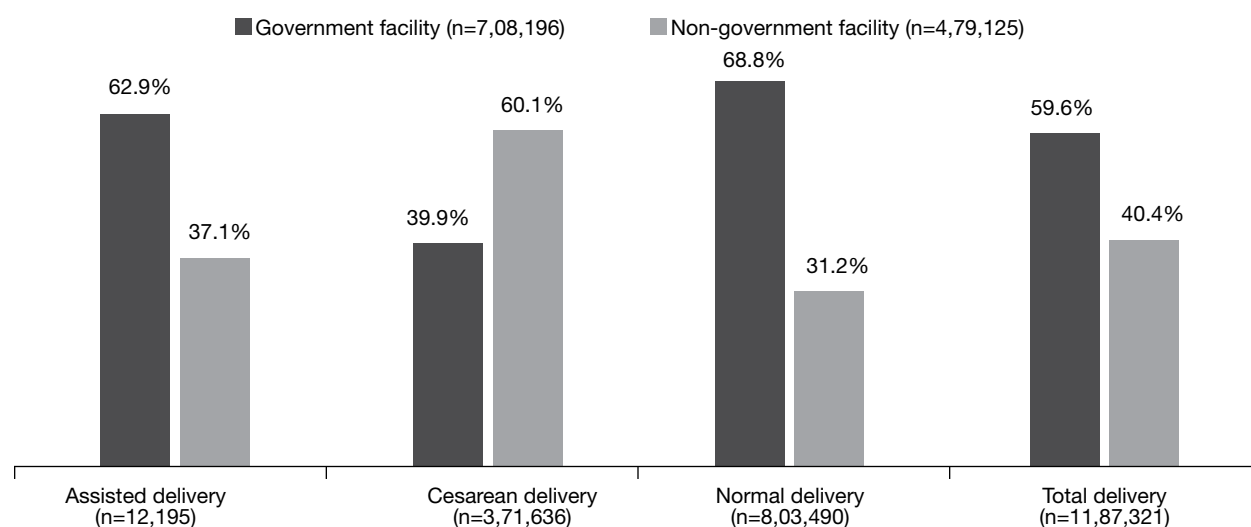
Table 4.4 shows the distribution of normal, assisted, cesarean and total deliveries reported from the government and non-government healthcare facilities (2014). Of the total 7,08,196 deliveries reported from the government health facilities, 0.7% took place in a postgraduate institute hospital (ICMH), 13.9% took place in medical college hospitals, 15.3% in district and

**Table 4.3. Obstetric care services provided by the government and non-government healthcare facilities, 2014**

Obstetric care service	Government facility		Non-government facility		Total	
	No.	%	No.	%	No.	%
Registered pregnant women (RPW)	16,70,682	80.8	3,96,544	19.2	20,67,226	100.0
At least 1 ANC	16,68,880	78.5	4,56,380	21.5	21,25,260	100.0
4th ANC	8,23,636	75.4	2,68,432	24.6	10,92,068	100.0
Normal delivery	5,52,406	68.8	2,51,084	31.2	8,03,490	100.0

Tabel continued ...

UN Process Indicator	Government facility		Non-government facility		Total	
	No.	%	No.	%	No.	%
Vaginal breech/Face delivery	5,455	63.2	3,178	36.8	8,633	100.0
Cesarean delivery	1,48,122	39.9	2,23,514	60.1	3,71,636	100.0
Forceps/vacuum/destructive operation	2,213	62.1	1,349	37.9	3,562	100.0
PNC	9,62,106	69.3	4,25,803	30.7	13,87,909	100.0
Complicated pregnancy	2,38,670	66.1	1,22,248	33.9	3,60,918	100.0
Maternal death	1,698	84.6	309	15.4	2,007	100.0



**Figure 4.5. Distribution of deliveries by type between government and non-government (private, NGO) health facilities, 2014**

general hospitals, and the largest proportion (71.1%) took place at the government health facilities at the upazila level (upazila health complexes: 39.5% and other government health facilities at the upazila level: 30.6%); Of the total 4,79,125 deliveries reported from the non-government facilities (NGO, private), 30.5% were done at NGO facilities and 69.5% at private clinics/hospitals. Table 4.4 also reveals that there were 1,48,122 cesarean sections reported from the public health facilities and 2,23,514 from the non-government health

While most of the total (59.6%) and normal deliveries (68.8%) took place in the government facilities, the percentage of cesarean section was more in private health facilities (60.1%)



**Table 4.4. Distribution of normal, assisted, cesarean and total deliveries reported from the government and non-government healthcare facilities, 2014**

Delivery type	No.	Government facility						Non-government facility		
	%	PGIH	MCH	DH/GH	UHC	Other govt. facilities at upazila level	Total	NGO	Private	Total
Assisted delivery	No.	133	2,741	1,433	1,991	1,370	7,668	819	3,708	4,527
	%	1.7	35.7	18.7	26	17.9	100	18.1	81.9	100
Cesarean delivery	No.	3,303	50,104	39,839	29,018	25,858	148,122	20,566	202,948	223,514
	%	2.2	33.8	26.9	19.6	17.4	100	9.2	90.8	100
Normal delivery	No.	1,498	45,586	67,182	248,783	189,357	552,406	124,767	126,317	251,084
	%	0.3	8.3	12.2	45	34.3	100	49.7	50.3	100
Grand total	No.	4,934	98,431	108,454	279,792	216,585	708,196	146,152	332,973	479,125
	%	0.7	13.9	15.3	39.5	30.6	100	30.5	69.5	100

Of the total 7,08,196 deliveries reported from the government health facilities, 0.7% took place in a postgraduate institute hospital (ICMH), 13.9% took place in medical college hospitals, 15.3% in district and general hospitals, and the largest proportion (71.1%) took place at the government health facilities at the upazila level

facilities. Of the total cesarean sections at the public facilities, 2.2% were reported from postgraduate institute hospital (ICMH) (n=3,303), 33.8% from medical college hospitals (n=50,104), 26.9% from district hospitals (n=39,839), 19.6% from upazila health complexes (n=29,018), and 17.4% from other

government health facilities at the upazila level. Of the total cesarean sections reported from the non-government health facilities, 9.2% were in the NGO facilities (n=20,566), and 90.8% were in the private clinics/hospitals (n=223,514).

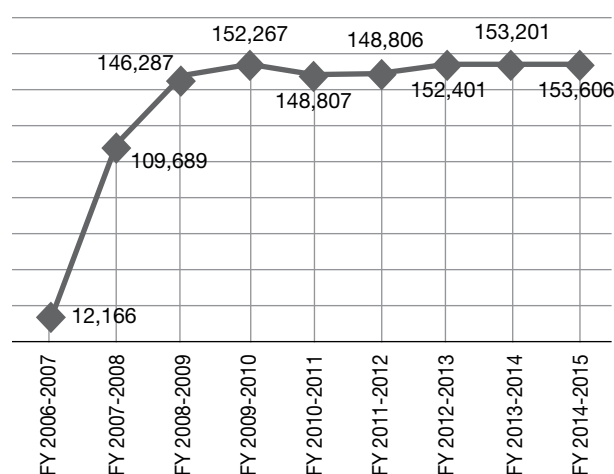
### Voucher scheme for maternal health

The Ministry of Health and Family Welfare, in collaboration with WHO, introduced in 2007 an innovative maternal health voucher scheme, a demand-side financing (DSF) initiative, to improve access to and use of quality maternal health services. Currently, the program is being implemented in 46 upazilas of 41 districts and 7 upazilas of 4 MNHI (maternal and newborn health initiative) districts. Poor women defined by specific criteria (roughly 50% of the pregnant women) and validated by local government representatives are eligible for the voucher. Half of the target population qualifies as poor. The total number of cumulative beneficiaries reached 870,423 (Figure 4.6). In 2014–2015, a total of 153,606 pregnant women received the benefit. A voucher entitles its holder for specific health services free of charge, viz. antenatal and postnatal care, safe delivery, and treatment for complications, including cesarean section, transportation cost, and laboratory tests. If



A voucher entitles its holder for specific health services free of charge, viz. antenatal and postnatal care, safe delivery, and treatment for complications, including cesarean section, transportation cost and laboratory tests

delivery is attended by skilled staff, voucher-holders get unconditional cash benefits for nutritious food and gift-box. Safe delivery rate is now at impressive 85% amongst the voucher recipients. Both public and NGO healthcare providers participate in the DSF scheme. There is a target to scale the program up to 100 upazilas, with a 20% increase each year. Strikingly, the maternal mortality rate among the voucher-holder women is 12 per 100,000 livebirths, in sharp contrast to the national rate of 176 per 100,000 livebirths (UN 2015).



**Figure 4.6. Number of DSF (Demand-side financing) beneficiary pregnant women by year (total 1,177,223)**

## Maternal and Newborn Health Initiative

The Maternal and Newborn Health Initiative (MNHI) is being implemented by the Director of Primary Healthcare of the DGHS in 11 districts of Bangladesh, with the assistance of UNFPA, UNICEF, and WHO and funded by DFATD Canada. The districts are: Thakurgaon, Jamalpur, Narail, Maulvibazar, Panchagarh, Sirajganj, Patuakhali, Barguna, Rangamati, Sunamganj, and Bagerhat. The program focuses on saving maternal and newborn lives through creating need-based demand and priority-based actions. The broad principle of this program is to find bottleneck through data analysis. Finally, the health managers develop Evidence-based Planning and Budgeting (DEPB) for every upazila and hospital. Around 25 districts are covered under DEPB by UNICEF. The civil surgeon and deputy directors of family planning of the respective districts serve as the local focal points for the program. UNICEF has designed a comprehensive model to Improve Health & Neonatal for Hard-to-reach Mother and Young Children (IH&NHMYC) for Bandarban, Cox's Bazar and Netrakona which introduce default tracking system to track every mother and child. Under health system strengthening, 10 HMIS consultants are working to improve information system by using the data for planning. Innovative dashboard has been created for all health managers. As a part of improving quality, Maternal and Perinatal Death Review (MPDR) has been introduced in 10 districts and has shown good impact in reducing maternal and neonatal deaths.

## Tetanus toxoid (TT) for women of childbearing age

Table 4.5 shows the tetanus toxoid coverage among the women of childbearing age in Bangladesh in 2014. The country is maintaining the maternal and neonatal tetanus-free status since 2008. The immunization program of Bangladesh aims to immunize the women of childbearing age by administering TT before the age of 18 years. A period of 2 years and 7 months is required to complete all the 5 doses of TT vaccines. If a woman starts TT vaccination at the age of 15 years and

maintains the exact interval, she would be able to complete all the doses before she reaches the age of marriage, ensuring protection for her entire reproductive life. The data shown in Table 4.5 have been excerpted from EPI Coverage Evaluation Survey 2014. However, the coverage gradually falls for the subsequent TT doses and is remarkably lower for the fourth and final doses. This aspect needs attention to ensure effective coverage.

**Table 4.5. Tetanus toxoid coverage (%) in Bangladesh among women of childbearing age (2014)**

Area	TT1	TT2	TT3	TT4	TT5
National	97.6%	97.6%	85.0%	68.9%	49.8%
Rural	97.7%	97.6%	85.5%	68.9%	49.3%
Urban	97.5%	97.5%	85.7%	69.4%	52.6%

### Community-based skilled birth attendants and midwives

Shortage of skilled manpower in the remote areas to extend obstetric care is one of the major barriers to improving maternal health. The Ministry of Health and Family Welfare undertook a short-term measure to tackle the problem by producing trained manpower for fulfilling the gap in the interim period. The Directorate General of Health Services is also implementing community-based skilled birth attendant (CSBA) training program since 2003, with the goal to train and educate the family welfare assistants/female health assistants and similar health workers in NGOs and private sector, on midwifery skills. The CSBAs are trained to conduct normal safe deliveries at home and to identify the risks and complicated cases so that they can motivate the women and their family members to refer to the nearby health facilities where comprehensive EOC services are available. The CSBA training program is now organized in 342 upazilas of 60 districts. The Government introduced midwifery course and created posts for 3,000 midwives.

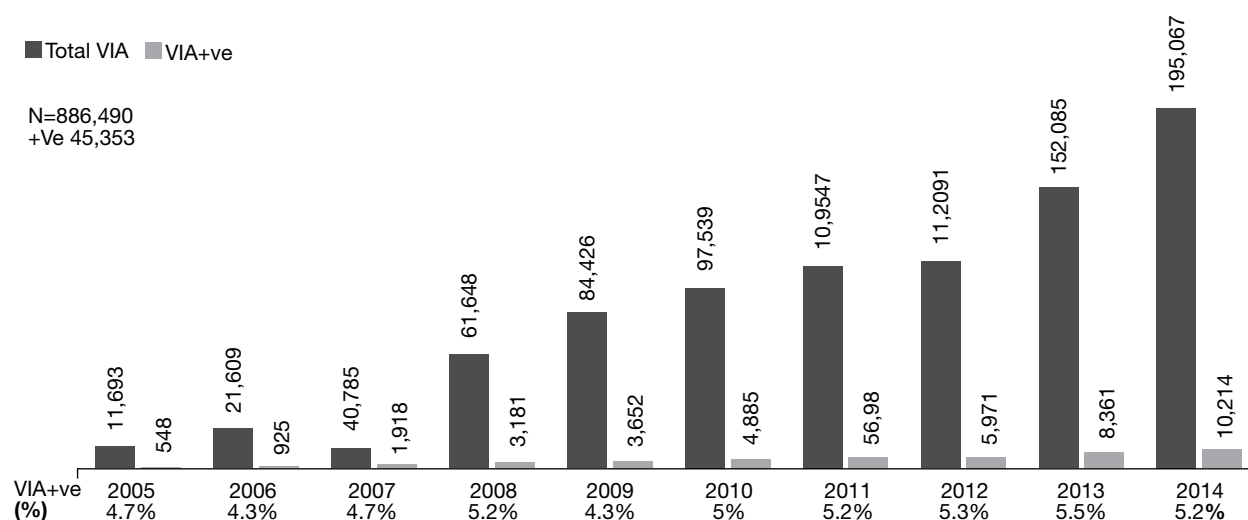
The CSBAs are trained to conduct normal safe deliveries at home and to identify the risks and complicated cases so that they can motivate the women and their family members to refer to the nearby health facilities where comprehensive EOC services are available

### Obstetric fistula program

In Bangladesh, obstetric fistula and other maternal morbidities affect thousands of women. It is estimated that approximately 71,000 women are currently living with fistula in the country (1.69 per 1,000 ever-married women). The UNFPA has been assisting the Government of Bangladesh in strengthening quality service delivery and capacity development of service providers at 10 medical college hospitals and 4 private hospitals. Since 2003, twenty-four doctors and 253 nurses have been trained; 3,050 complicated obstetric fistula surgeries were performed. National Fistula Center has been established in Dhaka Medical College Hospital.

### Cervical and breast cancer screening program

The cervical and breast cancers contribute to a significant disease burden in Bangladesh. The United Nations Population Fund has been assisting the Ministry of Health and Family Welfare to run cervical and breast cancer screening program. The program is being coordinated by the Department of Obstetrics and Gynecology at the Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka. Beginning in 2004, about 363 centers have



**Figure 4.7. Number of VIA tests done and their results (2005 to 2014) (total 886,490 tests done in 10 years; 5% found positive)**

been established throughout the country to run the cervical and breast cancer screening program. A list of the centers has been provided in the Annex; 1,228 service providers from 64 districts were trained within 2014 on cervical and breast cancer screening, based on visual inspection with acetic acid (VIA) and clinical breast examination (CBE). Figure 4.7 shows that a total of 886,490 VIA screening tests were done in 10 years (from 2005 to 2014) throughout the country, using the screening centers and, on average, 5% of them were found positive. The screening tests coverage is increasing every year. In 2014, a total of 195,067 VIA screening tests were done, with 5.2% showing VIA+ve. All VIA+ve cases were referred to colposcopy clinic at BSMMU and different medical college hospitals. It is reported that 10,214 VIA+ve patients attended the colposcopy clinics at BSMMU and various medical college hospitals in 2014 (Figure 4.7).

Figure 4.8 shows that a total of 808,042 screenings for CBE were done in 8 years (from 2007 to 2014) throughout the country, using the screening centers and, on average, 1.5% of them were found positive. The number of screening tests coverage is increasing every year. In 2014, a total of 194,565 screening tests were done, with 1.06% showing positive.

## Child healthcare

This report on child healthcare in Bangladesh covers information on universal routine child immunization, integrated management of childhood illness (IMCI), scaling up of newborn health interventions, and special-care newborn unit (SCANU), school health and adolescent health programs.

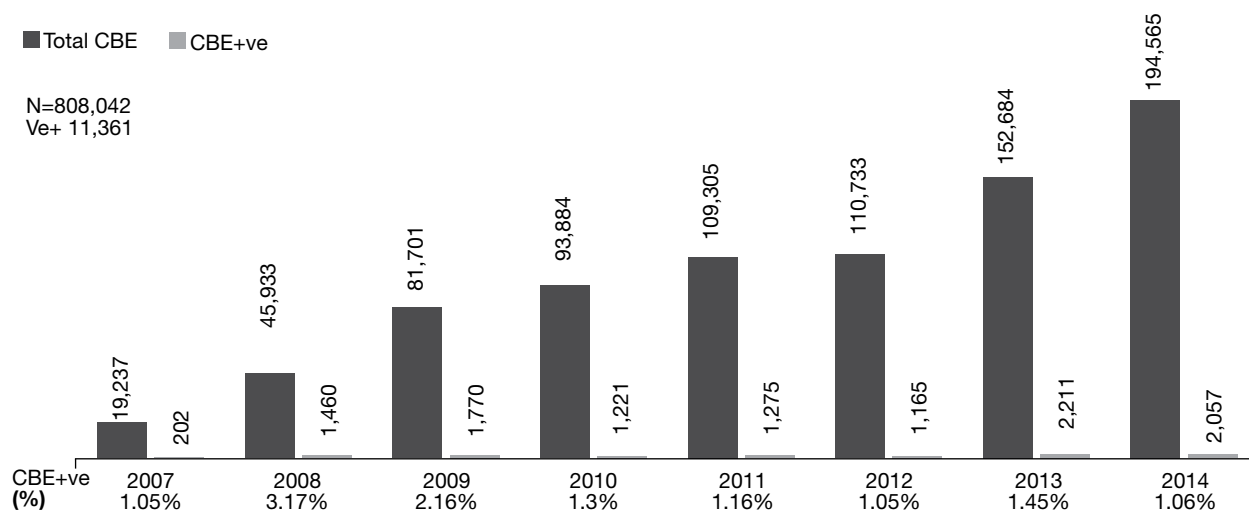
### Universal routine child immunization

Child immunization coverage data presented in this section were taken from the EPI Coverage Evaluation Survey 2014 (EPI CES 2014) Report. The EPI CES 2014 validated the immunization coverage rates by cross-checking EPI cards with history taken from mothers and caregivers.

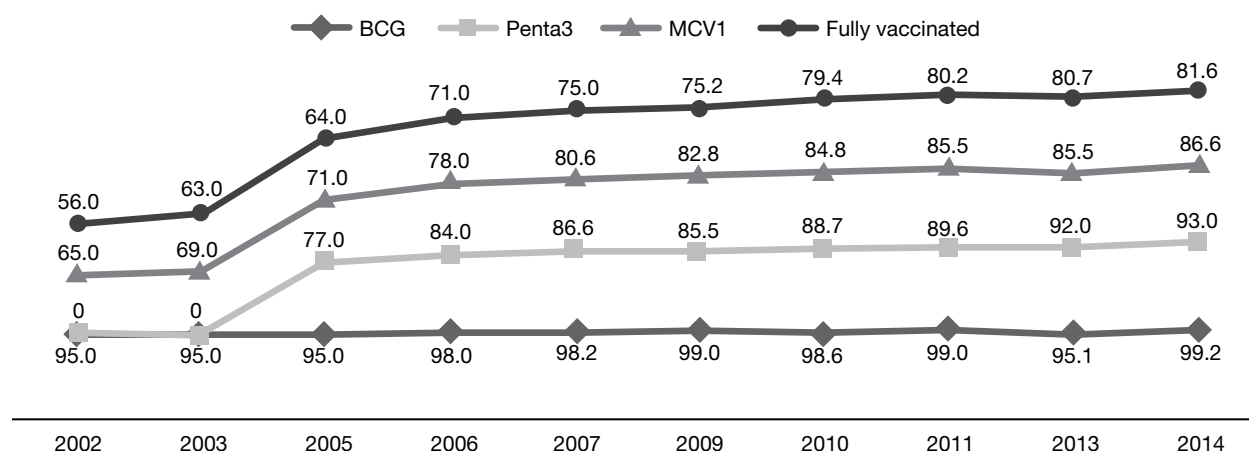
The percentage of children aged  $\leq 12$  months covered with all vaccinations was 81.6% in 2014 (Figure 4.9). Figure 4.9 also shows the trend of immunization coverage from 2002 to 2014 among the same age-group of children.

Figure 4.10 shows the trend of immunization coverage from 2005 to 2014 among  $\leq 12$  and  $\leq 23$  months old children.

Table 4.6 shows the valid vaccination coverage of  $\leq 12$  and  $\leq 23$  months old children as found in EPI CES 2014. Measles vaccine coverage was



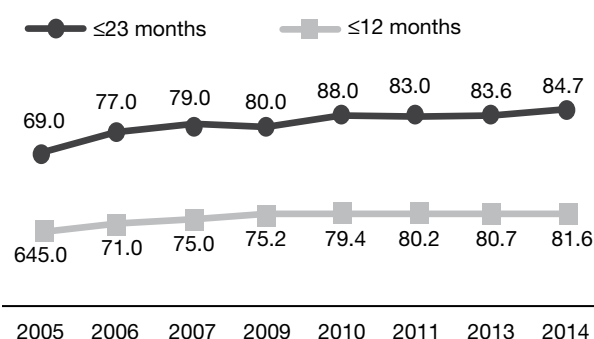
**Figure 4.8. Number of CBE tests done and their results (2007 to 2014) (total 808,042 tests done)**



**Figure 4.9. Trend of child (≤12 months) immunization coverage (%) from card plus history**

86.6% and 90.1% among ≤12 and ≤23 months old children respectively. Full vaccination coverage among these two groups of children was 81.6% and 84.7% respectively.

Bangladesh showed a success story on polio eradication. The country is polio-free since 2000, with 18 exceptional cases of wild polio virus imported from neighboring India in 2006. National Immunization Day is observed every year. The current valid national OPV3 coverage rate is 93%, with each district having coverage of more than 80%. The polio eradication program in Bangladesh illustrates



**Figure 4.10. Trend of valid vaccination coverage among children aged ≤12 months and ≤23 months (Ref. EPI CES 2014)**

**Table 4.6. Valid vaccination coverage of  $\leq 23$  and  $\leq 12$  months old children as found in EPI CES 2014**

Age-group	BCG	OPV1	OPV2	OPV3	Penta1	Penta2	Penta3	Measles	Full vaccination
$\leq 12$ months	99.2%	95.8%	95.1%	92.7%	92.6%	93.3%	93.0%	86.6%	81.6%
$\leq 23$ months	99.2%	95.8%	95.2%	93.3%	92.6%	93.4%	93.2%	90.1%	84.7%

**Table 4.7. Valid full vaccination coverage differentials by sex, area of residence, and division as found in EPI CES 2014**

Age-group	Sex		Residence		Division						
	Male	Female	Rural	Urban	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet
$\leq 12$ months	81.6%	81.6%	90.1%	88.3%	82.6%	81.0%	79.4%	81.9%	87.0%	81.5%	78.6%
$\leq 23$ months	84.6%	84.9%	85.3%	82.7%	86.3%	84.6%	83.6%	86.1%	88.3%	85.6%	82.6%

Government's commitment through providing 100% cost of routine polio immunization and 95% cost of supplementary polio immunization activities. Bangladesh, despite being free from polio for a long time, could not achieve polio-free certification as one country of the WHO South-East Asia Region, viz. India, could not eradicate the last traces of polio. However, in India, last case of polio was detected in 2011. After being polio-free for more than 36 months, Bangladesh, along with other 10 member countries of the South-Asia Region, obtained the polio-free certification in March 2014. As per the global polio eradication end game strategic plan 2013 to 2018, Bangladesh introduced inactivated polio virus vaccine (IPV) in March 2015 for prevention of vaccine-derived polio viruses due to polio vaccine type two component. Now the country's plan is to switch trivalent oral polio vaccine (tOPV) to bivalent oral polio vaccine (bOPV) in the month of April 2016 for prevention of outbreak due to type 2 component of OPV. The country is also satisfactorily progressing toward achieving the measles elimination goal of the WHO's South-East Asia Region by 2020. National measles control activities have been accelerated since 2004 and already implemented all

recommended strategies for measles elimination and rubella/congenital rubella syndrome control. Valid measles vaccination coverage among  $\leq 12$  months old children was 86.6% according to EPI CES 2014. Coverage of the first dose (MCV1) of measles vaccine was estimated to increase from 81% in 2004 to 86.6% in 2014.

Table 4.7 shows the valid full vaccination coverage differentials by sex, area of residence, and division as found in EPI CES 2014 among  $\leq 12$  and  $\leq 23$  months old children.

In the measles campaign (follow-up), distribution of high-potency vitamin A and

The WHO completed necessary scientific observations, and the South-Asia Region, including Bangladesh, obtained the polio-free certification in February 2014

antihelminthes is also included. Table 4.8 shows the Penta vaccine, vitamin capsule and antihelminthic coverage among the under-five children.

## Integrated Management of Childhood Illness

The relevant section of the DGHS, with assistance from UNICEF, WHO, and other partners, is implementing Integrated Management of Childhood Illness (IMCI) program since 1998. Both facility and community IMCI have been scaled up—facility IMCI to 425 upazilas initially in all districts with high child mortality and community IMCI to 150 upazilas mainly in the low-performing districts. With the neonatal mortality showing slow rate of decline, neonatal health has been incorporated in both facility and community IMCI programs. The care-seeking from trained providers for pneumonia and diarrhea has increased remarkably over the last few years. Antibiotic treatment for pneumonia, ORT-use for diarrhea, and exclusive breastfeeding have been increased to 34.2 %, 84.3 %, and 55.3 % respectively (BDHS 2014). More than 4,000 doctors, 17,000 paramedics, 8,500 basic health workers, and 15,600 skilled birth attendants have been given training on different aspects of IMCI (3,500 doctors, 9,500 paramedics on IMCI clinical management; 500 doctors and 7,500 paramedics on sick newborn care; 8,500 basic health workers on community case management; and 15,600 skilled birth attendants on helping babies

breathe). Save the Children and UNICEF are supporting the MOHFW for the national scale-up of Helping Baby Breathe program for the prevention and management of newborn deaths due to birth asphyxia. In 2015, sixty-four districts and 2 city corporations have been covered. Logistics, like penguin sucker, bag, and mask, have been distributed. Large-scale maternal, neonatal and child health (MNCH) program, along with newborn health interventions, is being carried out in 41 out of 64 districts. This program is supported by UNICEF, UNFPA, JICA, USAID, Save the Children, BRAC, UNDP, PLAN, and other partners. Moreover, the MOHFW has established special-care newborn units (SCANU) in 30 hospitals (medical college and district hospitals) with support from UNICEF; additional 10 are being established in 2014-2015 with support from UNICEF; all district and upazila hospitals of 10 more districts will be added by 2016 through assistance from SAARC Development Fund.

Before inception of IMCI program in Bangladesh, there were separate vertical child health programs, viz. Control of Diarrheal Diseases (CDD) and Acute Respiratory Infections (ARI). IMCI addresses morbidities that are responsible for almost 75% of under-five deaths. To simplify case management in the primary healthcare settings, diseases and problems covered by IMCI program in Bangladesh have been classified into 13 broad categories, viz. (i) very severe disease, (ii) pneumonia, (iii) cough and cold-not pneumonia,

**Table 4.8. Coverage of Penta vaccine, vitamin A capsule, and antihelminthes among under-five children (EPI CES 2014)**

Residence	Penta vaccine (coverage) (0-59 months)	Vitamin A capsule		
		Infant (6-11 months)	Children (12-59 months)	Postpartum women
Rural	92.9	85.2	94.0	40.9
Urban	92.3	86.2	92.7	44.0
National	92.7	85.4	93.7	41.4



(iv) diarrhea, (v) fever-malaria, (vi) fever-no malaria, (vii) fever-malaria unlikely, (viii) measles, (ix) ear problem, (x) drowning, (xi) child injury, (xii) pus draining from umbilicus, and (xiii) other diseases.

The Management Information System (MIS) of the DGHS, with support from UNICEF, collects data on IMCI services. For 2015, data on

**Table 4.9. Division-wise distribution of children aged 0 to 5 year(s), who received treatment from IMCI facilities in 2015 (total 5,798,375)**

Division	Male	Female	Total
Dhaka	951,335	909,454	1,860,789
Chittagong	474,746	465,369	940,115
Rajshahi	470,182	454,252	924,434
Khulna	342,205	341,338	683,543
Sylhet	246,537	244,014	490,551
Rangpur	247,245	241,065	488,310
Barisal	214,395	196,238	410,633
<b>Total</b>	<b>2,946,645</b>	<b>2,851,730</b>	<b>5,798,375</b>

5,798,375 children, aged 0 to 5 year(s), who received treatment from the IMCI facilities of the 64 districts, have been received. Table 4.9 shows distribution of the children by division.

Table 4.10 shows the type of disease treated from IMCI corners. Major diseases are cough and cold-no pneumonia (35%), fever (21%) and diarrhea (13%).

### School health program

In Bangladesh, school health program began in 1951 in Dhaka and Chittagong and gradually expanded by 1972 to a network of 23 school health clinics located mainly in one school campus of the district headquarters. Currently, two medical officers are assigned to each of the clinics. The school health clinics provide clinical services to pupils of the schools. In addition, the clinics help in the improvement of school environment, improvement of school health and nutrition

**Table 4.10. Distribution diseases treated at IMCI facilities in 2015 (total 5,742,074)**

Sl. no.	Disease/Condition	No. of patients	%
1	Cough and cold-no pneumonia	2,020,182	35.18%
2	Fever-no malaria	1,183,466	20.61%
3	Diarrhea	719,594	12.53%
4	Referral (for various problems)	497,226	8.66%
5	Pneumonia	431,215	7.51%
6	Ear problem	191,320	3.33%
7	Very severe disease	157,378	2.74%
8	Anemia (0-5 years)	112,411	1.96%
9	Underweight (0-5 years)	96,577	1.68%
10	Moderate acute malnutrition	73,515	1.28%
11	Fever-malaria unlikely	60,749	1.06%
12	Child injury	56,550	0.98%
13	Low birthweight	38,755	0.67%
14	Stunting (0-5 years)	31,798	0.55%
15	Wasting (0-5 years)	23,886	0.42%
16	Severe acute malnutrition	16,682	0.29%
17	Drowning	10,527	0.18%
18	Pus draining from umbilicus	10,431	0.18%
19	Fever-malaria	9,589	0.17%
<b>Total</b>		<b>5,742,074</b>	<b>100%</b>

services, and health education to the pupils. The HPNSDP 2011-2016 has broadened the scope of school health program to expand all over the country, to provide preventive and promotional health services through health education; screening for eye, ENT, nutrition and dental health; first-aid, and referral. School health program includes training of school teachers for teaching on first-aid to the school students, as well as personal hygiene, handwashing, nutrition, safe water and sanitation, and provision of first-aid box.

### Adolescent health program

The adolescents (10-19 years) constitute about 23% of the population in Bangladesh. The annual growth rate of the adolescent population is 4.3% compared to 1.37% growth rate among

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The HPNSDP 2011-2016 has broadened the scope of school health program to expand all over the country

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the general population. Early marriage and motherhood are common in Bangladesh. About 50% of all 15-19 years old females are married, of whom about 33% are already mothers, and

another 6% are pregnant having risks to their health. Their knowledge on unprotected sex is also limited that may expose them to STDs, unwanted pregnancies, and abortions. In consideration of the above facts, the adolescent health program has been incorporated into school health program under HPNSDP 2011-2016. The objectives of the program include; (i) improvement of knowledge of adolescents on adolescent reproductive health issues; (ii) creation of positive changes in the behavior and attitude of the gatekeepers of the adolescents toward reproductive health; (iii) providing easy access of all adolescents to adolescent-friendly and related health and other services.



# 5

## SECONDARY AND TERTIARY HEALTHCARE

Per-capita bed availability needs to be increased

Secondary and tertiary healthcare facilities are those that provide more advanced or specialty care than the primary healthcare facilities at the ward, union and upazila levels. The district hospitals are usually termed secondary hospitals as these have fewer facilities for specialty care compared to many in the medical college hospitals. There are also different types of specialty-care centers, such as infectious disease hospitals, tuberculosis hospitals, leprosy hospitals, which fall under the health facilities of secondary care. The medical college hospitals are located at the regional level, one for few districts and provide specialty care in many disciplines. These hospitals are called tertiary hospitals. Super-specialty hospitals at the national level or centers that provide high-end medical services in a specific field are also considered tertiary hospitals.

**Table 5.1. Secondary and tertiary hospitals/health centers under DGHS, with the number of functional beds (as of December 2014)**

Type of hospital/health center	No. of facilities	No. of functional beds
Chest hospital	13	816
Dental college hospital	1	200
District/general hospital	64	10,250
Hospital of alternative medicines	2	200
Infectious disease hospital	5	180
Leprosy hospital	3	130
Medical college hospital	14	12,963
Other hospitals	3	155
Special-purpose hospital	1	500
Specialized hospital	3	450
Specialty-care postgraduate institute and hospital	11	3,184
Trauma center	5	100
50-bed hospital	3	150
<b>Total</b>	<b>128</b>	<b>29,278</b>

Dhaka division has the highest number (48) of secondary and tertiary hospitals, followed by Chittagong, Khulna and Rajshahi division

The number and bed-capacity in different types of secondary and tertiary hospitals/ health centers under DGHS are shown in Table 5.1. Further details, including the list and bed-capacity of each type of hospitals, are provided in the Annex to this chapter.

### Bangabandhu Sheikh Mujib Medical University

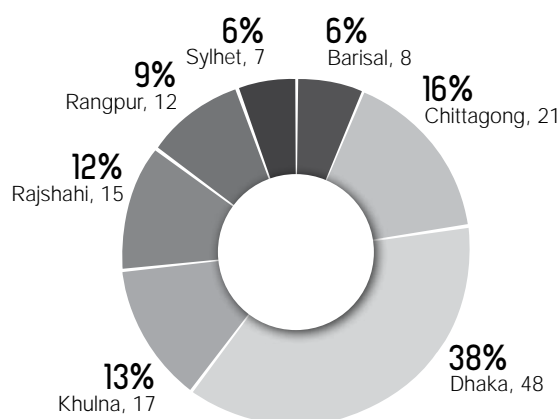
Bangabandhu Sheikh Mujib Medical University (BSMMU) is the only medical university in Bangladesh. The BSMMU and its affiliated hospital receives financial assistance from the Ministry of Health and Family Welfare.

Both university and its affiliated hospital are autonomous bodies. The hospital has 1,500 beds, including 752 free beds. The hospital has 48 clinical departments, 167 cabins, and 18 operation theaters.

### Distribution of public hospitals and hospital beds by administrative division

Figure 5.1 shows the distribution of secondary and tertiary hospitals by administrative division. Dhaka division has the highest number (48) of secondary and tertiary hospitals, followed by Chittagong, Khulna and Rajshahi division with 21, 17, and 15 hospitals respectively. Sylhet division has the lowest number (7) of such hospitals.

Table 5.2 shows that, of the total 14 medical college hospitals, 5 are in Dhaka division (35.71%), 2 in each of Chittagong, Rajshahi



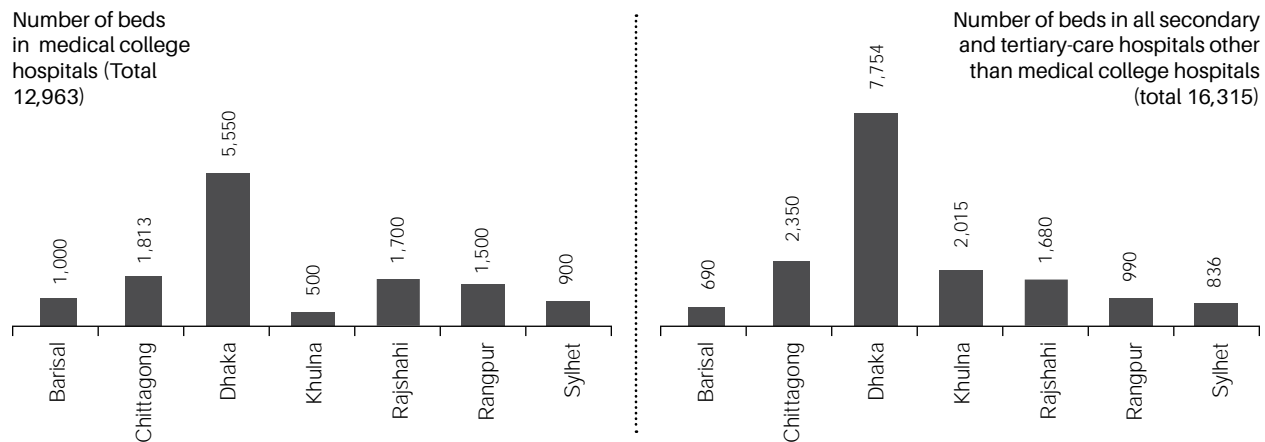
**Figure 5.1. Distribution (number and percentage) of government-owned secondary and tertiary hospitals under the DGHS by administrative division of Bangladesh (2014) (total 128)**

and Rangpur division (14.29% in each of the divisions), and 1 in each of Barisal, Khulna and Sylhet division (7.14% in each division). However, this distribution will be changed once the new public medical college hospitals start functioning. In terms of the number of other 114 secondary and tertiary-level hospitals, Dhaka division is placed at the top, with 43 hospitals (37.72%), followed by Chittagong division with 19 (16.67%) hospitals.

Available number of beds for the population in the catchment areas is one of the good proxies for measuring the strength of healthcare infrastructure in different geographic areas.

**Table 5.2 Distribution of secondary and tertiary public hospitals under the DGHS by division (2014)**

Type of hospital	Number and percentage	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet	Total
Medical college hospitals	Number	1	2	5	1	2	2	1	14
	Percentage	7.14	14.29	35.71	7.14	14.29	14.29	7.14	100.00
Other secondary & tertiary hospitals	Number	7	19	43	16	13	10	6	114
	Percentage	6.14	16.67	37.72	14.04	11.40	8.77	5.26	100.00

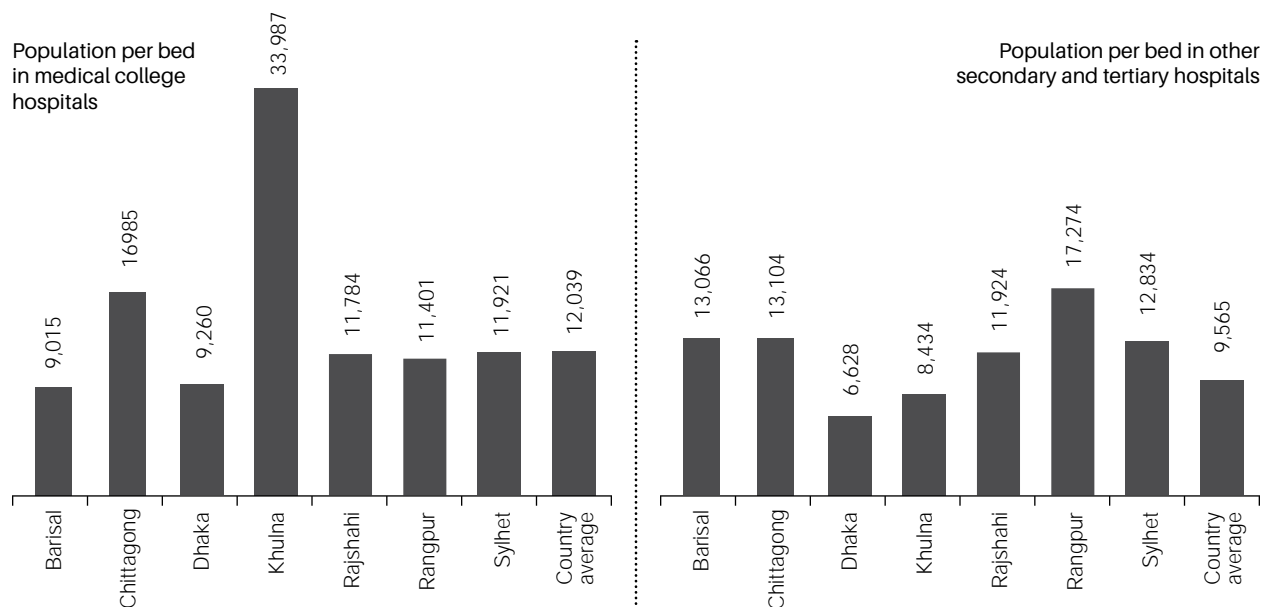


**Figure 5.2. Distribution of the number of beds in the secondary and tertiary hospitals by administrative division of Bangladesh (2014)**

Figure 5.2 shows the distribution of government-owned secondary and tertiary-level hospital beds by administrative division of Bangladesh. These are run under the administrative control of the DGHS. It is not surprising to see that about 43% (5,550 out of the total 12,963) of beds in the government medical college hospitals and

48% (7,754 out of the total 16,315) of beds in the remaining (other than medical college hospitals) secondary and tertiary hospitals under the DGHS are concentrated in Dhaka division.

Figure 5.3 shows the population-bed ratios in the secondary and tertiary-care hospitals by



**Figure 5.3. Population per bed in government-run secondary and tertiary hospitals by administrative division of Bangladesh (2014)**

administrative division of Bangladesh. Khulna division has the paucity of beds in its medical college hospitals (one bed per 33,987 people) compared to other divisions. With the addition of beds from the new medical college hospitals, the population-bed ratios in Khulna and Chittagong division are expected to be reduced in the near future. For 9,620 persons, there is one bed in medical college hospital and, for 6,628 persons, there is one bed in other types of secondary and tertiary hospitals in Dhaka division. The population per bed scenario in Dhaka division is obviously better than the country average as well as that in any other division.

### **Private hospitals, clinics, and diagnostic centers**

As of November 2015, the DGHS provided registration to 13,341 private hospitals, clinics, and diagnostic centers in Bangladesh. The number of registered private hospitals and clinics is 4,280, and that of registered private diagnostic centers is 9,061. The total number of beds in these registered private hospitals and clinics is 74,620. The Annex to the chapter shows the number of sanctioned beds, free beds, departments, wards, cabins, and operation theaters in some of the private and non-profit hospitals.

# 6

## UTILIZATION OF HEALTH FACILITIES

Care-seeking from public facilities is on the rise

Almost all public hospitals and health centers now send their service utilization data to the MIS-DGHS. Besides, the autonomous medical university, namely Bangabandhu Sheikh Mujib Medical University, and some NGO-run health facilities are also sending their data on a regular basis. Hence, from this chapter, the readers will get an idea about the number of patients being served annually by the public and NGO-run facilities of the country.

### Public hospitals

For 2014 (January to December), we received data from quite a good number of public hospitals and health centers. Table 6.1 through 6.4 show the summary figures relating to hospital utilization.

**Table 6.1. Source of hospital utilization data (2014)**

Facility level	No.
No. of upazila (data from all public health facilities at upazila level and below)	483
No. of district level hospitals (district hospitals/general hospitals)	64
No. of medical college hospitals/specialty-care postgraduate institute hospitals/ other tertiary hospitals)	30
<b>Total</b>	<b>577</b>

In total, more than 182 million patient-visits took place for outpatient and emergency services from public health facilities in 2014

From these health facilities (owned by both DGHS and DGFP), reportedly 174,145,676 patients received healthcare from the outpatient departments in 2014 (Table 6.2). Among them, the number of patients aged five years or below (both the sexes) was 29,945,026. The number of patients aged more than 5 years was 144,200,650. The number of total emergency visits was 8,519,555. Among them, patients aged five years or below were 1,521,718 and patients above 5 years were 6,997,837. Thus, in total, more than 182 million patient-visits took place for outpatient and emergency services from public

health facilities in 2014. These services were provided free or at nominal charges. The number of total admissions was 5,864,707. Among these, patients aged 5 years or below were 1,564,290 and patients above 5 years were

4,300,417. The total number of hospital deaths was 100,268.

Detailed information on each hospital/health facility is given in the Annex to this chapter.

**Table 6.2. Number of OPD and emergency visits and admissions reported from government health facilities (DGHS and DGFP) (2014)**

Location	≤5 years			>5 years			Grand Total
	Male	Female	Total	Male	Female	Total	
Outpatient	14,548,493	15,396,533	29,945,026	52,078,151	92,122,499	144,200,650	174,145,676
Emergency	805,492	716,226	1,521,718	3,286,466	3,711,371	6,997,837	8,519,555
Admission	759,094	805,196	1,564,290	1,983,318	2,317,099	4,300,417	5,864,707

**Table 6.3. Number of outpatient and emergency visits in government health facilities by type (2014)**

Facility type	OPD	Emergency	Total
<b>Primary-care hospital</b>	<b>21,248,296</b>	<b>2,861,336</b>	<b>24,109,632</b>
10-bed hospitals	-	-	-
20-bed hospitals	16,137	-	16,137
Maternal and child welfare center (MCWC)	634,716	5,634	640,350
Other primary-care hospitals	28,331	6,885	35,216
Thana health complex	-	256	256
Trauma center	14,920	1,613	16,533
UHC	20,554,192	2,846,948	23,401,140
<b>Primary-care OPD</b>	<b>135,007,210</b>	<b>24,69,075</b>	<b>13,74,76,285</b>
CC	102,642,246	1,910,936	104,553,182
HFWC-DGFP	-	176,362	176,362
RD/UD/TD	15,398	6,000	21,398
TB center	131,981	-	131,981
UHFWC	5,970,091	29,870	5,999,961
UHFWC-DGFP	10,079,430	-	10,079,430
UHFWC-DGHS	568,923	2,776	571,699
USC	15,599,141	343,131	15,942,272
<b>Secondary-care hospitals</b>	<b>9,790,956</b>	<b>1,863,026</b>	<b>11,653,982</b>
<b>Tertiary-care hospitals</b>	<b>8,099,214</b>	<b>1,326,118</b>	<b>9,425,332</b>
<b>Total</b>	<b>174,145,676</b>	<b>8,519,555</b>	<b>182,665,231</b>

**Table 6.4. Number of admissions and deaths in government health facilities by type (2014)**

Facility type		Admission	Death
Primary-care hospitals	Mother and child welfare center (MCWC)	15,767	2
	TB Clinic	511,561	18
	Trauma Center	4,614	0
	UHC	2,251,845	9,330
	<b>Total</b>	<b>2,783,787</b>	<b>9,350</b>
Secondary-care hospitals	District / general hospitals	1,656,770	23,996
Tertiary-care hospitals	Medical college hospitals	1,279,805	60,724
	Specialty postgraduate institute hospitals	144,345	6,198
	<b>Total</b>	<b>1,424,150</b>	<b>66,922</b>
<b>Grand total</b>		<b>5,864,707</b>	<b>100,268</b>

Figure 6.1 compares the outdoor visits in all health facilities under the DGHS in 2013 and 2014. Overall, the number of reported total outdoor visits increased by 8.8% in 2014 compared to that in 2013.

Figure 6.2 compares the number of admissions in all hospitals under the DGHS in 2014 and 2013. The number of reported total admissions increased by 22.8% in 2014 compared to that in 2013.

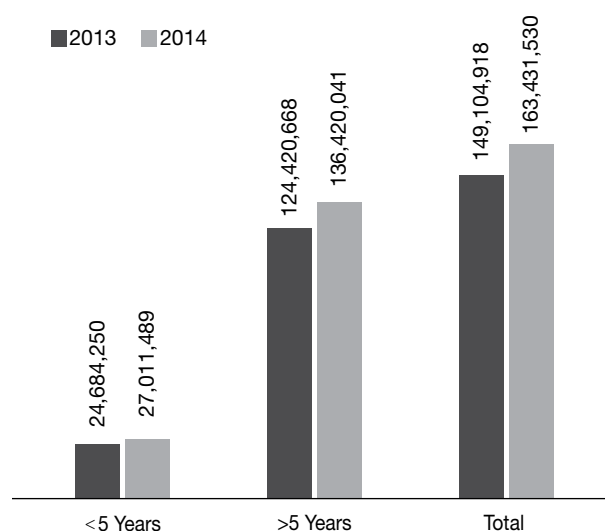
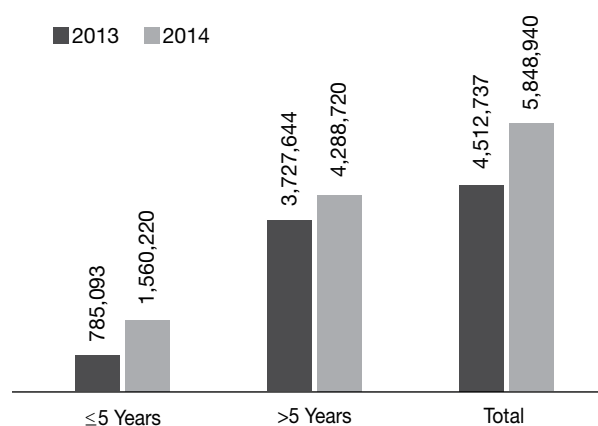
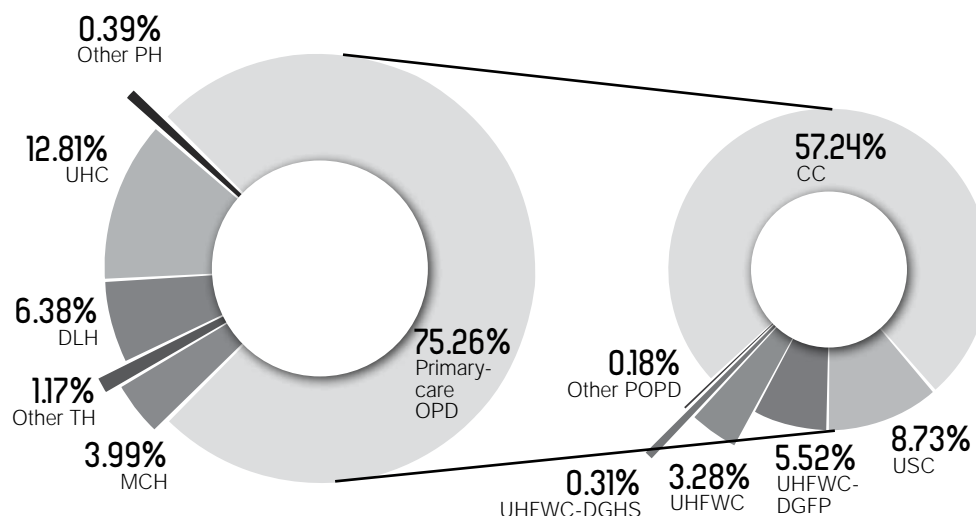
**Figure 6.1. Number of reported outdoor visits in all DGHS health facilities in 2013 and 2014****Figure 6.2. Number of reported admissions in all DGHS hospitals in 2013 and 2014**

Figure 6.3 shows the distribution of OPD and emergency patients by type of health facilities. Of the total 182,665,231 patients (OPD: 174,145,676; emergency: 8,519,555), three-fourths (75.26%) were seen in the outdoor-only health facilities providing primary care (POPD). The types of facilities include community clinic (CC), union subcenter (USC), and union health and family welfare center (UHFWC). Among these facilities, community clinics served the majority of the patients (57.24%). Among the remaining one-fourth of patients, 12.81% were seen by upazila health

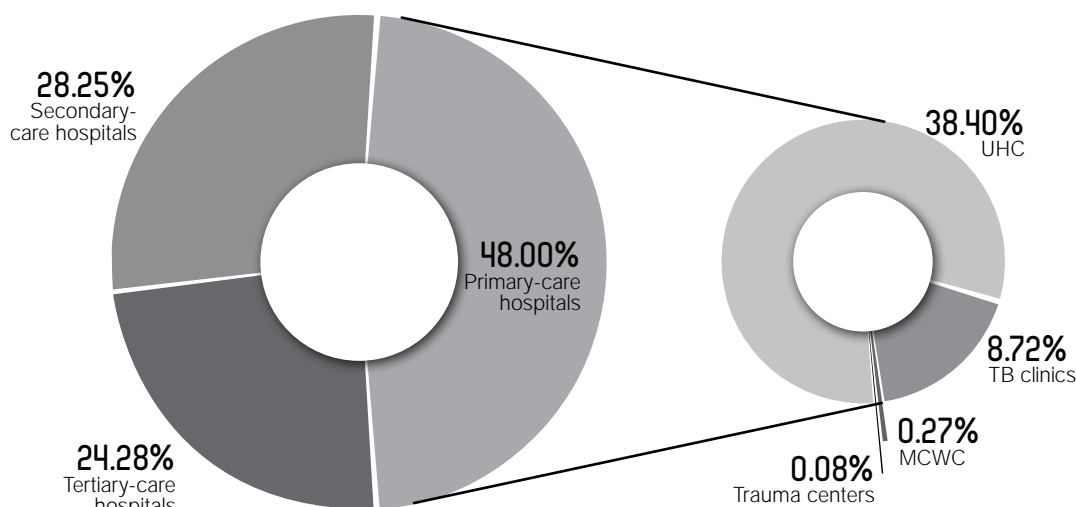


**Figure 6.3. Distribution of outdoor and emergency patients by type of MOHFW health facility in 2014 (total patients: 182,665,231)**

complexes (UHC), 6.38% by district-level hospitals (DLH), 3.99% by medical college hospitals (MCH), 1.17% by other tertiary hospitals (other TH), and 0.39% by other primary-care hospitals (other PH).

Figure 6.4 shows the distribution of admissions in 2014 by type of hospital. Of the total 5,864,707 reported admissions, almost half (48%) were in the primary-care hospitals;

38.40% of the total patients admitted in this level were in the upazila health complexes (UHC). Other primary-care hospitals (PHCH) included TB clinics serving 8.72% patients, Maternal and child welfare centers (MCWC) and trauma centers provided services to 0.27% and 0.08% patients respectively. The secondary-care hospitals (district and general hospitals) admitted



**Figure 6.4. Distribution of admissions by type of hospital in 2014 (total admissions 5,864,707)**



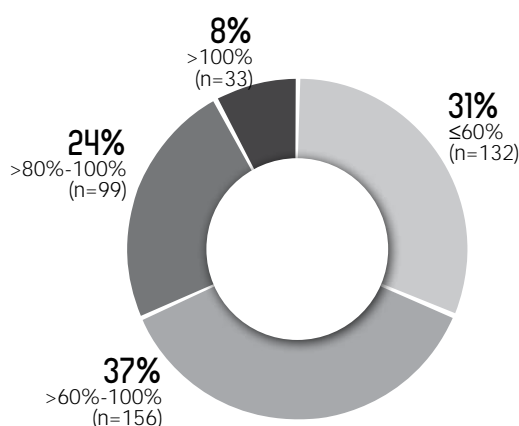
28.25% of the total patients, and the remaining 24.28% patients were admitted in the medical college hospitals, specialty-care postgraduate institute hospitals, and other tertiary hospitals.

**Table 6.5. Average length of stay and bed-occupancy rate in different types of public hospitals during 2014**

Type of health facility	Average length of stay (day)	Bed-occupancy rate (%)
University hospital (BSMMU)	17.3	98.0
Specialized postgraduate teaching institute hospitals	8.1	98.8
Other tertiary hospitals	5.2	128.4
District hospitals	2.7	117.3

Table 6.5 shows the average length of stay and bed-occupancy rate in different types of public hospitals during 2014. Detailed information is given in the Annex.

Figure 6.5 shows the distribution of 420 upazila health complexes by bed-occupancy rate in 2014. It revealed that bed-occupancy rates of 24% upazila health complexes were more than 80%; in 37% of upazila health complexes it was between >60% and 80%; and in 31% of health complexes it was ≤60%.



**Figure 6.5. Distribution of upazila hospitals by bed-occupancy rate (%) in 2014**

## NGO Health Service Delivery Project (NHSDP) is the largest USAID and DFID-funded urban healthcare investment in Bangladesh

Table 6.6 shows the distribution (%) of upazila hospitals by bed-occupancy rate in the last 7 years (2008 to 2014).

### Bangabandhu Sheikh Mujib Medical University

Bangabandhu Sheikh Mujib Medical University (BSMMU) and its affiliated hospital are autonomous bodies. The hospital has 1,500 sanctioned beds. In 2014, it served 866,400 outdoor patients. A total of 31,025 patients were admitted here in 2014. The average length of hospital stay was 10 days, and the bed-occupancy rate was 98%.

### USAID-supported NGO Health Service Delivery Project

NGO Health Service Delivery Project (NHSDP) is the largest USAID and DFID-funded urban healthcare investment in Bangladesh. The project supports the delivery of an Essential Service Package (ESP) of primary healthcare through a nationwide network of 26 national NGOs, 392 static clinics, 10,186 satellite clinics, and 7,321 community service providers (CSP), serving approximately 24 million people of the country (about 15% of the total population) and has around 38 million annual total service contacts. The project complements the Government of Bangladesh's efforts to maximize the reach to the poor and the underserved population of the country with quality services at an affordable or no cost. The ESP comprises: (1) reproductive health, including family planning, (2) child health; (3) behavior change

**Table 6.6. Distribution (%) of upazila hospitals by bed-occupancy rate in the last 7 years (2008 to 2014)**

Bed-occupancy rate (%)	2008		2009		2010		2011		2012		2013		2014	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%
≤40	10	2.5	8	2.0	40	9.7	24	5.9	15	3.7	44	10.4	50	11.9
>40–50	42	10.4	23	5.6	23	5.6	19	4.7	23	5.7	24	5.7	23	5.5
>50–60	59	14.6	36	8.8	52	12.6	42	10.4	46	11.3	53	12.6	59	14.0
>60–70	74	18.3	75	18.4	48	11.6	50	12.4	53	13.1	60	14.2	80	19.0
>70–80	76	18.8	113	27.7	73	17.7	63	15.6	77	19.0	62	14.7	76	18.1
>80–90	61	15.1	60	14.7	56	13.6	64	15.8	61	15.0	80	19.0	66	15.7
>90–100	48	11.9	48	11.8	35	8.5	47	11.6	61	15.0	49	11.6	33	7.9
>100–110	16	4.0	20	4.9	30	7.3	36	8.9	36	8.9	25	5.9	20	4.8
>110–120	16	4.0	12	2.9	25	6.1	27	6.7	11	2.7	5	1.2	4	1.0
>120–130	0	-	9	2.2	14	3.4	17	4.2	9	2.2	5	1.2	0	0.0
>130–140	0	-	4	1.0	6	1.5	7	1.7	4	1.0	5	1.2	1	0.2
>140	2	0.5	0	-	11	2.7	8	2.0	10	2.5	10	2.4	8	1.9
<b>Total</b>	<b>404</b>	<b>100.0</b>	<b>408</b>	<b>100.0</b>	<b>413</b>	<b>100.0</b>	<b>404</b>	<b>100.0</b>	<b>406</b>	<b>100.0</b>	<b>422</b>	<b>100.0</b>	<b>420</b>	<b>100.0</b>

communication; (4) communicable diseases control; and (5) limited curative care. There are four dimensions of performance by NGOs under NHSDP, viz. coverage and uptake, quality, equity, and institutional strengthening through three elements, such as improved reproductive and MNCAH-FP outcomes, sustainability, and delivery of quality ESP to the poor.

In 2014, the numbers of clients served by the Surjer Hashi Network (Table 6. 7) include 124,556 newborn contacts for essential newborn care and 4,064,829 immunization services; management of ARI was given to 2,974,585 children. A total of 4,122,801 mothers received services on maternal health; of them, 1,342,055 and 460,728 mothers received antenatal care and postnatal care respectively, and 28,280 mothers obtained safe birth services by the network clinics. In addition, 15,631,171 couples received family planning services. Out of the total service encounters, 10,619,758 were for the poor (39% of total service contacts). In 2014, NHSDP has taken special initiatives to increase maternal health services and empower

pregnant women, such as (1) distribution of “Mayer Bank” among pregnant women; (2) hosting of “Surjer Hashi red flag” in the pregnant women’s house to engage the community; and (3) “Three-day Vigilance” for the mother and newborn. Remarkable progress of services has been seen in 2014 compared to 2013 (shown in Table 6.8).

Surjer Hashi network provided services to 27,702,365 clients at static and satellite clinics (Table 6.9). A total of 28,280 child deliveries were conducted during 2014 in the EmONC facilities (55 clinics) and at home (89 clinics). The number of admissions was 24,209 in the emergency obstetric care (EmOC) clinics for childbirth. There was no death in the Surjer Hashi clinics. The bed-occupancy rate was 66%, and the daily average admission rate was 64.

### Government coordination

Strengthened partnership and advocacy with the Government of Bangladesh has resulted in the formation of an inter-ministerial “USAID-DFID

**Table 6.7. Number of patients served under USAID and DFID-funded NHSDP Surjer Hashi network in 2014**

Month	Newborn contact	EPI	ARI	ANC	PNC	Maternal contact	FP	Poor customer
January	9,883	341,764	248,365	108,632	39,056	346,358	1,305,131	866,808
February	9,964	335,421	245,541	107,830	36,964	343,267	1,291,989	873,237
March	10,033	335,918	234,563	114,521	38,936	351,192	1,301,333	904,486
April	10,004	331,809	234,567	113,504	37,374	346,566	1,294,147	913,529
May	10,361	332,220	231,452	116,979	39,409	356,562	1,309,834	912,793
June	10,434	331,884	234,567	119,769	40,485	362,178	1,344,322	927,106
July	10,617	333,595	259,877	106,832	36,457	335,623	1,314,455	876,745
August	10,582	339,876	249,875	111,425	38,784	332,456	1,313,528	883,386
September	10,611	340,097	256,753	116,368	38,575	353,802	1,318,162	900,393
October	10,705	339,889	256,798	100,190	37,939	313,410	1,246,585	822,509
November	10,630	345,567	267,549	110,641	38,433	326,905	1,286,878	855,973
December	10,730	356,789	254,678	115,364	38,316	354,482	1,304,807	882,794
<b>Total</b>	<b>124,556</b>	<b>4,064,829</b>	<b>2,974,585</b>	<b>1,342,055</b>	<b>460,728</b>	<b>4,122,801</b>	<b>15,631,171</b>	<b>10,619,758</b>

**Table 6.8. Comparison between the year 2013 and 2014 for services provided by NHSDP**

Year	Newborn contact	EPI	ARI	ANC	PNC	Maternal contact	FP	Poor customer
Total (2013):	113,909	3,633,968	2,748,338	1,236,314	417,717	3,726,755	14,814,539	9,398,134
Total (2014):	124,556	4,064,829	2,974,585	1,342,055	460,728	4,122,801	15,631,171	10,619,758
Increase %	9%	12%	8%	9%	10%	11%	6%	13%

**Table 6.9. Some parameters of hospitalized patients served by USAID and DFID-funded NHSDP in 2014**

Month	Total patients (No.)	Admission (No.)	Death (No.)	Average length of stay (day) (No.)	Bed-occupancy rate (%)	Hospital death rate (%)	Avg. daily admission (No.)	Total skilled deliveries (No.)
January	2,314,374	1,955	0	3	62	0	63	2,272
February	2,299,292	1,680	0	3	61	0	63	1,958
March	2,369,922	1,842	0	3	62	0	62	2,129
April	2,355,968	1,701	0	3	61	0	62	1,998
May	2,400,769	1,949	0	3	62	0	62	2,230
June	2,422,256	1,905	0	3	63	0	63	2,236
July	2,271,619	1,970	0	3	63	0	63	2,281
August	2,283,434	2,013	0	3	64	0	64	2,387
September	2,350,401	2,192	0	3	68	0	65	2,591
October	2,137,484	2,254	0	3	72	0	64	2,616
November	2,230,365	2,308	0	3	76	0	67	2,696
December	2,266,481	2,440	0	3	77	0	69	2,886
<b>Total</b>	<b>27,702,365</b>	<b>24,209</b>	<b>0</b>	<b>3</b>	<b>66</b>	<b>0</b>	<b>64</b>	<b>28,280</b>

NHSDP Advisory Committee.” The committee consists of eight relevant ministries under the leadership of the Ministry of Health and Family Welfare in order to provide strategic direction to NHSDP and accelerate the ongoing health and FP services with an emphasis on reaching the poor. In collaboration with the Ministries of

LGRD&C, Social Welfare, Women & Children Affairs and Chittagong Hill Tracts, the NHSDP aims to reach underserved population leveraging government programs and supplement to the result. It has also a plan to incorporate NHSDP-MIS into the government MIS.

# 7

## MORBIDITY PROFILE

### Assaults and transport accidents claiming huge resources

The analyses are based on top 10 causes of hospital admission as published in the online local health bulletins (2015) of the public health facilities. Data from upazila health complexes, district-level hospitals, and medical college hospitals have been analyzed in three separate groups whereas those from the postgraduate institute hospitals providing specialty care are individually presented. Different types of institutions from which data were received are shown in Table 7.1.

**Table 7.1. Type and number of government hospitals from which indoor morbidity data for 2014 were received**

Type of hospital	Total number of hospitals	No. and % of hospitals which provided indoor morbidity data	
		Number	Percentage
Upazila health complex	424	408	96.23
District and general hospital	64	62	96.88
Medical college hospital	14	14	100
Specialty-care postgraduate institute hospital	11	9	81.82
Hospitals of alternative medicines	2	1	50.00

ICD-10 and its modified forms are used world-wide for morbidity and mortality statistics, among others

ICD-10 (International Statistical Classification of Diseases and Related Health Problems-10th Revision) has been developed by the World Health Organization. The ICD-10 and its modified forms are used world-wide for morbidity and mortality statistics, among others. The ICD-10 is subdivided into chapters, blocks, 3-digit codes, and 4-digit codes. Usually, a 4-digit code indicates a condition most specifically; a 3-digit code can also indicate a condition but with lesser specificity. A 'block' is composed of a group of similar conditions.

The external causes of morbidity and mortality are described in Chapter XX of ICD-10 book and, according to ICD-10 coding

convention, codes of that chapter should not be used without accompanying codes from Chapter XIX which describes the nature/site of injury, poisoning, and certain other consequences of external causes. However, in this chapter of Health Bulletin, some ICD-10 codes, specifically codes for transport accidents (V1 through V99) and assaults (X85 through Y09) are used without accompanying codes from Chapter XIX so that the underlying cause, rather than the nature of injury can be highlighted.

In local health bulletins, the ICD-10 is applied to provide a glimpse of the morbidity profile from the hospitals. The hospitals compile a list of top 10 causes of admission in their respective facilities, assign ICD-10 codes against those conditions/diseases and enter data into the online local health bulletins. In most cases, both compilation and coding of diseases are done by statisticians who are briefly trained on ICD-10. Hence the precision of coding is not ideal in all cases. Considering this limitation, we are providing the morbidity analyses up to 'block' levels for upazila health complexes and district-

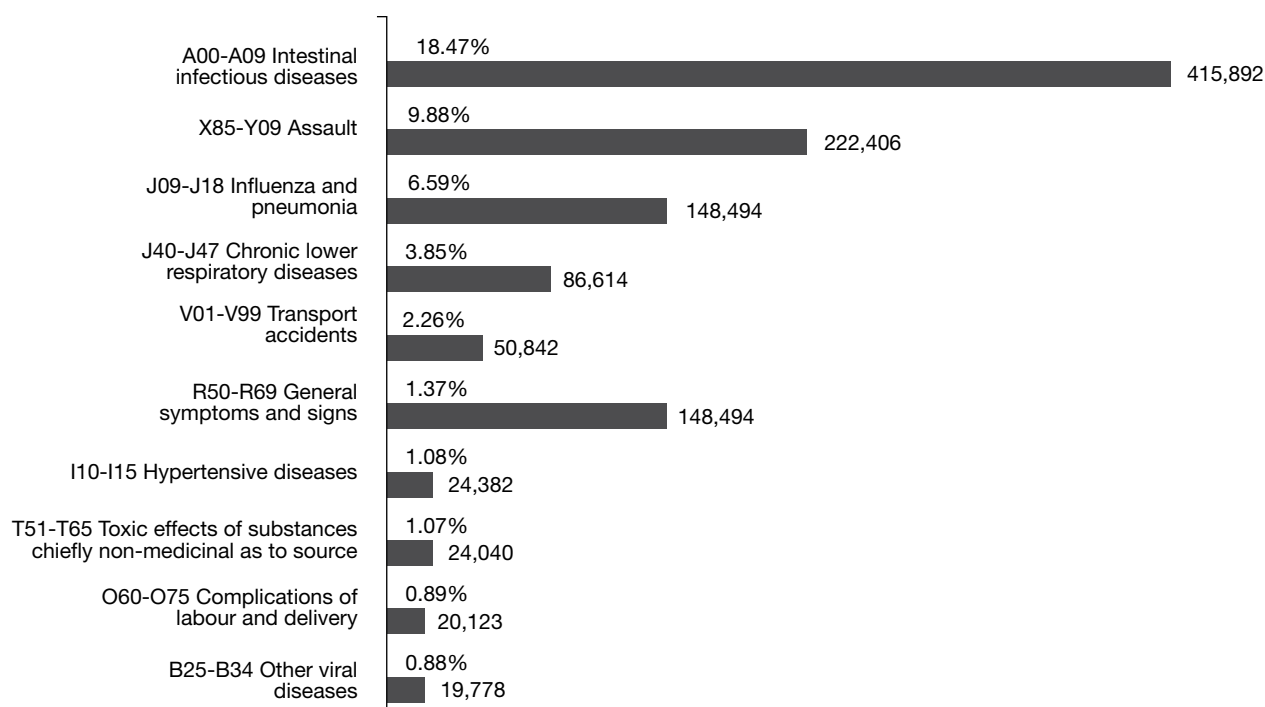
level hospitals. In the analyses of morbidity data from medical college hospitals and specialized institutes mostly 3-digit codes are used; however, where appropriate, similar conditions are shown as a group.

The individual institute-level data can be seen and exported from the 'local health bulletin' section under publication tab of our official website ([www.dghs.gov.bd](http://www.dghs.gov.bd)).

### Morbidity profile of indoor patients at upazila health complexes

There are 424 upazila health complexes (UHC) in the country and, in addition, there are 60 'sadar upazila' (subdistricts situated at the administrative district headquarters) health offices which do not have indoor facilities. Out of the 424 UHCs, we received morbidity data in 2014 on the indoor patients from 408 (96.23%) because, in some of the UHCs, indoor facilities are not currently available.

As stated earlier, the ICD-10 blocks are used in the morbidity analyses to increase accuracy of



**Figure 7.1. Top causes of admission (number and percentage) among the indoor patients (n=2,251,845) of upazila health complexes (n=408) in 2014**

the information. In the ICD-10 coding system, a 3-digit alpha-numeric code (for example 'A09') indicates a specific disease or condition whereas a range of 3-digit codes (like A00 to A09) is called 'block' which indicates a group of similar diseases/conditions. So, the readers are advised to keep in mind that the concept of "group of diseases/conditions", rather than a specific disease/condition, has been used in the analyses provided here.

Figure 7.1 shows the morbidity profile in terms of the ICD-10 blocks as causes of hospitalization of the patients in the UHCs. In the graph, the range of alpha-numeric codes (like A00–A09) preceding the names of diseases/conditions indicates the corresponding blocks of ICD-10.

Total number of patients included in the analysis was 2,151,845. Among them, 1,267,014 were female (56.27%), and 984,831 were male (43.73%) patients. Out of the 2,151,845 admitted patients, there were 439,187 (19.50%) children aged 5 years or less. Among the children, 208,575 were female (9.26% of total admissions, and 47.49% of the children aged 5 years or less); 230,612 were male (10.24% of total admissions, and 52.51% of the children

aged 5 years or less). The 'top 10' blocks have been determined from the percentage of prevalence of diseases/conditions calculated among both sexes and all ages across 408 UHCs.

The block A00–A09, denoting 'Intestinal infectious diseases', had the first place among the causes of admission in the UHCs. This block contains diseases, like cholera, other types of gastroenteritis (commonly known as 'diarrhea'), typhoid and paratyphoid fever, shigellosis (known as 'blood dysentery'), amebiasis (known as 'dysentery'), etc. In total, 415,892 patients (18.47% of the total admissions) were admitted in the UHCs for these infectious conditions. A further analysis in terms of number and percentage, with break up for the level of individual diseases/conditions inside this block is shown in Table 7.2.

From Table 7.2, it is evident that diarrhea and gastroenteritis of infectious origin (commonly known as 'diarrhea') is still the commonest cause of admission in the upazila health complexes. However, deaths due to these diarrheal diseases are negligible as evidenced by the mortality analyses provided in Chapter 8.

**Table 7.2. Number and percentage of patients suffering from diseases/conditions under the block A00–A09 among the indoor patients (n=2,251,845) of upazila health complexes (n=408) in 2014**

ICD-10 code	Disease/Condition	Number of patients	Percentage (n= 2,251,845)
A00	Cholera	23,886	1.06%
A01	Typhoid and paratyphoid fever	47,554	2.11%
A02	Other Salmonella infections	372	0.02%
A03	Shigellosis	3,088	0.14%
A04	Other bacterial intestinal infections	1,219	0.05%
A05	Other bacterial foodborne intoxications, not elsewhere classified	1,148	0.05%
A06	Amebiasis	3,276	0.15%
A07	Other protozoal intestinal diseases	220	0.01%
A08	Viral and other specified intestinal infections	5,682	0.25%
A09	Diarrhea and gastroenteritis of infectious origin	329,447	14.63%
A00 – A09	<b>Intestinal infectious diseases</b>	<b>415,892</b>	<b>18.47%</b>

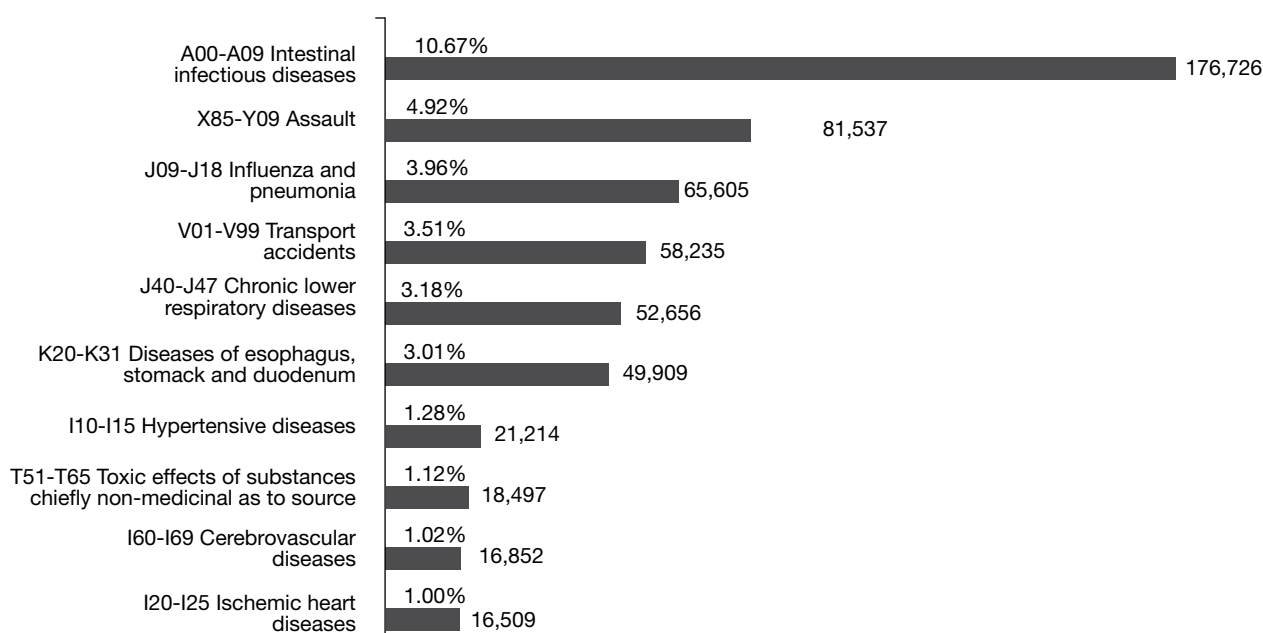
Injury or trauma caused by assault (9.88%), influenza and pneumonia (6.59%), chronic lower respiratory diseases (3.85%), and injury caused by transport accidents (2.26%) had the 2nd to 5th positions as the cause of admission at the UHCs in 2014. Complications of labor and delivery had the 9th position in the list. The analysis was done among both sexes and all ages; hence, the prevalence of these conditions would have been much higher if only the females of childbearing ages were considered as denominator. The full list of the causes of admission is provided in the Annex.

### Morbidity profile of indoor patients at the district-level hospitals

The secondary hospitals situated in the district headquarters are usually known as district hospitals, and with a few exceptions, there is one such hospital in each of the 64 districts. In some districts, the hospitals are called 'general hospitals' or '250-bed hospitals'. They are termed secondary hospitals as these have fewer facilities for specialty care compared to many in the medical college hospitals and other tertiary hospitals. In addition to the district or general hospitals, there are different types

of specialty-care centers, such as infectious disease hospitals, tuberculosis hospitals, leprosy hospitals, which also fall under the health facilities of secondary care. In this section, the morbidity profiles of the district and general hospitals are given. The morbidity data as published in the local health bulletins (2015) of 62 general and district hospitals out of 64 are summarized below.

Figure 7.2 shows the morbidity profile of patients in terms of the top 10 diseases/causes of admission in the district and general hospitals. Total number of patients included in the analysis was 1,656,770. Among them, 856,968 (52.27%) were female and 790,802 (47.73%) were male patients. Out of all admitted patients, there were 381,457 (23.02%) children aged ≤5 years. Among the children, 172,778 were female (10.43% of all admitted patients and 45.29% of admitted ≤5 children), and 208,679 were male (12.60% of total admission and 54.71% of under-5 children). The top 10 blocks have been determined from the percent prevalence of diseases/conditions calculated among both sexes and all ages across 62 district and general hospitals.



**Figure 7.2. Top causes of admission (number and percentage) among the indoor patients (n=1,656,770) of the district and general hospitals (n=62) in 2014**



The rankings of the top causes of admission in the district-level secondary hospitals were similar to that at the UHCs

As in the upazila health complexes, the block A00–A09, denoting “Intestinal infectious diseases”, had the first place (10.67%) among the causes of admission in the district and general hospitals.

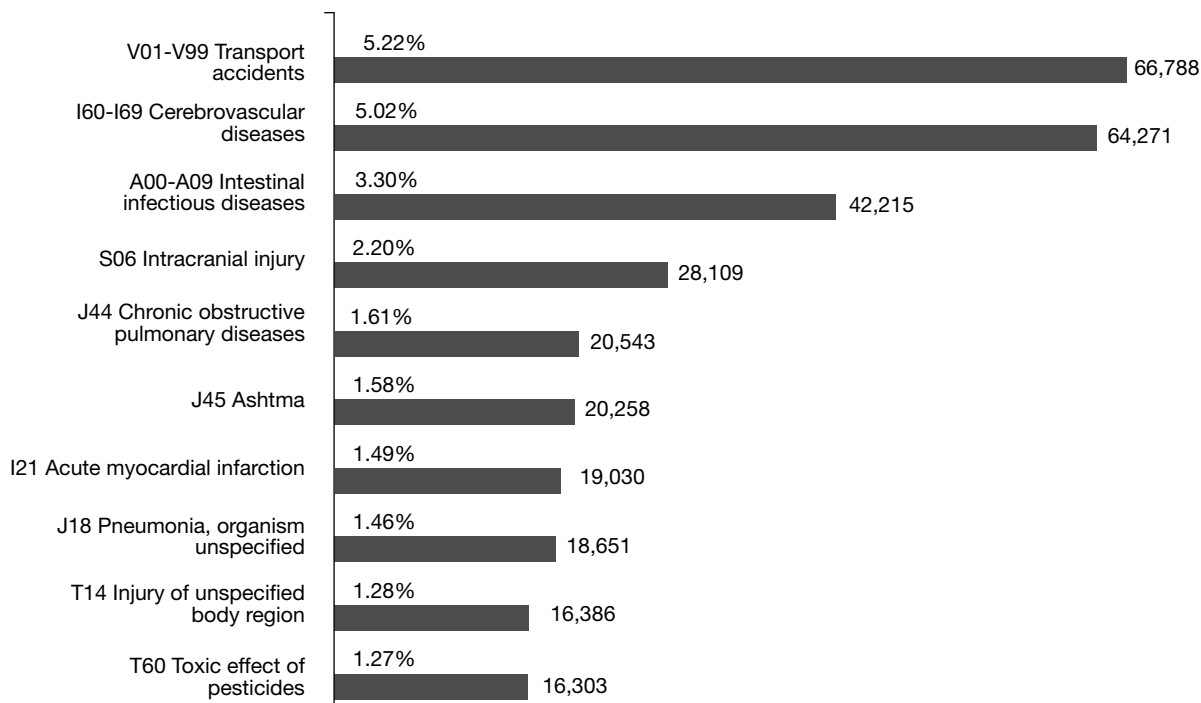
Injury or trauma caused by assault (4.92%), influenza and pneumonia (3.96%), injury caused by transport accidents (3.51%), and chronic lower respiratory diseases (3.18%) occupied the 2nd to 5th positions as the cause of

admission. Thus, the rankings of the top causes of admission in the district-level secondary hospitals were similar to that at the UHCs. The full list of the causes of admission is provided in the Annex.

### Morbidity profile of indoor patients at medical college hospitals

As the hospitals associated with the newer medical colleges are not yet declared as medical college hospitals, the number of medical college hospitals is still 14, although the number of government medical colleges under the DGHS rose to 30. The morbidity data published in the local health bulletins of 14 medical college hospitals are summarized here.

Figure 7.3 shows the morbidity profile of patients in terms of the top 10 diseases/causes of admission in the medical college hospitals. Total number of patients included in the analysis was 1,279,805. Among them, 677,176 (52.91%) were male and 602,629 (47.09%) were female



**Figure 7.3. Top causes of admission (number and percentage) of the indoor patients (n=1,279,805) in medical college hospitals (n=14) in 2014**

patients. Out of all admitted patients, there were 211,110 (16.50%) children aged ≤5 years. Among the children, 115,769 were male (9.05% of all admitted patients and 54.84% of the admitted ≤5 children), and 95,341 were female (7.45% of the total admissions and 45.16% of ≤5 children). The top 10 blocks have been determined from the percent prevalence of diseases/conditions calculated among both sexes and all ages across 14 medical college hospitals.

Although 3-digit ICD-10 codes describing specific conditions were used in the analysis, some conditions, like injuries relating to transport accidents, cerebrovascular diseases, and intestinal infectious diseases, are shown in groups.

The group consisting of injuries caused by transport accidents (as described in the codes V01 through V99 in ICD-10) was the topmost cause of admission in the medical college hospitals.

The group of cerebrovascular diseases (commonly known as 'stroke' or 'brain hemorrhage'), having the ICD-10 codes from I60 through I69, occupied the 2nd place (5.02%) in the list. The group of intestinal infectious diseases as described in the ICD-10 codes between A00 and A09 was at the 3rd position. As mentioned earlier, this group contains diseases, like cholera, other types of gastroenteritis (known as 'diarrhea'), typhoid and paratyphoid fever, shigellosis (known as 'blood dysentery'), amebiasis (known as 'dysentery'). Intracranial injury, COPD, asthma, acute myocardial infarction (known as 'heart attack'), pneumonia, other unspecified injuries, and pesticide poisoning occupied the remaining positions (4th to 10th) in the list. A more detailed list is available in the Annex.

From the morbidity analyses of all three categories of hospitals (viz. upazila health complexes, district-level secondary hospitals, and medical college hospitals) as described above, it is evident that huge numbers of

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Huge numbers of patients are admitted at the public hospitals as consequences of assault, transport accidents and pesticide poisoning that require significant investment of resources

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patients are admitted at the public hospitals as consequences of assault, transport accidents and pesticide poisoning that require significant investment of resources. Appropriate social and administrative measures should be considered by the policy-makers to reduce the burden on the healthcare systems arising from these types of preventable incidents. If we want to achieve the Sustainable Development Goals (SDGs) by 2030, optimal utilization of our limited resources is imperative, and this is why these facts on the morbidity pattern should be taken into account.

### **Morbidity profile of patients in postgraduate institute hospitals**

The morbidity profiles of indoor patients at the specialty-care postgraduate institute hospitals, namely National Institute of Kidney Diseases and Urology (NIKDU), National Institute of Mental Health & Research (NIMHR), National Institute of Cancer Research and Hospital (NICRH), National Institute of Cardiovascular Diseases (NICVD), National Institute of Ophthalmology (NIO), National Institute of Chest Disease and Hospital (NIDCH), National Institute of Neurosciences and Hospital (NINH), and Institute of Child and Mother Health (ICMH), have been taken from their respective local health bulletins published in 2015 (containing data of 2014).

Table 7.3 shows the morbidity profile of indoor patients at the National Institute of Kidney Diseases and Urology (NIKDU).

Table 7.4 summarizes the morbidity profile of the indoor patients at the National Institute of Mental Health & Research (NIMHR). Total number of patients was 3,120; among them, 1,943 (62.28%) were male, 1,071 (34.33%) female, and 106 (3.40%) were children aged less than 5 years. Schizophrenia (28.88%) was the leading

cause of admission, followed by bipolar affective disorder (25.80%).

Table 7.5 summarizes the causes of admissions (described as site of appearance of cancers) at the National Institute of Cancer Research and Hospital (NICRH) in 2014. In total, 4,057 patients were admitted. Carcinoma of lungs or

**Table 7.3. Morbidity profile of the indoor patients (all ages and both sexes) at NIKDU in 2014**

Serial no.	ICD-10 code with name of disease	No. of cases	%
1	N18.5 Chronic kidney disease, stage 5	1,758	31.66
2	N04 Nephrotic syndrome	712	12.82
3	N20 Calculus of kidney and ureter	521	9.38
4	N17 Acute renal failure	515	9.27
5	N13 Obstructive and reflux uropathy	438	7.89
6	N18 Chronic renal failure	375	6.75
7	N40 Hyperplasia of prostate	329	5.92
8	N19 Unspecified renal failure	319	5.74
9	C64 Malignant neoplasm of kidney, except renal pelvis	308	5.55
10	N00 Acute nephritic syndrome	278	5.01
Total patients=5,553			

**Table 7.4. Morbidity profile of indoor patients (all ages and both sexes) at NIMHR in 2014**

Serial no.	ICD-10 code with name of disease	No. of cases	%
1	F20 Schizophrenia	901	28.88
2	F31 Bipolar affective disorder	805	25.80
3	F41 Other anxiety disorders	172	5.51
4	F19 Mental and behavioral disorders due to multiple drug-use and use of other psychoactive substances	146	4.68
5	F79 Unspecified mental retardation	61	1.96
6	F42 Obsessive-compulsive disorder	33	1.06
7	G30 Alzheimer's disease	30	0.96
8	G40 Epilepsy	30	0.96
9	F60 Specific personality disorders	9	0.29
10	R401 Stupor	3	0.10
Total patients=3,120			

bronchus ranked first (15.41%) in terms of the number of patients admitted in 2014. A detailed morbidity picture of this hospital is also provided in Chapter 11 which describes the non-communicable disease situation in Bangladesh.

Table 7.6 shows the causes of admissions at

the National Institute of Cardiovascular Diseases (NICVD) in 2014. Total number of admitted patients was 49,283. Acute myocardial infarction was the leading cause (30.35%) of admission.

Table 7.7 shows the causes of admissions at the National Institute of Ophthalmology (NIO) in

**Table 7.5. Morbidity profile of indoor patients (all ages and both sexes) at NICRH in 2014**

Serial no.	ICD-10 code with name of disease	No. of cases	%
1	C34.9 Bronchus or lung, unspecified	625	15.41
2	C56 Malignant neoplasm of ovary	295	7.27
3	C50.9 Breast, unspecified	250	6.16
4	C16.9 Stomach, unspecified	199	4.91
5	C20 Malignant neoplasm of rectum	169	4.17
6	C41.9 Bone and articular cartilage, unspecified	155	3.82
7	C53.9 Cervix uteri, unspecified	153	3.77
8	C69.2 Retina	129	3.18
9	C49.9 Connective and soft tissue, unspecified	109	2.69
10	C18.9 Colon, unspecified	108	2.66
Total patients=4,057			

**Table 7.6. Morbidity profile of indoor patients (all ages and both sexes) at NICVD in 2014**

Serial no.	ICD-10 code with name of disease	No. of cases	%
1	I21 Acute myocardial infarction	14,958	30.35
2	I11 Hypertensive heart disease	7,797	15.82
3	Q20 Congenital malformations of cardiac chambers and connections	4,618	9.37
4	I08.9 Multiple valve disease, unspecified	4,283	8.69
5	I50 Heart failure	4,253	8.63
6	I70 Atherosclerosis	4,125	8.37
7	I33.0 Acute and subacute infective endocarditis	3,371	6.84
8	I50.0 Congestive heart failure	1,932	3.92
9	J44.0 Chronic obstructive pulmonary disease with acute lower respiratory infection	1,863	3.78
10	C75.9 Endocrine gland, unspecified	375	0.76
Total patients=49,283			

2014. Total number of admitted patients was 12,447. Senile cataract was the leading cause (44.24%) of admission.

Table 7.8 shows the causes of admissions at the National Institute of Chest Disease and Hospital (NIDCH) in 2014. Total number of admitted patients was 12,151. Bacteriologically- and

histologically-confirmed respiratory tuberculosis was the leading cause (22.64%) of admission.

Table 7.9 shows the causes of admissions at the National Institute of Neurosciences and Hospital (NINH) in 2014. Total number of admitted patients was 3,921. Stroke was the leading cause (24.99%) of admission.

**Table 7.7. Morbidity profile of indoor patients (all ages and both sexes) at NIO in 2014**

Serial no.	ICD-10 code with name of disease	No. of cases	%
1	H25 Senile cataract	5,507	44.24
2	H35.9 Retinal disorder, unspecified	1,070	8.60
3	H52 Disorders of refraction and accommodation	1,100	8.84
4	H18.9 Disorder of cornea, unspecified	950	7.63
5	H40 Glaucoma	790	6.35
6	H04.9 Disorder of lacrimal system, unspecified	637	5.12
7	H05.9 Disorder of orbit, unspecified	591	4.75
8	H02.9 Disorder of eyelid, unspecified	498	4.00
Total patients=12,447			

**Table 7.8. Morbidity profile of indoor patients (all ages and both sexes) at NIDCH in 2014**

Serial no.	ICD-10 code with name of diseases	No. of cases	%
1	A15 Respiratory tuberculosis, bacteriologically- and histologically-confirmed	2,751	22.64
2	J91 Pleural effusion in conditions classified elsewhere	1,647	13.55
3	J45 Asthma	1,502	12.36
4	J44 Other chronic obstructive pulmonary diseases	1,076	8.86
5	J93 Pneumothorax	803	6.61
6	J47 Bronchiectasis	756	6.22
7	S29.7 Multiple injuries of thorax	594	4.89
8	C34 Malignant neoplasm of bronchus and lungs	421	3.46
9	C15 Malignant neoplasm of esophagus	256	2.11
10	W80 Inhalation and ingestion of other objects causing obstruction of respiratory tract	211	1.74
Total patients=12,151			

Table 7.10 shows the causes of admissions at the Institute of Child and Mother Health (ICMH), Matuail, Dhaka, in 2014. Total number of admitted patients was 14,998. The leading cause of admission was delivery by cesarean

section which accounted for 22.02% of all admissions. Unspecified bacterial pneumonia (10.02%) and birth asphyxia (8.20%) occupied the 2nd and 3rd position respectively.

**Table 7.9. Morbidity profile of indoor patients (all ages and both sexes) at NINH in 2014**

Serial no.	ICD-10 code with name of disease	No. of cases	%
1	I64 Stroke, not specified as hemorrhage or infarction	980	24.99
2	G40 Epilepsy	588	15.00
3	C71.9 Carcinoma of brain, unspecified	471	12.01
4	S09 Other and unspecified injuries of head	392	10.00
5	A89 Unspecified viral infection of central nervous system	314	8.01
6	G61.0 Guillain-Barré syndrome	235	5.99
7	M51.1 Lumbar and other intervertebral disc disorders with radiculopathy	196	5.00
8	G03.9 Meningitis, unspecified	157	4.00
9	E75.4 Neuronal ceroid lipofuscinosis	118	3.01
10	Q28.2 Arteriovenous malformation of cerebral vessels	78	1.99
Total patients=3,921			

**Table 7.10. Morbidity profile of indoor patients (all ages and both sexes) at ICMH in 2014**

Serial no.	ICD-10 code with name of disease/condition	No. of cases	%
1	O82.9 Delivery by cesarean section, unspecified	3,303	22.02
2	J15.9 Bacterial pneumonia, unspecified	1,503	10.02
3	P21 Birth asphyxia	1,230	8.20
4	A41.9 Septicemia, unspecified	753	5.02
5	A09 Diarrhea and gastroenteritis of presumed infectious origin	471	3.14
6	E43 Unspecified severe protein-energy malnutrition	423	2.82
7	P07 Disorders relating to short gestation and low birthweight, NEC	401	2.67
8	O03.3 Spontaneous abortion, incomplete, with other and unspecified complications	318	2.12
9	R56.0 Febrile convulsions	310	2.07
10	P59.9 Neonatal jaundice, unspecified	270	1.80
Total patients=14,998			

### Morbidity profile of indoor patients at the hospitals of alternative medicines

There are two public hospitals of alternative medicines under the DGHS, namely Government Unani and Ayurvedic Degree College Hospital and Government Homeopathic Medical College Hospital; each of the hospitals has 100 beds.

Of the two hospitals, the morbidity profile of patients at the Government Homeopathic Medical College Hospital only was published in its local health bulletin. This is presented in Table 7.11 which shows that the total number of patients admitted at this hospital in 2014 was 520, and the leading cause of admission was chronic hepatitis (15.19%).

**Table 7.11. Morbidity profile of indoor patients (all ages and both sexes) at the Government Homeopathic Medical College Hospital in 2014**

Serial no.	ICD-10 code with name of disease	No. of cases	%
1	K73 Chronic hepatitis, not elsewhere classified	79	15.19
2	L50 Urticaria	71	13.65
3	K30 Dyspepsia	60	11.54
4	I20 Angina pectoris	49	9.42
5	M00 Pyogenic arthritis	41	7.88
6	R12 Heartburn	37	7.12
7	R10.1 Pain localized in upper abdomen	26	5.00
8	N18 Chronic renal failure	19	3.65
9	N81.0 Female urethrocele	15	2.88
10	R10 Abdominal and pelvic pain	14	2.69
Total patients=520			

# 8

## MORTALITY PROFILE

### Non-communicable diseases causing more deaths in hospitals

Based on data from the local health bulletins (LHBs) of individual public hospitals in Bangladesh, the chapter presents mortality profile of indoor patients during 2014. The number of different types of institutions from which data were received is shown in Chapter 7 (Table 7.1). The National Institute of Ophthalmology (NIO) and the Government Homeopathic Medical College Hospital reported no death in 2014 from their hospitals. In this chapter, we followed the same principles in grouping of hospitals and analyzing data as in Chapter 7. A brief introduction to the organization and structure of ICD-10 codes, used here, is also provided in Chapter 7.

#### **Number of deaths among indoor patients in hospitals during 2014**

In 2014, a total of 5,864,707 patients had admission in public hospitals and, among them, 100,268 patients died. A subset containing most of these patients was included for analyses presented here. Table 8.1 shows the total number of admissions and deaths in each type of hospital included for analyses.

The average death rates among the 493 hospitals considered here for analyses is 1.88. In general, the tertiary hospitals have higher mortality rates (except for a few like the mental hospital) compared to primary- and secondary-level hospitals. This is due to the fact that the tertiary hospitals deal with more complicated and critical patients. However, NICRH, the specialty hospital primarily dealing with cancer patients, has a much lower death rate. This apparently-paradoxical phenomenon might be explained by our social culture of taking care of dying persons at home.

In case of the upazila health complexes (UHCs), district-level hospitals, and medical college hospitals, the numbers of death reported under top 10 causes were much less than the total deaths. Nevertheless, we used the actual or total number of deaths as denominator in all analyses. Readers may consider this fact while going through data in the tables and figures presented in the chapter.

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The tertiary hospitals have higher mortality rates (except for a few, like the mental hospital) compared to primary- and secondary-level hospitals

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**Table 8.1. Number of admissions, deaths, and percentage of deaths in different hospitals during 2014**

Type of hospital		Number of hospitals considered for analyses	Number of admitted patients	Number of deaths	Death against admission (%)
Upazila health complex		408	2,251,845	9,330	0.41
District and general hospital		64	1,656,770	23,996	1.45
Medical college hospital		14	1,279,805	60,724	4.74
Postgraduate institute hospital providing specialty-care	Institute of Child and Mother Health (ICMH)	1	14,998	394	2.63
	National Institute of Cancer Research and Hospital (NICRH)	1	4,057	110	2.71
	National Institute of Cardiovascular Diseases (NICVD)	1	49,283	3,655	7.42
	National Institute of Chest Disease and Hospital (NIDCH)	1	12,151	970	7.98
	National Institute of Kidney Diseases and Urology (NIKDU)	1	5,553	206	3.71
	National Institute of Mental Health & Research (NIMHR)	1	3,120	3	0.10
	National Institute of Neurosciences and Hospital (NINH)	1	3,921	342	8.72
	National Institute of Ophthalmology (NIO)	1	12,447	0	0.00
Government Homeopathic Medical College Hospital		1	520	0	0.00
Total		495	5,194,470	99,730	1.88

Table 8.2 shows the number of actual deaths and number of deaths for top 10 causes in each of the hospital-groups.

From Table 8.2, it is apparent that, in the UHCs, 83.43% of total deaths occurred for the top 10 causes. In the district-level hospitals and medical college hospitals, respectively 62.66%, and 54.30% of total death tolls were caused by the top 10 diseases or conditions.

The individual institute-level data can be seen, and the summarized data can be exported

from the 'local health bulletin' section under 'publication' tab of our official website ([www.dghs.gov.bd](http://www.dghs.gov.bd)).

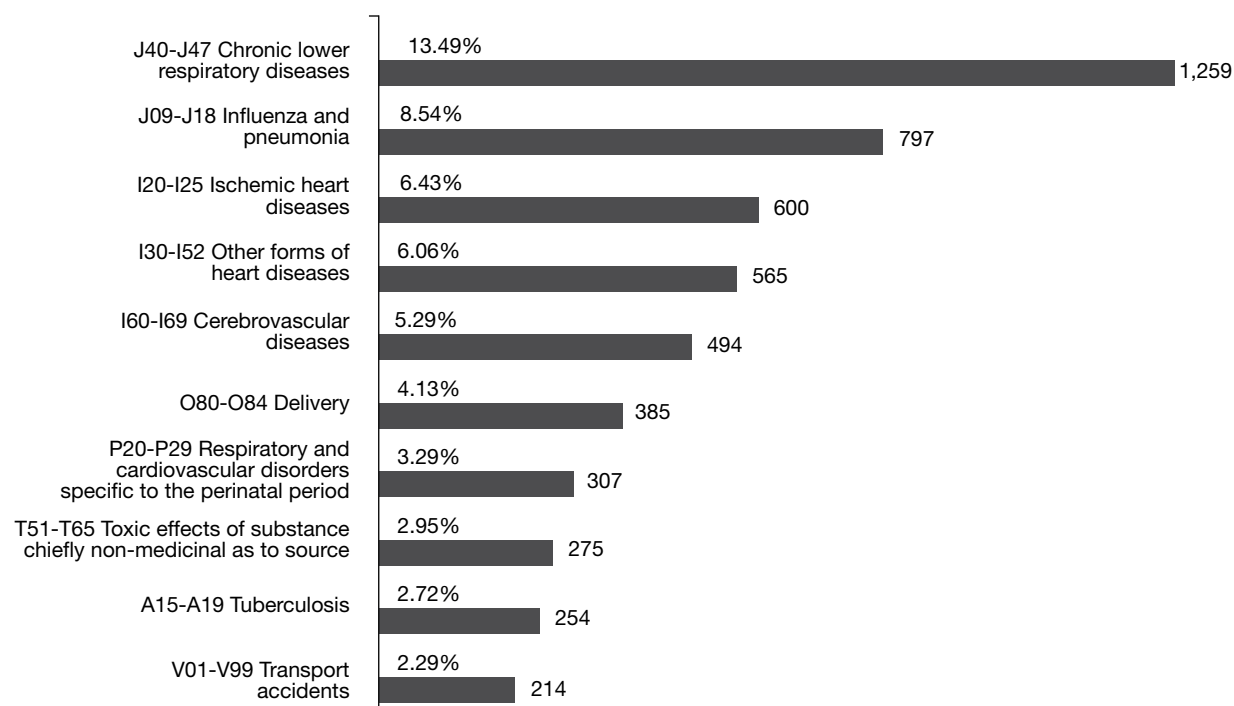
### **Mortality profile of admitted patients at upazila health complexes**

Out of the 424 UHCs, we received mortality data from 408 (96.23%), from which a total of 9,330 deaths were reported in 2014 (Figure 8.1).

The ICD-10 blocks were used in the analyses, and the blocks for transport accidents (V1 through V99) were further grouped to present all

**Table 8.2. Number of actual deaths and deaths reported for top 10 causes in different types of hospital**

Type of hospital	No. of total deaths	No. of deaths reported for top 10 causes	% of deaths reported for top 10 causes
Upazila health complex	9,330	7,784	83.43
District and general hospital	23,996	15,036	62.66
Medical college hospital	60,724	32,973	54.30



**Figure 8.1. Top 10 causes of death (number and percentage) (n=9,330) that occurred in upazila health complexes (n=408) in 2014**

types of transport accidents as a single entity. Figure 8.1 presents the summarized mortality profile of 408 upazila health complexes.

The Figure shows that block J09–J18, denoting “Chronic lower respiratory diseases”, occupied the first position among the causes of death in

upazila health complexes. This block contains diseases, like asthma, bronchitis, bronchiectasis, emphysema, etc. Together they caused 1,259 deaths and, in terms of percentage, the group was responsible for 13.49% of the total death toll at the upazila-level hospitals. However, asthma (J45) alone accounted for more than

**Table 8.3. Number and percentage of patients who died of different conditions under J40-J47 block**

ICD-10 code	Disease/Condition	Number of deaths	Percentage (n=1,259)
J40	Bronchitis	11	0.87
J41	Simple and mucopurulent chronic bronchitis	4	0.32
J42	Unspecified chronic bronchitis	3	0.24
J43	Emphysema	1	0.08
J44	Other chronic obstructive pulmonary diseases	442	35.11
J45	Asthma	658	52.26
J46	Status asthmaticus (Severe acute asthma)	131	10.41
J47	Bronchiectasis	9	0.71
J40-J47	Chronic lower respiratory diseases	1,259	100

50% of deaths in this block. Chronic obstructive pulmonary diseases (COPD) were responsible for more than 35% of deaths. Table 8.3 shows the breakdown.

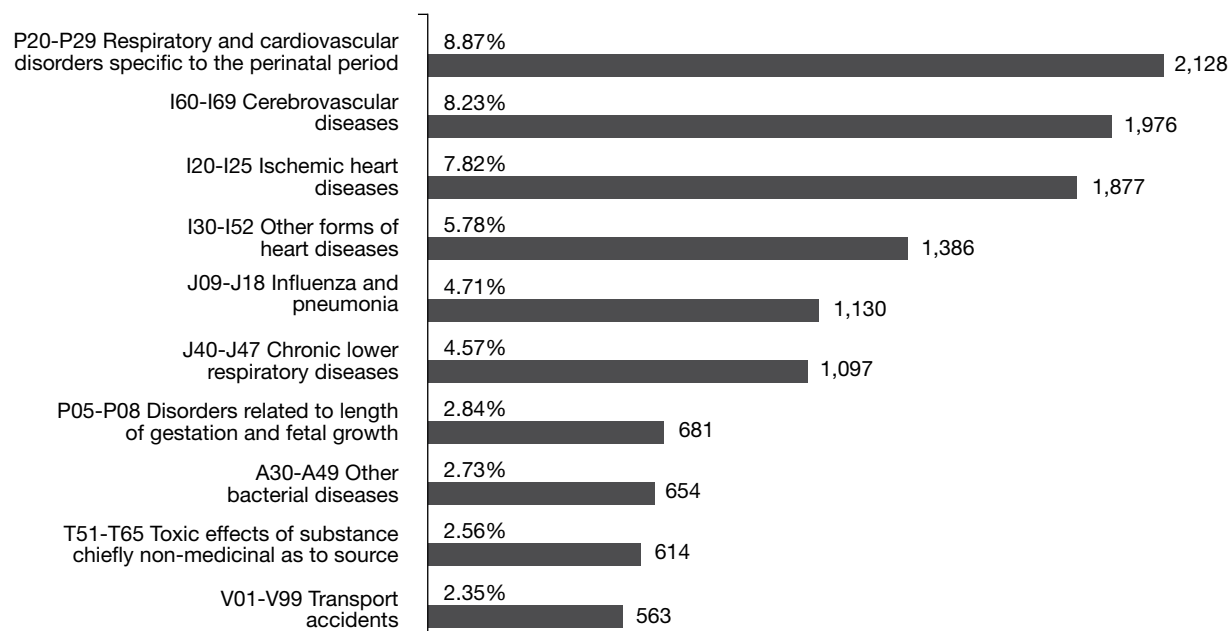
Our findings on the prevalence and fatality of these respiratory diseases are in agreement with the information provided in some WHO factsheets on respiratory diseases (WHO fact

- More than 3 million people died of COPD in 2012, which is equal to 6% of all deaths globally that year.
- More than 90% of COPD deaths occur in low- and middle-income countries where effective strategies for prevention and control are not always implemented or accessible.
- The primary cause of COPD is tobacco smoke (through tobacco-use or second-hand smoke).
- Asthma is one of the major non-communicable diseases. Some 235 million people currently suffer from asthma.
- Most asthma-related deaths occur in low- and lower-middle-income countries.
- The strongest risk factors for developing asthma are inhaled substances and particles that may provoke allergic reactions or irritate the airways.

sheet no. 307 and 315 available from [www.who.int](http://www.who.int)). It would be very contextual to mention some of those key facts in the following box:

Influenza and pneumonia comprising another

block from the diseases of respiratory system occupied the 2nd position with 797 deaths (8.54%). The block for ischemic heart diseases occupied the 3rd place causing 600 deaths (6.43%). Acute myocardial infarction (I21),



**Figure 8.2. Top 10 causes of death (number and percentage) (n=23,996) among the indoor patients of the district-level hospitals (n=62) in 2014**

which is widely known as 'heart attack' was the major contributor in the block accounting for 520 deaths.

### Mortality profile of indoor patients at the district-level hospitals

Figure 8.2 shows the mortality profile at the district-level hospitals (DLH). Total number of deaths included in the analysis was 23,996.

Block P00–P29 representing respiratory and cardiovascular disease of the perinatal period was at the top position (8.87%) among the causes of death. Birth asphyxia (P21) was the main contributor in the block causing 2,040 deaths. A 3-digit breakdown is given in Table 8.4.

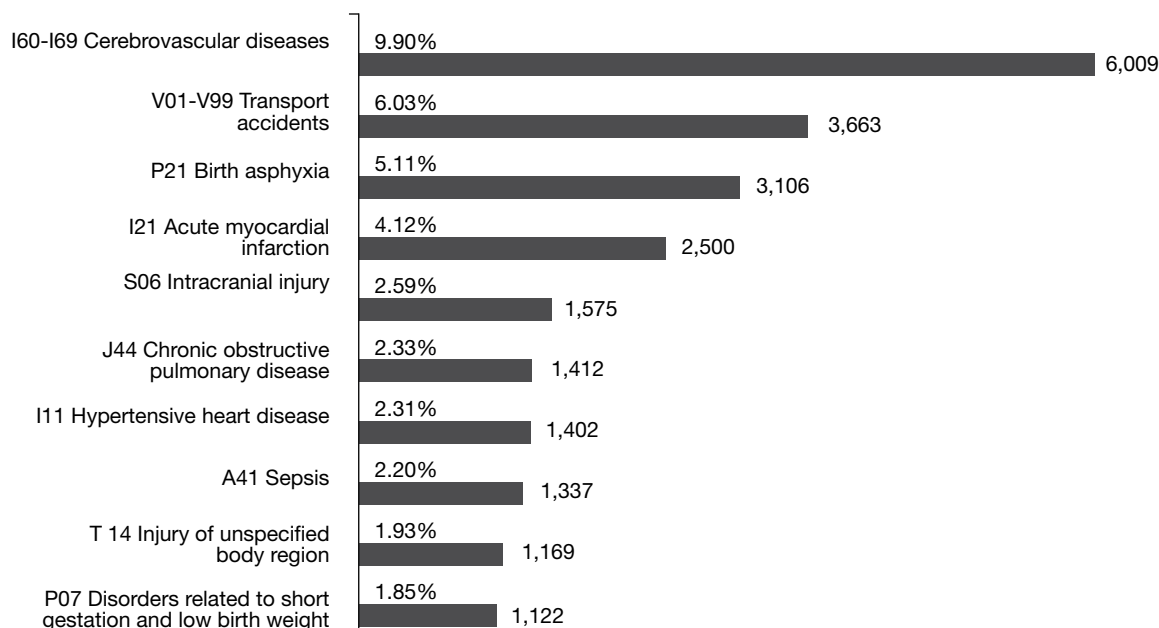
Block I60–I69 containing the cerebrovascular diseases (commonly known as 'stroke' or 'brain hemorrhage') was at the 2nd place. The 3rd place was occupied by block I20–I25 which contains ischemic heart diseases, where acute myocardial infarction (I21) was the major contributor (1,703 deaths).

### Mortality profile at the medical college hospitals

The mortality profile summarized from 14 medical college hospitals (MCH) is presented in Figure 8.3, which shows the top 10 causes of death. Total number of deaths was 60,724. Mostly, the 3-digit ICD-10 codes are shown here as the cause of death, except for the

**Table 8.4. Number and percentage of patients who died of different conditions under P20-P29 block**

ICD-10 code	Disease/Condition	Number of deaths	Percentage (n=2,128)
P20	Intrauterine hypoxia	31	1.46
P21	Birth asphyxia	2,052	96.43
P22	Respiratory distress of newborn	45	2.11
P20-P29	Respiratory and cardiovascular disorders specific to the perinatal period	2,128	100



**Figure 8.3. Top 10 causes of death (n=60,724) occurred in medical college hospitals (n=14) in 2014**

**Table 8.5. Number and percentage of patients who died from different conditions under I60-I69 block**

ICD-10 code	Disease/Condition	Number of deaths	Percentage (n=6,009)
I61	Intracerebral hemorrhage	803	13.36
I63	Cerebral infarction	3,691	61.42
I67	Other cerebrovascular diseases	469	7.80
I69	Sequelae of cerebrovascular disease	1,046	17.41
I60-I69	Cerebrovascular diseases	6,009	100

Dominance of non-communicable diseases among the causes of death was evident in all three categories of hospitals

cerebrovascular diseases (ICD-10 block is shown) and transport accidents (related blocks are grouped).

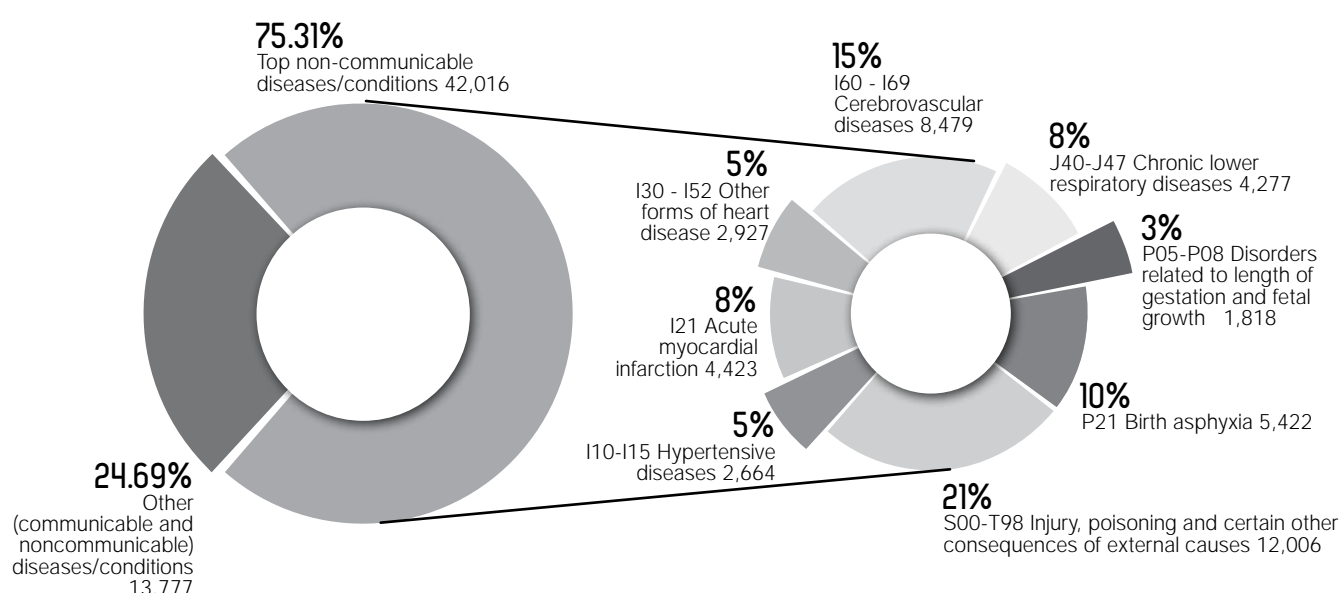
The block containing cerebrovascular diseases (I60-I69) was at the first place (9.9%) among

the causes of death. Inside the block, cerebral infarction had the leading position. Table 8.5 gives the breakdown of the 3-digit levels.

Transport accidents causing 3,663 deaths (6.03%), had the 2nd place. Birth asphyxia (P21) was at the 3rd place in the list, accounting for death of 3,106 patients (5.11%), most of whom were likely to be infants. Acute myocardial infarction caused 2,500 deaths (4.12%) to occupy the 4th position.

### Contribution of non-communicable diseases

Dominance of non-communicable diseases among the causes of death was evident in



**Figure 8.4. Contribution of main non-communicable diseases/conditions among the top 10 causes of death (n=55,793) in UHC,DLH, and MCH (n=486) in 2014**

all three categories of hospitals described above. Figure 8.4 shows that only a few non-communicable diseases or conditions accounted for more than three-fourths (75.31%) of deaths reported under the top 10 causes by these non-specialized hospitals.

Among the top non-communicable conditions shown here, the group representing injury, poisoning, and certain consequence of external causes was the major contributor causing death of 12,006 people. Transport accidents, assault and pesticide poisoning were the

leading causes of these fatal injuries and poisoning.

### Mortality profile at the postgraduate institute hospitals

The mortality profiles at the specialty-care postgraduate institute hospitals are presented in this section.

A total of 394 patients died at ICMH, in 2014. The causes of death at this hospital are listed in Table 8.6. Birth asphyxia was at the top of the list causing almost one-third (30.71%) of the deaths.

**Table 8.6. Mortality profile at ICMH in 2014**

Serial no.	ICD-10 code with name of disease	No. of cases	%
1	P21 Birth asphyxia	121	30.71
2	P36 Bacterial sepsis of newborn	69	17.51
3	P07 Disorders relating to short gestation and low birthweight, NEC	41	10.41
4	A41.9 Septicemia, unspecified	34	8.63
5	E43 Unspecified severe protein-energy malnutrition	30	7.61
6	J15.9 Bacterial pneumonia, unspecified	26	6.60
7	A86 Unspecified viral encephalitis	14	3.55
8	G00 Bacterial meningitis, NEC	10	2.54
9	P59.9 Neonatal jaundice, unspecified	6	1.52
10	A09 Diarrhea and gastroenteritis of presumed infectious origin	4	1.02
Total deaths=394			

**Table 8.7. Mortality profile of the indoor patients at NICRH in 2014**

Serial no.	ICD-10 code with name of disease	No. of cases	%
1	C34.9 Bronchus or lungs, unspecified	42	38.18
2	C16.9 Stomach, unspecified	11	10.00
3	C22.9 Liver, unspecified	9	8.18
4	C50.9 Breast, unspecified	9	8.18
5	C20 Malignant neoplasm of rectum	8	7.27
6	C53.9 Cervix uteri, unspecified	7	6.36
7	C85.9 Non-Hodgkin's lymphoma, unspecified type	6	5.45
8	C56 Malignant neoplasm of ovary	5	4.55
9	C92.0 Acute myeloid leukemia	4	3.64
10	C71.9 Brain, unspecified	3	2.73
Total deaths=110			

One hundred and ten cancer-affected patients died at NIRCH in 2014. Table 8.7 shows the number and percentage of the causes of death

in terms of different anatomical sites primarily affected by the cancers. Cancers affecting the lungs or bronchus (C34.9) were at the

**Table 8.8. Mortality profile at NICVD in 2014**

Serial no.	ICD-10 code with name of disease	No. of cases	%
1	I21 Acute myocardial infarction	1,218	33.32
2	I20.0 Unstable angina	322	8.81
3	I46 Cardiac arrest	314	8.59
4	I21.9 Acute myocardial infarction, unspecified	272	7.44
5	I50.1 Left ventricular failure	172	4.71
6	I25.2 Old myocardial infarction	160	4.38
7	I25.5 Ischemic cardiomyopathy	150	4.10
8	I08.9 Multiple valve disease, unspecified	109	2.98
9	I50.9 Heart failure, unspecified	72	1.97
10	I24.9 Acute ischemic heart disease, unspecified	54	1.48
Total deaths=3,655			

**Table 8.9. Mortality profile at NIDCH in 2014**

Serial no.	ICD-10 code with name of disease	No. of cases	%
1	J44 Chronic obstructive pulmonary disease	221	22.78
2	A15 Respiratory tuberculosis, bacteriologically- and histologically- confirmed	183	18.87
3	J47 Bronchiectasis	93	9.59
4	J84 Other interstitial pulmonary diseases	83	8.56
5	S29.7 Multiple injuries of thorax	79	8.14
Total deaths=970			

**Table 8.10. Mortality profile at NIKDU in 2014**

Serial no.	ICD-10 code with name of disease	No. of cases	%
1	N18.5 Chronic kidney disease, stage 5	79	38.35
2	N17 Acute renal failure	67	32.52
3	E87.8 Other disorders of electrolyte and fluid balance, NEC	25	12.14
4	N01 Rapidly progressive nephritic syndrome	18	8.74
5	R57.9 Shock, unspecified	12	5.83
6	N13.9 Obstructive and reflux uropathy, unspecified	4	1.94
7	C67 Malignant neoplasm of bladder	1	0.49
Total deaths=206			

top position causing 38.18% of all deaths in this hospital. These were also the top causes of admissions as mentioned in Chapter 7. It is worth mentioning that smoking is strongly associated with this type of cancer.

Table 8.8 shows the causes death at NICVD in 2014. Acute myocardial infarction was responsible for one-third (33.32%) of the 3,655 deaths that occurred in this hospital in 2014.

Table 8.9 shows the top 5 causes of deaths at NIDCH in 2014. Total number of deaths was 970. COPD (22.78%) and respiratory tuberculosis (18.87%) were the two leading causes of death in this hospital.

Table 8.10 enlists the causes of death at NIKDU

in 2014. In total, 206 patients died at the hospital during 2014. Chronic kidney disease of stage 5 and acute renal failure occupied the top two positions causing 38.35 % and 32.52% of deaths respectively.

Table 8.11 summarizes the causes of death at NIMHR in 2014. Only 3 patients died during this period. Schizophrenia, manic episode, and obsessive-compulsive disorder were reported as the causes of these 3 deaths.

Table 8.12 shows the causes of death at NINH in 2014. Stroke was had the top position in the list, accounting for one-fourth (24.99%) of the total 342 deaths in this hospital. Cancer involving brain had the 2nd place causing 15% of deaths.

**Table 8.11. Mortality profile at NIMHR in 2014**

Serial no.	ICD-10 code with name of disease	No. of cases	%
1	F20 Schizophrenia	1	33.33
2	F30 Manic episode	1	33.33
3	F42 Obsessive-compulsive disorder	1	33.33
Total deaths=3			

**Table 8.12. Mortality profile at NINH in 2014**

Serial no.	ICD-10 code with name of disease	No. of cases	%
1	I64 Stroke, not specified as hemorrhage or infarction	78	22.81
2	C71.9 Cancer involving brain, unspecified	56	16.37
3	G40 Epilepsy	47	13.74
4	G61.0 Guillain-Barré syndrome	35	10.23
5	S09 Injuries of head	29	8.48
6	G03.9 Meningitis, unspecified	18	5.26
7	R56 Convulsions, NEC	15	4.39
8	A89 Unspecified viral infection of central nervous system	13	3.80
9	J69.0 Pneumonitis due to food and vomit	6	1.75
10	R09.0 Asphyxia	5	1.46
Total deaths=342			



# 9

## COMMUNICABLE DISEASE CONTROL IN BANGLADESH

Increased attention to emerging and re-emerging diseases

Reducing trend in communicable diseases worldwide resulted from launching comprehensive prevention and control programs. Analyzing the downfall, we can have a strong signal for policy-makers and implementing bodies to think about the changing patterns, with special focus on the emerging and re-emerging communicable diseases. Trans-boundary and international migration of people deserves due attention to contain novel emerging diseases at the spots of origin. Core capacity development at the point of entries is to be considered a multisectoral action of national priority. Early detection of infectious diseases, novel pathogens as well as antimicrobial resistance must be prioritized, escalating budget, capacity-building, strengthening infrastructure, providing logistic support and other related measures. Viral hepatitis as an important public-health issue needs due attention of the policy-makers and civil society organizations. Supporting role of media is to be patronized for awareness-building among the communities.

### **Malaria**

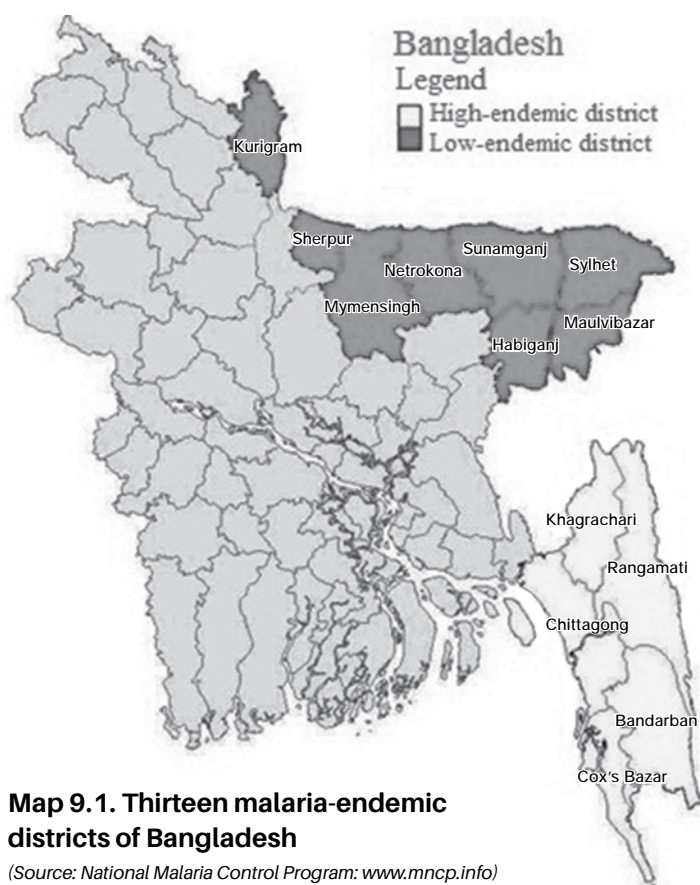
One of the major public-health problems in Bangladesh is malaria. Out of 64 districts in the country, 13 border districts in the east and northeast facing the eastern states of India and a small territory of Myanmar are reporting about 98% of the total malaria cases every year. The National Malaria Control Program (NMCP) is responsible for implementing malaria control interventions under the Communicable Disease Control Division of the DGHS. The endemicity of malaria is shown in Map 9.1.

The malaria control program activities have been strengthened and accelerated since 2007 due to funding support from the Global Fund (Round VI and IX) and the partnership established with BRAC-led 21 member NGO consortium, academic and research institutions, and the private sector. According to National Strategic Plan 2008-2015, the goal of the National Malaria Control Program (NMCP) is “to reduce malaria morbidity and mortality until the disease is no longer a public health problem in the country.” One of the objectives of NMCP is to reduce malaria morbidity and mortality by 60%

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Trans-boundary and international migration of people deserves due attention to contain novel emerging diseases at the spots of origin

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Out of the total 64 districts, 13 districts are in the high-endemic areas for malaria transmissions. In these 13 endemic districts, there are 70 endemic upazilas covering 620 unions with a total population of 10.9 million. Over 98% of the total cases in the country are reported from these areas

**Map 9.1. Thirteen malaria-endemic districts of Bangladesh**

(Source: National Malaria Control Program: [www.mnccp.info](http://www.mnccp.info))

within 2015 from the rates of 2008. Increased access to diagnosis and treatment, prevention by using long-lasting insecticide-treated nets (LLINs) and Insecticide-treated bednets (ITNs), strengthened surveillance, monitoring and evaluation, increased awareness of the population at risk through effective behavior change communication (BCC), and enhanced collaboration with NGOs and private sector are the main components of the program.

The achievement of the program in terms of reducing morbidity and mortality since 2008 till

2013 is notable and praiseworthy. There was 68% and 90% reduction in malarial morbidity and mortality respectively in 2013 compared to 2008. However, there is a sudden upsurge, mostly in 3 hill districts, and the numbers of both cases and deaths went up in 2014 compared to 2013. Therefore, respectively 32% and 71% reduction in malaria morbidity and mortality occurred in 2014 and 2008.

Table 9.1 summarizes year-wise malaria epidemiological data (2000–2014) from the endemic districts.

**Table 9.1. Summary of year-wise epidemiological data (2000-2014) malaria from the endemic districts**

Year	Positive cases		P. falciparum		P. vivax		Death	
	No.	Per 1,000 population	No.	%	No.	%	No.	Per 1,000 population
2000	54,223	5.565	39,272	72.4	14,951	27.6	478	0.049
2001	54,216	5.476	39,274	72.4	14,942	27.6	490	0.049

Table continued...

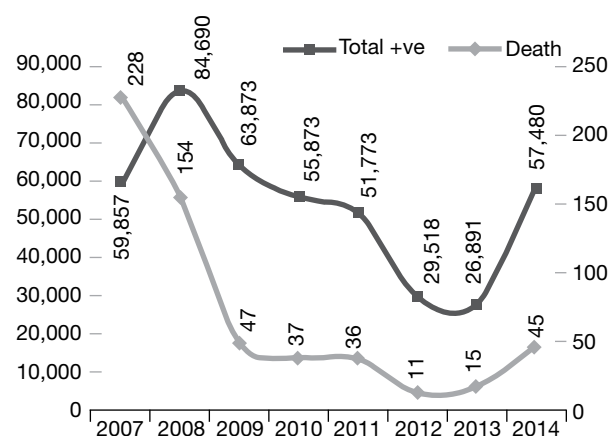
Year	Positive cases		P. falciparum		P. vivax		Death	
	No.	Per 1,000 population	No.	%	No.	%	No.	Per 1,000 population
2002	62,269	6.189	46,418	74.5	15,851	25.5	588	0.058
2003	54,654	5.346	41,356	75.7	13,298	24.3	577	0.056
2004	58,894	5.669	46,402	78.8	12,492	21.2	535	0.052
2005	48,121	4.559	37,679	78.3	10,442	21.7	501	0.047
2006	32,857	3.063	24,828	75.6	8,029	24.4	307	0.029
2007	59,857	5.460	46,791	78.2	13,066	21.8	228	0.021
2008	84,690	7.726	70,281	83.0	14,409	17.0	154	0.014
2009	63,873	5.827	57,020	89.3	6,853	10.7	47	0.004
2010	55,873	5.097	52,049	93.2	3,824	6.8	37	0.003
2011	51,773	3.908	49,194	95.0	2,579	5.0	36	0.003
2012	29,518	2.228	27,819	94.2	1,699	5.8	11	0.001
2013	26,891	2.030	25,908	96.3	983	5.8	15	0.001
2014	57,480	4.339	54,132	94.2	3,348	5.8	45	0.003

Significant progress in malaria control has been achieved in Bangladesh during the period from 2007 to 2013, showing a progressive decline in total cases and deaths. However, as mentioned earlier, both cases and deaths increased in 2014. Figure 9.1 shows the epidemiological trend in the incidence and deaths during 2007-2014.

The three districts (Bandarban, Khagrachhari, and Rangamati) in the Hill Tracts and Cox's Bazar district in Chittagong have reported 97% of the malaria cases and 45% of malarial deaths in 2014. Both *P. falciparum* and *P. vivax* malaria are prevalent in the country, of which the number of reported falciparum cases is 94% of the total cases.

Figure 9.2 gives an idea about the share of total malaria burdens by endemic districts in 2014.

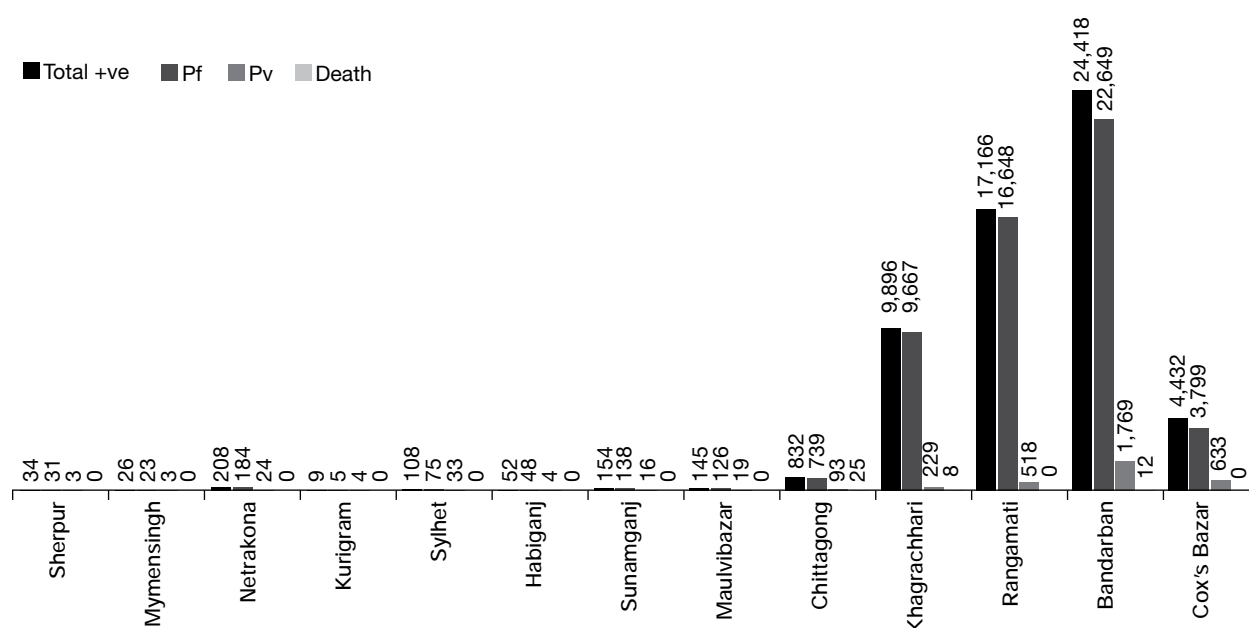
Both cases and deaths reduced to such a level that the program is now aiming at malaria elimination from the country. A new strategic plan 2015-2020 has been updated with the vision of "Malaria-free Bangladesh." The goal of the National Strategic Plan (NSP) is: "By 2020, to have achieved 'zero indigenous transmission' and 'zero death' aiming malaria elimination in



**Figure 9.1. Epidemiological trend in malaria incidence and deaths during 2007-2014**

Bangladesh." The strategic objectives of the NSP 2015-2020 are the following:

1. Achieve 100% coverage of 'at-risk' population with appropriate malaria prevention interventions by 2018
2. Have 100% malaria patients receiving early and quality diagnosis (RDT or microscopy) and effective treatment by 2018
3. Continue strengthening of program management towards elimination of malaria by 2020



**Figure 9.2. Malaria burden in 13 endemic districts in 2014**

4. Continue strengthening of disease and vector surveillance, monitoring, and evaluation towards malaria elimination
5. Intensify advocacy, communication and social mobilization (ACSM) for malaria elimination.

## Dengue

The re-emergence of dengue viruses has been very dreadful and created a new threat in recent times in Bangladesh. Bangladesh has experienced this viral infection in the most horrific manner in 2000 after an earlier outbreak as Dhaka Fever in the 1960s. The re-emergence generated huge number of cases, along with morbidity and mortality of public-health concern. It is not yet possible to address the dengue situation in the country as a separate entity. So far, only sporadic cases were diagnosed in Bangladesh through small-scale surveys that actually failed to unearth the real situation in Bangladesh. In 1996-1997 dengue infections were confirmed in 13.7% of 255 fever patients screened at Chittagong Medical College Hospital. The first epidemic of dengue hemorrhagic fever occurred in mid-2000 when 5,551 dengue infections were reported

Both cases and deaths reduced to such a level that the program is now aiming at malaria elimination from the country

from Dhaka, Chittagong, and Khulna cities, occurring mainly among adults. Among the reported cases, 4,385 (62.4%) were dengue fever (DF) infections, and 1,186 (37.6%) cases were dengue hemorrhagic fever (DHF). The case-fatality rate (CFR) was 1.7%, with 93 deaths reported. *Aedes aegypti* was identified as the main vector responsible for the epidemic, and *Aedes albopictus* was identified as a potential vector in Chittagong. According to WHO, the worst outbreak occurred in 2002, with 6,104 cases and 58 deaths. The prevalent serotypes of dengue until 2000 in Bangladesh were: DENV1, DENV2, and DENV3, with the

Over the last 10-15 years, dengue fever and dengue hemorrhagic fever have become leading causes of hospitalization and deaths among children in South-East Asian regions, followed by diarrheal diseases and acute respiratory infections

highest number of reported cases attributed to DENV3. A similar situation can be seen in other countries, such as India and Sri Lanka, where DENV3 has been reported most of the time in DF/DHF-related illnesses. Over the last 10-15 years, dengue fever and dengue hemorrhagic fever have become leading causes of hospitalization and deaths among children in South-East Asian regions, followed by diarrheal diseases and acute respiratory infections. The reporting of dengue cases is mainly based upon the information collected from the control room at the DGHS. The source of information is mainly the private sector: private clinics and some selected urban NGOs. Fewer attempts were made to collect information from sources in the public sector, like medical colleges and city corporations. Moreover, the information sources at present are mainly Dhaka-based. Information from other parts of the country is lacking. So, it is very difficult to come to a definitive conclusion regarding the program perspective. Still, some assessment can be possible by analyzing the current available information. Table 9.2 shows the distribution of dengue cases, deaths, and case-fatality rates in Bangladesh by year beginning from 2000.

**Table 9.2. Distribution of dengue cases, deaths, and case-fatality rates by year**

Year	Cases	Deaths	Case-fatality rate (%)
2000	5,551	93	1.67
2001	2,430	44	1.81
2002	6,132	58	0.95
2003	486	10	2.05
2004	3,934	13	0.33
2005	1,048	04	0.38
2006	2,200	11	0.50
2007	466	0	0.00
2008	1,153	0	0.00
2009	474	0	0.00
2010	409	0	0
2011	1,362	06	0.44
2012	671	01	0.1
2013	1,749	02	0.11
2014	375	00	0.00

## Filariasis

### *Filariasis elimination program*

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.

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 toward 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 areas of filariasis, particularly the north-east border areas of India that are adjacent to Assam, Bihar, and West Bengal. In Bangladesh, the disease is prevalent all over the country, with the highest endemicity in the northern part. Out of 147 million people, about 20 million in the area have been suffering from the disease, most of whom are children. The exact figures of filaria cases in Bangladesh are not known but it is endemic in 33 districts out of 64 districts as revealed from ICT by LQAS done in 2002 and 2004. There was high endemicity of filariasis in Nilphamari, Thakurgaon, Dinajpur, Rangpur, Panchagarh, Kurigram, Chapainowabganj, Rajshahi, and Lalmonirhat. It is estimated that about 70 million are at risk of infection while one million people have various forms of clinical deformity, and another 10 million people are microfilaremics. Microfilaria survey done in March-May 2006 revealed that it is present in 34 districts, and clinical cases are reported from 49 districts.

Mass Drug Administration (MDA) was launched in November 2001 (Round I) at Panchagarh district and, thereafter, it was scaled up in 19 districts by 2008 following the baseline survey of the area. The 19 endemic districts are: Panchagarh, Thakurgaon, Nilphamari, Kurigram, Rangpur, Lalmonirhat, Dinajpur, Rajshahi, Chapainowabganj, Sirajganj, Pabna, Meherpur, Kushtia, Chuadanga, Barisal, Patuakhali, Jhalokathi, Pirojpur, and Barguna.

Bangladesh is known to be surrounded by endemic areas of filariasis, particularly the north-east border areas of India that are adjacent to Assam, Bihar, and West Bengal

### **Goal, objectives, and strategies**

Goal of the program is elimination of filariasis by 2015, and the objectives are to reduce microfilaria prevalence to <1% and to give relief to the patients of lymphedema caused by filariasis.

Strategies adopted to achieve this goal and objectives are: Mass Drug Administration (MDA) among at-risk population once a year for successive five years through door-to-door household registration, except for pregnant women, children aged <2 years, and severely ill patients; and alleviation of sufferings of lymphedema patients by community-based morbidity control.

Table 9.3 shows data of MDA rounds from 2001 through 2014.

**Table 9.3. Year-wise MDA round (2001-2014) with coverage**

Year	District/ Implementation unit (IU)	Total population (Million)	Coverage (%) reported by civil surgeons	Coverage (%) observed in survey	Actual coverage (%) among the eligible
2001	1	0.81	95.5	93.0	ND*
2002	4	5.18	93.6	83.2	87.3
2003	6	8.73	93.3	77.9	81.9
2004	10	11.75	98.6	ND*	ND*
2005	12	20.16	90.3	78.0	82.2
2006	13	23.92	92.2	78.2	82.2
2007	17	31.0	91.5	82.4	84.3



Table continued...

Year	District/ Implementation unit (IU)	Total population (Million)	Coverage (%) reported by civil surgeons	Coverage (%) observed in survey	Actual coverage (%) among the eligible
2008	20	42.0	90.53	79.38	83.06
2009	19	35.0	96.87	83.33	85.76
2010	19	35.0	92.47	60.23	62.98
2011	14	29.70	97.14	92.35	94.90
2012	09	16.67	98.11	89.76	92.78
2013	04	8.66	98.86	88.9	93.26
2014	01	3.01	81.72	69.5	90.33

Transmission Assessment Survey (TAS) is the WHO-recommended survey protocol to assess the status of elimination to stop MDA. Based on microfilaria (Mf) survey report, Bangladesh Elimination of Lymphatic Filariasis (ELF) Program conducted TAS in 18 out of 19 districts where MDA started. The preconditions for conducting TAS are completion of at least five to six successive rounds of MDA, Mf result <1%, and MDA coverage >65%. Results of TAS indicate that Bangladesh has achieved preliminary elimination goal in 18 districts. As per WHO protocol, MDA has been stopped in 18 out of 19 districts (except Rangpur).

### **Soil-transmitted helminthes (STH) control: a nationwide deworming program**

Soil-transmitted helminthes (STH) control is an important component of the Filariasis Elimination Program of CDC. The STH Control Program has been integrated with Filariasis Elimination Program, with the aim to minimize its operation cost.

In 2005, it was started in 3 districts and it was extended up to 64 districts by November 2008.

The 'Little Doctor Program' (involving school students) is another initiative under STH Control Program. It has been introduced nationwide through all primary-level institutions for peer-education in STH control and developing health-related wellbeing, followed by regular and proper hygiene practices. It is estimated that

there will be a total of 1,650,000 'little doctors' each year from more than 100,000 primary-level institutions in the country.

The nationwide school-based deworming program has been started in 2008, with an aim of regular deworming among 75-100% school-age children (WHA resolution 54.19 of 2001). The first National Deworming Day was observed on 1 November 2008. Subsequently, since 2013, the Program was implemented every six months—April and October. From 2010, deworming is conducted for a week, instead of the National Deworming Day, and the age-group of 5 years (baby class) is included as the target. Single-dose Albendazole (400 mg) has been replaced by Mebendazole (500 mg) and is being administered at school by 'little doctors', with the help of teachers as guide. About 25.5 million children who are studying in Class I-V, or are 5-12 years old are targeted. All types of schools,

From 2010, deworming is conducted for a week, instead of the National Deworming Day, and the age-group of 5 years (baby class) is included as the target

including government, non-government, NGO, private, English medium schools, madrasas, etc., are covered in the Program.

Goal of the Program is to control intestinal helminthes among children, with the objective of deworming school-aged children of 5-12 years twice a year (April and October).

## Achievements

School-based deworming program covered every primary-level institutions in the country to deworm all school-aged children of 5-12 years twice a year. The reports of treatment coverage, as sent by the civil surgeon's offices of the concerned districts, are shown in the Table 9.4.

Overall, the STH prevalence among school children has been reduced to 27.2 % according to a survey conducted by STH Control Program in 2010. Similar findings are also observed in the study by other organizations. The survey results of 2012-2013 showed that the worm infestation has come down to 15.7%. If we strengthen the hygiene status of the schools and maintain this accordingly, the country will be able to control the soil-transmitted helminthes in near future.

## Kala-azar

Kala-azar (KA) or visceral leishmaniasis (VL) is a neglected tropical disease affecting the poor and marginalized rural population of the society. It is prevalent in about 90 countries that threatens 350 million people, especially in South Asian Region and East Africa. Approximately 0.2 to 0.4 million visceral leishmaniasis (VL) cases occur worldwide and, among them, 90% of the disease burden is borne by 6 countries: India, Bangladesh, Sudan, South Sudan, Brazil, and Ethiopia. It is estimated that around 147 million people are at risk in three countries: Bangladesh, India, and Nepal. Around 31 million people are at risk in Bangladesh. The people at risk are residing in 26 districts of Bangladesh where kala-azar is endemic. In these 26 districts, 100 upazilas are mostly endemic.

The Kala-azar Elimination Program (NKEP) in Bangladesh has set the target of elimination of kala-azar by 2017. The goal is to reduce the annual incidence of kala-azar to less than 1 patient per 10,000 population. The strategic objectives are to: (i) ensure early diagnosis and complete management of the cases, (ii)

**Table 9.4. Reported coverage of school-based deworming program (2008-2014)**

Year	Round	No. of districts covered	No. of children		Reported coverage (%)
			Targeted	Treated	
2008	November	64	15,743,159	15,482,778	94
2009	May	64	19,303,404	19,101,496	98
	November	64	19,303,404	18,782,212	97
2010	May	64	19,837,612	19,440,860	98
	November	64	2,19,71,611	2,17,45,757	98.97
2011	May	64	2,20,70,512	2,17,35,040	98.48
	November	64	2,20,82,923	2,19,92,383	99.59
2012	May	64	2,22,63,213	2,20,40,581	99
	November	64	2,22,63,192	2,20,38,334	98.99
2013	April	64	2,49,86,323	2,47,99,113	99.25
	October	64	2,50,89,864	2,48,98,332	99.23
2014	April	64	2,48,86,323	2,46,98,576	99.25
	October	64	2,50,90,960	2,49,93,205	99.61



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## Monthly reporting of kala-azar cases and case search are running regularly under active and passive surveillance of KA cases

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implement integrated vector management, (iii) conduct patient and vector surveillance, (iv) conduct operational research, and (v) develop social mobilization and building partnerships.

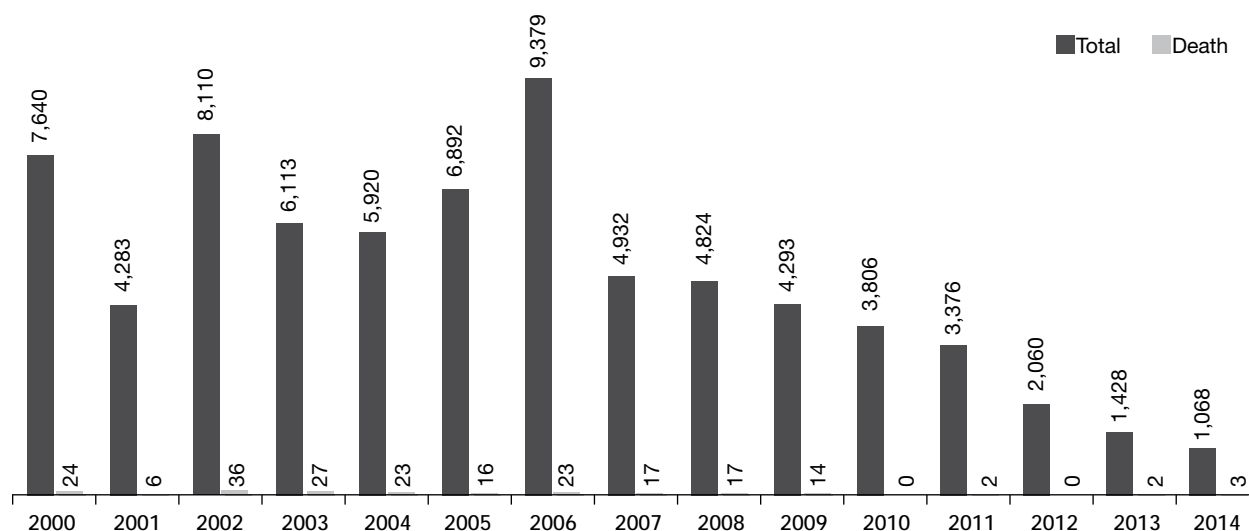
At the beginning of 2014, a new activity “No kala-azar transmission” has been adopted and implemented in moderate and hyper-endemic upazilas. Besides the 26 kala-azar-endemic districts, a few sporadic cases are being reported from 15 districts that are mostly concentrated in 19 upazilas. The endemicity is arbitrarily defined as follows: (a) hyper-endemic:  $\geq 2.5$  cases/10,000 population, (b) moderately endemic:  $\geq 1$  to 2.49 cases/10,000 population, and (c) low-endemic:  $< 1$  case/10,000 population. Kala-azar patients are detected and treated mainly through primary healthcare centers (upazila health complexes-UHC) and referral centers, especially at Surya Kanta Kala-azar Research Center (SKKRC) and some medical college hospitals. The ICT-based rK39 is being used for the diagnosis of kala-azar both in the field (UHC) and hospitals. Injection Sodium Stibogluconate (SSG) had long been used in the treatment of kala-azar and post-kala-azar dermal leishmaniasis (PKDL) cases, which have been phased out. In the WHO-supported VL elimination program in Bangladesh, single-dose AmBisome (amphotericin B) has been introduced in the treatment for KA since 2013. Initially, it was focused on eight hyper-endemic upazilas but now it is being introduced in the remaining 91 endemic upazilas. WHO Bangladesh has been providing technical assistance to increase the capacity of the

program to implement the single-dose Inj. AmBisome in all the endemic upazilas.

Kala-azar Elimination Program (KEP) has started indoor residual spraying (IRS) to control adult vector (sandfly) since 2011 from the post-monsoon period (Sept-Oct) as a pilot project in five unions of Fulbaria upazila, with gradual scaling-up. The IRS has been conducted up to a total of five rounds in each of the eight hyper-endemic upazilas, with two rounds per year (pre-monsoon and post-monsoon) in 2012, 2013, and 2014. In addition, in the remaining 91 upazilas, two rounds of IRS—both blanket and focal—have been conducted during the pre- and post-monsoon period in 2013 and 2014. These IRS activities will be continued for three consecutive years, i.e. a total of six rounds in all the remaining endemic upazilas. (Annual Report 2014, KEP, Bangladesh).

Monthly reporting of kala-azar cases and case search are running regularly under active and passive surveillance of KA cases. Active case detection (ACD) activities were conducted in eight hyper-endemic upazilas and five moderately-endemic upazilas under Health, Population, and Nutrition Sector Development Program (HPNSDP 2011-16) and WHO fund respectively to strengthen disease surveillance strategy for Kala-azar Elimination Program (KEP) by house-to-house searching in 2014. Before searching, the concerned personnel (kala-azar search volunteers and first-line supervisors) from corresponding upazilas were trained on ACD activities, and many new PKDL and kala-azar cases have been diagnosed and treated at the UHC.

In order to implement “No Kala-azar Transmission” activity (NKTA), the National Rapid Response Team was formed at the central and peripheral level in 100 endemic upazilas. A total of 100 cases were investigated under NKTA to find out the sources of KA and PKDL in 2014. Both epidemiological and entomological teams conducted house-to-house search for identifying the suspected KA and PKDL cases and status of vector in the environment respectively. Searching was done in 60 households



**Figure 9.3. Year-wise number of kala-azar cases and deaths**

surrounding each index case for undiagnosed cases, if any and confirmed those by doing RDT (rK39) test and ensured the treatment by referring those to UHC.

In addition, a program is doing pre- and post-IRS vector bionomics and susceptibility test on regular basis as part of vector surveillance. Moreover, operational researches, like pharmaco-vigilance, vector bioassay test, clinical trial of combination therapy for the treatment of new kala-azar, etc., were conducted.

After implementing the abovementioned activities under the guideline of Kala-azar Elimination Program (KEP) and its strategy paper, it has been found that new KA and PKDL cases are steadily decreasing. Regarding endemicity of the upazilas, it has been found that, in 2014, the program had its activities in only two hyper-endemic and six moderately-endemic upazilas. Figure 9.3 shows year-wise kala-azar cases and related deaths from 2000 to 2014.

## Diarrhea

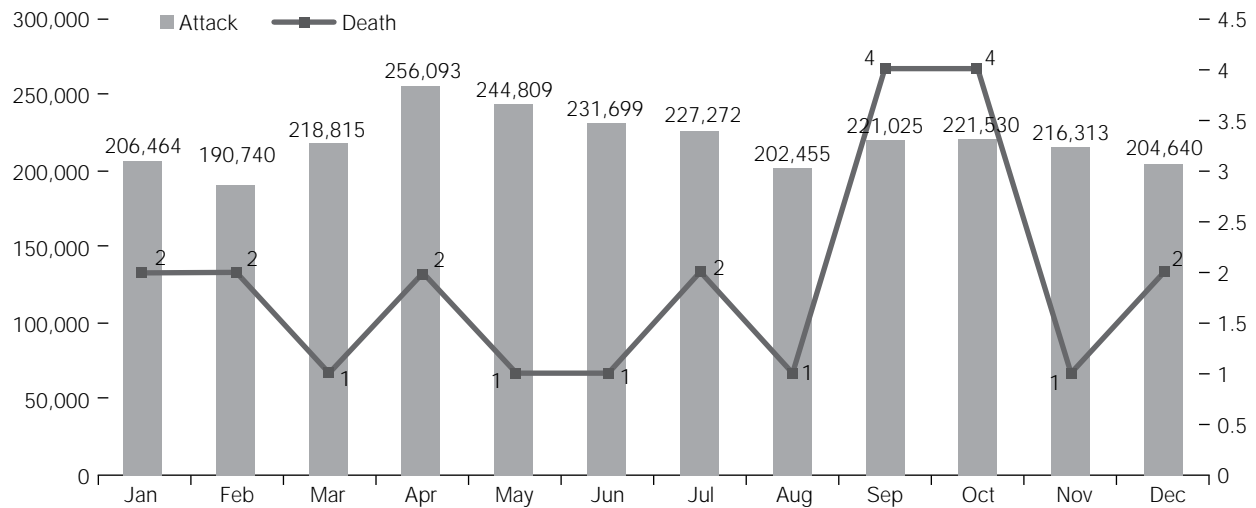
In 2014, a total of 2,135,220 diarrhea cases and 23 related deaths were reported. The death rate due to diarrhea thus remains at around 0.001% as in the previous year. Figure 9.4 shows the total diarrhea cases and related number of deaths in 2014 by month.

Figure 9.5 shows that the deaths due to diarrhea decreased almost each year but drastically from 2007 to 2014. The amazing reduction in diarrhea-related mortality over the last few years proves the effectiveness of the strategies adopted. The strategies include the provision of early oral rehydration at the household level. Cases that cannot be managed at the community level are usually referred to the treatment centers where more efficient therapy, including intravenous rehydration and antibiotics, can be used.

## Emerging and re-emerging diseases control program

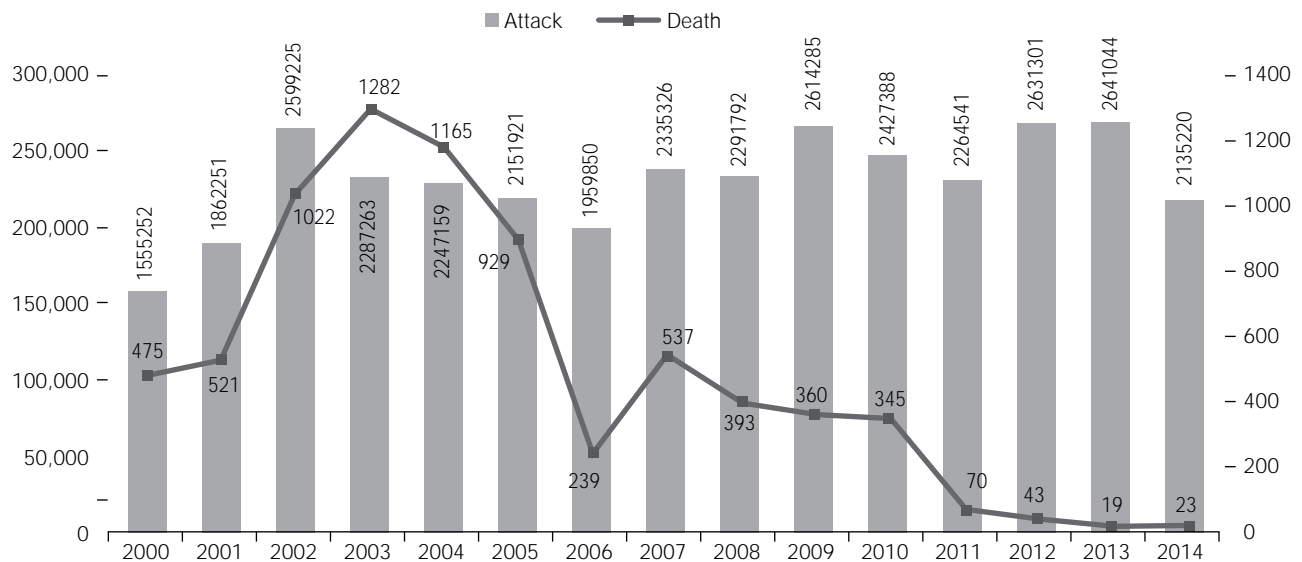
The control of rabies, anthrax, Nipah, chikungunya, and antimicrobial resistance are the prime concern of the emerging and re-emerging disease control program of DGHS. Different comprehensive action plans have been taken to combat these diseases. Some important steps, which already have been taken in 2015, are as follows:

- Seminar and training on viral hepatitis
- Measures taken on the prevention of Ebola virus
- Training of health assistants and sanitary inspectors on the prevention and control of communicable diseases
- Training of trainers (TOT) for doctors, nurses, and store-keepers of District Rabies Prevention &



**Figure 9.4. Number of diarrhea cases and related deaths in Bangladesh by month in 2014**

Source: Control Room, DGHS



**Figure 9.5. Number of diarrhea cases and related deaths in Bangladesh during 2000-2014**

Source: Control Room, DGHS

- Control Center (DRPCC) of 64 districts of the country in order to improve and centralize modern treatment and management of dog and animal bites
- Nationwide training on rabies prevention, disease surveillance, and technical aspects of vaccine.
  - Meeting of the core working committee of antimicrobial resistance

- National symposium on antimicrobial resistance for UH&FPOs in the whole country held in Dhaka Medical College auditorium
- Training of MT lab personnel on communicable disease prevention and control
- Orientation meeting on emerging diseases (Nipah, MERS-CoV) and re-emerging diseases (dengue, chikungunya fever) conducted for district health education officers of the country

- Approval of National Strategy of Antimicrobial Resistance
- Establishment of thermal scanner in different ports of entry.

## Rabies

Rabies was a neglected tropical zoonotic disease. It claims more than 2,000 lives annually in the country. This is the highest for any single infectious disease. Rabies, if manifested, is nearly 100% fatal but is 100% preventable as well if appropriate preventive measures are taken. Annual number of dog-bites in Bangladesh varies between 200,000 and 300,000, and 95% of rabies occur due to dog-bites. Only suspected rabid dogs are thought to be responsible for rabies as dogs rarely can remain healthy. Other animals that occasionally transmit rabies in Bangladesh are cat, fox, monkey, jackal, and mongoose. Other than humans, an estimated 25,000 or more cattle succumb to rabies every year. In the national rabies elimination goal by 2020, a number of activities are being conducted, such as national rabies survey, setting up of national and district rabies prevention and control centers, mass dog vaccination, and management of dog population. To estimate the total dog population and annual events of dog-bites and rabies, a national rabies survey was conducted in 600 clusters all over the country, each cluster comprising 300 households and altogether covering a total of 180,000 households.

A national rabies prevention and control center has been established at the Infectious Disease Hospital, Mohakhali, Dhaka, where about 350 to 450 dog-bite victims receive the service daily. Antirabies vaccines and rabies immunoglobulin are distributed free of charge from this center. In addition to the national center, 65 rabies prevention and control centers have also been established at the district level where dog-bite victims are receiving modern management. These district centers also distribute antirabies vaccines and rabies immunoglobulin free of charge. Mass dog vaccination, launched in 2011 in Cox's Bazar Sadar Municipality as a pilot,

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A national rabies prevention and control center has been established at the Infectious Disease Hospital, Mohakhali, Dhaka, where about 350 to 450 dog-bite victims receive the service daily

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is a unique idea to make the dog population immune from rabies so that any dog-bite does not transmit rabies to humans. If 70% of the existing dog population can be vaccinated, there will be herd immunity among the dog population, keeping them protected from rabies. Large-scale mass dog vaccination activities have been scaled to 37 districts of four divisions (Dhaka, Rajshahi, Sylhet, and Rangpur).

The list of these districts is presented in the Annex. Intradermal tissue culture-based rabies vaccines are now being used replacing the locally-produced nerve tissue vaccines for dog-bites. For all these measures, the case-fatality rates are declining. The Annex provides data on the year-wise rabies-related deaths at the Infectious Disease Hospital, Mohakhali, Dhaka.

## Anthrax

Anthrax is caused by *Bacillus anthracis*, a bacterium that can form spores. Spores allow it to survive in the soil for long periods. Anthrax is primarily a disease of herbivorous mammals, such as cattle, sheep, goats, and buffaloes, which may have chance to ingest anthrax spores while grazing. Humans generally acquire the disease directly or indirectly from infected animals or from occupational exposure to infected or contaminated animal products. Control in livestock is, therefore, the key to reducing incidence. There is no documented evidence of person-to-person transmission. The impact of the disease on animal and human

## Diagnosis of chikungunya is important to distinguish it from dengue

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. Anthrax outbreaks in animals also occur sporadically in other countries. Prevalence of anthrax in Bangladesh was not well-documented earlier. However, since August 2009, the Institute of Epidemiology, Disease Control and Research (IEDCR) investigated 14 outbreaks of cutaneous anthrax in three districts of Bangladesh (Pabna, Sirajganj, and Tangail). Recently, more and more outbreaks are being reported. In 2012, a total of 176 cases of anthrax were reported from 5 districts—74 from Sirajganj, 67 from Meherpur, 16 from Bogra, 14 from Tangail, and 5 from Kushtia.

In total, 327 anthrax cases in 2013 were detected. Among those, 23 cases were reported from Shahjadpur, 77 from Tangail, 187 from Meherpur, and 40 from Chuadanga. In 2014 (up to 17 June), 114 anthrax cases have been detected. Among those, 13 cases were from Sirajganj, 93 from Meherpur, and 8 from Narayanganj.

### Nipah virus infection

Nipah virus infection in humans is an emerging zoonotic disease in Bangladesh. First recognized in a large outbreak with 276 reported cases in Malaysia and Singapore (between September 1998 and May 1999), Bangladesh identified the first cases in 2001. Encephalitis and respiratory distress are common presenting symptoms and signs of Nipah infections. In India, two outbreaks in humans during 2001 and 2007 were reported from West Bengal. Bangladesh encountered

11 Nipah outbreaks between 2001 and 2012 in 20 districts, all occurring between December and May. The districts where the outbreaks occurred are: Meherpur (2001), Naogaon (2003), Rajbari (2004), Faridpur (2004), Tangail (2005), Thakurgaon (2007), Kushtia (2007), Manikganj, Rajbari (2008), Faridpur (2010), Lalmonirhat (2011), and Joypurhat (2012). In all these outbreaks, a total of 215 human cases of Nipah infections in Bangladesh were recognized with 164 deaths, indicating a very high case-fatality rate (76.3%).

No major outbreak occurred in 2013 and 2014. In 2015 (till 4 February), 9 Nipah cases were identified by IECDR; out of them, 6 (67%) died. These cases were from 6 different districts, namely Nilphamari, Panchagarh, Faridpur, Magura, Naogaon, and Rajbari. Median age of these cases was 13 years (Range: 2 to 45 years); 5 (56%) of the affected were male. One cluster was identified in Naogaon; the cluster consisted of three Nipah encephalitis cases. Of these, two were laboratory-confirmed cases. Numbers of isolated cases were 6. Table 9.5 summarizes the 2015 cases in different districts.

**Table 9.5. Number of cases and deaths from Nipah virus infection in 2015 (till 4 February)**

District	Cases	Deaths
Faridpur	2	1
Magura	1	1
Naogaon	3	3
Nilphamari	1	1
Panchagarh	1	0
Rajbari	1	0
<b>Total</b>	<b>9</b>	<b>9</b>

Among the Bangladeshi patients, respiratory problems, including pneumonia, were more than those among patients in Malaysia. This may be attributed to the genetic diversity of the virus strains. Human-to-human transmission, rare earlier, were also noticed, probably due to more involvement of respiratory tract infections.



## **MERS-CoV and H7N9**

In recent times, newly-emerged MERS-CoV outbreak in the Middle East and novel influenza H7N9 outbreak in China have been of growing public-health concern in our country. The IEDCR has started surveillance for those two newly-emerging diseases, using the platform of nationwide influenza surveillance in selected hospitals. The laboratories at IEDCR have the capability to detect these two viruses.

## **Rotavirus and intussusceptions**

IEDCR, in collaboration with icddr,b, has started hospital-based rotavirus and intussusception surveillance in three selected hospitals across the country from July 2012. The objectives of this surveillance are to estimate the proportion of diarrhea-related hospitalization among children aged less than 5 years, which are attributable to rotavirus, to describe the predominant strain of rotavirus throughout Bangladesh, to determine the age, region and seasonal distribution of hospitalizations associated with rotavirus in the population under surveillance, and to estimate the frequency of hospitalization associated with intussusception among children less than 2 years of age in surveillance hospitals.

## **Chikungunya**

Chikungunya fever, a dengue-like disease, is emerging alarmingly in the country in recent years. It is caused by an insect-borne virus. In 2011 (August to October), suspected chikungunya fever outbreaks were detected in Dohar upazila of Dhaka district and Shibganj upazila of Chapainowabganj district. Recently, two other outbreaks in Rajshahi and Pabna districts were identified. No case fatality was reported from the outbreaks. However, persistent arthralgia, causing patients' suffering, was associated in some of the cases. Diagnosis of chikungunya is important to distinguish it from dengue. Chikungunya is caused by mosquitoes; so, reducing mosquito breeding is an important public-health measure to control the disease.

## **Avian and pandemic influenza A H1N1**

### **Background**

Avian influenza is a zoonotic viral disease caused by a subtype of Influenza A known as avian influenza H5N1 (A1/H5N1), which is highly contagious. The disease is known as 'bird flu' as it infects only birds. The avian influenza (AI) outbreaks among poultry and wildlife occurred in 61 countries since 2003. Migratory birds are considered to be one of the major biological vectors which enable the virus to travel across and between continents. The global community was alarmed by the death of 6,000 bar-headed geese due to H5N1 in the Qinghai Lake region in northeast China, and its rapid spread in water-fowl in Central Asia, Russia, and Eastern Europe. It is believed that, infected water-fowl carry the H5N1 virus which is spread along their migratory routes, and they introduce the virus into the poultry flocks across these routes.

The population-size and density in Bangladesh encouraged proliferation of poultry industry producing 220 million chickens and 37 million ducks annually. Poultry industry in the country is one of the largest in the world. Approximately 50% of the local breed of hens and ducks are raised in backyard farms, and another 50% comprise broilers and layers reared in commercial farms. The risk of avian influenza and other zoonotic diseases increases due to (i) high density of humans and animals; (ii) high number of backyard farms and live poultry markets; (iii) mixed farming practice with low biosecurity; (iv) limited control over poultry movements; (v) inadequate regulation of slaughtering and processing of products; and (vi) suboptimal veterinary public health infrastructure, surveillance system, and laboratory facilities. External risk factors include: (i) long porous border (with significant cross-border movements of people and a lack of animal quarantine stations); (ii) importation of avian species, particularly breeder chickens; and (iii) regular movements of companion animals from overseas with expatriates. To contain the disease in poultry, awareness development, capacity-building in management, multisectoral coordination and cooperation, hygienic measures

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## Mortality in ducks and geese caused by highly-pathogenic avian influenza A(H5N1) infection had not been previously identified in Bangladesh

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at commercial farms, backyard, and wet markets, surveillance and regulation of culling activities in livestock sector are needed. Bangladesh developed modern diagnostic laboratories for pandemic influenza, with real-time polymerized chain reaction (RT-PCR) and biosafety level 3 (BSL<sub>3</sub>) facilities. The country reports to the WHO on any event of avian influenza following the guidelines of International Health Regulation 2005 (IHR 2005). Avian and Pandemic Influenza Wards at Asthma Centre of National Institute of Diseases of Chest and Hospital (NIDCH), Dhaka, with support from WHO and isolation units in 64 district hospitals have been established. There is a national guideline to operate the isolation units both whenever human pandemic avian influenza or other pandemic influenza cases are detected. When there will be no such cases, the units will be specified to be used for other infectious diseases, like Nipah virus infection, meningitis, diphtheria, encephalitis, etc. The Infectious Disease Hospital (IDH) at Mohakhali, Dhaka, has been also made ready for the management of pandemic influenza patients, if needed. In such cases, the provision has been made to open separate outdoor and indoor facilities in medical college hospitals and also in the district and upazila hospitals. For all hospitals having more than 200-bed capacity, there is an instruction to create a pandemic influenza management committee.

### Overview of global situation

Although HPNI (highly-pathogenic avian influenza) is primarily a disease of birds, human cases are occurring consistently since 2003. The disease

started in mid-December 2003 in the Far-East, spread quickly in many other countries of South-East Asia, and subsequently, to other parts of Asia, Europe, and Africa. The transmission occurs mainly from bird-to-human, with limited human-to-human transmission. Infections in human often have serious consequences with a high case-fatality rate averaging 58%. Widespread outbreaks of H5N1 in poultry and continued human infections have increased the chance of evolving a mutated strain or another novel virus having pandemic potential. Globally, influenza activity has decreased from its peak in early 2015 to low levels in the northern hemisphere while there were increases in activity in the southern hemisphere. In North America, influenza activity was low and at interseasonal levels. Influenza type B continued to be the predominant strain in circulation in the recent time. In Europe, influenza activity remained low, with influenza B predominant in the recent time. In northern Africa, influenza activity remained at low levels in most countries, with influenza A activity being predominant throughout the whole season. In western Asia, most countries reported decreasing influenza activity, remaining at low levels in the recent time. In the temperate countries of Asia, influenza activity remained at low levels. In tropical countries of the Americas, low and interseasonal levels of influenza activity were reported in most countries, except Peru where low levels of influenza type A circulation was detected. In tropical Asia, increased influenza activity was reported from Hong Kong (Special Administrative Region, China), Singapore, southern China, Viet Nam, and Sri Lanka, with influenza type A viruses predominating in the recent time.

In the southern hemisphere, influenza activity increased in most of the regions but remained at low levels. However, South Africa reported high influenza activity, with influenza A(H1N1) pdm09 and A(H3N2) co-circulation in the recent time. National Influenza Centers (NICs) and other national influenza laboratories from 53 countries, areas, or territories reported data to FluNet for the period from 31 May 2015 to 13 June 2015 (data as of 25 June 2015 12:05 UTC). The

WHO's GIRS (Global Influenza Surveillance and Response System) laboratories tested more than 23,577 specimens during that period; 1,620 were positive for influenza viruses, of which 1,117 (69%) were typed as influenza A and 503 (31%) as influenza B. Of the subtypes of influenza A viruses, 172 (22.8%) were influenza A(H1N1) pdm09, and 582 (77.2%) were influenza A(H3N2). Of the characterized B viruses, 69 (83.1%) belonged to the B-Yamagata lineage and 14 (16.9%) to the B-Victoria lineage.

### **Bangladesh situation**

About 244 species of migratory birds visit Bangladesh during the winter season (October to March), of which approximately 21 species may carry the HPAI/ N5N1 virus. In Bangladesh, the first outbreak in poultry was declared on 22 March 2007. The first report of human case of avian influenza in Bangladesh was made on 22 May 2008. Subsequently, the country was declared to have pandemic alert situation.

After that report, two more human cases of H9N2 were detected in 2011 in Bangladesh. The swine flu virus first struck in Mexico six years ago with panic gripping even in Bangladesh—about 11,000 kilometers away from this Latin American country. Within a couple of months, the World Health Organization declared H1N1 a global pandemic, and Bangladesh recorded the first case of swine flu attack, triggering the panic further. At least eight people died among an estimated 10,000 cases. As part of the Government's measures, incoming persons, imported foods, and some goods are checked at land ports, airports, and other entry-points for swine flu. After the 2009 outbreak, swine flu became a seasonal influenza in Bangladesh, like other two viruses: influenza B and H3. A combined vaccine against these three viruses is available.

Mortality in ducks and geese caused by highly-pathogenic avian influenza A(H5N1) infection had not been previously identified in Bangladesh.

In June–July 2011, mortality in ducks, geese, and chickens, with suspected H5N1 infection in a northeastern district of the country, was

investigated to identify the etiologic agent and the extent of outbreak and to identify possible associated human infections. Surveys were conducted in households and farms with affected poultry flocks in six villages in Netrakona district and collected cloacal and oropharyngeal swabs from sick birds and tissue samples from dead poultry. A survey was conducted in three of these villages to identify suspected human influenza-like illness cases and collected nasopharyngeal and throat swabs. In the said six villages, among the 240 surveyed households and 11 small-scale farms, 61% (1789/2930) of chickens, 47% (4816/10 184) of ducks, and 73% (358/493) of geese died within 14 days preceding the investigation. Of the 70 sick poultry from which swab samples were collected, 80% (56/70) had detectable RNA for influenza A/H5, including 89% (49/55) of ducks, 40% (2/5) of geese, and 50% (5/10) of chickens. Virus from six of the 25 samples was isolated; sequence analysis of the hemagglutinin and neuraminidase gene of these six isolates indicated clade 2.3.2.1a of H5N1 virus. Histopathological changes and immune histochemistry staining of avian influenza viral antigens were recognized in the brain, pancreas, and intestines of ducks and chickens. Ten human cases were identified showing signs compatible with influenza-like illness; four were positive for influenza A/H3; however, none was positive for influenza A/H5. The recently-introduced H5N1 clade 2.3.2.1a virus caused unusually high mortality in ducks and geese. Heightened surveillance in poultry is warranted to guide appropriate diagnostic testing and detect novel influenza strains.

### **Prevention and control activities for avian and pandemic influenza**

Avian influenza is handled under a new program reflected in the operational plan of CDC from 2007–2008. Formerly, it was included in emerging and re-emerging diseases. Since July 2007, it has been a separate program with a Deputy Program Manager (DPM) posted. For appearance of influenza A (H1N1) 2009 as a novel virus with pandemic potential and chance



of appearance of new viruses of other types with pandemic potential, the Avian Influenza (AI) Program is now renamed Avian Influenza and Pandemic Influenza Program. The activities of the Program are summarized below.

- Implementation and review of national policy
- Adaptation of international protocols and guidelines to Bangladesh
- Development of standard operating procedure (SOP)
- Evaluation of health services/needs assessments
- Upgrading healthcare facilities
- Improving capacity of diagnostic laboratories
- Upgrading of priority infrastructure for health surveillances
- Training of public health workers in disease surveillance
- Reinforcement of rapid response teams for outbreak investigations
- Providing rapid diagnostic kits to regional centers for preliminary diagnosis
- Training of clinicians, healthcare workers, and paramedics
- Implementation and review of communication strategy
- Table-top and field exercises
- Purchase, storage, and distribution of antiviral, supportive medication and disinfectants
- Acquisition, storage, and distribution of personal protective equipment (PPE) sets.
- Technical assistance for pandemic planning
- Equipment and materials for quarantine operations and mortality issues
- A technical committee is formed, and drugs have been stockpiled with the Government and the World Health Organization (WHO)
- Twenty-five infrared thermometers have been supplied and are being used. In addition, seven thermal scanners have been set up at selected points of entry.

- Pregnant women, older people, children, and those with co-morbid conditions, such as diabetes, heart disease, and asthma were at higher risk of infection with seasonal influenza as well as swine flu. Public awareness was increased to be cautious about influenza, suggesting the use of handkerchiefs and tissue papers when coughing or sneezing, washing hands regularly, and getting proper rest if suffering from a fever or seasonal influenza.
- Bangladesh has put its health offices on high alert over H1N1 following an outbreak of the disease in neighboring India.

## **Tuberculosis**

### **General considerations**

Tuberculosis (TB) is a major public-health problem in Bangladesh since long. Under the Mycobacterial Disease Control (MBDC) Unit of the Directorate General of Health Services (DGHS), the National Tuberculosis Control Program (NTP) is working with a mission of eliminating TB from Bangladesh. The goal of the program is to reduce morbidity, mortality, and transmission of TB until it is no longer a public-health problem while the present aim is to achieve universal access to high-quality care for all people with TB.

The NTP adopted the DOTS [Directly-observed Treatment, Short-course] strategy and started its field implementation in November 1993. The program progressively expanded to cover all upazilas by mid-1998. By 2007, the DOTS services were made available throughout the country, including the metropolitan cities. Now the NTP is providing tuberculosis control services all over the country under the Stop TB strategy that is being implemented since 2006. DOTS has evolved to be a brand name for the TB control strategy with the following five components: (i) political commitment with increased and sustained financing; (ii) case detection through quality-assured bacteriology; (iii) standardized treatment with supervision and patient support; (iv) an effective drug supply and management system; and (v) monitoring and evaluation system, and impact measurement.

## Bangladesh situation

According to the revised estimates by WHO, the incidence and prevalence of all forms of tuberculosis in 2014 were 227 and 404 per 100,000 people respectively. It is further estimated that about 51 per 100,000 people died of TB in the same year. Although the HIV prevalence is still low, HIV poses a threat to TB control. The estimated incidence rate of HIV-positive TB cases reduced from 0.40/100,000 people in 2011 to 0.36/100,000 in 2014. The proportion of multidrug-resistant tuberculosis (MDR-TB) among new TB cases was 1.4% and that among re-treatment cases was 29% (Table 9.6).

**Table 9.6. Estimated population and TB burden, Bangladesh- 2014**

District	Cases	Deaths
Population		159 million
Mortality rate		51/100 000 pop
Prevalence rate (all TB cases)		404/100 000 pop
Incidence rate (all TB cases)		227/100 000 pop
Incidence rate (HIV-positive TB cases)		0.36/100 000 pop
Proportion of new TB cases with MDR-TB	1.4%	
Proportion of retreatment of TB cases with MDR-TB	29%	

Source: Global Tuberculosis Report, WHO, 2015

## Progress in TB control

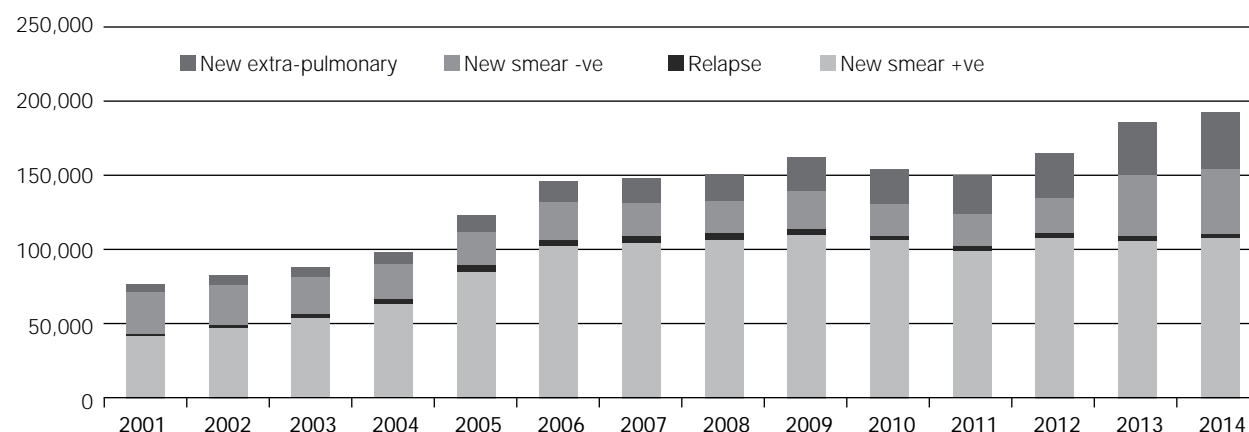
Since the introduction of DOTS in Bangladesh in 1993, remarkable progress in TB control has been made in terms of DOTS coverage, detection of TB cases, and treatment success.

DOTS coverage in all upazilas was achieved by June 1998 and, by 2007, NTP reached the 100% DOTS coverage.

A total of 196,797 cases (including 5,631 combined cases of return after failure, return after loss to follow-up, and others) have been reported to NTP in 2014. So, the overall case notification rate of all forms (excluding those 5,631 returning cases) of TB cases was 122 per 100 000 population. The case notification rate for bacteriologically-confirmed pulmonary (new smear-positive) cases in 2014 was 68 per 100 000 people (Figure 9.6, and 9.7; Table 9.7, and 9.8). The projected population for 2014 based on 2011 census is 156,754,787.

The program has successfully treated 94% of the new smear-positive cases registered in 2013 (Figure 9.8).

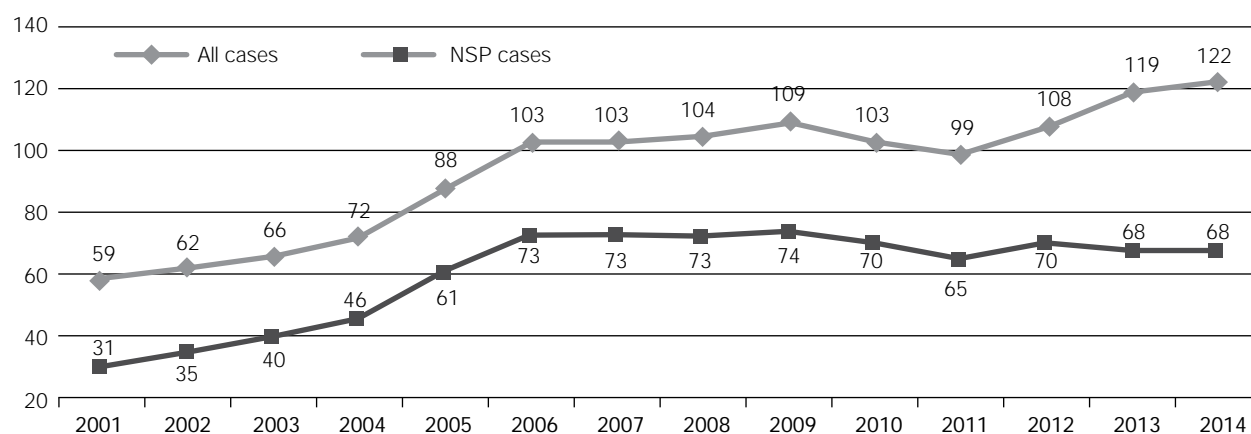
DOTS coverage refers to the population living in areas where DOTS services are available. This does not mean that all people have equal access to diagnostic and/or treatment facilities



**Figure 9.6. Nationwide case notification: absolute number, 2001-2014**

**Table 9.7. Nationwide case notification: absolute number, 2014 (according to new classification)**

Reporting units	Case type						All retreatment	Total
	Pulmonary (Bacteriologically-confirmed)		Pulmonary (Clinically-diagnosed)		Extra-pulmonary (Bacteriologically-confirmed/Clinically-diagnosed)			
	New/ Treatment history unknown	Relapses	New/ Treatment history unknown	Relapses	New/ Treatment history unknown	Relapses		
Upazial	95,716	2,027	36,346	694	27,854	161	4,622	167,420
Metro. city	9,585	871	5,663	167	8,348	142	915	25,691
CDC	1,438	91	851	2	1,204	6	94	3,686
Total	106,739	2,989	42,860	863	37,406	309	5,631	196,797

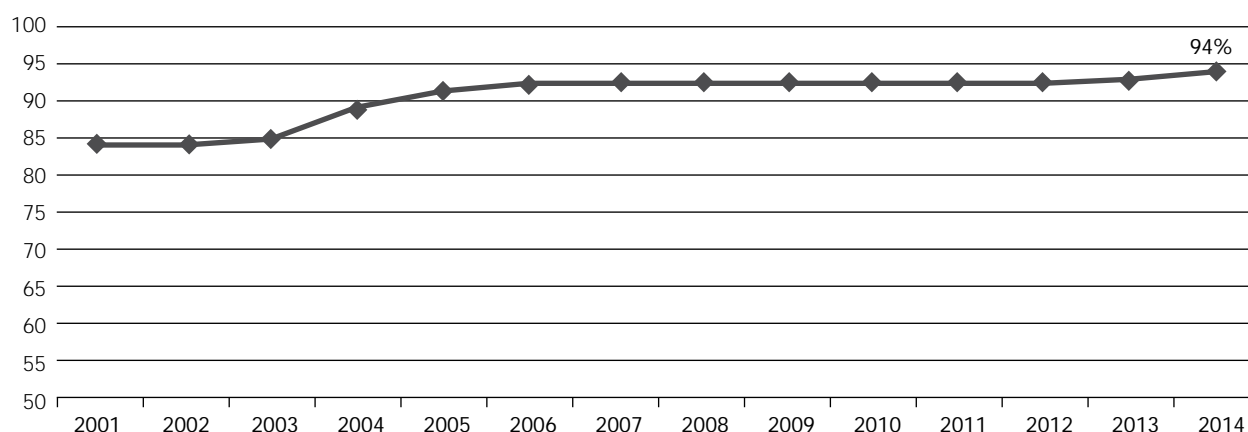
**Figure 9.7. Nationwide case notification rate (per 100 000 population/year), 2001-2014****Table 9.8. Year-wise tuberculosis case notification by type of reporting unit, 2008-2014**

Year	Area	Smear +ve		Smear -ve (New)	Extra-pulmonary (New)	Total
		New	Relapse			
2008	Rural/Upazila	93,659	2,753	15,069	12,825	124,306
	Urban/Metro	10,289	1,165	5,660	4,486	21,600
	CDC	2,425	220	1,463	1,048	5,156
	Total	106,373	4,138	22,192	18,359	151,062
2009	Rural/Upazila	96,333	2,692	17,759	15,768	132,552
	Metro	10,390	1,136	5,829	4,872	22,227
	CDC	2,171	150	1,548	1,225	5,094
	Total	108,894	3,978	25,136	21,865	159,873
2010	Rural/Upazila	93,937	2,101	15,539	17,255	128,832
	Metro	9,977	770	4,788	4,943	20,478

Table continued...

Year	Area	Smear +ve		Smear -ve (New)	Extra-pulmonary (New)	Total
		New	Relapse			
2011	CDC	1,858	129	1,298	1,308	4,593
	Total	105,772	3,000	21,625	23,506	153,903
	Rural/Upazila	87,743	1,889	16,433	20,340	126,405
	Metro	9,391	698	4,442	5,648	20,179
	CDC	1,814	114	1,046	1,341	4,315
	Total	98,948	2,701	21,921	27,329	150,899
2012	Rural/Upazila	95,132	2,135	18,856	22,506	138,629
	Metro	10,068	820	4,640	6,849	22,377
	CDC	1,640	112	955	1,194	3,901
	Total	106,840	3,067	24,451	30,549	164,907
2013	Rural/Upazila	94,668	2,024	36,036	25,081	157,809
	Metro	9,372	751	5,367	7,393	22,883
	CDC	1,501	93	990	1,231	3,815
	Total	105,541	2,868	42,393	33,705	184,507
2014	Rural/Upazila	95,716	2,027	36,346	27,854	161,943
	Metro	9,585	871	5,663	8,348	24,467
	CDC	1,438	91	851	1,204	3,584
	Total	106,739	2,989	42,860	37,406	189,994*

\*Pulmonary smear-negative relapse and extra-pulmonary relapse are not included in the total



**Figure 9.8. Treatment success rate (%) of new smear-positive TB cases, 2001-2013 cohorts**

### Drug-resistant tuberculosis (DR-TB)

The multidrug-resistant tuberculosis (MDR-TB) has become a significant public-health threat globally against effective TB control. There were an estimated 480 000 (range: 360,000–600,000) new cases of MDR-TB worldwide in 2014.

Globally, an estimated 3.3% of new cases and 20.0% of previously-treated cases have MDR-TB.

Bangladesh is also facing the challenge of drug-resistant TB. To combat this problem under National TB Control Program, Bangladesh has

The multidrug-resistant tuberculosis (MDR-TB) has become a significant public-health threat globally against effective TB control

taken appreciable steps in terms of diagnosis and management of drug-resistant TB. The diagnostic facilities are available at: (i) National TB Reference Laboratory (NTRL) in the NIDCH, Dhaka; and (ii) Regional TB Reference laboratory (RTRL) in the CDH, Rajshahi; (iii) Regional TB Reference Laboratory (RTRL) in the CDH, Chittagong.

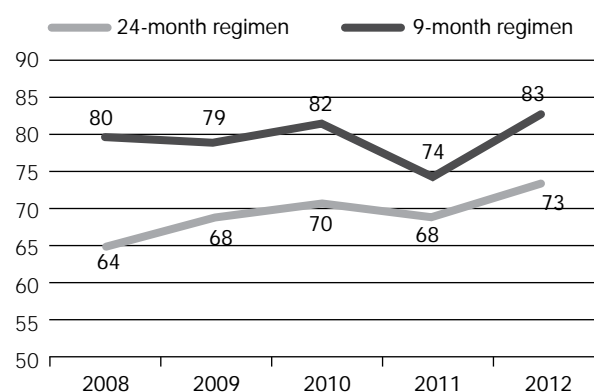
The treatment facilities for drug-resistant TB are available at: NIDCH, Dhaka; CDHs, Rajshahi, Chittagong, Khulna, and Sylhet; and 20-bedded CDH at Pabna.

Besides these, the government-run hospitals have the treatment facilities for DR-TB management and are also available at three other hospitals of Damien Foundation at Jalchatra under Tangail District, Onontopur under Netrakona district and Shambhuganj under Mymensingh district, with a shorter regimen of 9 months. The Damien Foundation, Bangladesh also conducts operational research on drug-resistant TB.

From the year 2008 to 2014, a total of 3,460 multidrug-resistant TB patients have been enrolled for treatment; 2,309 under 24 months regimen (Supported by the Global Fund) and 1,151 under 9 months regimen (Supported by the Damien Foundation, Bangladesh). (Table 9.9). The treatment success rates of the enrolled cases of cohort from 2008 to 2012 are 83% and 73% under 9 months and 24 months regimen respectively (Figure 9.9).

**Table 9.9. Number of MDR-TB cases enrolled for treatment, 2005-2014**

Year	24-month regimen	9-month regimen	Total
2008	107	129	236
2009	179	181	360
2010	183	154	337
2011	253	137	390
2012	376	129	505
2013	495	191	686
2014	716	230	946
<b>Total</b>	<b>2,309</b>	<b>1,151</b>	<b>3,460</b>



**Figure 9.9. Treatment success rates of enrolled MDR-TB cases of cohort 2008-2012**

## Acknowledgements

National TB Control Program is pleased to acknowledge the contribution and support of its diverse partners, like NGO Consortium; government medical institutions; private medical institutions; civil societies, like National Anti-tuberculosis Association of Bangladesh (Natab), corporate sectors—notably BGMEA and BKMEA; professional associations; and development partners, especially WHO, GFATM, USAID, and World Bank.

## Leprosy

Leprosy is an ancient and chronic infectious disease caused by *Mycobacterium leprae*,

affecting mainly the peripheral nerves. The disease also affects the skin, mucosa of the upper respiratory tract, muscles, eyes, bones, testes, and internal organs. Before 1873, the cause of leprosy was not known, and no effective treatment was available. In 1873, the discovery of the pathogen *M. leprae* (Hansen's Bacillus) by Dr. Armuer Hansen opened avenues to the diagnosis of and treatment for leprosy. In 1943, the sulphone drugs (dapsone monotherapy) were introduced in the treatment for leprosy. In 1985, multidrug therapy was introduced in the treatment for leprosy due to emergence of dapsone-resistant strains of *M. leprae*.

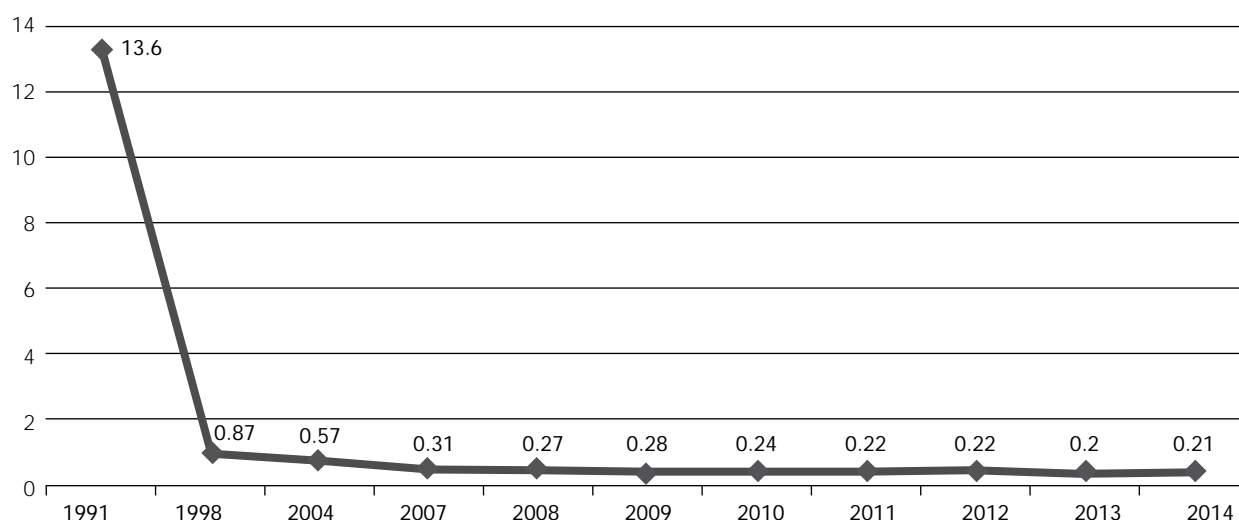
Bangladesh has achieved elimination of leprosy at the national level by the end of December 1998.

It was 2 years ahead of WHO-targeted date. The 'elimination' as defined by the WHO is to reduce registered prevalence to less than 1 case per 10,000 people. When WHO declared elimination, the registered prevalence was 0.87/10,000 people, and the number of endemic districts/areas were 15. After achieving elimination at the

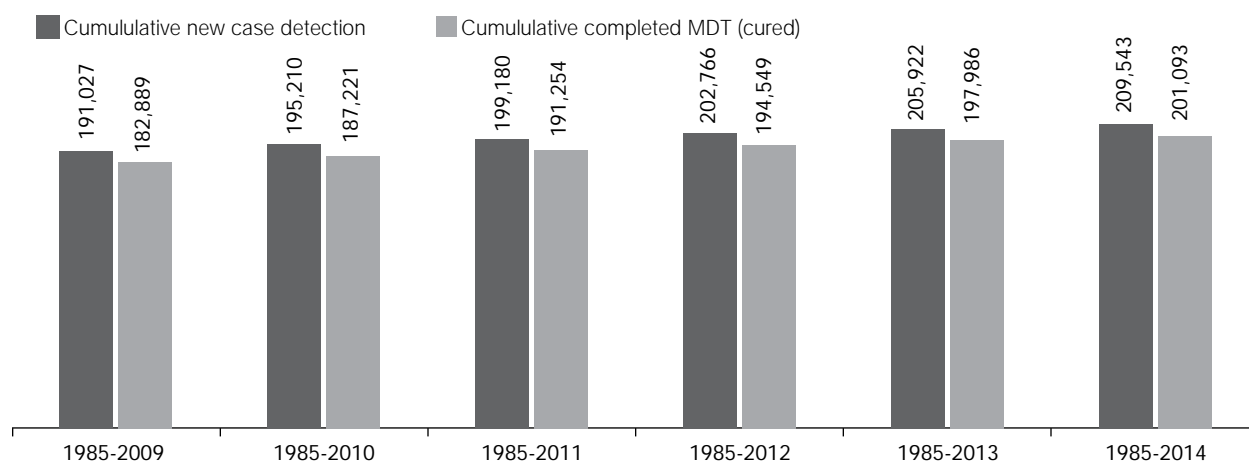
## Bangladesh has achieved elimination of leprosy at the national level by the end of December 1998

national level, the National Leprosy Elimination Program (NLEP) is consolidating its effort to achieve subnational (district-level) elimination. At the end of December 2004, the registered prevalence came down to 0.51/10,000 people, and the number of endemic districts/areas came down to 10. The NLEP has been experiencing a very slow decline of leprosy prevalence during the last nine years, with 0.021/10,000 at the end of December 2014 (Figure 9.10).

Figure 9.11 shows the cumulative number of new leprosy cases and completed MDT from 1985 to 2014. Table 9.10 and 9.11 show the division-wise new case detection and completion of MDT (cured) respectively.



**Figure 9.10. Registered prevalence rate of leprosy (per 10,000 people), Bangladesh, 1991-2014**



**Figure 9.11. Cumulative number of new leprosy cases detected and MDT completed (cured) under NLEP, Bangladesh, 1985-2014**

**Table 9.10. Division-wise profile of the newly-detected leprosy cases, Bangladesh, 2014**

Division	Population (N)	MB (N)	PB (N)	Total (N)	Registered prevalence/10,000 people
Barisal	8,701,081	3	00	3	0.003
Chittagong	30,981,393	259	107	366	0.12
Dhaka	52,488,866	667	385	1052	0.2
Khulna	16,638,096	67	5	72	0.043
Rajshahi	19,940,460	188	94	282	0.14
Rangpur	17,065,912	606	533	1139	0.67
Sylhet	11,008,497	279	117	396	0.36
<b>Total</b>	<b>156,824,305</b>	<b>2,069</b>	<b>1,241</b>	<b>3,310</b>	<b>0.21</b>

**Table 9.11. Division-wise leprosy cases (completed MDT) in Bangladesh in 2014**

Division	MB	PB	Total
	(>5 lesions)	(1 to 5 lesions)	
Dhaka	332	449	781
Barisal	2	0	2
Chittagong	188	101	289
Sylhet	127	73	200
Khulna	30	13	43
Rajshahi	184	216	400
Rangpur	481	911	1392
<b>Total</b>	<b>1344</b>	<b>1763</b>	<b>3107</b>

## HIV/AIDS

### General considerations

Bangladesh is still considered a low-prevalence country for HIV/AIDS but remains vulnerable to an HIV epidemic because of the high prevalence in neighboring countries and the high mobility of people within and beyond the country. Inadequacy in correct knowledge about HIV and AIDS due to illiteracy, ignorance, and gender inequity aggravate the vulnerability. High rate of needle-sharing among people who inject drugs (PWIDs), low rate of condom-use, and high prevalence of sexually transmitted infections (STIs) among the key populations are the most important factors that may contribute to a potential HIV epidemic.



In Bangladesh, as in other countries of the region, HIV prevalence is higher in key populations [i.e. female and male sex workers (FSW and MSW), men who have sex with men (MSM), people who inject drugs (PWID), and hijra/transgender], with a concentrated epidemic among the PWID. The prevalence of HIV among PWID was more than 5% in Dhaka in 2011. Although it is estimated that less than 0.1% of the total population of 152 million is infected with HIV, the number of HIV cases is increasing rapidly according to a report titled “Assessment of Impact of Harm Reduction Interventions among People Who Inject Drugs (PWID) in Dhaka City.”

It is recognized that HIV and AIDS are beyond the health issues as the economic and social challenges for the most productive age-group are surmounted due to HIV. Bangladesh has an estimated 23,800 PWID, 74,300 FSW (according to the unpublished 2009 Size Estimates for Most At-risk Populations in Bangladesh), 1,10,581 MSM, 32,484 MSW, 8,882 hijra (according to icddr,b's 2012 report titled “Counting the numbers of men who have sex with men, male sex workers, and Hijra in Bangladesh to provide HIV prevention services); 23% of the total population comprises young people. These young people have limited knowledge about HIV and AIDS due to various societal barriers.

The Government of Bangladesh has been undertaking precautionary measures to limit the spread of HIV infection since the detection of the first HIV-positive case in 1989. The National AIDS Committee (NAC) was formed in 1985 and reconstituted in 2010. The MOHFW is playing the leading role in the prevention of HIV and control of AIDS. The National AIDS/STD Control Program (NASP) is implementing HIV and AIDS prevention activities in Bangladesh through a coalition of three functionaries, namely the NAC, MOHFW, and DGHS. The NASP under the DGHS is responsible for coordinating activities of all stakeholders and development partners involved in the HIV and AIDS program.

The strong political history and commitment

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The number of HIV cases is increasing rapidly according to a report titled “Assessment of Impact of Harm Reduction Interventions among People Who Inject Drugs (PWID) in Dhaka City”

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of Bangladesh to the HIV response helped the nation attain a unique position to succeed whereas several other developing countries have not been that successful to keep the AIDS epidemic from expanding beyond this current level. The comprehensive, timely and strategically-viable prevention measures have prevented the gradual spread of HIV from key populations (KPs) to the general population. To a significant extent, this is probably attributable to the willingness of the Government to acknowledge the existence of key populations and risk behaviors, which facilitated the start of the effective interventions at early time, high-quality interventions by NGOs, strong technical support from international and local agencies and communities, and a clear strategic focus by donor agencies.

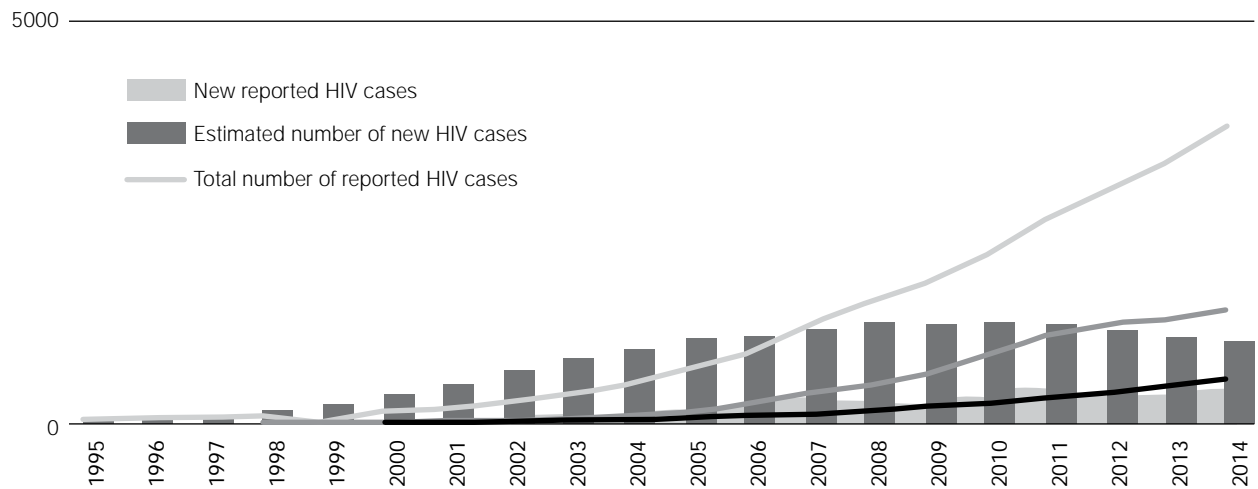
In 2014, a total of 433 new HIV infections have been detected. Further, until December 2014, the total number of detected cases was 3,674, of whom 563 people living with HIV (PLHIV) have died, leaving 3,111 known people living with HIV. However, the majority of infections are likely to remain undetected, and the total national estimate is around 9,000 PLHIV (source: GARRP 2014).

Figure 9.12 shows the year-wise cumulative and new HIV-positive cases in Bangladesh.

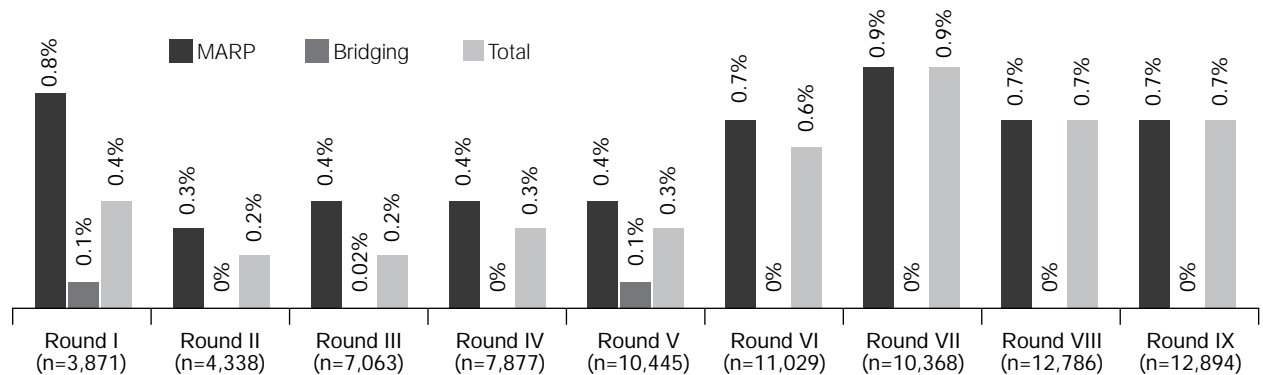
## Surveillance

The NASP introduced a surveillance system since 1998, using facility-based data from

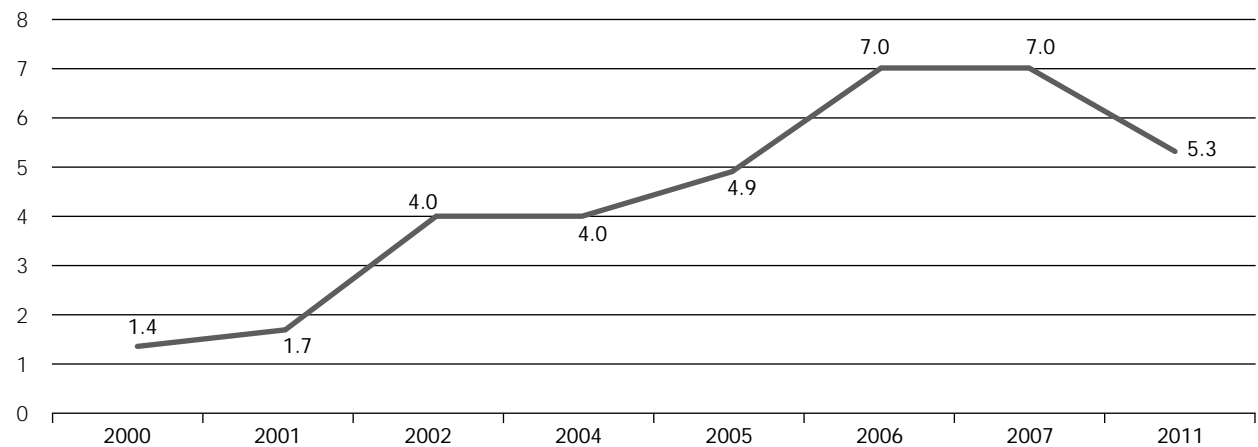




**Figure 9.12. New and cumulative HIV-positive cases as reported and estimated by year in Bangladesh (1989-2014)**



**Figure 9.13. HIV prevalence over the years**



**Figure 9.14. HIV prevalence among PWID over the rounds of surveillance in Dhaka city**

HIV/AIDS and STI/STD service providers. As in previous years, Round IX of serological surveillance was conducted among the key populations, including heroin-smokers (HS). This round was conducted during December 2010-June 2011, and 12,894 individuals were sampled from 36 geographical areas of Bangladesh. The overall prevalence of HIV and active syphilis was 0.7% and 3% respectively.

The population group with the highest rate of HIV continues to be PWID in Dhaka. The prevalence was 5.3% in Round VIII and 7% in Round IX. The decline is not statistically significant. Fortunately, the localization of the PWID epidemic to one neighborhood of Dhaka observed in the previous years has also remained static. HIV was also detected in another four groups of people who use drugs (PWUD)—male PWID from Narayanganj (1.5%) and Satkhira (0.4); combined female PWID and heroin-smokers from Dhaka, Narayanganj, Tongi (1.2%), and Benapole (1%).

Active syphilis rates at >5% was detected among six groups of PWID, and the highest proportion was found in male PWID in Narsingdi (7.9%). High active syphilis rates suggest practice of unsafe sex.

Antibodies to hepatitis C virus (HCV), a marker of unsafe injecting practices, were measured in all PWID and groups of combined PWID and heroin-smokers but not in the groups consisting of only heroin-smokers and, in six cities, >50% were HCV-positive. The higher prevalence of HCV was found among PWID from several cities of Rajshahi division, with Kanshat having the highest prevalence (95.7%). In Dhaka, HCV rates have declined significantly ( $p < 0.05$ ) over the rounds of surveillance.

A total of 3,568 female sex workers were sampled from 13 areas of Bangladesh. Overall HIV prevalence was low (<1%) in all groups of FSW, except in casual sex workers from Hili where two in 125 samples were positive (1.6%). Active syphilis rates at >5% was detected in three sites—street-based FSW of Hili (12.5%) and Chittagong (10.3%) and hotel-based FSW of Sylhet (9.3%).

In 2013-2014, a cross-sectional survey was conducted by icddr,b with support from Global Fund to assess changes in risk behaviors and prevalence of HIV and active syphilis among MSM, MSW, and hijra population. The results show that, in Dhaka, the prevalence of HIV in MSM, MSW and hijra population was <1%, while, in Hili, HIV was detected only among two of 28 hijra (7.1%). In the same group, active syphilis was <1%. Over the years in Dhaka, the prevalence of active syphilis declined significantly among the hijra and MSW but it has remained unchanged at <2% among MSM. In Chittagong, although HIV was not detected in these groups, active syphilis was 2.2% among MSM and MSW (combined). The overall prevalence of HIV in all three cities (Dhaka, Chittagong, and Hili) was 0.4% among MSM, 0.4% among MSW, and 1% among the hijra. The overall prevalence of active syphilis in all three cities was 1.2% among MSM, 2.4% among MSW, and 2.8% among the hijra.

### **HIV prevalence over the rounds**

The overall HIV prevalence has remained at <1% over the rounds of surveillance, irrespective of whether the total population is considered or when segregated for the key (most at-risk) and bridging populations. It is to be noted that bridging population groups (e.g. mainly truck-drivers, dockyard workers, etc.) were not sampled since Round VI of the surveillance (Figure 9.13 and 9.14).

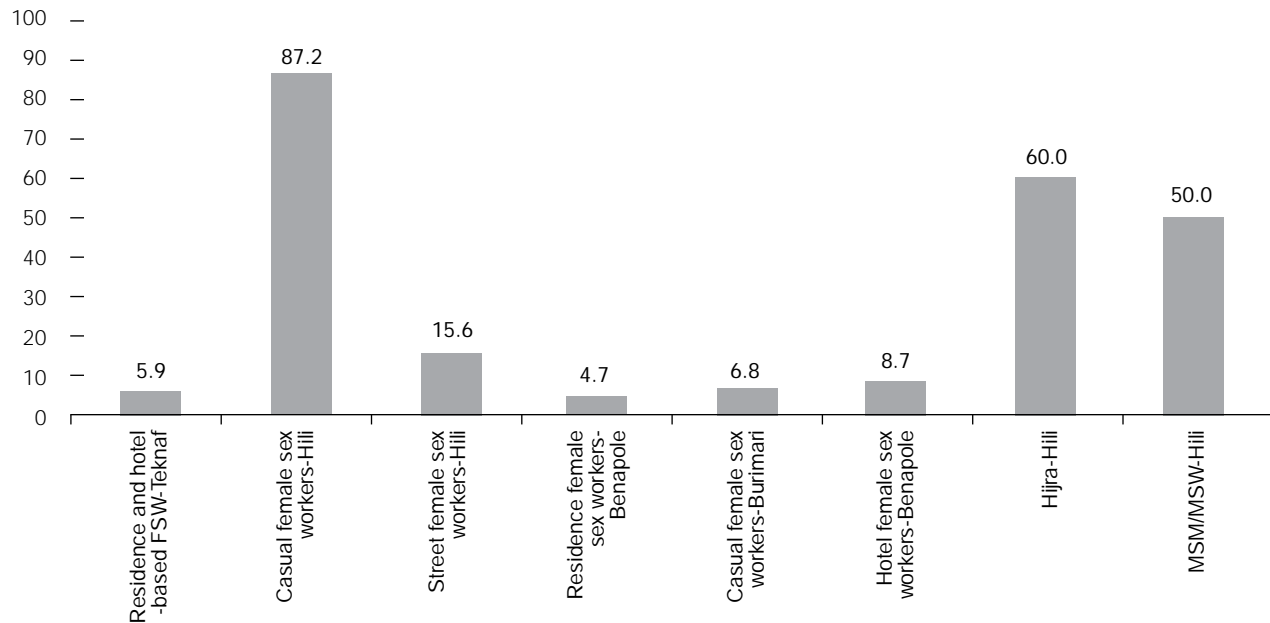
### **Cross-border mobility in the recent years (among FSW, MSM, MSW, and hijra)**

The areas where more than one population group with HIV were detected include: Benapole (female PWID and residence-based FSW) and Hili (hijra and casual FSW), both sites bordering with West Bengal of India. It is well-recognized that mobility and migration can enhance vulnerability to HIV, and women are particularly vulnerable (Blanchet, Biswas *et al.* 2003). Figure 9.15 and 9.16 show the percentage of FSW, MSM, MSW, and hijra living in border areas, who crossed the border in the

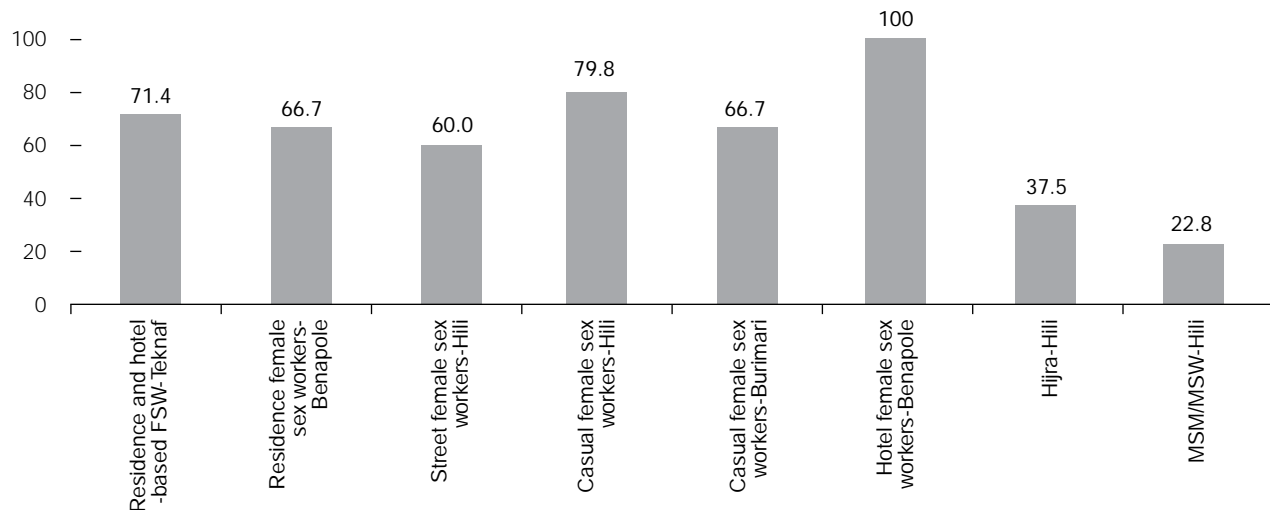
year 2011 and sold sex while abroad. It is clear that cross-border mobility is more common in Hili. Little is known about the sex workers (male, female, and hijra) living in these border areas. A better understanding is essential for evidence-based programming.

### Geographical and occupational distribution

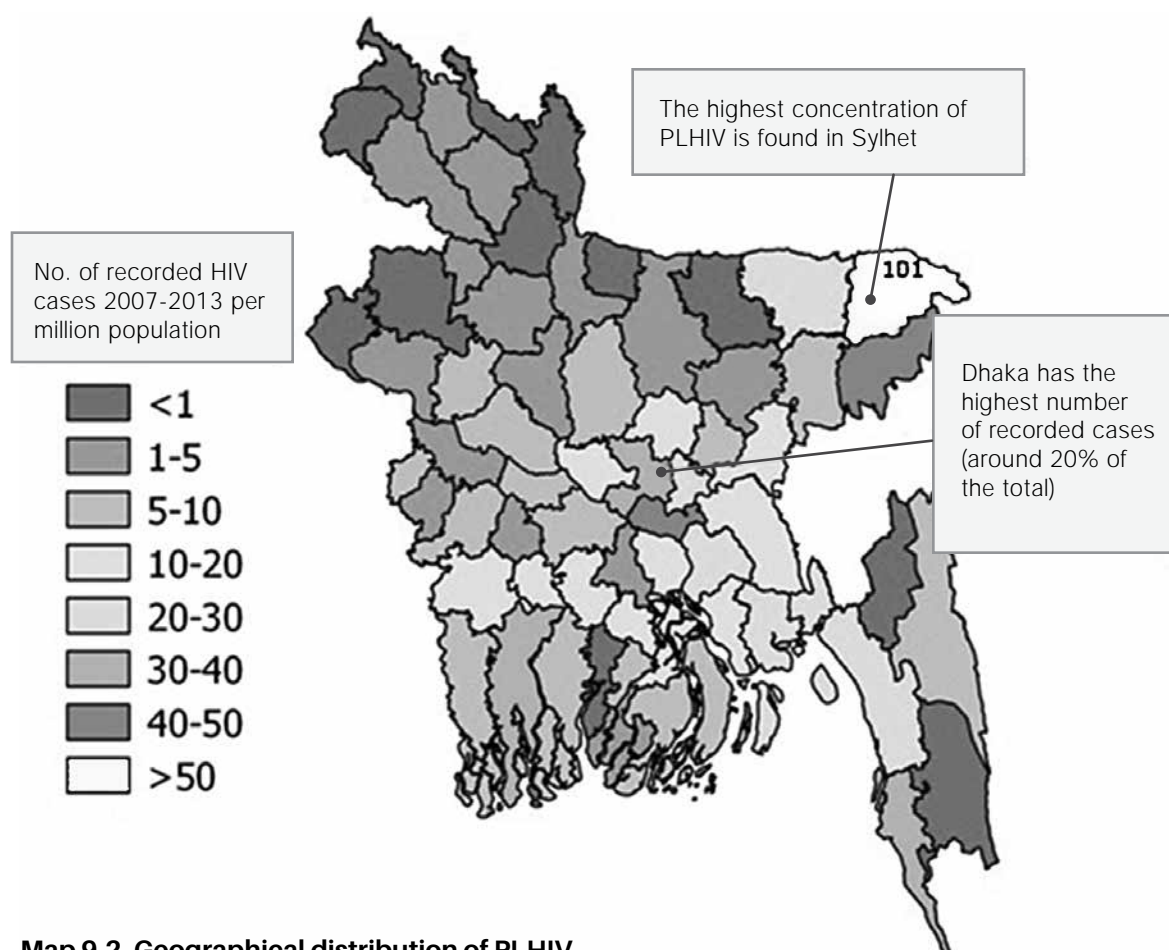
From regular case reporting, it is evident that the highest number of PLHIV is recorded in Dhaka but Sylhet has the highest concentration of PLHIV. The district-wise case reports are shown in Map 9.2.



**Figure 9.15. Cross-border mobility of different key populations, 2011**



**Figure 9.16. Selling sex while abroad in the last year (by those who crossed the border in 2011)**



**Map 9.2. Geographical distribution of PLHIV**

Source: National AIDS/STD Control Program (NASP), Directorate General of Health Services

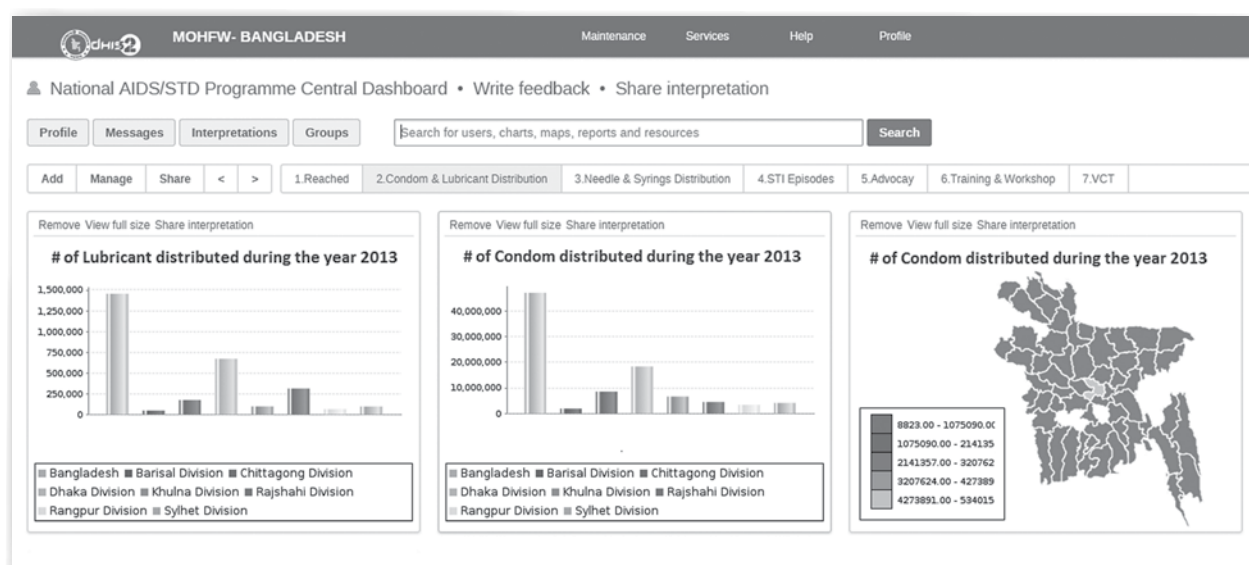
### Estimated size of key populations

A new size estimation of key populations is being planned in Bangladesh. As per existing

information, the estimated sizes of the different key populations are shown in Table 9.12.

**Table 9.12. Estimated sizes of different key populations**

Key population	Estimated size (2009-2010)
Total FSW	63,600-74,600
Brothel-based FSW	3,100-3,600
Street-based FSW	25,500-30,700
Hotel- and residence--based FSW	35,000-40,000
Clients of FSW	2,714,000-3,733,000
PWID	21,800-23,800
MSM	21,833-110,581
MSW	11,134-32,484
TG (Hijra)	4,504-8,882
Returning migrants	381,000-762,000



**Figure 9.17. A screen-shot of the national reporting system**

### Investment case study

From January 2015, Bangladesh undertook an initiative to conduct an investment case study to explore how limited resource could be used in maximizing impact and to help direct a rapid and sustainable increase in domestic and donor investment. With this backdrop, the 'Investment Case Study' in Bangladesh analyzes the HIV status and response, examines the impact and implications of various future scenarios, and establishes priorities that aim to make the response more effective, efficient and sustainable, toward the global goal of "Ending AIDS by 2030." The AIDS Epidemic Model (AEM) and programmatic analyses were used for developing the study design.

From the AEM, it is clear that the early response to HIV/AIDS helped maintain a low prevalence in the country. AEM analysis demonstrates that the ongoing interventions have averted a total of 141,225 HIV infections up to 2014 in Bangladesh and saved 3,841,000 DALYs and 19,545 lives till 2014. If there would be no interventions since 2000, HIV prevalence would have exceeded 20% in most key populations within the next 20 years, and a generalized epidemic would have taken off.

### Care, support, and treatment (CST) services

The Government of Bangladesh, under the

direct supervision of NASP, has taken the initiative to provide optimum care and treatment to key populations and PLHIV through care, support and treatment (CST) services at GO and NGO facilities.

The Government had a target to provide optimum care to 65% PLHIV by 2014 in its Millennium Development Goal 6 (MDG 6). So, the package of services aims to take initiative on early detection of HIV through HIV testing and counseling (HTC) to detect more cases and increase the coverage of optimum care for PLHIV.

### GOB initiative for comprehensive care, support and treatment of PLHIV

- NASP is procuring 100% ARV from December 2012 onwards
- ARV is dispensed through 5 government health facilities through GO-NGO collaboration under HPNSDP
- 12 government health facilities are providing other services relating to PLHIV
- 8 NGO facilities are providing BCC, home-based care, community sensitization, drug adherence, opportunistic infections (OIs) management, and capacity-building of health service provider
- 3 tertiary-level health institutions are supporting PMTCT among ANC attendees.

## National reporting system for HIV and AIDS

A unified online national reporting system for HIV and AIDS was established in 2013. This was a collaborative initiative among NASP, icddr,b, MIS of the Director General of Health Services, and UNAIDS. Previously, in assessing the national progress of programs on HIV and AIDS, data were collected manually from each of the organizations conducting the program, which was time-consuming, infrequent, cumbersome, and prone to errors. Using the existing web portal of MIS-DGHS where the country's overall health information is routinely collected, a unified reporting system for HIV and AIDS was initiated. Through this system, HIV and AIDS program data relating to key populations are now being collected on output/coverage indicators every six months from all drop-in-centers (DICs) and service delivery points, including HTC centers for the general population. This web-based reporting allows assessment of the national response at a six-month interval, which facilitates NASP to monitor and plan activities in an informed manner. Since June 2013, efforts are being made to incorporate HIV and AIDS program data from all agencies engaged in HIV and AIDS intervention programs into the online system.

## Publications/Resources

The NASP has improved and supported the development of several national guidelines, manuals, and policies/strategies on specific intervention areas:

### 2002 to 2005

- The Safe Blood Transfusion Act (passed in 2002)
- The National Harm Reduction Strategy for Drug Use and HIV, 2004-2010
- National HIV Advocacy and Communication Strategy, 2005-2010

### 2006 to 2010

- National STI Management Guidelines, 2006
- National Policy and Strategy for Blood Safety, 2007
- National Curriculum on HIV/AIDS for students of Class 6 to 12, 2007

- National Standards for Youth-friendly Health Services (YFHS), 2007
- Population-size Estimates for Most At-risk Populations for HIV In Bangladesh, 2009
- Standard Operating Procedures for Services to People Living with HIV and AIDS, 2009
- SOP for caregivers, counselors, and outreach workers for supporting PLHIV, 2009
- Management of Opportunistic Infections and Post-exposure Prophylaxis Guideline, 2009
- Clinical Management of HIV and AIDS–Doctors' Handbook, 2009
- Standard Operating Procedures for Drop-in-Centers for IDU and FSW, 2010
- Various training manuals and guidelines on counseling and peer-education as per project needs for IDU, FSW, and PLHIV, 2008 to 2011
- National Strategic Plan for HIV/AIDS, 2011-2015
- National AIDS M&E Plan, 2011-2015

### 2011 to 2014

- National Antiretroviral Therapy (ART) Guidelines, 2011
- Training Manual on the Reduction of Stigma and Discrimination Relating to HIV/AIDS, 2010
- HIV/AIDS-Opobad O Boishommo Protirodh toolkit (stigma and discrimination toolkit), September 2011
- Nutritional Guidelines for PLHIV, 2012
- Risk Reduction Strategy for Young Key Populations and Most At-risk Adolescents (MARAs), 2013
- ART Training Module for Doctors, 2013
- National HTC Guidelines, 2013
- National Guidelines for the Prevention of Vertical Transmission of HIV and Congenital Syphilis, 2013
- Assessment of Impact of Harm Reduction Intervention among People Who Inject Drugs (PWID) in Dhaka City
- A survey of HIV, syphilis, and risk behaviors among men having sex with men, male sex workers, and hijra, 2014 (icddr,b project report).



# 10

## PREPAREDNESS AND RESPONSE IN HEALTH EMERGENCIES

Inter-sector coordination emphasized to save more lives

Bangladesh is vulnerable to natural calamities, resulting in the need for mass health emergencies, primarily due to flood, cyclone, and tornado that occur here almost every year. The country is also vulnerable to earthquake. Bangladesh being the most densely-populated country in the world has more victims to road, rail and river traffic accidents than other developing countries. Sudden onset of re-emerging and newly-emerging diseases often requires emergency responses. The overall disaster situation of the country causes high burden of disaster-related diseases, disabilities, and deaths. Skilled manpower, uninterrupted supply of logistics, and availability of guidelines for the best public-health practices at adequate level are required to reduce the adverse health impact of these disasters.

Under the non-communicable disease control (NCDC) operational plan in the DGHS, the health emergency preparedness and response program is actively focusing on adequate disaster preparedness and quick responses. Two programs work in collaboration with each other. One is the National Health Crisis Management Center and Control Room (NHCMC&CR) under NCDC program of the DGHS supported by the Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016, and the other one is the WHO-supported Emergency Preparedness and Response (EPR).

To receive reports of any health emergencies relating to disaster or accidents, the NHCMC&CR operates round-the-clock, all seven days a week. Some of the recent experiences will clarify how it works. In the Brahmanbaria district, a devastating tornado ripped through several rural villages, affecting seven unions of three upazilas (subdistricts) in the evening of Friday, 22 March 2013. The tornado claimed 37 lives and injured 971

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The health emergency preparedness and response program is actively focusing on adequate disaster preparedness and quick responses

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persons. The NHCMC&CR immediately started coordination and mobilization of local medical teams to start rescue operations and medical relief. A team of NHCMC&CR rushed to the area and took notes on deaths and injured persons and visited admitted patients in Brahmanbaria Sadar Hospital and in Akhaura and Kasba Upazila Health Complexes. Local health authorities and medical teams were given guidance on taking adequate care of patients. Subsequently, NHCMC&CR maintained contacts with the district health manager's office regularly and communicated the information to the higher authorities and policy-makers. The activities relating to management of buffer stocks of emergency drugs and logistics were coordinated, and actions were taken at the quickest possible time.

A nine-storied building called 'Rana Plaza' located in peri-urban Dhaka (Savar area) collapsed on 24 April 2013. This was one of the greatest tragedies in the history of Bangladesh. The building housed five garment factories, a shopping complex, and branch of a bank. Many garment workers died immediately; others were injured, and many more were trapped inside the collapsed building. The number of bodies found was 1,132, and 2,755 injured persons were rescued and registered. The NHCMC&CR received information immediately from the local authority and categorized it as a high-priority national health emergency. The Director General of Health Services, the Minister for Health and Family Welfare (MOHFW), the Secretary to the MOHFW, and high officials of all allied departments, including local hospitals and clinics, were immediately informed. A rapid response team rushed to the site of incidence and started coordinating and organizing medical rescue operations, resuscitation, first-aid, and transfer of injured persons to appropriate hospitals. Ten ambulances were engaged for transportation of injured persons. Communication and coordination with armed forces, fire brigade, Disaster Management Bureau, WHO and UN agencies, development partners, and relevant NGOs were established.

The Government provided all the medicines and logistics support to all public or private hospitals for treatment of the admitted victims. Many victims suffered serious injuries in limbs, bones, kidneys, and other internal organs. The NHCMC&CR tracked activities for several months after the incidence for follow-up of these patients and doing whatever was needed.

A warning came from the meteorological department in the morning of 16 May 2013, that a cyclone called Mohasen was about to hit the coastal belt of Bangladesh. This was also a high-priority national emergency. Considering the possible health implications, the NHCMC&CR communicated the information to the Director General of Health Services, Honorable Health Minister, and Health Secretary as well as the local health facilities in the coastal area. Medical teams, buffer stocks of medicines and logistics and community awareness measures to minimize morbidity and mortality were mobilized. However, cyclone Mohasen was weakened during its long travel and hit Patuakhali, Pirojpur, and Barguna coastal districts of Barisal division. There were 16 deaths and 81 injuries. Although it was not required to make fully functional, the NHCMC&CR activated 1,327 government medical teams to provide post-cyclone medical operations, if needed.

The EPR program of NCDC, DGHS, is supported by the WHO. The regular activities include capacity-building of the health managers and raising awareness of community people. The program activities operate round-the-clock, all seven days a week, during emergencies. The program's primary goal is to reduce avoidable and preventable morbidities, disabilities, and deaths during emergencies through strengthening overall capacity of the health sector to prevent and mitigate the adverse health consequences of emergencies and disasters. During the normal period, it develops plans, policies, guidelines, IEC materials (viz., training modules, leaflets, posters, etc.), collects disaster-related information, and conducts other coordination functions with the NHCMC&CR and other government and NGO stakeholders.



The EPR program of NCDC, DGHS, has a number of institutional capacity-building activities, such as formation and training of “Disaster Health Management Committees” at all levels; conducting training of trainers (TOT)/workshop/mock drills/simulation exercises on search, rescue, evacuation, first-aid, psychosocial support, risk communication, and mass casualty management for health professionals and workers; provision of emergency supplies (first-aid kits, rain-coats, umbrellas, solar lamps, safety rubber boots, jackets, caps, whistles, etc.) for the first-level health responders; and provision of emergency drugs (maintaining buffer stock) and medical equipment/supplies.

Moreover, research on EPR program and surveys of various structural and non-structural components of health sector are ongoing under NCDC program of the DGHS. House-to-house active surveillance and interpersonal communication on post-disaster health management have been completed through workshops for fieldworkers of health and family planning sector at 324 upazillas in 40 districts. During the crises, strategic priority functions are undertaken. These are: (i) assessment and monitoring, (ii) critical gap-filling, (iii) coordination through cluster approach, and (iv) capacity-building during emergency.

For assessment and monitoring, a team is formed and sent immediately to the affected

areas as and when an emergency situation arises after cyclones, floods, etc. The team measures the health status of the victims and promptly makes an assessment of their needs, identifying priority actions to address the health problems and avert deaths. Very recently, in the last week of June 2015, a team was formed with officials from EPR program of NCDC and Emergency and Humanitarian Action (EHA) program of WHO, and they successfully completed an assessment and monitoring of health situation, needs, vulnerabilities with prioritization of health problems in certain areas of Chittagong and Cox’s Bazar district affected by flush floods and landslides.

For critical gap-filling, the EPR program ensures that critical gaps in health responses be rapidly identified and filled, based on the needs assessment report and available resources.

For coordination through cluster approach, the emergency situations are assessed by conducting cluster meetings participated by invited humanitarian actors for joint planning and joint response and actions. The participants with multidisciplinary knowledge and experiences share the observations and identify the under-served or over-served areas. All participants are made aware about “who does what and where” to ensure a holistic collaborative effort.

For capacity-building during emergency, the DGHS, on an urgent basis, conducts some sessions of relevant training on how to manage and overcome ongoing devastating situation for the health managers. Providing training to staff and the local people in the community is helpful in identifying a sustainable strategy to be adopted in future emergencies both for public health interventions and related areas, e.g. water quality surveillance, mental health counseling, and so on.

For efficient and effective management of health-related problems originated from the disasters, EPR program of NCDC of the DGHS has formed the Disaster Health Management Committee at all levels of health facilities; 2,562 trained doctors, along with paramedics; 28,483

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For critical gap-filling, the EPR program ensures that critical gaps in health responses be rapidly identified and filled, based on the needs assessment report and available resources.

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other health and family planning workers; and 5,940 volunteers at the union level were recruited. A well-developed buffer stock system is working for making logistics available. Current buffer stock position is being reported from every upazila health complex and civil surgeons' office every month.

There are 7 divisional health management committees with 50 trained staff, 63 district committees with 880 trained staff, 9 medical college-level committees and 407 upazila health complex-level committees having 31,045 trained staff.

All these activities of the EPR program of NCDC are supported by the Emergency and Humanitarian Action (EHA) program of the WHO and other stakeholders in the health sector. In addition to the governmental and other organizations. The Comprehensive Disaster Management Programme (CDMP) and European Union Narre Consortium also provide technical and logistic support to the program for strengthening disease surveillance and emergency supplies, like drugs for replenishing buffer stocks, medicines, laboratory reagents, and related goods for proper investigation and case

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The EPR program is part of a strong coordinated response to emergencies, along with the DGHS, armed forces, UN agencies, fire brigade, Red Cross, development partners, and NGOs

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**Table 10. Training /workshop/seminar organized by EPR program of NCDC of the DGHS with support from WHO during January 2012-June 2015**

Year	No. of training sessions held	No. of participants
Workshop on comprehensive health-sector emergency preparedness and response for health and disaster management professionals	7	245
Training on public-health risks and interventions in emergencies for health professionals	6	210
Training on prevention and control of post-disaster communicable diseases for health professionals	4	140
Health cluster meetings	6	180
Training on risk communication for health professionals	2	74
TOT on emergency medical services for master trainers	3	110
Training on search, rescue, and evacuation for community-level health workers	3	105
Advanced training on psychosocial health for health professionals	2	68
Workshop on EPR and post-disaster health management for doctors, nurses, paramedics, and fieldworkers at the upazila level	230	10,000
Training on health emergency preparedness and response for primary healthcare-level physicians from disaster-prone districts.	3	90

management. The EPR program is part of a strong coordinated response to emergencies, along with the DGHS, armed forces, UN agencies, fire brigade, Red Cross, development partners, and NGOs. Table 10 shows some recent capacity-building activities carried out by the EPR program from January 2012 to June 2015.

Some identified challenges include: (i) replenishment of buffer stocks at regular intervals; (ii) full functioning of Emergency Medical Services (EMS); (iii) achievement of 12 SEARO-EHA benchmarks, and (iv) adequate coordination among concerned agencies.

The EPR program aims to: (i) prepare comprehensive national disaster management plan for the health sector; (ii) operationalize the national disaster management institute in the health sector; (iii) strengthen National Health Crisis Management Center and Control Room, and (iv) procure make-shift hospitals and river ambulances.

Bangladesh, as the most densely-populated country, is the world's worst victim of climate change. There are obvious resource constraints. However, the use of experience to guide emergency preparedness for health authorities to ensure better response, statistics of some notable disasters of the previous year are given in the Annex to this chapter.

### **Activities of the National Institute of Preventive and Social Medicine (NIPSOM)**

The Asian Disaster Preparedness Center (ADPC) has been conducting the Hospital Preparedness for Emergencies (HOPE) training course in

several countries in Asia, including Bangladesh. HOPE is a component of the Program for Enhancement of Emergency Response (PEER), a region-based program initiated by USAID/OFDA. HOPE is a capacity-building and technical assistance program for the staff of medical facilities and healthcare personnel, both medical and non-medical, to prepare healthcare facilities to respond effectively to emergencies. In collaboration with the National Institute of Preventive and Social Medicine (NIPSOM), medical service providers are trained with HOPE, and expert assistance is provided on enhancing medical facility preparedness. In Bangladesh, HOPE has developed 24 new trainers, and 64 medical professionals have been trained on hospital mass casualty management under the 3rd phase of PEER.

In an effort to better prepare communities in Bangladesh to strengthen earthquake resilience, ADPC has been currently implementing USAID's Strengthening Earthquake Resilience in Bangladesh (SERB). The objective of the program is to increase capacity of the Government of Bangladesh to respond to and manage natural disasters.

ADPC has already established a resource pool of skilled trainers and facilitators in Bangladesh. They are providing technical assistance in implementing the program. The program is implemented in collaboration with the National Institute of Preventive and Social Medicine (NIPSOM), Fire Service and Civil Defense Directorate (FSCD), and partners, such as Department of Disaster Management (DDM) and Directorate General of Health Services.

# 11

## NON-COMMUNICABLE DISEASES

Public hospitals accommodating large number of NCD patients

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In the current Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016, control of non-communicable diseases is one of the topmost priority areas of healthcare in the country

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The population group most affected by non-communicable diseases (NCDs) in Bangladesh comprises the middle-aged persons and the elderly, having a major share of the disease burden and mortality in the country. Changing dietary habits and lifestyle, rapid urbanization, growth of commuting, tobacco-use, uncontrolled growth and consumption of processed foods and beverages, indoor air pollution, road-traffic injuries, lack of awareness about healthful behavioral patterns, and psychological pressure are among the important factors responsible for non-communicable diseases. In the current Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016, control of non-communicable diseases is one of the topmost priority areas of healthcare in the country. The NCD operational plan categorized NCDs into two major groups, viz. conventional and non-conventional NCDs. The conventional group includes major NCDs, like cardiovascular diseases (CVDs), peripheral vascular diseases (PVDs), cerebrovascular disease (stroke), cancer, diabetes, chronic obstructive pulmonary disease (COPD), arsenicosis, renal diseases, deafness, osteoporosis, congenital anomalies, oral health, and thalassemia. Road safety and traffic injury prevention; child injury (including drowning); sports injury; snake-bite; suicide and related injury; violence against women; acid burn; occupational health and safety; industrial and agricultural health hazards; strengthening Institute of Public Health (IPH); climate change; air pollution; water, sanitation and other environmental health issues; emergency preparedness and response; post-disaster health management and emergency medical services; mental health; autism; tobacco, alcohol and substance-abuse, etc. constitute the non-conventional group of health issues.

Some critical issues evolved from the national NCD risk factor survey conducted in 2010: (i) the NCDs may account for 61%

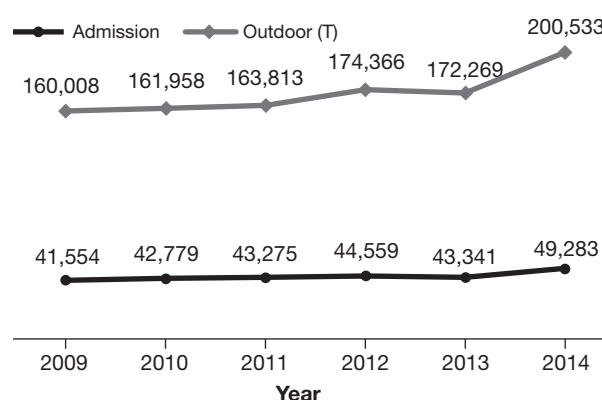
of the total disease burden; (ii) among the sampled adult population (15+ years), 97% had at least one risk factor, half of whom had two risk factors; (iii) the country has 40 million adult smokers and smokeless tobacco-users; (iv) 64.5 million people are not taking adequate fruits and vegetables; (v) 17 million people are not doing adequate physical activity; (vi) 18% adults have hypertension; and (vii) 4% have documented diabetes as reported by the patients themselves.

Under the above NCD situation in the country, summary of data gathered from different specialized hospitals is presented below to understand the volume of patient-loads in these hospitals.

### National Institute of Cardiovascular Diseases

The numbers of outdoor visits and admissions in the National Institute of Cardiovascular Diseases (NICVD) in the last six years (2009-2014) are shown in Figure 11.1. The Annex to the chapter presents more detailed information from 2002 to 2014, with disaggregation of male, female, and children, including average daily outdoor visits and admissions, average length of stay, and bed-occupancy rate.

A total of 3,012 exercise tolerance tests (ETTs) were done in the Institute during 2014; the recipients of services included 76.46% males (n=2303) and 23.54% females (n=709). Detailed data on ETTs from 2001 to 2014 are provided



**Figure 11.1 Number of outdoor visits and admissions in NICVD (2009-2014)**

in the Annex. In 2014, 36 myocardial perfusion imaging were done.

Table 11.1 shows the number of cath-lab procedures done in NICVD in 2014. In total, 4,241 coronary angiography, 183 cardiac cath, 121 other (peripheral/renal) angiographies, and 3,684 other procedures were done. The Annex provides detailed data on the various cath lab procedures done in the Institute from 2003 to 2014.

The numbers of heart and vascular surgeries done in the NICVD in 2014 are shown in Table 11.2. These included a total of 943 open-heart surgeries, 48 closed-heart surgeries, and 1,523 vascular surgeries. The Annex to the Chapter presents detailed data on heart and vascular surgeries from 2000 to 2014.

**Table 11.1. Number of cath-lab procedures performed in NICVD in 2014**

Coronary angiography	Cardiac cath	Other angiographies	Angioplasty	Other interventions						Total
				PCI	PTMC	TPM	PPM	EPS&RFA	Other	
4,241	183	121	0	1,898	111	992	525	35	123	3,684

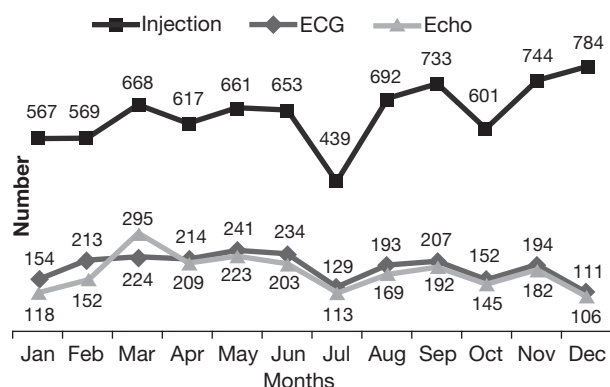
**Table 11.2. Heart and vascular surgeries performed in NICVD in 2014**

Open-heart surgery				Closed-heart surgery		Vascular surgery		
CABG	Valve	Congenital	Other	Total		Routine	Emergency	Total
103	310	492	28	943	48	265	1,258	1,523

## National Center for Control of Rheumatic Fever and Heart Diseases

The National Center for Control of Rheumatic Fever and Heart Diseases (NCCRFHD) takes care of the patients suffering from rheumatic heart diseases and related conditions. There were 27,457 outdoor visits in 2014; among the visitors, 61.41% (n=16,860) were female, and 38.59% (n=10,597) were male; 50.21% (n=13,785) were new and 49.79% (n=13,672) were old patients. The Annex shows the detailed age- and sex-disaggregation by monthly outdoor attendance of patients.

Figure 11.2 shows the monthly distribution of the number of prophylactic antibiotic injections (n=7,728) given, ECGs (n=2,266), and echocardiograms (n=2,160) done on patients at the NCCRFHD in 2014.

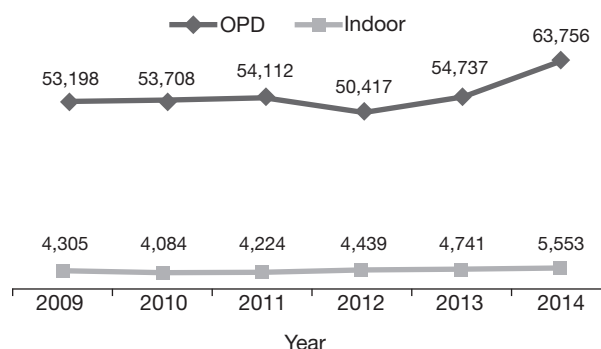


**Figure 11.2. Monthly distribution of the number of prophylactic antibiotic injections (n=7,728) given, ECGs (n=2,266), and echocardiograms (n=2,160) done at the NCCRFHD in 2014**

## National Institute of Kidney Diseases & Urology

The National Institute of Kidney Diseases & Urology (NIKDU) is a specialized postgraduate institute and training center. It offers postgraduate courses, like MD (Nephrology), MD (Pediatric Nephrology), and MS (Urology) and provides postgraduate training on nephrology, urology, pediatric nephrology, radiology and imaging, biochemistry, histopathology, microbiology, immunology, hematology, and anesthesiology.

Figure 11.3 shows the number of outdoor and indoor patients treated in this institute from 2009 to 2014. The Annex provides detailed disaggregated data on male, female, and children.



**Figure 11.3. Number of outdoor and indoor patients at the National Institute of Kidney Diseases & Urology (NIKDU) from 2009 to 2014**

## National Institute of Cancer Research & Hospital

The National Institute of Cancer Research & Hospital (NICRH) is the country's largest setup to deal with every aspect of cancer. It is the solitary tertiary-level cancer institute run by the Government. It offers a wide range of cancer-related services at low cost or free of charge. There are 23 rich departments at the NICRH. All departments are working relentlessly in cancer management from prevention to cure, from diagnosis to research, and from surgery to rehabilitation. In 2014, the NICRH provided services to 201,195 outdoor, 4,493 emergency, and 4,057 indoor patients. Table 11.3 and 11.4 shows the OPD and emergency visits, admissions and deaths at the NICRH in the last three years. Table 11.5 presents distribution of cancer patients by age-group. Majority of the patients were from 45-54 years age-group (30.4%). The second leading age-group was 55-64 years (16.0%). Table 11.6 shows the distribution of admitted cancer patients by department in 2014. Majority (51.3%) of the patients were admitted to the Medical Oncology Department, followed by Pediatric Oncology (16.1%), Surgical Oncology (9.0%), Radiation Oncology (8.0%), and Gynecological Oncology



In 2014, the NICRH provided services to 201,195 outdoor, 4,493 emergency, and 4,057 indoor patients.

(4.4%). Table 11.7 shows the top five types of cancer according to sites of occurrence

among the males and females. These data were extracted from draft cancer registry report of 2014 (n=11,108). In males, lung cancer topped the list (27.5%). Cancer of the lymph node (12.6%) was in the second position. Esophageal cancer (5.2%), stomach cancer (4.9%), and liver cancer (4.5%) occupied the next successive places. Among the females, breast cancer (27.4%) was the leading one, followed by cervical cancer (17.9%), lung cancer (6.0%), cancer of the lymph node (5.4%), and gallbladder cancer (2.8%).

**Table 11.3. Number of OPD and emergency visits at the NICRH in the last three years (2012-2014)**

Year	OPD				Emergency			
	Total	Male	Female	Child (Under-5)	Total	Male	Female	Child (Under-5)
2012	59,221	33,073	26,148	1803	3,606	2305	1,301	177
2013	163,029	81,753	81,276	2,425	3,720	2,220	1,500	107
2014	201,195	97,585	99,274	4336	4,493	2530	1,963	105

**Table 11.4. No. of admissions and deaths at the NICRH in the last three years (2012-2014)**

Year	Admission				Death			
	Total	Male	Female	Child (Under-5)	Total	Male	Female	Child (Under-5)
2012	3,020	1,731	1,289	481	60	45	15	5
2013	3,045	1,820	1,225	577	115	67	48	3
2014	4,057	2,280	1,857	212	124	86	38	4

**Table 11.5. Distribution of cancer patients at the NICRH by age-group in 2014**

Age-group (completed years)	Frequency	Percentage
<14	691	3.7
15-24	887	4.8
25-34	1,903	10.3
35-44	2,702	14.6
45-54	5,641	30.4
55-64	2,974	16.0
65-74	2,673	14.4
75-84	824	4.4
85-94	209	1.1
>95	52	0.3
Total	18,556	100.0

**Table 11.6. Distribution of admitted cancer patients at the NICRH by department in 2014**

Department	Frequency	Percentage
Medical Oncology	2,080	51.3
Pediatric Oncology	653	16.1
Surgical Oncology	367	9.0
Radiation Oncology	325	8.0
Gynaecological Oncology	178	4.4
Genito-urinary Surgical Oncology	160	3.9
Hematology	143	3.5
ENT Oncology	75	1.8
Dental & Faciomaxillary Surgical Oncology	40	1.0
Plastic & Reconstructive Surgical Oncology	36	0.9
Total	4,057	100.0

**Table 11.7. Distribution of patients by top five types of cancer according to the site of occurrence at the NIRCH in 2014**

Male (n=6,125)		Female (n=4,983)	
Site	Number (%)	Site	Number (%)
Lung	1,684 (27.5)	Breast	1,363 (27.4)
Lymph node	769 (12.6)	Cervix	894 (17.9)
Esophagus	321 (5.2)	Lung	299 (6.0)
Stomach	300 (4.9)	Lymph node	269 (5.4)
Liver	275 (4.5)	Gallbladder	141 (2.8)

## National Institute of Mental Health & Research

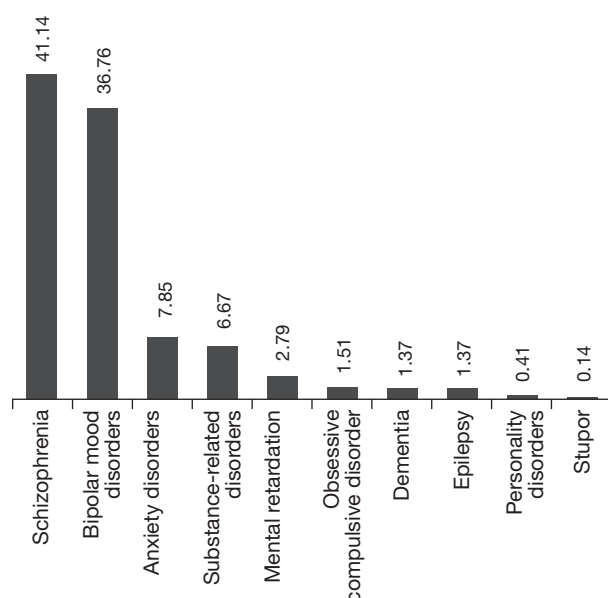
In 2014, the National Institute of Mental Health & Research (NIMHR) provided services to 35,014 new outdoor patients, 2,345 emergency patients, and 3,120 indoor patients. Among the outdoor patients, 17,856 (51.00%) were males, 12,303 (35.14%) were females, and 4,855 (13.87%) were children. Among the emergency patients, 1,448 (61.75%) were males, 810 (34.54%) were females, and 87 (3.71%) were children. Among the indoor patients 1,943 (62.28%) were males, 1,071 (34.33%) were females, and 106 (3.40%) were children. A detailed profile of patients from 2008 to 2014 is given in the Annex.

Figure 11.4 shows the percentage distribution of the causes of admission in the NIMHR in 2014. As in the previous year, schizophrenia (41.14%), bipolar mood disorder (36.76%), anxiety (7.85%), and substance-abuse (6.67%) were the leading causes of admission.

## Arsenic in groundwater: mitigation program of the DGHS

Arsenic is a colorless, tasteless acute poison and carcinogen. The presence of arsenic in harmful level was first detected in 1993 by the Department of Public Health Engineering (DPHE) in tubewell waters of Chamagram village of Chapainowabganj Sadar Upazila. Since the discovery of the arsenic problem in the country,





**Figure 11.4. Distribution of the admitted patients in the NIMHR in 2014 in descending order of causes**

significant work, such as identification of the scale of the problem, advocacy, awareness, and mitigation program activities, have been carried out. Despite the efforts made to provide safe water, a water quality survey in 2009 revealed that 12.6% of drinking-water samples collected from 13,423 households across the country exceeded the drinking-water quality standards (GOB, 1997) for Bangladesh (BBS; UNICEF, 2010). This means that about 20% of the total population is still being exposed to arsenic contamination.

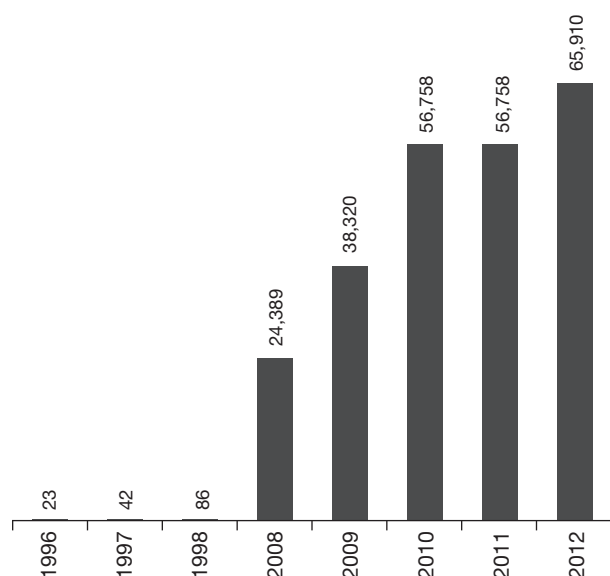
The detection of health problems in 8 persons due to drinking of arsenic-contaminated water was recorded first in 1994 by the Department of Occupational and Environment Health of the National Institute of Preventive and Social Medicine (NIPSOM). The commonly-reported symptoms of chronic arsenic exposure are: melanesia, keratosis, gangrene skin cancer, bladder cancer, etc. The National Arsenic Program of the Directorate General of Health Services, with technical support from WHO, has been conducting several key activities, viz. (i) consultations and workshops for the development of methodology, tools, database,

In future, the DGHS will work for having the national prevalence data for skin lesions and analysis for estimating death events due to cancers, heart diseases, etc. resulted from arsenic exposure

and data sources; (ii) orientation training of government and non-government health service providers, like nurses, medical assistants, technologists, and field-level health and family planning workers; (iii) mass awareness programs on consumption of arsenic-free safe drinking-water; (iv) testing tubewell water at health facilities for prevention of arsenicosis; (v) screening of patients through house-to-house searching programs; (vi) identification, diagnosis, and management of arsenicosis patients; (vii) capacity-building of human resources and improving facilities for effective case management and referral; (ix) establishment of rehabilitation centers for disabled arsenicosis patients; (x) conducting surveys and research on arsenicosis; (xi) updating national arsenic mitigation policy and strategy; (xii) strategic partnership with local bodies and community-based organization regarding the mitigation of arsenicosis; (xiii) further collaboration between DGHS and DPHE at the field level to strengthen water screening at the community level; (xiv) strengthening of the existing 'Bangladesh Network for Surveillance and Prevention of NCDs' (BanNet) and InfoBase (a national information bank on NCD) and further inclusion of electronic database at the DGHS (logistics, human resource, and IT network); and (xv) strengthening routine MIS for hospital statistics on arsenicosis and interlinking with MIS.

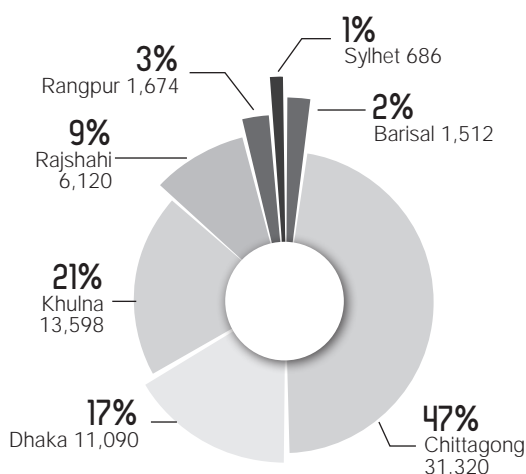
In future, the DGHS will work for having the national prevalence data for skin lesions and analysis for estimating death events due to

cancers, heart diseases, etc. resulted from arsenic exposure.



**Figure 11.5. Cumulative number of arsenic patients in Bangladesh detected year-wise by National Arsenic Program of the DGHS**

Figure 11.5 shows the cumulative number of arsenic patients from 1996 to 2012. In 2012, the cumulative number stood at 65,910.



**Figure 11.6. Distribution of arsenicosis patients by administrative division of Bangladesh (2012)**

A total of 26,000 field-level personnel have been trained on climate change, its health impact and management

Figure 11.6 shows the distribution of arsenicosis patients by administrative division of Bangladesh. Chittagong division shows nearly half of the identified patients (48%; n=31,230), followed by Khulna (21%; n=13,598), Dhaka (17%; n=11,090), Rajshahi (9%; n=6,120), Rangpur (3%; n=1,674), Barisal (2%; n=1,512), and Sylhet division (1%; n=686).

## Climate change and response

To address climate change-related health issues, the Non-communicable Disease Control Unit of the DGHS, with technical support from WHO, has an action plan which includes raising awareness and building capacities of medical professionals toward understanding the potential impact of climate change on human health and adaptation. Accordingly, training modules—one for doctors and another for nurses, paramedics, health assistants, and family welfare assistants—were developed and published. Several training and orientation sessions have been organized at the central, district and upazila levels. A total of 26,000 field-level personnel have been trained on climate change, its health impact and management. A total of 3,900 teachers have been oriented. After receiving training, the field-level health workers are now organizing courtyard sessions at the communities. They are also registering climate-sensitive diseases in their respective areas. Necessary collaborations are being made to strengthen the activities of Climate Change Health Promotion Unit (CCHPU) of the MOHFW.

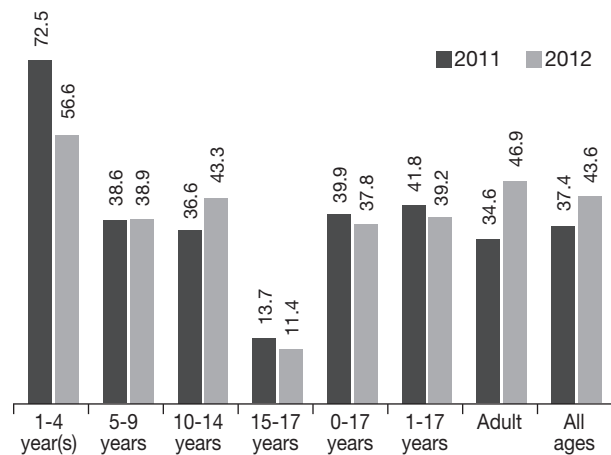
Further, the WHO-IEDCR has jointly conducted the 'Health Vulnerability and Adaptation' assessment of the current and future scenarios. Later, another regional assessment of 'Vulnerability and Adaptation' was carried out in the coastal and drought-prone areas of Bangladesh. The assessment generated primary qualitative and quantitative information regarding health, including the 'WASH' components (water, sanitation and hygiene) vulnerabilities of the study population, which will support informed decision in defining policy and strategy to address the impact of climate change and also may make significant contribution to the development of Health-National Adaptation Plan (H-NAP).

### Injury situation in Bangladesh

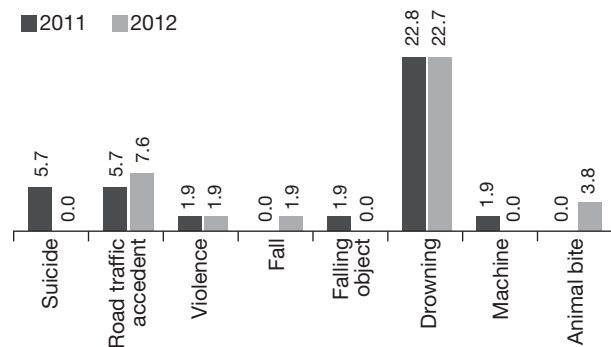
Injury has drawn attention of policy-makers and development activists of Bangladesh since the Bangladesh Health and Injury Survey (BHIS 2005) which revealed an annual estimate of 70,000 injury-related deaths in the country, the children being the worst victims (having 43% of the total injury-related deaths). The Center for Injury Prevention and Research, Bangladesh (CIPRB) has been involved in the injury prevention initiatives since 2005 and has a sentinel surveillance system to monitor the injury situation in its intervention areas—Raiganj and Sirajganj. Through the surveillance system, data are collected at a six-month interval from over 31,500 households representing more than 145,000 people. The injury rates among people in this surveillance area are expected to be lower than the national estimates due to the ongoing interventions in the area. However, this is the only community-based active injury surveillance that exists in the country to measure the injury burden. The mortality rates due to injury in all ages were found to be 37.4 and 43.6 per 100,000 people in 2011 and 2012 respectively. The rate of injury-related mortality in children below 18 years of age was 39.9 and 37.8 per 100,000 people in 2011 and 2012 respectively. Among all children, those aged 1-4 year(s) were the worst victims (72.5 and 56.6 per 100,000 people in 2011 and 2012 respectively).

Among adults, the rates were 34.6 and 46.9 per 100,000 people in 2011 and 2012 respectively (Figure 11.7).

Figure 11.8 summarizes the injury-related mortality rate by cause per 100,000 people as



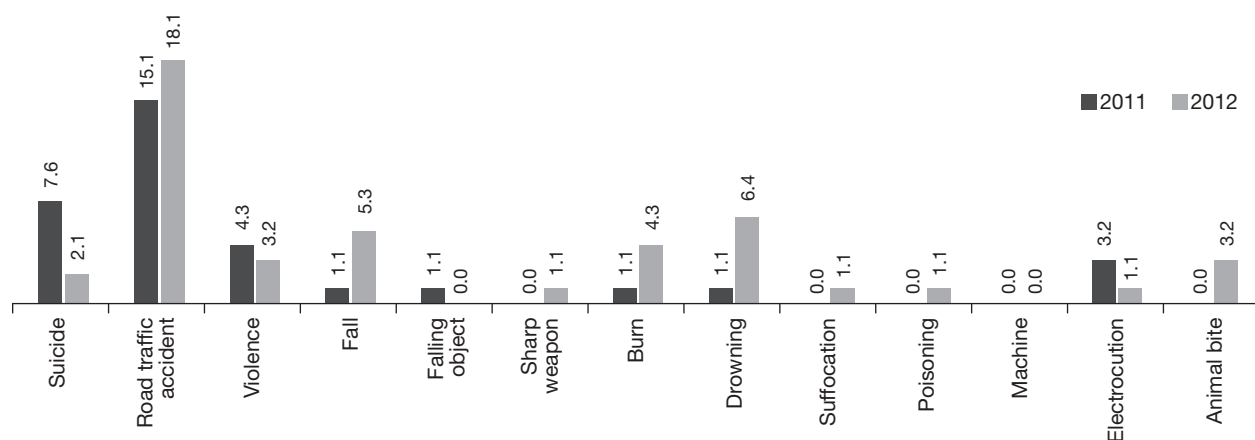
**Figure 11.7. Injury-related mortality per 100,000 population by age-group in the surveillance area of Bangladesh (2011 and 2012)**



**Figure 11.8. Injury-related mortality rate per 100,000 population by cause among children below 18 years in the surveillance area of Bangladesh (2011 and 2012)**

found in the surveillance area of Bangladesh in 2011 and 2012. Drowning was the leading killer of children below 18 years of age, claiming about 23 lives per 100,000 people.

Figure 11.9 shows the injury-related mortality



**Figure 11.9. Injury-related mortality rate by cause per 100,000 population among adults as found in the surveillance area in 2011 and 2012**

rate by cause per 100,000 people among adults as found in the surveillance area of Bangladesh in 2011 and 2012. Road-traffic injury was the most common cause of injury-related deaths.

## Autism

Autism Spectrum Disorders (ASD) is one of the most intriguing and challenging neurodevelopmental disorders facing people all over the world. It is estimated that every day 360,000 babies are born in the world. Sadly, one in every 68 of them is born with an autism spectrum disorder.

In a developing country like Bangladesh, with a population of over 160 million, the challenge of autism is compounded by limited financial, professional and technical resources. However, even more than the lack of services, the bigger challenge has been that of social stigma and isolation.

The challenges faced by families living in poverty are already immeasurable; it is even more challenging when their child has a complex disability, such as autism. The national health program has identified this problem as a priority and has undertaken the following activities:

1. National Advisory Committee on Autism and Neurodevelopmental Disability headed by Saima Wazed Hossain has been constituted;
2. A 17-member Autism Technical Guidance Committee has been created

3. A National Steering Committee on autism by the involvement of 15 ministries/divisions/ organizations has been created;
4. A national strategic plan on autism has been formulated, along with a short-term and a long-term action plan;
5. Autism has been incorporated in undergraduate medical curriculum;
6. Child development centers (Sishu Bikash Kendro) have been established in 15 medical college hospitals;
7. Piloting of home-based screening of autism and neurodevelopmental disorders in children aged 0-9 year(s) in selected 7 upazilas, one in each division, has been conducted;
8. Doctors have been trained on autism;
9. IEC materials on autism have been developed, printed, and distributed;
10. Center for Neurodevelopment and Autism in children has been established at Bangabandhu Sheikh Mujib Medical University, which is now the Institute of Pediatric Neurodisorder and Autism (IPNA).
11. Study of "Prevalence of maternal depression of children with autism in Dhaka and pilot testing of feasibility of the implementation of household-based training for mothers" has been done.
12. "World Autism Awareness Day 2015" has been observed.

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Bangladesh remains in the leadership and forefront position in global awareness creation on autism

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Bangladesh remains in the leadership and forefront position in global awareness creation on autism. Under the initiative of Bangladesh Government, resolutions on autism have been approved by the United Nations General Assembly (2012), Regional Committee Meeting of the WHO South-East Asia (2012), and the Executive Board of the WHO (May 2013).

More population-based actions are needed for primary prevention and control of the non-communicable diseases since these continue to exert an increasing disease burden on the country.

# 12

## SAFE BLOOD TRANSFUSION

Proper blood screening and control reduced transfusion-induced health problems

In Bangladesh, the blood transfusion services were introduced in 1950 in the Dhaka Medical College Hospital. To ensure maximum safety for both donors and recipients of blood or blood-derived products, the Safe Blood Transfusion Program (SBTP) was launched in 2000 under the Health and Population Sector Program (HPSP) 1998-2003 with the assistance of UNDP. Under this program, blood-screening facilities were developed in 99 blood transfusion centers. In 2004, the activities of the Safe Blood Transfusion Program received financial support from the World Bank and DFID through IDA credit. A Memorandum of Understanding (MoU) was signed between MOHFW and WHO under HIV/AIDS Prevention Project (HAPP) with technical assistance from the latter. This continued till 2007. Since then, the activities were being implemented under the Health, Nutrition and Population Sector Program (HNPSPP) 2003-2011. The activities are now being continued under the current Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016.

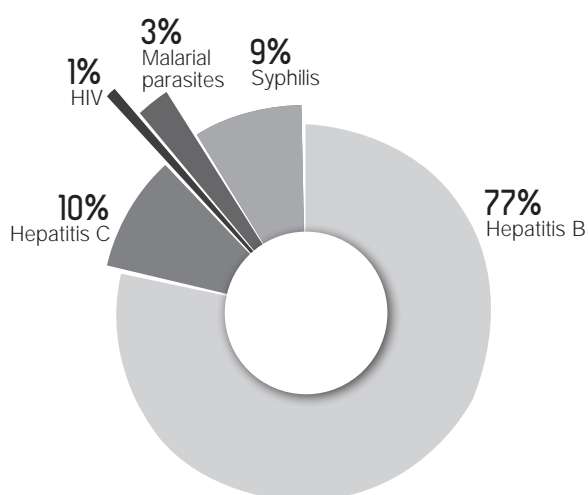
The Safe Blood Transfusion Program made a good progress over the past years through reduction in the number of paid donors from 70% to 0%; capacity-building for blood screening for HIV, hepatitis B and C, syphilis; malaria in all blood transfusion centers; and expansion of activities down to the upazila health complex level. Currently, the number of blood transfusion centers supported by SBTP is 211; number of blood transfusion centers at the upazila level is 92; number of centers where blood-component separation facilities exist is 24; and the number of centers with mobile vans for blood collection is 6.

During 2001 to 2014, a total of 4,642,402 units of blood were tested in 211 centers, out of which 53,408 units were rejected due to the evidence of transfusion-transmitted infections (TTIs). These are shown in Table 12. Of the rejected units, 41,830 were

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Currently, the number of blood transfusion centers supported by SBTP is 211

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**Figure 12.1. Percentage of units of blood rejected due to various reasons from 2001 to 2014 (Total units rejected=53,408)**

rejected for hepatitis B, 5,168 for hepatitis C, 4,704 for syphilis, 1,392 for malarial parasites, and 314 for HIV. Figure 12.1 shows the percentages.

In 2014, a total of 82,386 units of blood components were produced by the blood centers. These included 42,396 units of red blood cell concentrate, 23,243 units of fresh frozen plasma, 16,168 units of platelet concentrate, 524 units of platelet-rich plasma (PRP), and 55 units of fresh plasma (FP). The cumulative production of blood components up to 2014 was 5, 72,489 units.

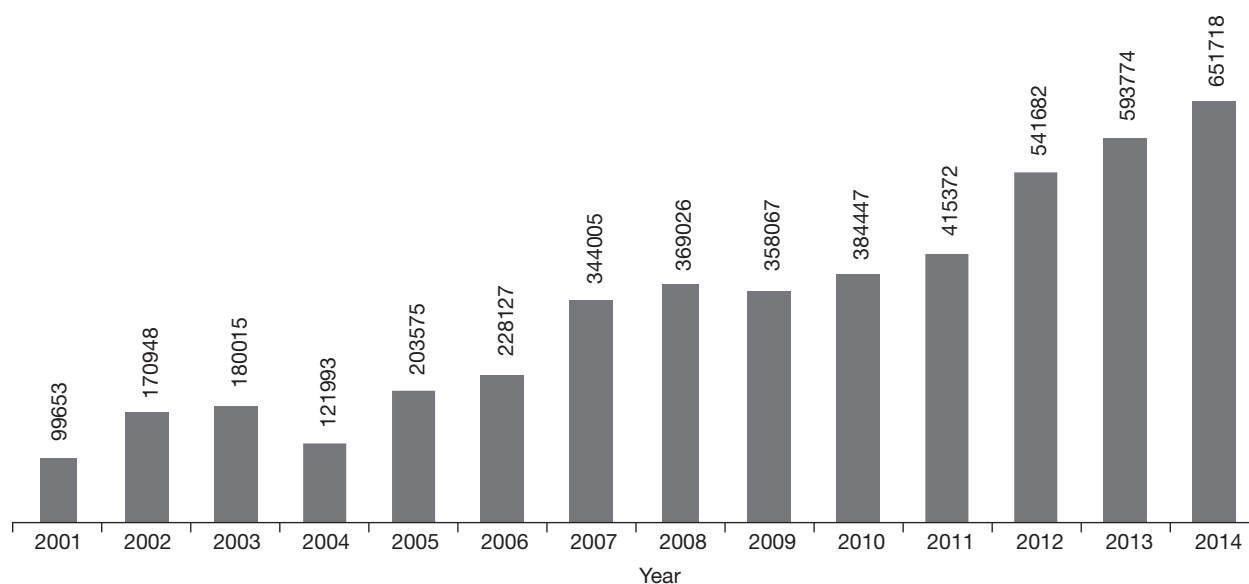
The Safe Blood Transfusion Act 2002 of Bangladesh is in place that circulated the rules and regulations in 2008. There is a reference laboratory for blood transfusion at

**Table 12. Cumulative screening report for blood with TTIs, 2001–2014**

Year	No. of units tested	HIV+ve*		Hepatitis B+ve		Hepatitis C+ve		Syphilis+ve		Malarial parasite+ve	
		No.	%	No.	%	No.	%	No.	%	No.	%
2001	99,653	2	0.002	1,381	1.4	82	0.08	290	0.29	7	0.01
2002	170,948	4	0.002	2,433	1.4	246	0.14	655	0.38	53	0.03
2003	180,015	1	0.001	1,900	1.1	1,024	0.57	428	0.24	13	0.01
2004	121,993	36	0.030	1,284	1.1	251	0.21	257	0.21	8	0.01
2005	203,575	8	0.004	1,689	0.8	201	0.10	305	0.15	6	0.00
2006	228,127	20	0.009	1,814	0.8	242	0.11	209	0.09	1	0.00
2007	324,005	27	0.008	2,764	0.9	251	0.08	215	0.07	1,013	0.31
2008	369,026	13	0.004	2,996	0.8	309	0.08	143	0.04	4	0.00
2009	358,067	9	0.003	2,135	0.6	181	0.05	115	0.03	7	0.00
2010	384,447	6	0.002	3,313	0.9	374	0.10	182	0.05	37	0.01
2011	415,372	21	0.005	4,356	1.0	272	0.07	179	0.04	39	0.01
2012	541,682	56	0.010	5,052	0.9	676	0.12	399	0.07	58	0.01
2013	593,774	37	0.006	5,184	0.9	597	0.10	573	0.10	98	0.02
2014	651,718	74	0.01	5,529	0.8	462	0.07	754	0.11	48	0.01
<b>Total</b>	<b>4642,402</b>	<b>314</b>	<b>0.006</b>	<b>41,830</b>	<b>0.90</b>	<b>5,168</b>	<b>0.11</b>	<b>4,704</b>	<b>0.10</b>	<b>1,392</b>	<b>0.03</b>

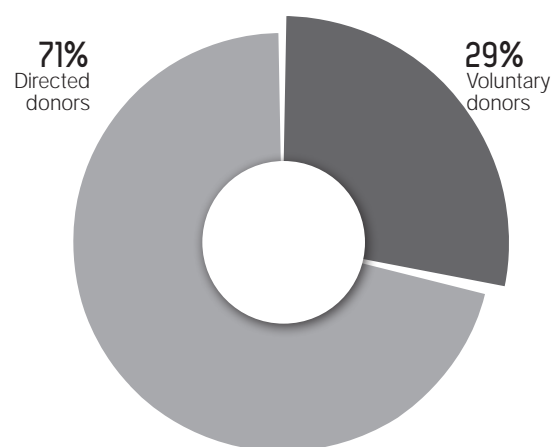
\*HIV-reactivity done by rapid test





**Figure 12.2. Number of blood units collected year-wise by the blood centers under SBTP (n=4,642,402)**

Dhaka Medical College Hospital. The function of the reference laboratory is to support various organizations for training and monitoring. The reference laboratory is also testing the referred samples and validation of kits. The professionals engaged in the safe blood transfusion program deeply feel that a National Blood Center should be established as soon as possible to further streamline the stewardship role and coordination functions for the current fragmented blood transfusion services operating throughout the country.

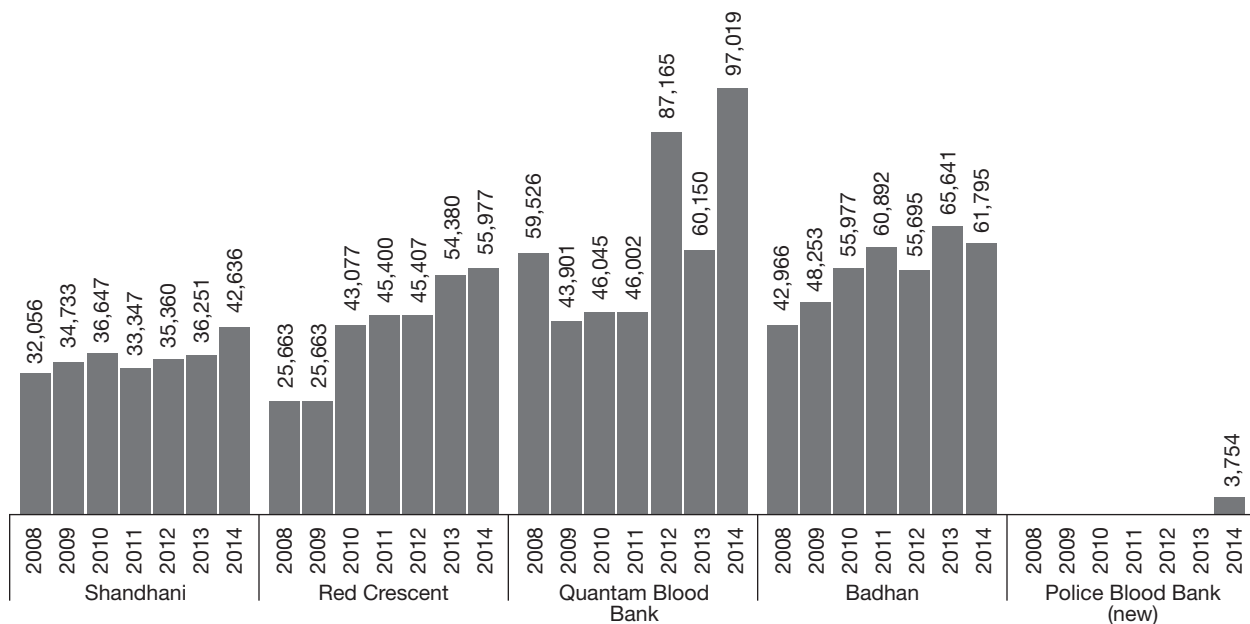


**Figure 12.3. Distribution of volunteer and relative blood donors in 2014 (n=651,718)**

The Safe Blood Transfusion Program and the voluntary blood-donation organizations could consistently keep the percentage of paid donors at zero

The blood centers under the Safe Blood Transfusion Program collectively gathered a total of 4,642,402 units of blood from 2001 to 2014. The year-wise distribution of collection is shown in Figure 12.2. In 2014, the program personnel collected 651,718 units of blood. The distribution of volunteer (185,797) and relative (465,921) blood donors is shown in Figure 12.3.

A number of voluntary or non-profit organizations



**Figure 12.4. Number of units of blood collected by different voluntary blood-donation organizations during the last 7 years**

also contribute to encouraging healthy donors for donating blood voluntarily. Figure 12.4 shows the year-wise collection by the major voluntary blood-donation organizations.

The Safe Blood Transfusion Program and the voluntary blood-donation organizations could consistently keep the percentage of paid donors at zero. The paid donors are sources of Transfusion Transmitted Infections (TTIs), viz. hepatitis B and C, syphilis, malarial parasites,

HIV, etc. They dominated the blood donors before inception of the Safe Blood Transfusion Program and emergence of the voluntary blood-donation organizations. The absence of paid donors and screening of collected blood before transfusion substantially reduced the risk of transfusion-transmitted infections.

# 13

## NUTRITION SITUATION IN BANGLADESH

### Streamlining under a coordinated system

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Despite significant progress in sustained economic growth, reduction in maternal and child mortality, Bangladesh is one among the developing countries with the highest level of malnutrition, affecting mostly children and women

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Malnutrition has been a long-standing public-health problem in Bangladesh. It is responsible for one-third of deaths in children below 5 years of age and is a significant cause of under-five deaths in the country. Malnutrition during pregnancy increases the risk of complications and maternal death as well as the likelihood of low birthweight of babies. It also has impact on the health, education, and work productivity and is a major impediment to the economic growth and development of the country. Despite significant progress in sustained economic growth, reduction in maternal and child mortality, Bangladesh is one among the developing countries with the highest level of malnutrition, affecting mostly children and women.

#### **Public health nutrition program under MOHFW**

The National Nutrition Services (NNS) began in 2011 to steward mainstreaming nutrition into the health, family planning and other sectors through the current sector-wide program (HPNSDP 2011-2016), along with scaling up of the provision of community-based nutrition services throughout the country. The Government of Bangladesh is trying to fast-track the reduction in maternal and child malnutrition by scaling up the implementation of nutrition-specific and nutrition-sensitive interventions in all relevant sectors. This has resulted in creating the opportunity of establishing a country-wide cost-effective and comprehensive system of nutrition services delivery. Under the National Nutrition Services (NNS) housed in the Institute of Public Health Nutrition (IPHN), both DGHS and DGFP are streamlining and strengthening the nutrition services by using the frontline government staff and their supervisors.

Major activities of NNS include: (i) training, (ii) facility-based services, (iii) community/area-based nutrition-related work, (iv) human resource development in the area of nutrition services, (v) providing micronutrients to mass people, (vi) supply of nutrition-related logistics and medicines, (vii) operational research and surveys, and

(viii) developing nutrition information system. Capacities of the upazila health complexes, district hospitals, and community clinics as well as of the facilities under DGFP, e.g. of MCWCs, are now in the process of strengthening nutrition-related services. The NNS aims to cater nutrition services through establishing IMCI and corners in all the health facilities, and IMCI corners are already established. Mass awareness is also being created through behavior change communication (BCC).

### Current nutrition situation in Bangladesh

Malnutrition among children and women is one of the major health problems in Bangladesh, although there have been some improvements in nutritional status of children over the years; 36% of the under-five children are stunted, with 12% severely stunted. The prevalence of stunting increases with age, from 14% children of 6 months to 46% children of 18-23 months and decreases to 38% among children of 48-59 months. Rural children are more likely to be stunted than urban ones (38% compared to 31%). Stunting is most prevalent in Sylhet (50%) and least prevalent in Khulna (28%). Nationally, the prevalence of wasting among under-five children is 14%, with 3% being severely wasted. Wasting peaks at age 9-11 months (20% for moderate wasting and 6% for severe wasting). The prevalence of underweight among children is 33%, with 8% being severely underweight. Figure 13.1 shows that the level of stunting has declined from 51% in 2004 to 36% in 2014. Wasting has declined from 17% in 2007 to 14% in 2014. The level of underweight has declined

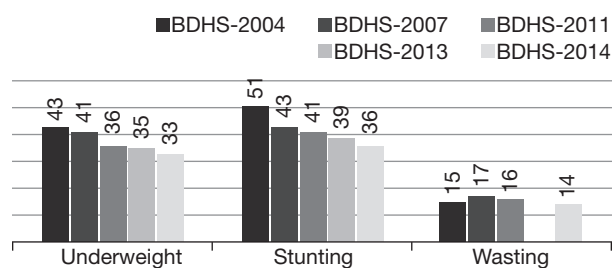


Figure 13.1. Trends in nutritional status of under-five children (2004-2014 BDHS and Utilization of Essential Service Delivery Survey 2013)

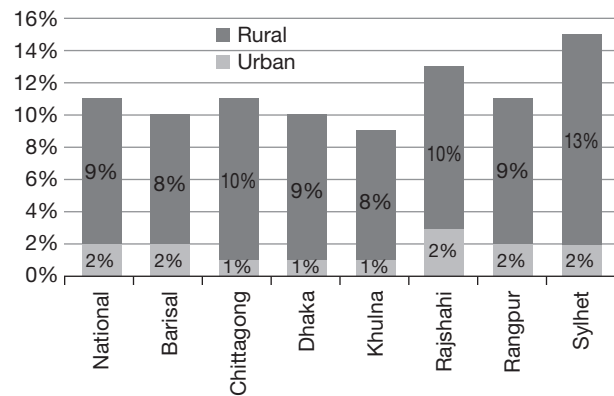


Figure : 13.2. Prevalence of wasting among children by division in 2014

to 33% in 2014 from 43% in 2004.

Another survey is being conducted in several regions of Bangladesh through Food Security Nutritional Surveillance Project (FSNSP) jointly by the Bangladesh Bureau of Statistics, Helen Keller International, and BRAC University. Through this survey, updated and seasonal information on nutrition and food security of six surveillance zones in Bangladesh is being collected and analyzed. As per 2013 Annual Report of this survey, prevalence of wasting is high in Sylhet (15%) than in other areas/zones (Figure 13.2) and higher than the national prevalence (14%) found in BDHS 2014. Dhaka and Khulna had lower rates of wasting than that in Rajshahi and Sylhet. Wasting rates in urban areas were markedly lower than in rural areas of the country.

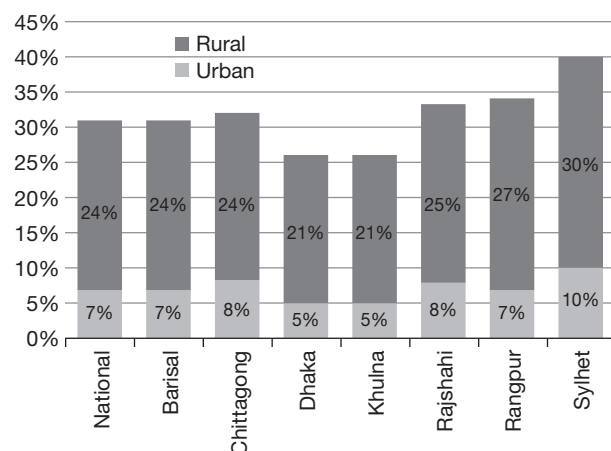
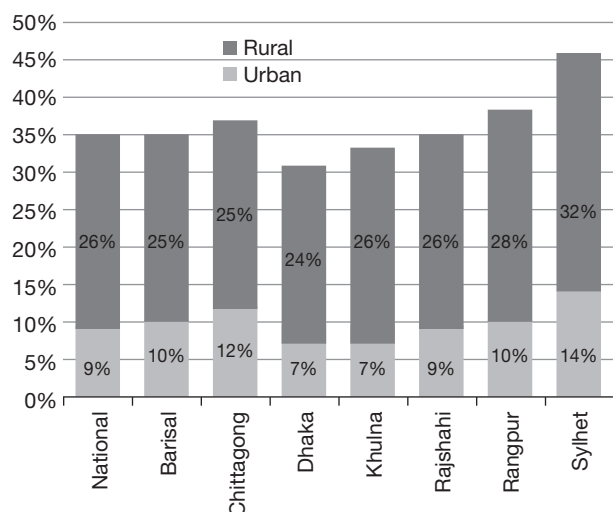


Fig: 13.3. Prevalence of underweight among children by division in 2012-13

Along with wasting, Sylhet had also the highest proportion of underweight children in 2013 as was the case in 2012. Less than one-quarter of children in urban areas were underweight while almost one-third of children in rural areas were underweight (Figure 13.3).

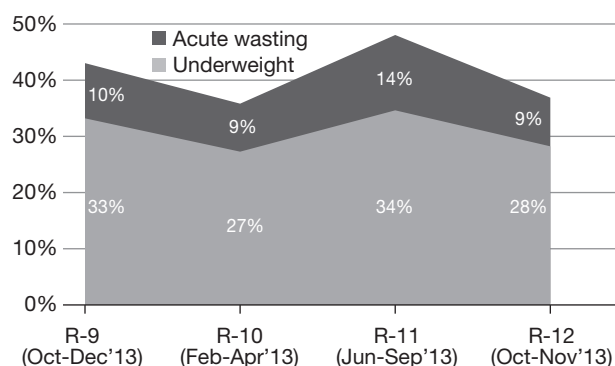
As shown in Figure 13.4, the levels of chronic childhood undernutrition varied greatly by area of residence. Similar to the past results, Sylhet had the highest rates of childhood stunting but Chittagong, Rangpur, and Sylhet were also the areas having the largest reduction in stunting rates between 2012 and 2013. On average, urban areas had much lower rates of stunting than rural areas.



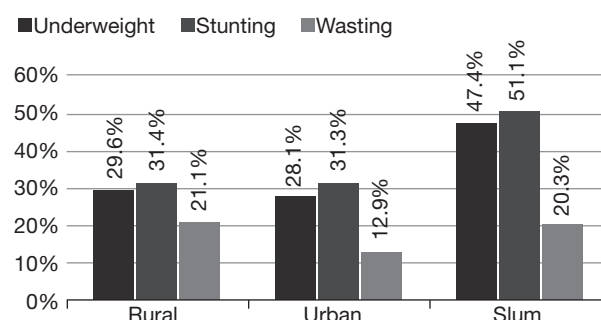
**Figure 13.4. Prevalence of stunting among children by division in 2012-13**

Figure 13.5 shows trend in underweight and acute wasting rate over the rounds of FSNP. Prevalence of wasting decreased from 14% in Round 11 to 9% in Round 12, and that is also less than national prevalence (16%) found in BDHS 2011. Prevalence of underweight also decreased from 34% in Round 11 to 28% in Round 12, and that was again less than the national rate (36%) found in BDHS 2011.

The recent National Micronutrients Status Survey (NMSS) 2011-2012, jointly conducted by the Institute of Public Health Nutrition (IPHN), UNICEF, icddr,b, and GAIN, shows that underweight and stunting rates are comparatively high in slum areas than in non-slum urban and rural areas (Figure 13.6).



**Fig 13.5. Trend in acute wasting and underweight over the rounds in 2013**



**Figure 13.6. Prevalence of underweight, stunting, and wasting among under-5 children in rural, urban and slum areas in 2011-12**

## Breastfeeding practices

The BDHS 2014 shows that the exclusive breastfeeding rate among children below 6 months is 55% in 2014. Intensive government programs are being implemented with focus on maternal, newborn and childcare, working in synergy with the health programs undertaken by other stakeholders for improving IYCF practice, including exclusive breastfeeding. Findings in the FSNP Annual Report 2013 show that 43% were continuing exclusive breastfeeding but, as per UESD Report 2013, exclusive breastfeeding is 60%.

## Infant and young child-feeding practices

Infant and young child-feeding (IYCF) practices include timely initiation of solid, semi-solid, or soft foods from six months of age. Overall, 23% of children aged 6-23 months were fed appropriately according to the standard IYCF practices in 2014, and this increased from 21%

observed in 2011 and is far below the HPNSDP target of 52%. The UESD report reveals that 32% of children of 6-23 months were fed as per standard IYCF practice. The FSNP Annual Report reveals that, in 2013, more than one-third of children were fed minimally-adequate diets. This indicates a considerable increase in children eating minimally-acceptable diets since 2011 but the current level is still far short of the target of 52% set in the HPNSDP.

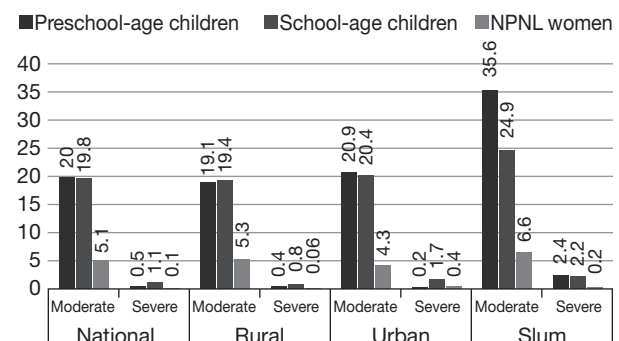
## Micronutrient status

### Vitamin A supplementation

The Government of Bangladesh prioritizes vitamin A supplementation as an important public-health program and is distributing vitamin A capsules to children of 6-59 months through National Vitamin A Campaign (NVAC). Every year, two rounds of vitamin A capsule supplementation to children aged 6-59 months have been conducted. Health workers and volunteers administer vitamin A capsules to around 20 million children at 140,000 sites located in health facilities, health centers, schools as well as in mobile sites (bus, boat, and railway stations) throughout the country. In 2014, Vitamin A Plus Campaign was organized on 25 April 2015. Currently, 99% of 6-11 months old children and 99% of 12-59 months old children are covered for vitamin A but the coverage was 62% according to BDHS 2014 and 75% according to Utilization of Essential Service Delivery Survey 2013. In terms of wealth index, the coverage was 55.6% in the 'poorest' section and 68.4% in the 'richest' section of the population.

At the national level, over half of the preschool-age children (56.3%) and school-age children (53.5%) are having mild vitamin A deficiency while mild deficiency affects one-third (34.3%) of the NPNL (non-pregnant non-lactating) women. Although the prevalence of severe deficiency was low in all the population groups studied (less than 1.0% in most of the strata), it appeared to be somewhat higher in the slums in the preschool-age children (2.4%) and school-age children (2.2%). Normal status of retinol in the preschool-age children was 21.7%, 30.4% and 8.5% in the rural, urban and slum area (NMSS 2011-2012). Figure 13.7 shows the severity of vitamin A

Intensive government programs are being implemented with focus on maternal, newborn and childcare, working in synergy with the health programs undertaken by other stakeholders for improving IYCF practice, including exclusive breastfeeding



**Fig 13.7. Percentage of vitamin A deficiency among preschool children, school-age children, and NPNL women in 2014**

deficiency among preschool children, school-age children, and NPNL women.

### Control and prevention of iron-deficiency anemia

NMSS report 2011-2012 shows that the prevalence of anemia among the school-age children was 19.1% and 17.1 % respectively in the 6-11 years and 12-14 years age-group. The prevalence of anemia in the NPNL women was 26.0%. The prevalence of iron-deficiency in Bangladesh population appeared to be substantially lower than the widely-held assumption. The amount of consumption of iron from foods is short of the daily recommended allowance (RDA) in all the population groups studied. The total consumption of iron from foods was 41.0-82.0% of the recommended daily allowance across ages and sexes of the studied population groups.



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A substantial proportion (30%) of households in rural area still uses 'open' salt

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Control and prevention of iron-deficiency anemia and other nutritional anemia was broadly made through the country's routine service-delivery network and the NNS. In 2014-2015, the NNS distributed 188,525,000 pieces of iron and folate tablets. Control of nutritional anemia is done by treating intestinal parasites through distribution of Albendazole tablets during Deworming Round and separate Deworming Week.

#### ***Control of iodine-deficiency disorders and other micronutrient-related problems***

The NNS provides training to doctors and other health staff on iodine-deficiency disorders. The NNS also provides training on capacity-building of managers, chemists, and relevant persons in different zones, in collaboration with Bangladesh Small and Cottage Industries Corporation (BSCIC). The IPHN laboratory for testing the iodine level in salt has also been strengthened. The NMSS 2011-2012 report on urinary iodine concentration shows 40% of the school-age children to have iodine deficiency, implying an improved situation from that in 2004-2005 (33.8%). Among the non-pregnant and nulliparous women, the prevalence of iodine deficiency was 42.1%, showing an improvement from 2004-2005 figures (38.0%). About 80% of the households used iodized salt (iodine level  $\geq 5$  ppm) while 57.6% of the households used adequately-iodized salt (iodine level  $\geq 15$  ppm). In the rural area, the use of adequately-iodized salt was just 51.8%. The national rate of the use of 'brand' salt is 75.8%; however, a substantial proportion (30%) of households in rural area still uses 'open' salt. The use of 'open' salt is 37.0% and 17.0% in the 'poorest' and the 'richest' households respectively. The proportion of retailer salt samples adequately-iodized ( $\geq 20$  ppm) was 66.4%.

#### ***Micronutrients consumption from foods***

Survey shows that consumption of foods of animal source is increasing in the country (Household Income and Expenditure Survey of Bangladesh 2010). In the case of vitamin A, the median daily consumption, as expressed by Retinol Equivalent (RE), is 270.0, 318.0, and 372.0 respectively among the preschool children, school-age children, and the non-pregnant and nulliparous women, which are certainly short of the RDA they need. Daily median consumption of iron from foods is 4.17, 5.21, and 6.64 mg among the preschool and school-age children; non-pregnant and nulliparous women, which are also short of the RDAs they require. The consumption of iron from animal-source diets, the form of dietary iron that is readily absorbed in the body, is low in terms of the total iron consumption. The share of iron from animal-source food is 23.0%, 24.0%, and 18.0% of the total iron consumption respectively among the preschool children, school-age children, and non-pregnant and nulliparous women. The median daily consumption of zinc from foods among the preschool children is 3.2 mg and 2.6 mg respectively in the urban and slum area against the RDA of 3 to 5 mg.

#### ***Zinc status***

The NMSS 2011-2012 report provided for the first time in Bangladesh a nationally-representative dataset on zinc status in the selected populations. The national prevalence of zinc deficiency was 44.6% in the preschool children. Urban children were less likely to suffer from zinc deficiency than their peers in the rural and slum areas (29.5% urban vs. 48.6% rural). In the NPNL women, the national prevalence was 57.3%. However, over half of the NPNL women suffered from zinc deficiency at the national level and in all the strata, with prevalence being the highest in women living in slums (66.4%). The amount of consumption of zinc was well below the recommended daily amount. In the NPNL women, total consumption was 54.7% and 47.0% of the recommended daily amount in the urban and slum area respectively. Of the total consumption, majority comes from plant origin, which is poorly bioavailable.



## Nutrition Programs of the Directorate General of Family Planning

MCH Services Unit of the Directorate General of Family Planning (DGFP) has been providing healthcare to the pregnant women and under-5 children since 1975. Monitoring of maternal weight, IFA supplementation, and nutrition education during ANC, growth monitoring of under-5 children, referral of severely-malnourished children, vitamin A supplementation of under-5 children, etc. are being provided by the DGFP since 1975.

Since 2011, the MCH Services Unit of the DGFP has been implementing MYCNSIA (Maternal and Young Child Nutrition Security Initiatives in Asia) in collaboration with UNICEF in 22 upazilas of 10 districts covering 6,765,910 population. The initiatives taken include: counseling to mothers/ caregivers about IYCF, distribution of Micro Nutrient Powder (MNP) among 6-23 months old children, counseling of pregnant and lactating mothers on feeding practice and Iron Folic Acid (IFA), food security intervention, and handwashing/ hygiene practice in the communities.

For implementing the MYCNSIA, MCH Services Unit of DGFP trained officials at various levels (both TOT and core training), developed training materials, developed web-based MIS, conducted baseline survey, and procured and distributed MNP sachets, etc.

MCH Services Unit of DGFP will scale up nutrition intervention in other upazilas and districts gradually. Service registers and reporting formats were revised to include nutrition information. The DGFP's MIS is currently revisited for nutrition indicators.

## Mainstreaming nutrition information system

The National Nutrition Services (NNS) under IPHN is implemented through an operational plan of the MOHFW's Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016. The NNS is the umbrella organization for

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The NNS is the umbrella organization for the implementation and management of nutrition-related activities throughout the country

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the implementation and management of nutrition-related activities throughout the country. The NNS works closely with the DGHS and DGFP in order to implement programs for nutrition effectively. The NNS supports the delivery of nutrition services and interventions with the support of stakeholders at all levels, including the Government and development partners.

Since the NNS has started its implementation with a concept of 'mainstreaming' with the DGHS and DGFP, the nutrition activities are implemented by field staff of the DGHS and DGFP. The NNS has been working with the DGHS, DGFP, IMCI, and now-concluded RCHCIB (Community Clinic Project) to include nutrition-related indicators within the existing MIS of DGHS and DGFP rather than developing a parallel system. Standard nutrition indicators to assess effective coverage of interventions were also defined to measure the scale-up and to identify gaps. Nutrition indicators have been incorporated in service registers and reporting format of IMCI Nutrition Corner, Community Clinic Project, HMIS and DGFP's MIS. The NNS is extracting nutrition data from these MISs. The NNS is implementing nutrition surveillance all over the country through James P Grant School of Public Health (JPGSPH) of BRAC University. The NNS is also working on harmonizing nutrition information system among organizations working in urban areas and through bilateral donors. Standardized supervision checklists were also developed for different nutritional activities.

# 14

## HEALTH INTERVENTIONS BY IEDCR AND IPH

### Respective programs implemented

On behalf of the Ministry of Health and Family Welfare of the Government of Bangladesh, the Institute of Epidemiology, Disease Control and Research (IEDCR) and the Institute of Public Health (IPH) undertook and implemented many important public-health interventions in 2014 and 2015. Highlights of these interventions are presented below.

#### **Institute of Epidemiology, Disease Control and Research ([www.iedcr.gov.bd](http://www.iedcr.gov.bd))**

##### **Mandate of the Institute**

Beginning in 1976, the Institute of Epidemiology, Disease Control and Research (IEDCR) conducts disease surveillance and outbreak investigation followed by response. The Institute is the WHO-designated National Influenza Centre (NIC) in Bangladesh. With 115 personnel, the IEDCR comprises eight departments, viz., Biostatistics, Epidemiology, Medical Entomology, Medical Social Science, Microbiology, Parasitology, Virology, and Zoonosis. The specific objectives of the IEDCR are to (i) conduct disease surveillance, (ii) conduct outbreak investigation followed by response, (iii) conduct epidemiological research, and (iv) provide training to concerned staff.

##### **IEDCR laboratories**

With a biosafety level 3 (BSL3) laboratory, the Institute has several other laboratories, including Medical Entomology Laboratory, Microbiology Laboratory, Parasitology Laboratory, Virology Laboratory, Zoonosis Laboratory, RT-PCR Laboratory, and the BSL2 Laboratory. These laboratories have wide-ranging diagnostic facilities for testing parasitic and fungal pathogens that cause visceral leishmaniasis (kala-azar, PKDL), malaria, and intestinal diseases, along with dermatophytes, and candida; those that cause viral diseases,

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Beginning in 1976,  
the Institute of  
Epidemiology,  
Disease Control and  
Research (IEDCR)  
conducts disease  
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outbreak investigation  
followed by response

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e.g. Nipah encephalitis, influenza, Middle East Respiratory Syndrome-Corona Virus (MERS CoV), hepatitis A, B, C, and E virus (HAV, HBV, HCV, and HEV), HIV, dengue, chikungunya, bacterial diseases, e.g. enteric fever, brucellosis, rickettsial diseases, and other aerobic and anaerobic bacterial infections. Biochemical tests are also conducted in these laboratories. The laboratories in IEDCR have facilities for cell-culture also. Biological efficacy tests for insecticides are regularly conducted at the Department of Entomology.

### Outbreak investigations

Since its inception, the IEDCR has conducted numerous outbreak investigations. From 2007, these are systematically recorded and posted at IEDCR website at [www.iedcr.gov.bd](http://www.iedcr.gov.bd). The number of outbreak investigations followed by responses was 11 in 2007, 29 in 2008, 10 in 2009, 17 in 2010, 22 in 2011, 18 in 2012, 20 in 2013, and 18 in 2014. The outbreak investigations in 2007 were notable for identification of Nipah virus-related diseases, mass psychogenic illness in 18 districts, and outbreak of illness due to toxic *Ghagra shak* in Sylhet. In 2008, the outbreak investigations were notable for identification of Nipah virus, puffer-fish poisoning, mass psychogenic illness, first human case of avian influenza (AI), and chikungunya. The investigations in 2009 were notable for identification of pandemic influenza A H1N1 (swine flu), chikungunya, cutaneous anthrax, pesticide poisoning, and mass psychogenic illness. Notable outbreaks investigated in 2010 were for Nipah virus, pneumonia, bronchiolitis, chicken pox (in Lama), suspected water contamination (in Boropukuria Power Plant), anthrax (in Tangail, Sirajganj, and Pabna), suspected insecticide poisoning (in Naogaon), mass psychogenic illness and rabies (in Narsingdi). Investigations for Nipah virus, cholera and shigellosis outbreaks, detection of the second and third human cases of avian influenza (H5N1), the first case of H9N2, investigation for suspected pesticide poisoning, cutaneous anthrax, suspected rubella encephalitis, hepatitis E, H5 outbreak among ducks and waterfowl (for human contact investigation), influenza B outbreak, respiratory virus cluster, and unknown diseases

were the major activities of IEDCR in 2011. The prominent outbreaks investigated in 2012 were for Nipah virus, detection of avian Influenza H5N1, mass psychogenic illness, cutaneous anthrax, Japanese encephalitis, chikungunya, dengue, and suspected pesticide victims. The public health emergencies that were dealt with by the National Rapid Response Team (NRRT) of IEDCR in 2013 were: Nipah encephalitis, death due to Influenza H5N1, mass sociogenic illness among students and garments workers, food poisoning, cutaneous anthrax, and cholera outbreak. In 2014, the NRRT conducted outbreak investigations followed by responses for Nipah encephalitis, food safety emergency, mass sociogenic illness among garments workers, and cutaneous anthrax, suspected MERS-CoV, suspected Ebola Virus Disease. In 2015 (up to 3 August), significant responses were made for: Nipah encephalitis, mass psychogenic illness, unintentional pesticide poisoning, suspected chicken pox, suspected cholera, and suspected MERS-CoV.

### Disease surveillance by IEDCR

One of the main activities of IEDCR is disease surveillance. Routine and disease-specific surveillances are conducted round the year. The routine surveillances include: (i) web-based integrated disease surveillance (WBIDS); (ii) foodborne illness surveillance (FBIS); and (iii) cell phone-based disease surveillance (CPBDS). The WBIDS collects data on communicable diseases of priority, e.g. blood dysentery, malaria, kala-azar, tuberculosis, leprosy, encephalitis, ARI, SARI, pneumonia, anthrax, and unknown diseases. The FBIS investigates acute watery diarrhea, cholera, enteric fever, and hepatitis A and E. The CPBDS collects information on foodborne illnesses, fever, SARI, and behavioral risk factors.

The IEDCR also conducts disease-specific surveillance. These include: (i) event-based surveillance–outbreak investigation and response; (ii) Nipah surveillance; (iii) acute meningo-encephalitis syndrome surveillance; (iv) hospital-based influenza surveillance in 12 sites (tertiary-care hospitals); (v) national influenza surveillance–Bangladesh (NISB) in 14 district

hospitals; (vi) surveillance for the sero-prevalence of antibodies to avian influenza A viruses among Bangladeshi workers in poultry markets; (vii) surveillance for human infections with avian influenza A viruses among workers of live bird markets and their household members in Dhaka city area; (viii) community-based avian/human influenza surveillance among poultry workers in H5-infected poultry farms; (ix) surveillance of high-risk group in wet markets under Dhaka City Corporation; (x) surveillance for hospital-acquired respiratory infections in patients and healthcare workers in three tertiary-care facilities; (xi) hospital-based dengue surveillance; (xii) hospital-based rotavirus and intussusception surveillance (HBRIS); (xiii) surveillance of unintentional acute pesticide poisoning due to carbamate and organophosphate among young children; and (xiv) post-mass drug administration surveillance for lymphatic filariasis transmission.

### **Web-based disease surveillance**

Through e-connection with offices of civil surgeons and UHFPOs, the IEDCR conducts web-based disease surveillance covering whole of Bangladesh. This surveillance has been extended to the upazila level. Data-entry is done directly at the sources in coordination with the district- and tertiary-level hospitals. DHIS2 platform is used for data management. This platform is used for surveillance of the prioritized communicable diseases, foodborne illness, and dengue.

### **Cell phone-based disease surveillance**

The cell phone-based surveillance system for behavioral risk factors of NCDs deals with common health conditions, risk factors of chronic diseases, the use of preventive healthcare services, and healthcare-seeking behavior among the residents of Dhaka City Corporation area, using data from the Behavioral Risk Factor Surveillance System (BRFSS), Bangladesh. This initial phase of the BRFSS and its successful outcome in 2012 helped in further program planning.

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Rapid Response Team Leaders from the district and subdistrict levels (n=865) were trained on outbreak response on novel communicable diseases

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### **Training/workshops**

A total of 6,137 doctors, 1,417 nurses, 239 medical technologists, 592 statisticians, and 583 government officials of other categories were trained at IEDCR on different emerging, re-emerging communicable diseases, International Health Regulations (IHR) 2005, and other health issues in 2014.

Rapid Response Team Leaders from the district and subdistrict levels (n=865) were trained on outbreak response on novel communicable diseases, including Influenza A (H7N9), MERS-CoV, Nipah, and Ebola viral disease. Doctors (4,284), nurses (1,296), medical technologists (152), and other officials (80) were trained on epidemiology, control, prevention, and emergency response for MERS-CoV, influenza A (H7N9), and Nipah infection. After the Ebola viral disease emerged, a total of 1,639 doctors, 154 nurses, and 80 other officials were trained on epidemiology, control, prevention, and emergency response for EVD. Forty officials from GOB, national and international NGOs, partner organizations, and stakeholders developed SOPs, guidelines, and manuals for the detection, reporting, clinical management, infection control, contact tracing, and waste management for Ebola viral disease. Training was provided to the health personnel of Hajrat Shahjalal International Airport (HSIA) on Ebola and other emerging infectious diseases and PPE. Refreshers training on influenza-like illness (ILI) and severe acute respiratory illness (SARI) for integrated disease surveillance (IDS) was provided to 208 doctors, 93 nurses, and 516 statisticians for the national influenza surveillance. A national consultation on comprehensive



Japanese Encephalitis Surveillance was made, followed by an orientation seminar attended by 26 physicians and 28 nurses. Several activities relating to International Health Regulations (IHR) 2005 took place, including (a) awareness workshop on IHR 2005, with emphasis on issues of graduate and postgraduate public health teachers of private medical college and universities where 142 doctors participated; (b) development of a port health action plan for IHR-designated seaport (Chittagong); (c) advocacy workshop on IHR for policy-makers, healthcare providers, and stakeholders of all relevant implementation-level staff comprising 310 doctors, NGO personnel, etc.; (d) workshop on capacity-building of technical personnel under health, customs, and immigration of IHR 2005 at the designated point of entries comprising 460 officials from health, customs, immigration, etc. A total of 23 doctors were trained by International Air Transport Association (IATA) on biological sample packaging, shipping biological materials, and cold chain at IEDCR. Medical technologists (152) were trained on emerging infectious diseases and SOPs of laboratory biosafety and infection control. Refreshers training on web-based disease surveillance was provided to 76 statisticians.

### Academic courses

The IEDCR conducts a few academic courses, such as (a) MSc in Applied Epidemiology (Field Epidemiology Training Program), which is affiliated with the University of Dhaka; (b) Masters of Public Health in One Health and Biosecurity (in collaboration with Massey University, New Zealand and Chittagong Veterinary & Animal Science University); (c) Clinical Epidemiology Course for Medical Professionals; and (d) Introduction to Epidemiology (short course prior to Field Epidemiology Training Program, Bangladesh-FETP,B)

### Activities in 2014

1. Digitalization of the surveillance system in Bangladesh—cell phone-based surveillance on major non-communicable diseases (NCDs) and important communicable diseases throughout Bangladesh
2. Establishment of Foodborne Illness Surveillance System, Bangladesh in the whole country

3. Behavioral and sero-surveillance of HIV-infected persons in the whole country.

### IEDCR activities in 2013

1. IEDCR was declared the 8th Global Disease Detection Regional Center for the Centers for Disease Control and Prevention (CDC), Atlanta, USA
2. Commencement of Field Epidemiology Training Program, Bangladesh (FETP,B) to train the government physicians as future public health professionals
3. Development of capacity and facilities for testing MERS-CoV
4. Contribution in South-East Asia Regional Certification Commission for Polio Eradication (SEARCCPE) of the World Health Organization
5. Contribution as one of the 15 members of the Emergency Committee of MERS-CoV formed by DG of WHO
6. Organizing the first National Public Health Conference 2013 in Bangladesh
7. Re-election of the Director, IEDCR, as member of the Executive Board of the International Association of National Public Health Institutes (IANPHI)
8. Conduction of the prevalence survey on HIV among pregnant mothers in Sylhet division
9. Procurement of gene-sequencer machine for performing genome sequencing of important pathogenic organisms
10. Documentation of the development of One Health strategy
11. Training of 1,070 doctors and 154 nurses on MERS-CoV infection control and management.

### Activities in 2012

The IEDCR developed a number of policies, strategies, and guidelines in 2012, which include the following:

1. Strategy and guideline for prevention, control, and management of Nipah and other encephalitis
2. Strategy and guideline for networking among public health laboratories

3. SOP for web-based integrated disease surveillance and early warning and alert system for epidemic-prone diseases
4. Guidelines for emerging infectious diseases and outbreak investigation
5. Updating health rules for designated point of entries (POEs) and national legislation, regulations, and other instruments for IHR 2005 implementation
6. Development of new law for implementations of IHR 2005.

### Research conducted by IEDCR

The list of research activities conducted in 2014 includes the following:

1. Tuberculosis prevalence survey, Bangladesh (ongoing)
2. Mitigating the impact of climate change to reduce the burden of climate-sensitive illnesses (ongoing)
3. Assessing the prevalence and risk factors of mild/asymptomatic influenza A (H5N1) infections among persons exposed to influenza A (H5N1)-infected poultry
4. Estimating the risk of mild human infection among persons exposed to influenza A (H5N1)-infected poultry
5. Assessment of the impact of hepatitis B vaccination in Bangladesh: a sero-prevalence study
6. Dengue prevalence survey in Dhaka City Corporation area
7. A national sero-surveillance of dengue exposure in Bangladesh
8. Chikungunya prevalence and entomological survey in Dhaka City Corporation area
9. Antibiotics medication and antimicrobial resistance of the bacteria causing upper respiratory tract infection
10. Leptospirosis survey in Bangladesh
11. Research on understanding of the ecology of Nipah virus in Bangladesh
12. Assessment of the immunogenicity of three doses of bivalent, trivalent or type one

monovalent oral poliovirus vaccines provided at 2- or 4-week intervals

13. Investigation of anthrax outbreaks and risk factors of anthrax in humans and livestock in Bangladesh
14. Piloting hospital infection control interventions for severe infections spread by respiratory droplet and direct contact routes
15. Estimating the incidence of maternal and neonatal deaths from hepatitis E virus (HEV) in Bangladesh.

The list of research activities conducted in 2013 included the following:

1. Evaluation of Web-based Disease Surveillance on Foodborne Illness
2. Evaluation of Influenza Surveillance
3. Evaluation of EPI Surveillance
4. Evaluation of TB Surveillance
5. Evaluation of Non-communicable Disease Surveillance

The research activities conducted by IEDCR in 2012 included the following:

1. Assessment of the impact of hepatitis B vaccination in Bangladesh, a sero-prevalence study
2. Safety and efficacy of Liposomal Amphotericin B (Ambisome) in Bangladeshi patients with visceral leishmaniasis—a phase III clinical trial
3. HIV, syphilis, and hepatitis among pregnant women in selected health facilities of Greater Sylhet area in Bangladesh
4. Assessment of the vulnerability of population and the health system in Bangladesh to the impact of climate change
5. Effectiveness of the *Ghagra shak* poisoning prevention campaign in Sylhet: a post-test only intervention control study
6. Mitigating the impact of climate change to reduce the burden of climate-sensitive illnesses
7. Assessing the prevalence and risk factors of mild/asymptomatic H5N1 infections among persons exposed to H5N1-infected poultry

8. Estimating the risk of mild infection among persons exposed to H5N1-infected poultry.

### International affiliation

The IEDCR is a member of the International Association of National Public Health Institutes (IANPHI), Global Outbreak Alert Response Network (GOARN). Director of IEDCR is a member of the Executive Board of IANPHI. He is also a member of the 11-member Emergency Committee on Middle East Respiratory Syndrome Corona virus (MERS-CoV) and Committee for International Certification of Polio Eradication formed by Director General of WHO. The IEDCR has collaborative activities with the Centers for Disease Control and Prevention (CDC) of USA, Rockefeller Foundation, icddr,b, and IANPHI. The Institute is supported by WHO, UNICEF, FAO, USAID, and other UN and international agencies.

## Institute of Public Health

### Mandate of IPH

Mandates of the Institute of Public Health (IPH), established in 1953, include: (i) ensuring the quality of food and water; (ii) production of vaccines, intravenous fluids, antisera, and diagnostic reagents; and (iii) diagnosis of infectious diseases. The IPH also conducts research on the above disciplines. The IPH has five major sections and several units to perform different activities.

### Production of intravenous fluids

Table 14.1 shows the quantity of different types of intravenous fluids produced by IPH over the last 5 years (2010 to 2014).

**Table 14.1. Production of intravenous fluids by IPH over the last 5 years (2010 to 2014)**

Item	Pack-size (mL)	2010	2011	2012	2013	2014
Glucose saline	1000	87040	70700	81590	111008	88015
	500	139630	143225	127255	130733	121345
Glucose aqua	1000	85894	66225	82810	88499	80660
	500	125044	120235	112785	118525	114705
Normal saline	1000	64471	51078	61471	93860	79030
	500	93291	101394	12179	114010	120630
Cholera saline	1000	67440	56367	81227	87585	74105
	500	121350	107320	124120	118030	112950
P.D. fluid	1000	30110	21192	25530	40125	36250
	500	-	-	-	-	-
3% Normal saline	1000	-	-	-	-	-
	500	7740	11130	10479	10149	16131
Baby saline	1000	-	-	-	-	-
	500	21560	30475	36355	33864	42065
Hemodialysis fluid	1000	8150	7830	10700	5868	1670
	-	-	-	-	-	-
Hartman's Solution	1000	-	-	-	-	-
	500	124040	110305	86465	24380	89450



## Production of blood-bags and related accessories

Table 14.2 shows the quantity of blood-bags and related accessories produced by IPH over the last 5 years (2010 to 2014).

## Production of antirabies vaccines

Table 14.3 shows the quantity of antirabies vaccines produced by IPH during 2009 through 2012. After 2012, these vaccines are not being produced.

**Table 14.2. Production of blood-bags and accessories by IPH over the last 5 years (2010 to 2014)**

Item	Pack-size (mL)	2010	2011	2012	2013	2014
CPD blood-bag	Single	83890	62272	105523	66117	114783
CPD blood-bag	Double	-	-	-	-	600
Baby bag	150 mL	-	1400	-	300	2390
Transfusion set	-	-	3800	58000	127830	38000
Infusion set	-	-	10200	75600	32200	110000

**Table 14.3. Production of antirabies vaccine by IPH during 2009 to 2012**

Year	For humans (5 mL)			For animals (10 mL)		
	Total volume (mL)	Ampoule	Course	Total volume (mL)	Ampoule	Course
2009	2895500	579100	41365	543800	54380	1295
2010	2296100	459220	32802	324500	32450	773
2011	1296370	259274	18519	368300	36830	877
2012	476800	95360	6811	124300	12430	296

## Production of diagnostic reagents

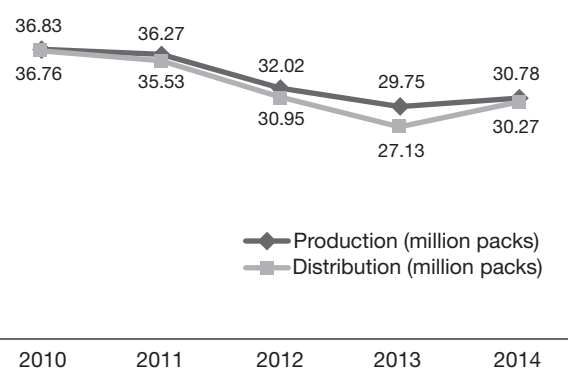
Table 14.4 shows the quantity of different types of diagnostic reagents produced by IPH from 2010 to 2014.

## Production of oral rehydration salt

Figure 14.1 shows the quantity of oral rehydration salt (ORS) produced and distributed by IPH from 2010 to 2014.

## Testing of food, water, drug and stool samples

Table 14.5 shows the number of food samples tested by IPH from 2010 to 2014. The table also



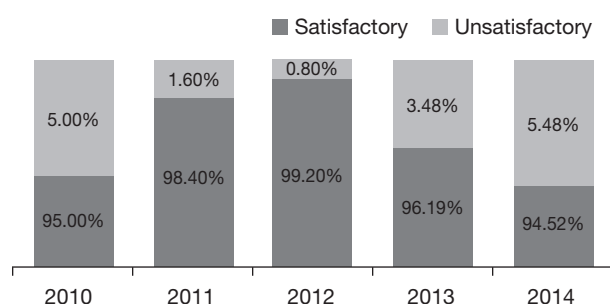
**Figure 14.1. Production and distribution of oral rehydration salt (ORS) by IPH over the last 5 years (2010 to 2014)**

Table 14.4. Production of diagnostic reagents by IPH (2010 to 2014)

Item	2010	2011	2012	2013	2014
Benedict's Solution (L)	460	360	400	140	240
ESR fluid (L)	160	89	160	180	99
20% Sulfuric acid solution (L)	30	NIL	-	-	
N/10 Hydrochloric acid solution (L)	50	41	70	40	40
Acetone alcohol (L)	NIL	NIL	60	02	
5% Acetic acid solution (L)	40	10	60	30	50
WBC fluid (L)	100	NIL	40	-	50
RBC fluid (L)	30	NIL	30	-	-
30% Sulfosalicylic acid (L)	04	NIL	10	-	-
20% Sodium hydroxide solution (L)	NIL	NIL	-	-	-
20% Potassium hydroxide solution (L)	NIL	NIL	-	-	-
Semen analysis fluid (L)	NIL	10	-	-	-
Normal saline (L)	20	NIL	20	40	10
Methylene blue (L)	05	NIL	-	-	-
Crystal violet (L)	05	NIL	-	-	-
Basic fuchsin (L)	NIL	NIL	10	-	-
Carbol fuchsin (L)	NIL	NIL	-	-	-
Gram iodine (L)	NIL	5	5	-	05
Lugol's iodine (L)	05	15	10	-	-
Leishman stain (L)	43	49.6	72	26	17.1
Giemsa stain (L)	34	43	40	33.5	14.4
Glucose kits	NIL	48	99	-	-
Bilirubin kits	97	NIL	149	-	100
Creatinine kits	49	250	298	-	191
Uric acid kits	NIL	NIL	-	-	-
EDTA vials	NIL	NIL	-	-	-
Urea kits	-	48	50	-	-

Table 14.5. Food samples tested by IPH over the last 5 years (2010 to 2014)

Year	Total samples	Genuine		Adulterated	
		No.	%	No.	%
2010	5749	2759	48	2990	52
2011	5812	2671	45.96	3147	54.04
2012	5322	2734	51.37	2558	48.63
2013	4967	2830	56.98	2137	43.02
2014	5396	3249	60.21	2147	39.79



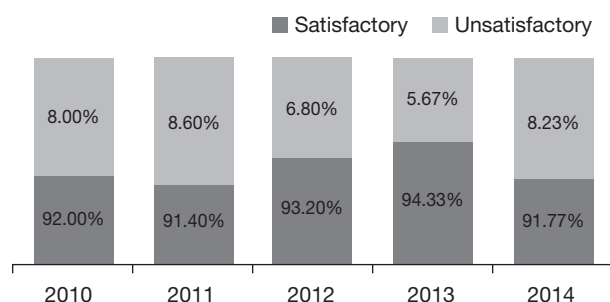
**Figure 14.2. Result of water samples tested chemically by IPH in the last 5 years (2010 to 2014)**

shows the distribution of genuine and adulterated samples out of the total samples tested each year.

Figure 14.2 shows the results of water samples tested by chemical means at IPH during 2010 to 2014.

Figure 14.3 shows the results of water samples, for which bacteriological test was done by IPH during 2010 to 2014.

Table 14.6 shows the number of drug samples received during 2010-2014 by IPH, with the test results.



**Figure 14.3. Result of water samples tested bacteriologically by IPH over the last 5 years (2010 to 2014)**

The National Polio Laboratory of IPH is a WHO-accredited laboratory established to assist in the eradication of wild polio virus from the country

The National Polio Laboratory of IPH is a WHO-accredited laboratory established to assist in the eradication of wild polio virus from the country. It is a partner of SEARO-WHO Polio Network. Table 14.7 shows the number of stool samples tested by IPH for polio virus from 2010 to 2014, with results of the tests.

### Serological tests for measles and rubella

The Measles Laboratory of IPH is involved with the serological study of measles and rubella to support measles control program in the country. Table 14.8 shows the numbers of measles-positive, rubella-positive and negative blood samples tested by the Measles Laboratory of the Institute from 2010 to 2014.

### Routine tests for blood, serum, stool, urine, sputum, throat-swab and ear-swab samples

The IPH performs routine tests on the samples of blood, serum, stool, urine, sputum, throat-swab,

**Table 14.6. Number of drug samples received and tested by IPH, with the test results (2010 to 2014)**

Year	Samples received (Total)	Satisfactory	Unsatisfactory	Not analyzed	Feedback given to senders
2010	5006	3833	82	1091	-
2011	3720	2583	104	1033	-
2012	4239	2276	95	1868	264
2013	5618	4635	162	21	962
2014	7336	5272	141	1923	44

**Table 14.7. Number of stool samples tested by IPH for polio virus from 2010 to 2014, with the test results**

Item	2010	2011	2012	2013	2014
AFP cases (N)	1541	1600	1570	1433	1473
Samples (N)	3464	3619	3450	3206	3112
Polio virus isolates (N)	72	75	84	68	34
Wild polio viruses (N)	-	-	-	-	-
Vaccine (Sabin) viruses (N)	72	75	84	68	34
NPEV (Non-polio enteroviruses) (N)	645	638	489	590	706
Negative samples (N)	2746	2906	2877	2584	2372

**Table 14.8. Number of measles-positive, rubella-positive (IgM antibody) and total negative blood samples (both measles and rubella) tested by the Measles Laboratory of IPH from 2010 to 2014**

Item	2010	2011	2012	2013	2014
Measles-positive	51	1788	714	77	143
Rubella-positive	1,425	672	481	639	223
Total negative	817	1633	1359	1047	1676
Total samples	2293	4093	2590	1763	2042

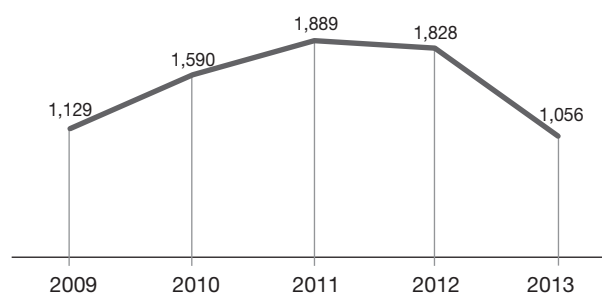
**Table 14.9. Number of routine tests done by IPH from 2009 to 2012**

Item	2009	2010	2011	2012
Biochemical (blood)	-	-	-	09
Serological	-	-	11043	6449
Routine examination (stool, blood-CP, urine, sputum)	82	162	157	79
Culture and sensitivity (stool, blood, urine, sputum, throat-swab, ear-swab)	78	30	-	-

ear-swab, etc. Table 14.9 shows a summary of the tests done on such samples by the Institute from 2009 to 2012.

### Visits by medical and dental students

Figure 14.4 shows the number of medical/dental students who visited IPH during 2009-2013.

**Figure 14.4. Number of medical/dental students who visited IPH during 2009-2013**

# 15

## RESEARCH AND DEVELOPMENT

In pursuit of wider knowledge

In 2014, the MIS-DGHS received information on research from several public, private, and autonomous institutions, which include Bangladesh Medical Research Council (BMRC), James P Grant School of Public Health under BRAC University, Institute of Mother and Child Health (ICMH), Institute of Epidemiology, Disease Control and Research (IEDCR), International Centre for Diarrheal Disease Research, Bangladesh (icddr,b), and National Institute of Preventive and Social Medicine (NIPSOM).

### **Bangladesh Medical Research Council**

Bangladesh Medical Research Council (BMRC) was established in 1972 by order of the President as an autonomous body under the Ministry of Health and Family Welfare (MOHFW). The objectives, rules, and regulations of BMRC were formulated by the Ministry's resolution in 1974 and 1976. The resolution states that BMRC is the focal point for health research in Bangladesh. The main activities of BMRC include providing research fund, publication of journals and research bulletins, provision of training, and issuing ethical clearance for research protocols. The list of BMRC seminars, research, and publications is provided in the Annex.

### **James P Grant School of Public Health, BRAC University**

The James P Grant School of Public Health (JPGSPH) under BRAC University was established in 2004 as an international educational and research institution focusing on the integral areas of teaching, research, and services. The goal of the School is not only to impart knowledge but also to act as a center of excellence in knowledge creation through research and training that connect with practice. Aside from the flagship educational programs, i.e. Masters of Public Health (MPH), JPGSPH also provides short courses on public health for health professionals through the Continuing Education Program (CEP). Additionally, JPGSPH possesses a burgeoning research portfolio conducting innovative and pioneering studies on public health issues funded by multiple international donors. JPGSPH also provides services in the form of training, advocacy workshops, and seminars with a special focus on the rights of the marginalized and vulnerable population of Bangladesh. The School serves as the secretariat for an initiative called Bangladesh Health Watch (BHW), a multi-stakeholder civil society advocacy and monitoring network dedicated to improving the health system in Bangladesh through critical review of

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BMRC is the  
focal point for  
health research  
in Bangladesh

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policies and programs and recommendations of appropriate actions for change. The main activity of the Bangladesh Health Watch is to publish an annual report on the state of health in Bangladesh by commissioning researches. A working group consisting of researchers and activists from different organizations carry out various activities. The list of studies and publications of JPGSPH is provided in the Annex.

### **Institute of Child & Mother Health**

The Institute of Child & Mother Health (ICMH) is a national institution in Bangladesh committed to being a center of excellence in the South-East Asia. The Institute is working for the improvement of health and nutrition of children and mothers in the country through its three objectives: human resource development, conducting research, and patient-care. The Institute was made autonomous through an Act in the Parliament in 2002 and is now administered through a Board of Governors. All research activities by ICMH are listed in the Annex.

### **Institute of Epidemiology, Disease Control and Research**

The Institute of Epidemiology, Disease Control and Research (IEDCR) conducted quite a good number of studies in collaboration with national and international public health institutions and universities. It has also a good number of PhD researchers. All research activities and publications by IEDCR are listed in the Annex.

### **International Centre for Diarrhoeal Disease Research, Bangladesh**

The International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) is an international health research institution located in Dhaka. Being dedicated to saving lives through research and treatment, the organization addresses some of the most critical health concerns ranging from improving neonatal survival to HIV/AIDS. In collaboration with academic and research institutions throughout the world, icddr,b conducts research, training, and extension activities as well as program-based activities to develop and share knowledge for global solutions for lifesaving. The organization translates knowledge from research into policy, using strategic health programs. This allows basic

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The Institute of Child & Mother Health (ICMH) is a national institution in Bangladesh committed to being a center of excellence in the South-East Asia

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research to influence policy applications and actions rapidly, if the evidence supports meaningful public-health benefit. Research priorities at icddr,b are cross-cutting, covering child health, infectious diseases, vaccine sciences, reproductive health, nutrition, population, HIV/AIDS, and safe water. The organization published several internal publications, journal, reports, and abstracts in 2014, which are listed in the Annex.

### **National Institute of Preventive & Social Medicine**

The National Institute of Preventive & Social Medicine (NIPSOM) is the only national-level public health institution under University of Dhaka. NIPSOM was established in 1978 with the aim of producing postgraduates in public health, capable of satisfying the needs of the community in promoting and restoring health. The Institute is also supporting various health policy formulations of the government and community health programs through research, training, and services. It conducts eight courses for Masters of Public Health (MPH), each of one and half-year duration and one course for M. Phil of two-year duration. The list of dissertations and research is given in the Annex.

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NIPSOM was established in 1978 with the aim of producing postgraduates in public health, capable of satisfying the needs of the community in promoting and restoring health

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# 16

## HEALTH WORKFORCE SITUATION IN BANGLADESH

### Filling up vacant positions given priority

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Health workforce deployment and redeployment are ongoing processes; attrition due to death, retirement, resignation, termination, migration, transfer, replacement, and filling-in is constantly occurring

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The health workforce situation, particularly in the DGHS and some of its allied departments, viz. Directorate General of Family Planning, and Directorate of Nursing Services, is summarized in this chapter. An overview of the number of sanctioned and filled-up posts is presented, along with vacancies. Medical teaching/training institutions and programs, along with training courses, have also been shown. Health workforce deployment and redeployment are ongoing processes; attrition due to death, retirement, resignation, termination, migration, transfer, replacement, and filling-in is constantly occurring. Therefore, the status of health workforce as shown in this report may not remain the same by the time this bulletin is published. In August 2014, about 6,100 physicians were newly-appointed through the 33rd BCS examination. The entry-level posts of the physicians in health cadre have been saturated by this large-scale employment.

#### **Overall health workforce situation of DGHS**

Table 16.1 shows a summary of health workforce situation in the DGHS. A division-wise distribution is shown in the Annex to this chapter.

It is revealed from Table 16.1 that, out of 126,727 sanctioned posts under the DGHS, about half (41.63%) are of Class III category, physicians (Class I) comprise 18.65%, Class II 16.48%, and Class IV employees comprise the rest 22.83%. Of the available 106,162 health personnel, 41.12% are of Class III, 20.57% are doctors (Class I), 17.16% are of Class II, and 20.98% are of Class IV. The Class I non-doctors comprise 0.18% of the sanctioned posts and 0.21% of the available staff. Table 16.1 also shows that 20,565 sanctioned posts remained vacant as of June 2015, which constituted 16.23% of the total sanctioned posts. Vacancy rate was 7.6% (1,796 posts) for doctors, 17.26% (9,106 posts) for Class III staff, 23.02% (6,658 posts) for Class IV staff, 12.95% (2,664 posts) for Class II staff, and 13.14% (337 posts) for Class I non-doctors.



Table 16.1. Number of sanctioned, filled-up and vacant posts under the DGHS (June 2015)

Class		Sanctioned		Filled-up						Vacant		
				Male		Female		Total				Filled-up as % of sanctioned posts
		No.	%	No.	%	No.	%	No.	%	No.	%	
Class I	Doctors	23,636	18.65	15,387	19.32	6,453	15.70	21,840	20.57	92	1,796	8
	Non-doctors	525	0.41	182	0.22	46	0.11	188	0.18	36	337	64
Class II		20,883	16.48	1,329	2.04	16,886	41.09	18,215	17.16	87	2,668	13
Class III		52,755	41.63	31,876	48.99	11,773	28.65	43,649	41.12	83	9,106	17
Class IV		28,928	22.83	16,336	25.11	5,934	14.44	22,270	20.98	77	6,658	23
Total		126,727	100.0	65,070	100.0	41,092	100.0	106,162	100.0	84	20,565	16

Figure 16.1 shows the percentage distribution of male and female staff under the DGHS as of June 2015. Slightly less than two-thirds (61.29%) of the total staff members (n=106,162) were male, and just above one-third (38.71%) of them were female (38.71%). Among the doctors (Class I), almost

three-quarters (70.85%) were male, and slightly more than one-quarter (29.55%) were female. Class I non-doctors also had similar distribution (75.53% male vs. 24.47% female). For the Class II staff, the scenario was quite opposite (7.30% male vs. 92.70% female). However, this was due

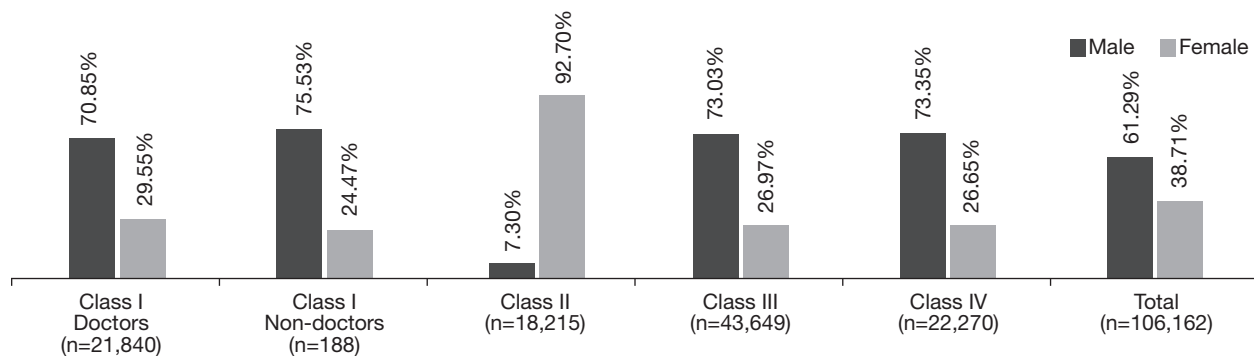


Figure 16.1. Percent distribution of male and female staff in the DGHS (June 2015)

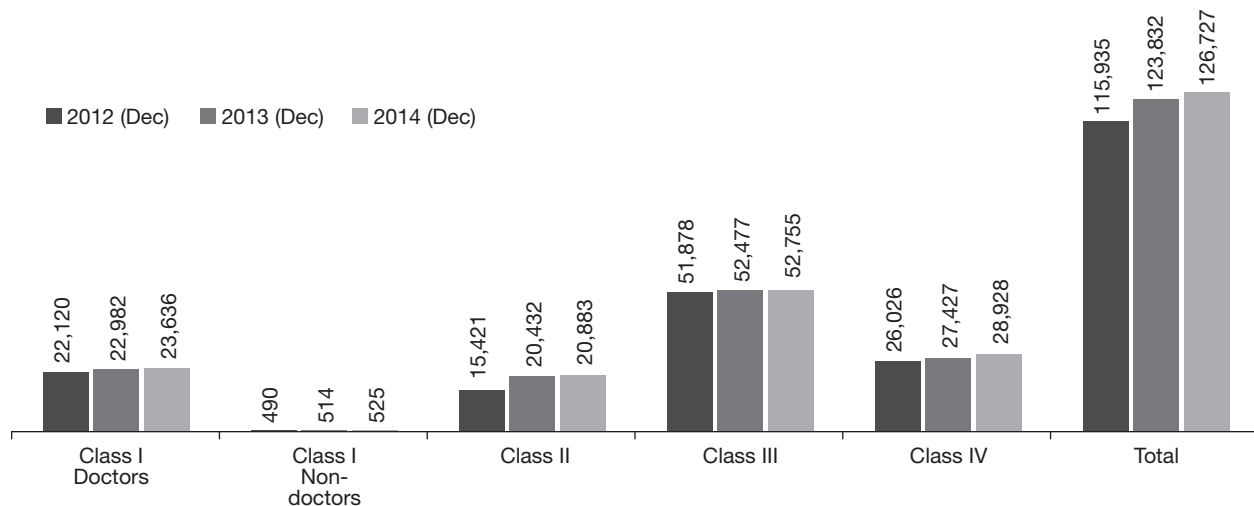


Figure 16.2. No. of sanctioned posts by year

to the fact that the bulk of Class II staff comprised nurses, and most of the nurses were female. Among the Class III staff, 73.03% were male, and 26.97% were female. Among the Class IV staff, 73.35% were male, and 26.65% were female.

Figure 16.2 shows the total number of sanctioned posts of the DGHS in 2012, 2013, and 2014. Between 2013 and 2014, there was an increase of 8,415 posts comprising 609

Class IV posts, 2,199 Class III posts, 6,380 Class I post for doctors and less than 720 Class II posts, 43 Class I posts for non-doctors.

### Administrative, managerial, academic and clinical positions

Table 16.2 shows the number of sanctioned, filled-up and vacant posts at administrative, managerial, academic and clinical positions under the DGHS as of May 2015.

**Table 16.2. Number of sanctioned, filled-up and vacant posts at administrative, managerial, academic and clinical positions under the DGHS (May 2015)**

Post	Total no. of sanctioned posts	Filled-up		Vacant	
		No	%	No	%
DG	1	1	100	-	0
ADG/equivalent	5	5	100	-	0
Director/principal/vice-principal/equivalent	105	94	90	11	10
Deputy director/equivalent	128	84	66	44	34
Assistant director/civil surgeon/equivalent	207	157	76	50	24
Deputy civil surgeon/UHFPO	511	494	97	17	3
Professor	603	322	53	380	41
Associate professor	928	548	59	353	39
Assistant professor	1,381	862	62	519	38
Senior consultant	533	312	59	221	41
Senior lecturer	8	7	88	1	13
Junior lecturer	32	28	88	4	13
Junior consultant/equivalent	3,935	2,318	59	1,617	41
Assistant surgeon/equivalent	14,628	16,058	11	1,430	10
Other posts	368	287	78	81	22
Total	23,373	21,577	92	1,796	8

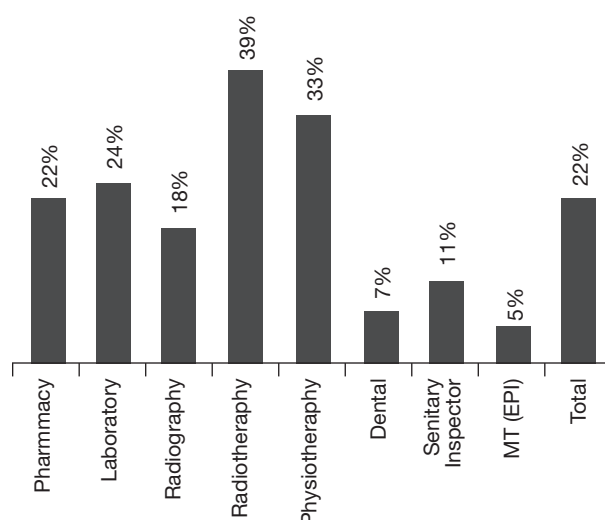
**Table 16.3. Number of sanctioned, filled-up and vacant posts of medical technologists by discipline in the last three years**

Year Month	Post	Pharmacy	Lab	Radiography	Radiotherapy	Physiotherapy	Dental	Sanitary inspection	MT (EPI)	Total
2012 (Dec)	Sanctioned	2,934	1,990	715	57	201	531	-	-	6,428
	Filled-up	2,172	1,610	634	38	147	495	-	-	5,096
	Vacant	762	380	81	19	54	36	-	-	1,332
2013 (Dec)	Sanctioned	2,934	1,922	737	66	216	535	491	-	6,901
	Filled-up	2,126	1,498	629	41	144	501	436	-	5,375
	Vacant	808	424	108	25	72	34	55	-	1,526
2014 (May)	Sanctioned	2,944	2,170	784	66	264	539	496	499	7,762
	Filled-up	2,113	1,642	644	40	177	501	439	473	6,029
	Vacant	813	528	140	26	87	38	57	26	1,733

## Medical technologists

Table 16.3 shows the number of sanctioned, filled-up and vacant posts of medical technologists as in the last three years (2012, 2013, and 2014).

Figure 16.3 shows the percentage of vacancies among different disciplines of medical technologists under the DGHS as of May 2015. Overall, 22% posts were vacant.



**Figure 16.3. Percentage of vacancies among different disciplines of medical technologists under the DGHS (May 2015)**

## Sub-Assistant Community Medical Officers

Table 16.4 shows the number of sanctioned, filled-up and vacant posts of Sub-Assistant Community Medical Officer (SACMO) in the three-year period (2012, 2013, and 2014) under the DGHS. Percentage of vacancy has been reduced in 2014 to 13% from 22.2% in 2012.

**Table 16.4. Number of sanctioned, filled-up and vacant posts of Sub-Assistant Community Medical Officer (SACMO) in the three-year period (2012, 2013, and 2014) under DGHS**

Year Month	No. of posts		Vacancy	
	Sanctioned	Filled-up	Vacant	(%)
2012 (Dec)	5,411	4,212	1,199	22.2
2013 (Dec)	5,411	4,917	494	9.13
2014 (Dec)	5,411	4,684	727	13

## Domiciliary staff (Health Inspectors, Assistant Health Inspectors, and Health Assistants)

Table 16.5 shows the number of sanctioned, filled-up and vacant posts of domiciliary staff (Health Inspectors, Assistant Health Inspectors, and Health Assistants) under the DGHS in the last three-year period (2012, 2013, and 2014)

**Table 16.5. Number of sanctioned, filled-up and vacant posts of domiciliary staff (Health Inspectors, Assistant Health Inspectors, and Health Assistants) under the DGHS in the last three-year period (2012, 2013, and 2014)**

Year Month	Post	Health Inspector	Assistant Health Inspector	Health Assistant	Total field staff	Vacancy (%)
2012 (Dec)	Sanctioned	1,399	4,198	20,815	26,412	8.9
	Filled-up	1,126	3,662	19,274	24,062	
	Vacant	273	536	1,541	2,350	
2013 (Dec)	Sanctioned	1,399	4,202	20,881	26,482	16.75
	Filled-up	1,313	4,042	16,690	22,045	
	Vacant	86	160	4,191	4,437	
2014 (Dec)	Sanctioned	1,399	4,205	20,877	26,481	14
	Filled-up	1,282	4,006	17,532	22,820	
	Vacant	117	199	3,345	3,661	

and Health Assistants) under the DGHS in the last three-year period (2012, 2013, and 2014). The rate of vacancy has dropped to 14% in 2014 from 16.75% in 2013.

### Officers and staff in alternative medicines

Table 16.6 shows the number of sanctioned, filled-up and vacant posts of various officers and staff in alternative medicines under the DGHS as of December 2014.

### Directorate General of Family Planning

Table 16.7 shows the number of sanctioned, filled-up and vacant posts under the Directorate General of Family Planning (DGFP) in the last three-year period (2012, 2013, and 2014).

### Directorate of Nursing

Table 16.8 shows the number of sanctioned, filled-up and vacant posts under the Directorate of Nursing Services (DNS) in the last two year period (2013 and 2014).

**Table 16.6. Number of sanctioned, filled-up and vacant posts (revenue and development) of various officers and staff in alternative medicines under the DGHS (December 2014)**

Name of post	Sanctioned post		Fill-up post		Vacant post	
	Revenue	Development	Revenue	Development	Revenue	Development
Director	1	0	1	0	1	0
Line director	1	0	1	0	1	0
Principal-cum-Superintendent	2	0	2	0	2	0
Professor	2	0	2	0	2	0
Deputy Director	1	0	1	0	1	0
Assistant Pprofessor	9	3	9	3	9	3
Assistant Director	1	0	1	0	1	0
RMO/RP	0	5	0	5	0	5
Lecturer	21	15	21	15	21	15
Medical Officer for ayurvedic medicine	61	101	61	101	61	101
Medical Officer for unani medicine	61	106	61	106	61	106
Medical Officer for homeopathic medicine	51	92	51	92	51	92
Medical Officer: IMO	6	12	6	12	6	12
Other posts equivalent to medical officer	14	6	14	6	14	6
Research officer	0	3	0	3	0	3
Deputy Superintendent	1	0	1	0	1	0
Nurse/Staff Nurse	12	0	12	0	12	0
Secretary	1	0	1	0	1	0
Accountant	0	1	0	1	0	1
Support personnel (Compounders for alternative medicine)	157	336	157	336	157	336
Herbal Assistant for herbal gardens	0	469	0	469	0	469
Other Class III personnel	100	22	100	22	100	22
Other Class IV personnel	184	2	184	2	184	2
<b>Total</b>	<b>686</b>	<b>1,173</b>	<b>686</b>	<b>1,173</b>	<b>686</b>	<b>1,173</b>

**Table 16.7. Number of sanctioned, filled-up and vacant posts under the DGFP in the three-year period (2012, 2013, and 2014)**

Year (Month)	Class	Sanctioned	Filled-up	Vacant	Vacancy (%)
2012 (Dec)	Class I	1,954	1,049	905	46.3
2013 (Apr)		1,954	1,021	933	47.7
2014 (Dec)		1,953	1,039	914	46.80
2012 (Dec)	Class II	1,022	401	621	60.8
2013 (Apr)		1,074	401	673	62.7
2014 (Dec)		1089	525	564	51.79
2012 (Dec)	Class III	16,937	14,646	2,291	13.5
2013 (Apr)		16,886	14,760	2,126	12.6
2014 (Dec)		16,881	14,665	2,216	13.13
2012 (Dec)	Class IV	32,507	29,845	2,662	8.2
2013 (Apr)		32,516	29,103	3,413	10.5
2014 (Dec)		32,512	29,116	3,396	10.45

**Table 16.8. Number of sanctioned, filled-up and vacant posts under the DNS in 2013 and 2014**

Year (Month)	Category	Sanctioned	Filled-up	Vacant	Vacancy (%)
Class I					
2013 (June)	Nursing	174	1	173	99.4
	Non-nursing	1	-	1	100.0
2014 (June)	Nursing	311	166	145	46.95
	Non-nursing	1	-	1	100.0
Class II					
2013 (June)	Nursing	21052	12,609	8,443	40.1
	Non-nursing	20	7	13	65.0
2014 (June)	Nursing	22,357	12,928	5,429	24.28
	Non-nursing	20	9	11	55.0
Class III					
2013 (June)	Nursing	1,375	625	750	54.5
	Non-nursing	358	204	154	43.0
2014 (June)	Nursing	611	611	0	0
	Non-nursing	368	289	79	21.47
Class IV					
2013 (June)	Non-nursing	863	614	249	28.9
2014 (June)	Non-nursing	704	664	40	5.68

## Institutions offering postgraduate medical degrees

Table 16.9 shows the number of institutions both in the government and private sectors providing postgraduate medical degrees. Thirty-three institutions—23 in public sector and 10 in private sector—offer such degrees. The table also shows the titles of the courses offered by each institution, along with the number of seats in each course. One institution, namely Bangladesh College of Physicians and Surgeons (BCPS), offers FCPS (Fellow of the College of Physicians and Surgeons) and MCPS (Member of the College of Physicians and Surgeons) degrees. Any eligible candidate can sit for the examinations, and results depend on the candidate's competence shown in the examinations. The number of seats is, therefore, variable. Other institutions offer courses, like MS, MD, M.Phil, Diploma, MPH, MTM, and MMED. The detailed list of the organizations, with courses and number of seats, is shown in the Annex.

Figure 16.4 shows the number of doctors who obtained FCPS and MCPS degrees from the Bangladesh College of Physicians and Surgeons (BCPS) from 2008 to 2014. Detailed data are given in the Annex.

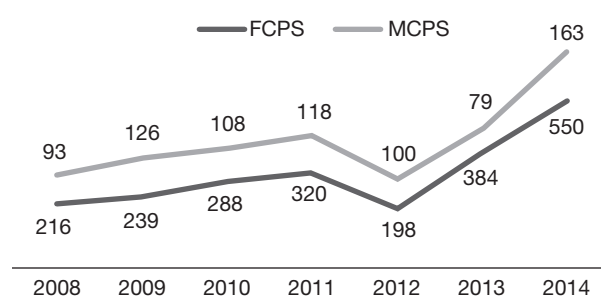
## Institutions offering MBBS degree

Table 16.10 shows the number of institutions, along with total number of seats both in the government and private sectors, which offer MBBS degree. Detailed list of institutions, with number of seats in each, is provided in the Annex

One institution, namely Bangladesh College of Physicians and Surgeons (BCPS), offers FCPS (Fellow of the College of Physicians and Surgeons) and MCPS (Member of the College of Physicians and Surgeons) degrees

## Institutions offering undergraduate dental degrees

Table 16.11 shows the number of institutions, along with the total number of seats both in the government and private sectors, which offer BDS degree. Detailed list of institutions, with number of seats in each, is provided in the Annex.



**Figure 16.4. Number of persons receiving FCPS and MCPS postgraduate degrees by year**

**Table 16.9. Type of institutions offering postgraduate medical courses, with number of seats (December 2014)**

Type of organization	No. of organizations	No. of seats							Total
		MS	MD	M. Phil	Diploma	MPH	MTM	MMED	
Government (BSMMU)	1	140	150	70	106	0	10	0	477
Government	22	312	360	242	478	185	0	15	1,614
Private	10	21	38	15	95	0	0	0	169
Total	33	473	548	327	679	185	210	15	2,270

**Table 16.10. Government and private institutions offering MBBS degree, with number of seats (May 2015)**

Type of organization	No. of institutions	No. of seats
Government	36*	3,729
Private	64	5,950
<b>Total</b>	<b>100</b>	<b>9,679</b>

\*Run by DGHS: 30, Bangladesh Armed Forces: 6

### **Institutions offering degrees and diplomas in alternative medicines**

Table 16.12 shows the list of academic institutions, along with the number of seats both in the government and the private sectors, offering degrees and diplomas in alternative medicines.

### **Institutions offering nursing degrees**

Table 16.13 shows the number of institutions, along with the number of seats in both government and private sectors, offering different types of nursing degrees. Detailed list of institutions and number of seats in each institution is provided in the Annex.

**Table 16.12. Government and private institutions offering BDS degrees, with number of seats (May 2015)**

Type of organization	No. of institutions	No. of seats
Government	9	532
Private	24	1,355
<b>Total</b>	<b>33</b>	<b>1,887</b>

### **Institutions to produce midwives**

There are 12 junior midwifery institutions in the private sector, with total seats of 320, to produce midwifery professionals (18-month course). Table 16.14 shows the list.

### **Training facilities for production of community-based skilled birth attendants**

To facilitate attendance at childbirths by skilled health personnel, the Ministry of Health and Family Welfare has a program to produce community-based skilled birth attendants. There are 47 facilities—45 in the government sector and 2 in the private sector to provide such training. Table 16.15 shows the location of the training facilities.

**Table 16.12. Institutions for teaching and training of alternative medicines in Bangladesh in 2014**

Name of institution	Total	Govt.	Private	Duration of course	Duration of internship	Degree offered	No. of seats
Govt. Unani and Ayurvedic Medical College	1	1	0	5 years	1 year	BUMS (Bachelor of Unani Medicine and Surgery); BAMS (Bachelor of Ayurvedic Medicine and Surgery)	50
Homeopathic Medical College	2	1	1	5 years	1 year	BHMS (Bachelor of Homeopathic Medicine and Surgery)	50
Tibbia College/Unani Diploma College	16	1	15	4 years	6 months	DUMS (Diploma in Unani Medicine and Surgery)	25*
Ayurvedic Diploma College	9	0	9	4 years	6 months	DAMS (Diploma in Ayurvedic Medicine and Surgery)	-
Homeopathic Diploma College	50	0	50	4 years	6 months	DHMS (Diploma in Homeopathic Medicine and Surgery)	-

\*Only in government institutions



**Table 16.13. Number of nursing institutions, along with the number of seats, offering different types of nursing degrees (December 2014)**

Course	Ownership	Affiliation	No.	Seats
BSc	Government	MOHFW	7	700
		Armed Forces Medical Institute, Dhaka Cantonment, Dhaka	1	60
		Faculty of Nursing, BSMMU, Dhaka	1	25
	Sub-total (Government)		9	785
	Private	Private (one institution has been closed)	13	430
Sub-total (BSc in Nursing)		22	1,215	
Post-basic BSc	Government	MOHFW	4	500
	Private	Private	10	345
	Sub-total (Post-basic BSc in Nursing)		14	845
Specialized	Private	Private	4	80
		Sub-total (Specialized education in Nursing)		4
Diploma	Government	MOHFW	43	2,580
		Armed Forces Medical Institute	1	50
		Sub-total (Government)		44
	Private	Private	47	1910
	Sub-total (Diploma in Nursing)		91	4,540
Total			131	8,740

**Table 16.14. Junior midwifery institutions, with number of seats in each (December 2014)**

Division	Name of junior midwifery institution	No. of seats
Chittagong	1. Junior Midwifery Institute, Red Crescent Matrisadan Hospital, Chandpur	20
	2. Jemison Red Crescent Midwifery Institute, Agrabad, Chittagong	50
	3. Christian Hospital, Chandraghona, Rangamati	20
	4. Junior Midwifery Institute, Memon Hospital, City Corporation, Chittagong	30
Dhaka	5. Junior Midwifery Institute, Holy Family Red Crescent Hospital, Dhaka	60
	6. Junior Midwifery Institute, Shaheed Moyez Uddin Memorial Red Crescent Matrisadan Hospital, Bangla Bazar, Dhaka	20
	7. Junior Midwifery Institute, Kumudini Hospital, Mirzapur, Tangail	20
	8. Central Hospital Nursing Institute, Green Road, Dhanmondi, Dhaka	20
Khulna	9. Junior Midwifery Institute Ad-Din Matrisadan Hospital, Jessore	20
	10. Junior Midwifery Institute, Fatema Hospital, Jessore	20
Rajshahi	11. Junior Midwifery Institute, Christian Hospital, Bogra	20
Rangpur	12. Prime Nursing College, Rangpur	20
<b>Total seats</b>		<b>320</b>

**Table 16.15. Training institutions for production of community-based skilled birth attendants (December 2014)**

Ownership	Type of facility	Location	No. of facilities
Government	CSBA Institution run by civil surgeon and attached with general hospital/district hospital	ICMS, Matuail, Dhaka. Narayanganj (WHO), Manikganj, Kishoreganj, Jamalpur, Habiganj, Gopalganj, Narsingdi, Nilphamari, Natore, Naogaon, Kurigram, Panchagarh, Gaibandha, Jhenaidah, Bagerhat, Rajbari, Madaripur, Munshiganj, and Chandpur	20
	Family Welfare Visitor Training Institute	Tangail (WHO), Barisal, Faridpur, Comilla (WHO), Kushtia, Sylhet, Rangamati, Dhaka, Rajshahi, Bogra, and Khulna (WHO)	11
	CSBA Institution attached with nursing institutions	Noakhali, Jessore, Satkhira, Thakurgaon, Feni, Joypurhat, Pabna, Brahmanbaria, Netrakona, Chuadanga, Cox's Bazar, Patuakhali, Chapainowabganj, Rangpur, Dinajpur, and Sirajganj	16
Private	CSBA Institution	Kumudini Hospital, Mirzapur, Tangail; Lamb Hospital, Parbotipur, Dinajpur; Christian Hospital, Chandraghona, Rangamati; OGSB Hospital, Mirpur, Dhaka; Model Family Planning Clinic, Rangpur	5
Total			52

### Training schools for production of medical assistants

Medical assistants (now to be designated as Sub-Assistant Community Medical Officer) assist the medical doctors posted at health facilities at the upazila health complex level and below. Medical Assistants are produced by Medical Assistant Training School (MATS) through a three-year academic course comprising theoretical and practical classes. Currently, there are 8 MATS in the government sector and 182 MATS in the private sector (total 190). Total annual production-capacity is 13,051, of which 716 are produced by the government MATS and 12,335 by the private MATS (Table 16.16). Detailed list of institutions, with the number of seats in each institution, is shown in the Annex.

**Table 16.16. Government Medical Assistant Training Schools (MATS), with the number of seats (May 2015)**

Ownership	No. of MATS	No. of seats
Government	8	716
Private	182	12,335
Total	190	13,051

### Institutes of Health Technology (IHT) for production of medical technologists

Medical technologists are laboratory personnel responsible for technical jobs under the supervision of medical experts. A few years back, there was an acute shortage of medical technologists in the country. However, for a steady growth of private institutions, by now there are 137 institutions to produce medical technologists (Table 16.17). Eleven government institutions and 104 private institutions offer diploma and/or BSc/MSc courses. Four institutions (government plus private) offer certificate course in medical technology. The total number of seats in diploma, BSc and MSc courses is 17,451, and that for certificate course is 180. The detailed list of IHTs, along with the number of seats in each, is given in the Annex.

### On-the-job training

Under the operation plan of in-service training, a large number of health personnel and support staff receive on-the-job training each year. A summary of the types of training programs and the number of participants in these training programs is given in Table 16.18. Details of on-the-job training are provided in the Annex.

**Table 16.17. Number of institutions of health technology, along with the number of seats (May 2015)**

Ownership	Type of course	No. of institutions	Discipline	No. of seats
Government	Diploma	8	Lab (415); Radiology (405); Physiotherapy (370); Sanitary inspection (400); Dentistry (405); Pharmacy (405) and Radiotherapy (140) Note: Offspring of freedom fighters and tribal students have 41 reserved seats	2,596
Private	Diploma	104	Lab; Radiology; Physiotherapy; Sanitary Inspection; Dentistry; Pharmacy; and Radiotherapy Note: Offspring of freedom fighters and tribal students have reserved seats	13,266
Government	BSc	3	Lab (85); Physiotherapy (110) Dentistry (120) and Radiology (40)	355
Private	BSc + MSc	18	Lab (395); Physiotherapy (320); Dentistry (320); Occupational (10), and others (115)	1,235
<b>Total (Diploma + BSc + MSc)</b>				<b>17,451</b>
Government + Private	Certificate	4	Optometrist, refraction, ophthalmic assistant, ophthalmic nursing assistant, cath-lab technician	180
<b>Total</b>		<b>137</b>	<b>Grand total</b>	<b>17,631</b>

**Table 16.18. Number of participants in on-the-job training given under operational plan of in-service training in FY 2013-2014**

Area/subject of the training/ workshop/seminar	Duration	No. of batches	No. of participants
<b>A. Local training (short-term)</b>			
Essential service delivery	1-21 day(s)	710	17,574
Management training	3-15 days	382	8617
Orientation of the members of District Training Coordination Committee (DTCC) and District Upazila Training Team (DUTT)	1 day	41	1,025
Development and review of curriculum and training policy	3 days	6	120
Upgrading Training Management Information System (TIMS)	1 day	5	5
Subject-wise specialized training implemented by ICMH, IPH, NIPSOM, IEDCR, BCPS, and CME	1 day-3 months	84	1,708
<b>Sub-total: local training</b>	-	<b>1,228</b>	<b>29,049</b>
<b>B. Overseas training</b>			
<b>a. Different clinical specialties</b>			
Short-term (4 weeks or less) clinical training for health service providers	1-4 week(s)	4	35
Short-term (4 weeks or less) training for basic science and paramedical teachers	1-4 week(s)	2	14
<b>b. Different management and public health specialists</b>			
Short-term (4 weeks or less) training on training and teaching technology, hospital management, waste management, exposure visit of teachers for curriculum development	1-4 week(s)	2	32
<b>c. Specialized overseas training</b>			
Short-term (4 weeks or less) hands-on clinical training for health service providers in local institutions (resource persons from abroad)	1-4 week(s)	8	-
<b>Sub-total: overseas training</b>	-	<b>16</b>	<b>100</b>
<b>Grand total</b>	-	<b>1,244</b>	<b>29,149</b>

## Yearly output from medical and dental colleges of Bangladesh

Table 16.19 shows year-wise number of new doctors and dentists produced from various medical and dental colleges of Bangladesh.

**Table 16.19. Year-wise number of new doctors produced**

Name of medical or dental college	No. of students graduated					
	2009	2010	2011	2012	2013	2014
Dhaka Medical College	147	132	178	202	195	196
Sir Salimullah Medical College	155	146	170	167	220	224
Rajshahi Medical College	139	170	164	205	208	190
Rangpur Medical College	-	185	23	214	131	188
Mymensingh Medical College	162	184	155	207	212	184
Chittagong Medical College	142	181	147	225	174	203
M.A.G. Osmani Medical College, Sylhet	161	160	155	203	203	189
Sher-e-Bangla Medical College, Barisal	143	166	164	190	201	178
Faridpur Medical College	59	59	60	117	108	203
S.Z.R. Medical College, Bogra	-	56	93	130	121	156
Dinajpur Medical College	50	52	75	119	83	110
Khulna Medical College	61	46	80	116	119	112
Comilla Medical College	52	60	49	147	115	211
Dhaka Dental College	79	97	129	84	132	95
Chittagong Dental College	18	36	59	43	38	40
Rajshahi Dental College	37	33	13	47	46	88
Pabna Medical College	-	-	-	-	-	34
Noakhali Medical College	-	-	-	-	-	26
Cox's Bazar Medical College	-	-	-	-	-	36
Shaheed Suhrawardy Medical College	-	-	-	-	-	132

# 17

## HEALTH INFORMATION SYSTEM, eHEALTH, AND MBT

Foundation work done to improve quality and use data for decision-making

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The MIS-DGHS earned another global reputation in November 2014 following its recognition for innovative work that led to winning of the United Nations Digital Health for Digital Development Award by Honorable Prime Minister Sheikh Hasina in 2011

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The MIS-DGHS earned another global reputation in November 2014 following its recognition for innovative work that led to winning of the United Nations Digital Health for Digital Development Award by Honorable Prime Minister Sheikh Hasina in 2011. On 26 November 2014, the Federal Ministry of Economic Cooperation and Development (BMZ) of the Government of Germany officially



Reinhard Tittel-Gronefeld, Head of Health Division at BMZ and Kelvin Hui, Head of Health Division of GIZ Bangladesh launched the publication "A Quiet Revolution" on HIS strengthening in Bangladesh (Bonn, Germany; 26 November 2014). Photo: GIZ/Viktor Siebert

launched the book "A Quiet Revolution: Strengthening the Routine Health Information System in Bangladesh" in Bonn, as part of the German Health Practice Collection. Each year, the BMZ recognizes one project as the best practice among all projects in about 160 countries supported by "The Deutsche Gesellschaft für



Mr. Sajeeb Ahmed Wazed, ICT Adviser to the Bangladesh PM, presenting keynote speech in the South Asia Regional Conference on Health Informatics (Dhaka, 23-24 June 2014)

Internationale Zusammenarbeit" (The German Corporation for International Cooperation, GIZ). The way the MIS-DGHS has improved the national Health Information System (HIS), has been recognized by BMZ as the global best practice for the year 2014. The book contains a detailed description of how the MIS-DGHS achieved almost a miracle, from nothing, in the improvement of national Health Information System (HIS) in Bangladesh. In 2014, the World Bank Bangladesh commissioned an international study to see whether the investment in HIS by the MIS-DGHS is returning value for the money spent. The report was published in early 2015. The result was quite fascinating, leading to recommendation for sustaining the momentum.

Measurement and Accountability for Results in Health (MA4Health) Summit 2015, held in Washington, DC, USA, from 9 to 11 June 2015, organized by the WHO, World Bank, and USAID, gave Bangladesh a special honor by making honorary sponsor of the event due to Bangladesh's special achievement in HIS. Another country—South Africa—received such special treatment. However, in the entire event, Bangladesh's remarkable success in HIS and eHealth was a major focus in the discussions.

The year 2014 was also marked for the expansion of Internet connectivity up to the

grassroots level (all frontline health workers and community clinics in rural Bangladesh). Honorable Minister for Health and Family Welfare Mohammed Nasim, MP, distributed the tablet computers and laptops through a ceremony held on 2 April 2014. The computers were distributed in about 500 places across the country. The ceremony was video-streamed real-time. From 23 to 24 June 2014, the MIS-DGHS organized the First South Asia Regional Conference on Health Informatics in Dhaka. The Conference was sponsored by WHO-HQ, GIZ, and UBS Optimus Foundation. The participants were overwhelmed by the inspirational keynote speech by Mr. Sajeeb Ahmed Wazed, ICT Adviser to the Honorable Prime Minister.

## HIS-Health Information System

### ***COIA Initiative to take NCD interventions as well***

The well-known Commission on Information and Accountability for Women's and Children's Health (COIA), established to register and track pregnant women and under-five children electronically, is an initiative of the United Nations for improving the women's and children's health and attainment of MDG 4 and 5 in countries lagging behind the targets. The Bangladesh COIA secretariat, established in 2014 with support from WHO-HQ, is operating the COIA activities country-wide. COIA program created momentum in the MNCH



activities among the collaborative partners, viz. HIS-EH, CBHC, MNCAH-DGHF, MCH-DGFP, MIS-DGFP, WHO, UNICEF, UNFPA, JICA, SAVE, USAID, Plan International, icddr,b, BRAC, CIPRB, etc. The UNICEF further expanded the COIA model to local-level planning to facilitate overall improvement of health situation at the district and upazila level through using the government healthcare platform. The evidence is being generated through the same national HMIS portal based on DHIS2. The unique feature of COIA model is tracking of individuals; community health workers and community clinics register every pregnant woman and every under-five child living in the respective community catchments through DHIS2. A routine weekly meeting is being held in the community clinic where the government community health workers (CHCP, HA, and FWA), NGO healthcare workers, and members of the community clinic management committee and community support group review the local maternal and child health data; if required they clean and further update that data, make intervention plan for the next week, and implement the plan. This routine cycle continues to track, follow up, and improve maternal and child health situation. As the WHO-HQ's support was extended through a catalytic seed fund for the COIA secretariat, it was a concern for how to sustain the growing momentum of the COIA program in Bangladesh. The Joint Donor Technical Assistance Fund (JDTAF), which provides technical assistance for HPNSDP 2011-2016 of the MOHFW of Bangladesh, came as a rescue for the period until the end of HPNSDP 2011-2016. However, given the context of high morbidity and mortality burden of non-communicable diseases in Bangladesh, JDTAF also proposed to include community-based NCD interventions into the COIA program as a requirement for funding support. Therefore, NCD interventions have been included in the extended COIA programs. According to the JDTAF's procedure, a consultant (person, firm, or organization) needs to be hired for taking responsibility of implementation. We are pleased to mention that icddr,b has been selected as the contractual partner for operating the

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The platform for citizens' life-time electronic health records, designated by the MIS-DGHS as the Shared Health Records (SHRs), is ready for use

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COIA secretariat on behalf of the MOHFW and implementing the extended COIA program for two focuses: MNCH and NCDs. As of July 2015, icddr,b started to recruit additional staff and take over the responsibility of COIA secretariat.

***Shared Health Records-platform for citizens' electronic health records-is going to pilot***

The platform for citizens' life-time electronic health records, designated by the MIS-DGHS as the Shared Health Records (SHRs), is ready for use. It has been decided to pilot the software in few hospitals and community settings before national scale-up. The platform of the Shared Health Records has been developed for keeping in mind the vision of introducing universal electronic health records in the country. However, its future potential is now being thought of in new perspectives. One of the perspectives is to release a global reference list of 100 core health indicators by the WHO and other members of the International Health Partnership. This list is minimal but comprehensive to allow collection of health data for measuring progress of different health targets proposed in the post-2015 Sustainable Development Goals (SDGs) inclusive of those for universal health coverage (UHC). Another perspective is the global drive toward promoting establishment of universal civil registration and vital statistics (CRVS) system in the countries. The Government of Bangladesh is also pushing the CRVS agenda forward. The SHR, due to its plan to register and track every citizen for health encounters, routine check-ups, and surveillance, is best suited for measurement



## The number of organizations that published online Local Health Bulletins in fiscal 2014-2015 is 630

of progress of UHC and health in the SDGs as well as for linking to CRVS, especially for notification of birth and death to the National Birth and Death Registration Authority and capturing data on cause of death. The days to come will say how far the SHR platform is contributing to this ambitious vision. We acknowledge that DFID provided technical assistance to the development of SHR platform. The latest development in this regard is the successful launch of the life-time electronic health-records in Kaliganj upazila of Gazipur district of Bangladesh on 18 November 2015 to be scaled gradually all over Bangladesh.

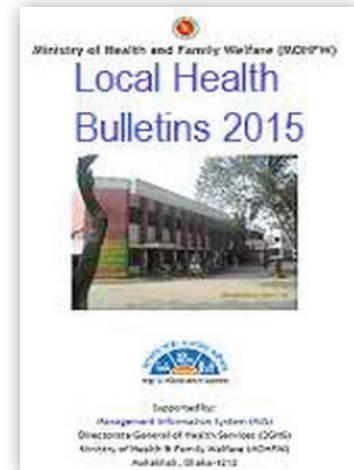
### **MoU with A2I of the Prime Minister's Office**

On 12 July 2015, a Memorandum of Understanding (MoU) has been signed between the Ministry of Health and Family Welfare and the Access to Information (A2I) project of the Prime Minister's Office to expand effective collaboration between the two parties with respect to promotion of digital health information in the country. The priorities at the short-term have been identified to focus on scaling-up of the platform of Shared Health Records; development of an electronic platform for nationally-managed appointments with health service providers; development of a GIS-supported system for finding and calling ambulance located at the best nearby location anywhere in the country; promoting eLearning system in healthcare; and provision of technical assistance to improve the quality of service of the planned health call center of the MIS-DGHS.

### **Local Health Bulletins and Annual MIS Conferences 2015**

Publication of online Local Health Bulletins by different health organizations, which began from fiscal 2011-2012, is continuing with much appreciation. The number of organizations that

published online Local Health Bulletins in fiscal 2014-2015 is 630 ([www.dghs.gov.bd](http://www.dghs.gov.bd)>>data). As a convention, the online Local Health Bulletins are presented by the heads of respective organizations, where health managers, MIS focal points, and statistical staff of the respective organizations, along with technical experts from the MIS-DGHS, development partners, and major NGOs remain present. Open discussion, critical analysis, and feedback follow after each



presentation. In May-June 2015, eight annual MIS conferences were held—seven in seven divisional headquarters for hospitals and organizations at the division level and below, with the eighth at the MIS-DGHS, Dhaka, for the tertiary-level hospitals. In the annual MIS conference for tertiary hospitals, Mr. Zahid Maleque, MP, Honorable State Minister for Health and Family Welfare was present as Chief Guest in the inaugural session, and Professor Dr. Deen Mohd. Noorul Huq, Director General of Health Services, was present as the Special Guest. Among others, Prof. Dr. Samiul Islam, Director (Hospitals and Clinics) and Dr. Ehtemshamul Haque Choudhury, Director (Administration) of the DGHS spoke in the inaugural session. Professor Dr. Abul Kalam Azad, Additional Director General (Planning & Development) and Director (MIS) made a presentation in the inaugural session to highlight the findings of Local Health Bulletins of all tertiary-level public hospitals in the country.

### **Human Resource Information System (HRIS) -all paper-based ACRs (annual confidential reports) are now made online**

The comprehensive design of the Human Resource Information System (HRIS) developed

by the MIS-DGHS is receiving increasing attention and policy support. This has been resulted from several discussions, review, and consultation of the existing system. It has been recognized that this system can be used for capturing human resource data of the health sector, although further need-based improvement may be required. Therefore, the HRM (Human Resource Management) Operational Plan decided to use the existing HRIS for ministry-wide human resource information management and to collaborate with the MIS-DGHS in further improvement of the system. However, having good software is not enough for effective human resource information management. Compliance to on-time updating of data correctly is the most important factor. Although the HRIS has been designed to transform the manual human resource management work to automation, it has not been materialized yet due to earlier inertia at the policy level. So, monitoring of the data quality and feedback to the defaulter organizations were strongly felt. To respond to this need, the control room of the DGHS has been given additional responsibility of monitoring cell to further improve the “monitoring and feedback to defaulter” activity. Recently, the MOHFW has taken a strong policy decision to adopt the automation function of the HRIS gradually so that all human resource management processes are done through the HRIS system. If this drive becomes successful, the HRIS will be able to fulfill the dream for which it was built. In 2014, the MIS-DGHS crossed another milestone of success through digitizing all the ACRs of the doctors working under the DGHS. The ACRs can now be viewed online from the same integrated platform of the HRIS.

***The procurement portal of MOHFW significantly reduced the length of procurement time***

It was reported in Health Bulletin 2014 that the MOHFW uses an online procurement portal developed with technical assistance from Management Sciences for Health (MSH) and supported by USAID. All processes for procurements under HPNSDP (2011-2016),

beginning from fiscal 2013-2014, are being done by this portal. The experience shows that the use of this portal has significantly reduced the total time required for completing a procurement.

***Monthly and annual reporting for Cabinet Division***

The MIS-DGHS provided routine monthly and annual reports to Cabinet Division of the Government of Bangladesh, using a standard proforma. The reports contain exhaustive information items on the overall health sector.

***Data collection and use***

The shared collection and use of data through DHIS2 have been further improved, and technical expertise has been scaled up among different development partners and organizations through providing training. Data from community clinics and programs, like MNCAH, IMCI, EPI, TB, NCDs, communicable diseases, HIV/STD, nutrition, COIA, cervical and breast cancer screening, obstetric fistula screening, and care program are being flown to the national HMIS. Data from DGFP, NGOs, DPs, and urban health dataset managed by DMIS as well as financial data for annual development program are also being received by the national HMIS. Besides, administrative and service data from IEDCR, IPH, NIPSOM, DGFP, DGDA, DNS, and a number of government and private organizations have been collected and also summarized in Health Bulletin 2015.

***Social media portals of DGHS bring half a million visitors per month—photo album is a new addition***

The DGHS web portal is increasingly better serving as a popular platform for information dissemination. The major social media portals, viz. Facebook, Twitter, Google+, YouTube, etc. are also used as channels for information dissemination. It is estimated that over half a million visitors come every month to see one or more component(s) of the integrated web portal. In 2014, an electronic photo album has been added, which has now become the living

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After satisfactory improvement in platform of the foundation work, the MIS-DGHS has recently given more attention to improving quality and use of data

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archive of pictures on health programs being run throughout the country, both for dissemination and collection.

### ***Dissemination of information and publications***

Between 2014 and 2015, the successes and various elements of digital progress of the MIS-DGHS have been discussed in well over 20 international events. Nationally, there were also many more similar events where the current progress, lessons learnt, challenges, and future potentials have been discussed. The information and statistics generated were also disseminated through web and social media portals, online national and Local Health Bulletins, printed health bulletins, newsletters, manuals, modules, and other publications, and also through annual MIS conferences, seminars, training courses, workshops, and meetings.

Honorable Prime Minister Sheikh Hasina with WHO Director General Dr. Margaret Chan, WHO South-East Asia Regional Director Dr. Poonam Kethrapal Singh, Health Minister of Bangladesh Mohammed Nasim, Honorable State Minister Zahid Maleque, and Saima Wazed Hossain during WHO-SEAR Health Ministers' Meeting held in Dhaka on 9-12 September 2014



### ***Improvement of dash boards***

After satisfactory improvement in platform of the foundation work, the MIS-DGHS has recently given more attention to improving quality and use of data. For this reason, advocacy programs with the help of development partners and research organizations, and user-friendly dash boards are being created. The dash boards give importance to visualization, including increase in the use of geospatial data. The days to come will see further development in this area.

### ***eHealth***

The MIS-DGHS uses the term “eHealth” to describe health services to citizens delivered through the use of ICT. The following section describes what further development has been done in eHealth recently.

### ***ICT technical support to Health Ministers' Meeting and the Regional Committee Meeting of the WHO South-East Asia Region***

Between 9 and 12 September 2014, two important events were held in Hotel Sonargaon

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Health ministers from all the 11 Member States of the WHO South-East Asia region, with their delegations, attended the WHO-SEAR meeting

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Pan Pacific, Dhaka. One was the 32nd Health Ministers' Meeting of the WHO South-East Asia region. The other was the 67th session of the Regional Committee of the WHO South-East Asia region. Health ministers from all the 11 Member States of the WHO South-East Asia region, with their delegations, attended the meeting. These high-profile meetings were inaugurated by Honorable Prime Minister Sheikh Hasina and illuminated by the gracious presence of WHO Director General Dr. Margaret Chan and WHO Regional Director of South-East Asia Dr. Poonam Kethrapal Singh. There was a simultaneous international side-event on autism during these meetings—also inaugurated by Honorable Prime Minister Sheikh Hasina. Ms Saima Wazed Hossain and the Health Minister of Timor-Leste, Dr. Sergio GC Lobos, on behalf of the National Malaria Control Programme of Timor-Leste, received the WHO Excellence Award for Public Health for their outstanding contributions in the fields of autism and malaria control respectively. The challenge of these events was provision of IT state of the support for concurrent public address system, presentation, video capture, editing, and live streaming, documentation, printing, duplication, and distribution without interruptions in the meetings. The MIS-DGHS successfully provided technical assistance beginning from planning, designing, collection of equipment, and setting to managing the ICT support successfully.

#### ***Telemedicine service in various forms***

The MIS-DGHS provides telemedicine service in various forms, which include mobile phone health service, advanced telemedicine and Skype-based tele-consultation. Between 2014

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The mobile phone health service received recognition through ICT4 Development Award (2010) and special mention in Manthan India Award (2011)

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MAMA Bangladesh uses a short code '16227' and provides pregnant and new mother's lifesaving information, including also advice for their newborn babies and children through SMS, IVRs, and direct counseling

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and 2015, all platforms have seen expansion. The mobile phone health service was first introduced in 2009 in 418 upazila health complexes and 64 district hospitals (total 482). Each hospital has a mobile phone to be carried round-the-clock by an on-duty doctor. People living in the catchment areas call the doctor, if need arises, and the doctor answers to give appropriate medical advice free of charge. Due to simplicity and no cost involvement for operation, the community healthcare providers (CHCPs) have been advised to provide similar health service using their own mobile phone for the people living in the respective community catchments. The mobile phone health service received recognition through ICT4 Development Award (2010) and special mention in Manthan India Award (2011).

The MIS-DGHS also introduced advanced telemedicine service which is currently being provided from 42 hospital-based centers across the county. Additional 15 telemedicine centers will be added by the end of 2015. These telemedicine centers are considered 'advanced' because these use high Internet bandwidth, large screen display, good-quality telemedicine camera, and telemedicine peripherals, like tele-stethoscope, tele-ECG, tele-microscope, tele-glucometer, etc. The first few advanced telemedicine centers were established in fiscal 2009-2010 in 8 hospitals and were formally inaugurated by Honorable Prime Minister Sheikh Hasina on 6 July 2011.

Subsequently, similar telemedicine centers were expanded to additional 34 hospitals. The Ministry of Science and Technology is currently working with the MIS-DGHS to support expansion of advanced telemedicine service to over 20 new hospitals.

Besides mobile phone health service and advanced telemedicine, Skype-based tele-consultation is also pursued. All functioning community clinics (~13,000) and all DGHS union health centers (~1,275) have been brought under coverage of Internet connectivity through provision of one laptop and one broadband wireless Internet modem in each. In community clinics or most of the union health centers, no qualified doctor is posted. However, there may be occasions when some patients need to consult a more qualified medical practitioner. In such cases, a Skype video-conferencing can be set up to hook the community clinic or union health center to a doctor sitting in the nearby upazila hospital to have a direct conversation between the patient and the doctor. The laptop computers in the community clinics and union health centers are also being used for multiple purposes, viz. telemedicine, updating community health data, health education to people, training of health staff, monitoring of clinic operation time, email communication, and Internet-browsing. The telemedicine project of MIS-Health received the National ICT4 Development Award in 2011.

### Video-conferencing

In fiscal 2014-2015, procurement order, on

behalf of the MIS-DGHS, has been placed by the Central Medical Stores and Depot to install 77 video-conferencing system in 77 strategic locations (MOHFW. DGHS. DGFP, 7 division directors' and 65 civil surgeons' offices. Once launched, the system will create opportunity for doing remote meetings, conferences, training, etc., thus minimizing travel requirement to a large extent.

### ***The third eye—citizens help in revealing reality even if routine administrative monitoring finds no problem***

As was before, the SMS-based complaint-suggestion box remains as the innovative and effective mechanism to know citizens' feedback on the quality of service in the public hospitals. This system is frequently recommended for further promotion with a view to improving accountability and transparency of public hospitals. This system is working in about 800 public hospitals and health organizations. In each of these, a display board is mounted on the wall (Figure 17). The display board describes how to send complaints about quality of services or suggestions for improvement of services. Clients of the hospitals or health organizations make complaints or suggestions in the form of SMS to a particular mobile number. A web server located at the MIS-DGHS receives the complaints-suggestions and displays these instantly on the web portal; some details also go for public viewing. Responsible staff members at the MIS-DGHS check the complaints and suggestions

General Hospital,	16-07-2015 @ 10:23:27am	room no.110.doctor aseni ekhono.and aste Onek late kore
100 bed District Sadar Hospital,	16-07-2015 @ 09:59:46am	have patient not doctor
250 Bedded District Sadar Hospital,	16-07-2015 @ 09:50:42am	doctor is not available at opd child dept.
- Sher-e-Bangla Nagar- Dhaka, Dhaka	16-07-2015 @ 08:10:37am	outdoor ticket counter room no 132 not open yet.its become regular practice. therefore Long cue.Also Lift not working.Please take action.

**Figure 17. Example of some complaints excerpted from the DGHS web portal**

and talk to the SMS senders to know more about the message. The staff members then talk to the local or other responsible authority to solve the problem or work on the suggestions. The public view of the complaint-suggestion box is available at [>>Data >>Complaint & Suggestion Box](http://www.dghs.gov.bd).

### ***Fingerprint machines in public hospitals for remote central monitoring of staff attendance***

As in many other countries, absenteeism from workplace, particularly from the remotely-located workplaces, is a common complaint. To track the office attendance of government health staff in workplaces, the MIS-DGHS installed remote biometric time-attendance machines in all upazila and district hospitals and in some tertiary hospitals. These are low-cost fingerprint biometric machines, and the recorded touch-encounter scan can be tracked from central office with the help of software developed locally. During installation, staff members' fingerprints were recorded in the database. Every day, the staff members need to touch the sensor of the machine during their check-in and check-out. The machine itself can keep in memory 30,000 encounters. Connected to a local computer through USB cable, the machine becomes empty of touch-records through transferring the same to the computer when the latter is switched on. At the MIS-DGHS, a web server captures the attendance data whenever the server finds the local computers switched on and connected to Internet for any purpose. Pre-defined web-based reports can be generated on the server-side, which can be accessed through web-browser from anywhere.

### ***Multipurpose round-the-clock health call center and MAMA***

The MIS-DGHS launched a multipurpose health call center from September 2015. This round-the-clock (24 hours all 7 days a week) call center started with support from DFID and is being operated through a professional outsourced company. A short calling code '16263' is being used for receiving calls and text messages from the clients. The call center is providing live

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The union health centers and community clinics have laptop computers and wireless modems, and the community health workers have android tablets

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health counseling, complaints management, and content delivery. A partnership program is also being operated with D.Net to provide an mHealth service called MAMA (Mobile Alliance for Maternal Action). MAMA Bangladesh uses a short code '16227' and provides pregnant and new mothers lifesaving information, including also advice for their newborn babies and children through SMS, IVRs, and direct counseling. This program is supported by USAID, partnered by Smiling Sun Clinic and Save the Children and coordinated by Abt Associates and D.Net. The MIS-DGHS is also actively working in Gaibandha district of Bangladesh with Johns Hopkins Bloomberg School of Public Health to develop and implement mCare (for pregnancy care) and mTika (for immunization) to track pregnant mothers and under-five children. In 2011, the mCare project was recognized as one of the top 11 innovations of the world by a global competition arranged by mHealth Alliance of the United Nations Foundation.

### ***Bulk SMS***

The innovative bulk SMS system of the MIS-Health, introduced in 2009, remained an effective solution even as of now to disseminate quick and urgent messages to health staff. The use of bulk SMS was frequent and demand-driven. For the bulk SMS system, mobile phone numbers of all health managers and staff members down to the grassroots level were collected and grouped. Customized text messages can be broadcast to one or multiple groups instantly.

### ***Medical and dental admission tests being managed digitally***

The digitally-managed medical and dental admission tests for both public and private medical and dental colleges of Bangladesh, which was started in 2001, continues as of now. Admission-seekers submit applications by online electronic form. The system then checks and authenticates prerequisite educational qualifications from secondary and higher secondary school examinations databases. Students then submit test-fees by mobile phone top-up. On successful fee submission, a text alert informs the student for collecting the Admit Card from a specified website. Students' admission test halls and seating plans are also managed and informed digitally. The answer-sheets of examinations use OMR (optical mark reader) technology. After the examination, all the answer-sheets are transported to Dhaka the same day from all over the country. The next day, all answer-sheets are read by OMR machine, and results are prepared with intelligent software to inform the eligible examinees for which institutions they qualified for admission. On the same day or the next day, results are sent to students' mobile phone numbers and also published through website.

### ***Hospital automation***

Two new hospitals (DMCH and NINH) will see automation of hospital processes soon, for which supply of ICT equipment is in the pipeline. These are in addition to the earlier hospitals that started automation functions, viz. National Institute of Kidney Diseases and Urology (NIKDU); Government Employees' Hospital; Azimpur Maternity Hospital; Bangladesh Secretariat Clinic; National Institute of Traumatology, Orthopedics and Rehabilitation (NITOR); and National Institute of Cardiovascular Diseases (NICVD). However, the real expansion of automation for the reasonable number of hospitals will be seen through scaling of Shared Health Records as explained before.

### ***Other eHealth initiatives—digital training facility and connectivity***

The digital training facility, inclusive of an auditorium created by the MIS-Health in 2009, was efficiently used over the past years. Its

attraction as one of the best meeting and seminar places continues to increase. Equipped with state-of-the-art gadgets, such as digital podium and sound system, interactive board, wireless presentation, wi-fi network, video-conferencing, etc., the facility attracts several organizations to hold their workshops, meetings, and symposia. The MIS-DGHS is still in the forefront in spreading Internet connection all over the country, which now extends down to the grassroots-level health facilities and workers (all union health centers, community clinics, and community health workers). The union health centers and community clinics have laptop computers and wireless modems, and the community health workers have android tablets. To ensure appropriate support for the HIS and eHealth solutions, a robust, highly-secured, and never-sleep data center, with plenty of storage space, has been put in place. A world-class state-of-the-art data center equipped with RAID servers, firewalls, VMware, underground cable system, automatic fire protection and humidity control, four tiers of power supply system, anti-spy and anti-hacking system to prevent unauthorized entry, remote monitoring system, text alerts by mobile phone, etc. exists in the MIS-DGHS. A disaster recovery center also exists in Khulna, an area not prone to earthquake, 300 km away from Dhaka.

### ***Technical partners***

In addition to the MOHFW, other technical partners, like A2I Project, World Bank, WHO, UNICEF, DFID, UNFPA, Rockefeller Foundation, JICA, USAID, icddr, Measure Evaluation, CIDA, UNESCAP, JPGSPH-BRAC University, BRAC, JHU, MSH (SIAP), Save The Children, D.Net, CIRPB, CIDA, etc., assist the MIS-DGHS to make technology-related solutions, training, and capacity-building.

### ***Medical Biotechnology***

The third component of HIS and eHealth operational plan is medical biotechnology (MBT). Activities relating to medical biotechnology are advancing to achieve the goals according to HPNSDP 2011-2016. A number of training programs for policy-makers, scholars, medical





Medical biotechnology laboratory at the Center for Medical Biotechnology at the Institute of Public Health

teachers, and doctors and workshop on awareness of biotech contact personnel and policy-makers were held in 2014-2015, where a total of 330 participants attended. A summary of the training sessions and workshops is provided in the Annex. To establish a Medical Biotechnology Commission, a draft of the MBT Law has been prepared which is sent to the Ministry of Health and Family Welfare for taking necessary steps to finalize and get approval from the Government of Bangladesh. High-tech medical biotechnology equipment have been procured for research, development and innovation activities on molecular biology and genetic diagnosis in medical biotechnology laboratories in 6 Institutions (4 medical colleges, BSMMU, and CMBT- ideSHi Laboratory situated at the 2nd floor of IPH building, Mohakhali, Dhaka). MBT-related books have been provided to 6 newly-

established government medical colleges and 8 other government institutions. In collaboration with the Institute of Developing Science & Health initiatives (ideSHi, Bangladesh—a local science and technology philanthropy—we developed a BSL3 biotechnology research laboratory at the Center for Medical Biotechnology. Taka 30 lakh has been given to BMRC for research work, and they have called for six proposals from interested persons/ organizations through announcements in the daily newspapers, with the commitment of Taka 5 lakh for each. To ascertain a center of excellence for MBT, land requisition application has been submitted to the IPH authority. A committee has been formed for distribution of unused land of IPH, and the committee had several meetings. It is expected that not less than 1 acre land will be allocated for the Center for Medical Biotechnology as a center of excellence.

## Capacity improvement and maintenance

### Human resource for HIS and eHealth

Currently, there are 785 sanctioned posts of statistical staff throughout the country. These staff members are already made skilled through training and engagement in practical work since 2009. These personnel are used as dedicated HIS and eHealth staff. Other staff members are also being trained to play their role in real-time data-entry at the source of data. The distribution of 785 statistical staff members by type of organization is shown in Table 17.1. By class category, the distribution of these sanctioned

**Table 17.1. Distribution of sanctioned posts of HIS and eHealth staff by type of organization and their vacancy situation (June 2015)**

Staffing situation	Upazila hospitals and health office	District civil surgeon's office	MIS-DGHS	Divisional health office	Postgraduate teaching institute and hospital	DGHS	Medical college hospital	100- to 300-bed hospitals	TB clinic at Chankhar Pool of Dhaka city	Total
Sanctioned posts (No./%)	483 61.53%	120 15.29%	92 11.72%	23 2.93%	20 2.55%	8 1.02%	17 2.17%	21 2.68%	1 0.13%	785 100.0%
Existing staff (No.)	365	61	40	20	12	6	7	11	1	523
Vacant (No. & %)	118 24.43%	59 49.17%	52 56.52%	3 13.04%	8 40.00%	2 25.00%	10 58.82%	10 47.62%	0 0.0%	271 33.38%

posts is as follows: Class I (122, 15.54%); Class II (17, 2.17%); Class III (636, 81.02%); and Class IV (10, 1.27%).

### **Training, workshops, and seminars**

In 2014-2015, several types of training courses, workshops, and seminars of different durations were held both at the MIS-DGHS office in Dhaka as well as at the local hospitals/health offices. A total of 29,149 officers and staff members participated in the training courses, workshops, and seminars held under the HPNSDP 2011-2016. In the WHO- and UNICEF-supported training program, another 800 and 2,212 personnel participated respectively. It may be mentioned that some participants might have attended more than one training, workshop, or seminar.

### **Supply of ICT equipment and computer stationeries**

Table 17.2 provides information on different types of hardware and machinery procured and distributed from 2011-2012 through 2014-2015.

### **Repair and maintenance of computers, printers, and other accessories**

In fiscal 2014-2015, the MIS-DGHS repaired 605 desktop, laptops, monitors, printers, UPSs and PDAs. Table 17.3 summarizes the information.

### **Repair and maintenance of computers, printers, and other accessories**

In fiscal 2014-2015, the MIS-DGHS repaired 605 desktop, laptops, monitors, printers, UPSs and PDAs. Table 17.3 summarizes the information.

**Table 17.2. Hardware and machinery procurement from fiscal 2011-2012 through 2014-2015**

Hardware	FY 2011-2012	FY 2012-2013	FY 2013-2014	FY 2014-2015	Distribution
Desktop computer	600	4,360	6,000	-	Hospitals, health offices, academic and training institutions from upazila to national level across the country
Laptop computer	3,465	12,471	2,000	-	<ul style="list-style-type: none"> <li>• FY 2011-2012: To 3,465 community clinics</li> <li>• FY 2012-2013: To union health facilities and to the remaining functional community clinics</li> <li>• FY 2013-14: To newly-functional community clinics and other health facilities and organizations</li> </ul>
UPS (offline - 600 VA)	500	4,000	6,000	-	<ul style="list-style-type: none"> <li>• Accompanies one for each desktop computer</li> </ul>
Tablet device	3,500	84,00	10,000	-	<ul style="list-style-type: none"> <li>• To community healthcare providers (HA, HI, and AHI)</li> </ul>
Equipment for tertiary-level hospital automation	NIKDU	NICVD & NITOR	DMCH & NINS	-	-
Equipment for telemedicine centers and peripherals	10	10	15	15	<ul style="list-style-type: none"> <li>• FY 2009-2010: 8 telemedicine centers established in 8 hospitals and 1 coordination center at the MIS-DGHS</li> <li>• FY 2011-2012: 10 additional telemedicine centers in 10 hospitals</li> <li>• FY 2012-13: 10 additional centers in 10 hospitals</li> <li>• FY 2013-14: 15 more centers in 15 hospitals</li> <li>• FY 2014-15: 15 more centers in 15 hospitals</li> </ul>

Table 17.2 contd...

Hardware	FY 2011-2012	FY 2012-2013	FY 2013-2014	FY 2014-2015	Distribution
Data center equipment	Data center start-up in Dhaka	Disaster recovery service center at Khulna	Upgrading the existing data centers	Upgrading the existing data centers	<ul style="list-style-type: none"> <li>• FY 2012-12: Data center at the MIS-DGHS established</li> <li>• FY 2012-2013: Disaster recovery service (DRS) center in Khulna established</li> <li>• FY 2013-2014: Data center and disaster recovery service center upgraded</li> <li>• FY 2014-2015: Data center and disaster recovery service center upgraded</li> </ul>
Medical biotechnology equipment				Equipment for research, development and innovation activities on molecular biology & genetic diagnosis	<ul style="list-style-type: none"> <li>• FY 2014-2015: Total:6, one each in 4 medical colleges, BSMMU, and CMBT-IdeShi Laboratory</li> </ul>
Equipment for Local Area Networking (LAN)				Installation of LAN in health facilities	<ul style="list-style-type: none"> <li>• FY 2014-2015: All UHC and district level hospitals</li> </ul>

Table 17.3. Number of desktops, laptops, monitors, printers, UPSs and PDAs repaired in FY 2014-15 by the MIS-DGHS

Institute	Desktop	Laptop	Monitor	Printer	UPS	PDA	Total
DGHS	59	48	15	39	12	12	185
Specialized institutes	15	3	10	6	1	1	36
Civil surgeon offices	18	8	11	11	0	9	57
District hospitals	8	5	3	6	3	0	25
Upazila hospitals	37	95	14	35	6	115	302
<b>Total</b>	<b>137</b>	<b>159</b>	<b>53</b>	<b>97</b>	<b>22</b>	<b>137</b>	<b>605</b>

# 18

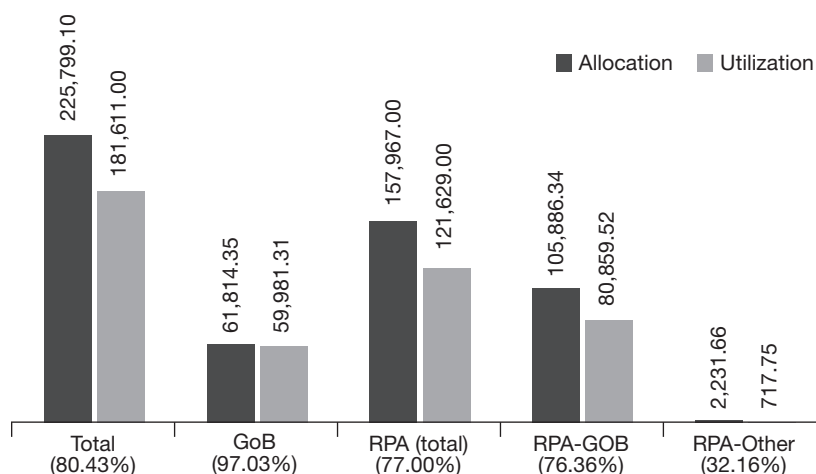
## FINANCING HEALTHCARE

Almost 100% of government fund utilized

The development budget of MOHFW and its agencies comes from Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016. In fiscal 2014-2015, the total allocation under revised annual development program (RADP) for the Directorate General of Health Services (DGHS) was BDT 225,799.10 lakh (Figure 18.1). This allocation was distributed among 17 operational plans of the DGHS as per respective work plans.

Table 18.1 shows the allocation, expenditure, and utilization in FY 2014-2015 (revised ADP) of HPNSDP 2011-2016 fund against different operational plans of DGHS. Detailed breakdown is shown in the Annex.

In fiscal 2014-2015, the total allocation under revised annual development program (RADP) for the Directorate General of Health Services (DGHS) was BDT 225,799.10 lakh



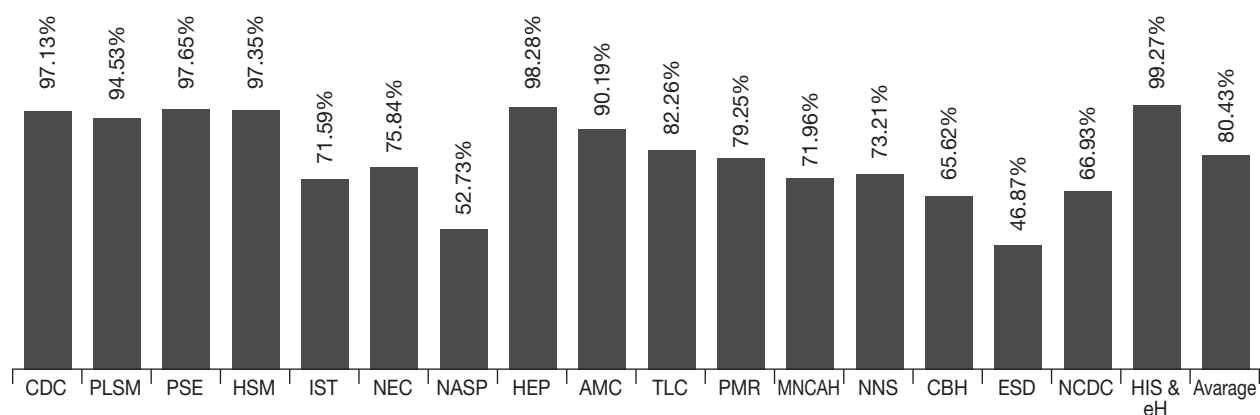
**Figure 18.1. Allocation and expenditure (in lakh taka) against operational plans of the DGHS in fiscal 2014-2015 under HPNSDP (values in parentheses show % of fund utilization against allocation)**

Table 18.1 shows that, as of June 2015, the total expenditure was BDT 181,611.00 lakh, the utilization rate being 80.43%. Of the total RADP allocation, GOB fund was BDT 61,814.35 lakh. The utilization rate of GOB fund was 97.03% (BDT 59,981.31 lakh), and that of RPA fund (RPA-GOB plus RPA-others) was 77.00% (BDT 157,967.00 lakh out of BDT 121,629.00 lakh). The RPA (GOB) fund utilization rate was 76.36%

(BDT 105,886.34 lakh against allocation of BDT 80,859.52 lakh). RPA (other) fund utilization rate was 32.16%. In fiscal 2013-2014, the overall fund utilization rate was 88.20% (GOB: 95.43%; RPA: 86.33%; RPA-GOB: 86.67%; RPA-other: 79.51%). Thus the overall fund utilization was lower in FY 2014-2015. However, utilization of the GOB fund was higher in this fiscal year (97.03%) than that of FY 2013-2014.

**Table 18.1. Allocation, expenditure, and utilization in FY 2014-2015 of HPNSDP 2011-2016 fund against different operational plans of the DGHS**

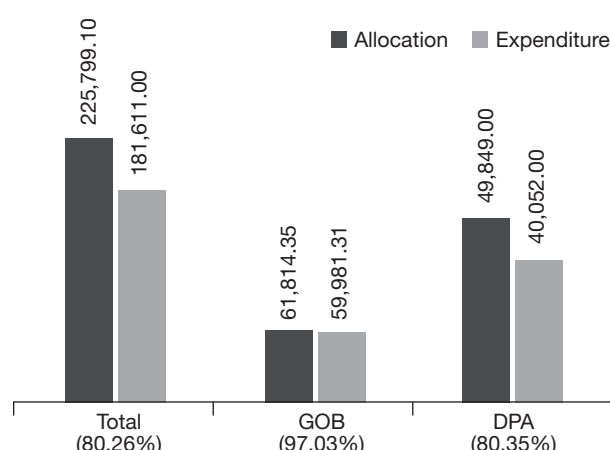
Program	Allocation (BDT in lakh)	Expense (BDT in lakh)	Utilization rate (%)
Maternal, Neonatal, Child and Adolescent Health	72,560.00	52,215.95	71.96
Essential Services Delivery	6,832.00	3,202.17	46.87
Community-based Healthcare	27,500.00	18,046.77	65.62
TB and Leprosy Control	7,164.00	5,893.15	82.26
National AIDS/STD Program	4,200.00	2,214.54	52.73
Communicable Diseases Control	11,000.00	10,683.96	97.13
Non-communicable Diseases	1,900.00	1,271.68	66.93
National Eye Care	550.00	417.12	75.84
Hospital Services Management & Safe Blood Transfusion	37,744.10	36,742.77	97.35
Alternative Medical Care	1,200.00	1,082.29	90.19
In-service Training	3,456.00	2,473.99	71.59
Pre-service Education	15,550.00	15,184.86	97.65
Planning, Monitoring and Research (Health)	954.00	756.00	79.25
Health Information System & eHealth	8,700.00	8,636.38	99.27
Health Education and Promotion	2,750.00	2,702.81	98.28
Procurement, Logistics & Supplies Management	12,700.00	12,004.87	94.53
National Nutrition Services	11,039.00	8,081.46	73.21
<b>Total OPs of DGHS</b>	<b>225,799.10</b>	<b>181,611.00</b>	<b>80.43</b>



**Figure 18.2. Fund utilization rate (%) of the DGHS operational plans in FY 2014-2015**

Figure 18.2 shows the fund utilization rate of different operational plans of the DGHS in fiscal 2013-2014 under HPNSDP 2011-2016.

Figure 18.3 shows the allocation and expenses of 25 investment projects of MOHFW in fiscal 2014-2015 under HPNSDP 2011-2016. Total allocation was BDT 449,572.35 lakh, and total expense was BDT 385,159.19 lakh. The utilization rate was 85.67%. The GOB allocation was BDT 219,373.35 lakh, and expense was BDT 209,300.08 lakh. The utilization rate was 95.40%. The Direct Project Aid (DPA) allocation was BDT 60,254.00 lakh, and the expense was BDT 47,952.17 lakh. The utilization rate was 79.58%.



**Figure 18.3. Allocation and expenses (in lakh taka) of 25 investment projects of MOHFW under HPNSDP in fiscal 2014-2015 (values in parentheses show fund utilization rate in %)**

**Table 18.2. Allocation, expenditure, and utilization in FY 2013-2014 under HPNSDP 2011-2016 for different investment projects**

Investment project	Allocation (BDT in lakh)	Expense (BDT in lakh)	Utilization rate (%)
Establishment of 250-bedded National Ophthalmology Institute and Hospital (1st Phase: 250 beds)	80.00	73.45	91.82
Upgradation of National Institute of Cancer Research and Hospital from 50 beds to 300 beds	1,738.00	130.67	7.52
Establishment of National Institute of Laboratory Medicine and Referral Centre	2,300.00	2,273.18	98.83
Extension of Dhaka Shishu (Children) Hospital Project	1.00	1.00	100.00
Establishment of Essential Drugs Company Limited, 3rd Plant, Gopalganj	2,500.00	2,497.53	99.90
Expansion and Quality Improvement of Nursing Education	2,800.00	2,074.17	74.08
Revitalization of Community Healthcare Initiatives in Bangladesh	26,892.00	25,710.37	95.61
Conversion of BSMMU to a Center of Excellence Project	6,100.00	4,693.15	76.94
Establishment of Sheikh Fajilatunnesa Mujib Eye Hospital and Training Institute, Gopalganj	2,500.00	2,332.99	93.32
Establishment of National Centre for Cervical and Breast Cancer Screening and Training at BSMMU	350.00	346.76	99.07
Establishment Sheikh Sayera Khatun Medical College and Hospital and Nursing Institute, Gopalganj	800.00	799.94	99.99
Establishment of Satkhira Medical College & Hospital	3,500.00	3,425.12	97.86
Establishment of Faridpur Medical College & Hospital	10,000.00	9,492.14	94.92
National Institute of Digestive Diseases Research & Hospital	2,500.00	2,488.36	99.53
Establishment of Kushtia Medical college	3,300.00	3,299.29	99.98
Establishment of Shaheed Sayed Nazrul Islam Medical College, Kishoreganj	16,600.00	15,800.00	95.18
Extension of Shaheed Sheikh Abu Naser Specialized Hospital, Khulna	2,500.00	1,500.00	60.00
Establishment of Trauma Center at Gopalganj	400.00	395.46	98.87
Sustaining Influenza Surveillance Networks and Response to Seasonal and Pandemic Influenza In Bangladesh	300.00	519.47	-



Table continued...

Investment project	Allocation (BDT in lakh)	Expense (BDT in lakh)	Utilization rate (%)
Provision for Equipment and Professional Training for Ahsania Mission Cancer Hospital	4,000.00	4,000.00	100.00
Extension of National Institute of Orthopedic Hospital and Rehabilitation (NITOR) Center	5,700.00	4,784.52	83.94
Establishment of Nursing Institute of Pabna	75.00	100.83	-
Establishment of National Institute of Advanced Practice Nurses in Bangladesh	4,025.00	4,000.00	99.38
Establishment of Sheikh Lutfar Rahman Dental College	800.00	564.80	70.60
Establishment of Institute for Pediatric Neuro-disorder and Autism in BSMMU	200.00	73.29	36.65
<b>Total</b>	<b>449,572.35</b>	<b>385,159.19</b>	<b>85.67</b>

Table 18.2 shows the allocation, expenditure, and utilization in FY 2013-2014 under HPNSDP 2011-2016 for different investment projects of MOHFW. Detailed breakdown is shown in the Annex.

## Bangladesh National Health Accounts (NHA)

The Bangladesh National Health Accounts 1997–2012 was officially published in 2015 by the Health Economics Unit (HEU) of the Ministry of Health and

Family Welfare. According to the publication, the total health expenditure (THE) in Bangladesh was Taka 325.1 billion (\$4.1 billion) in 2012. It was also mentioned that, in recent years, THE grew at an annual average of around 14% in nominal terms, and, in real terms, the growth level has been approximately 8% annually. Table 18.3 shows THE, GDP, and annual growth rates from 1997 through 2012. The original publication is available in the website of the HEU ([www.heu.gov.bd](http://www.heu.gov.bd)).

**Table 18.3. THE, GDP, and annual growth rates, 1997-2012**

Year	Total Health Expenditure (THE)		GDP		Per capita				Ratio of THE to PPP (%)
	Amount (Taka million)	Nominal Growth rate	Amount (Taka million)	Nominal growth rate	GDP	THE			
					Taka	Taka	US \$	PPP \$	
1997	46,356	-	1,807,013	-	14,767	379	\$9	\$19	2.60
1998	51,101	10.20%	2,001,766	10.80%	16,039	409	\$9	\$20	2.60
1999	56,529	10.60%	2,196,972	9.80%	17,270	444	\$9	\$21	2.60
2000	62,474	10.50%	2,370,856	7.90%	18,519	488	\$10	\$23	2.60
2001	71,959	15.20%	2,535,464	6.90%	19,452	552	\$10	\$26	2.80
2002	81,488	13.20%	2,732,010	7.80%	20,760	619	\$11	\$29	3.00
2003	87,429	7.30%	3,005,801	10.00%	22,532	655	\$11	\$30	2.90
2004	100,251	14.70%	3,329,731	10.80%	24,628	741	\$13	\$33	3.00
2005	114,338	14.10%	3,707,070	11.30%	27,059	835	\$14	\$36	3.10
2006	134,873	18.00%	4,157,279	12.10%	29,952	972	\$14	\$41	3.20
2007	153,887	14.10%	4,724,769	13.70%	33,604	1,095	\$16	\$44	3.30
2008	178,943	16.30%	5,458,224	15.50%	38,330	1,257	\$18	\$49	3.30
2009	205,120	14.60%	6,147,952	12.60%	42,635	1,422	\$21	\$52	3.30
2010	244,331	19.10%	6,943,243	12.90%	47,524	1,672	\$24	\$58	3.50
2011	289,017	18.30%	7,967,040	14.70%	53,220	1,931	\$25	\$64	3.60
2012	325,094	12.50%	9,181,414	15.20%	60,563	2,144	\$27	\$68	3.50

Source: "Summary Bangladesh National Health Accounts 1997-2012", BHNA Cell, Health Economics Unit, MOHFW



# 19

## HEALTH, POPULATION AND NUTRITION SECTOR DEVELOPMENT PROGRAM 2011-2016

Summary of progress in 32 operational plans for FY 2013-2014

The Mid-term Program Implementation Report (MPIR) was prepared by the Program Management and Monitoring Unit (PMMU) of the Planning Wing of the Ministry of Health and Family Welfare (MOHFW) in September 2014 (MPIR 2014). The report summarized performance of all 32 operational plans (OPs) for the financial year 2013-2014 and identified some critical gaps in program implementation. The Health Bulletin 2015 excerpts some of the key elements from the MPIR 2014. The PMMU staff and the PMMU Technical Assistance Support Team (TAST) members (from MEASURE Evaluation and icddr,b) collected the MPIR 2014 information from the line directors and their related staff of the 32 operational plans (OPs). This was done using a structured data-reporting template customized for individual operational plans.

### Major findings of MPIR 2014

- **Budget allocation and spending pattern:** Total fund allocation for FY 2013-2014 was Bangladeshi Taka (BDT) 3,121.1 crore (Government: 27%, BDT 850.7 crore and project aid: 73%, BDT 2,270.4 crore). Overall spending rate was 89% (97% of the Government and 86% of the project aid fund). The overall spending rate in FY 2011-2012 was 87% and, in FY 2012-2013, was 91%. Total fund allocation for HPNSDP has been increased consistently—from 2,285 crore (FY 2011-2012) to 2,832 crore (FY 2012-2013) to 3,121 crore (FY 2013-2014).
- **Programmatic achievement measured by indicators:** Of the 158 measurement indicators at OP-level (FY 2013-2014), 106 (67%) were fully achieved, 39 (25%) partially achieved, and 13 (8%) not achieved. The progress in OP-level indicator in FY 2013-2014 was in line with the previous years (60% indicators fully achieved in FY 2011-2012, 69% in FY 2012-2013).

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Total fund allocation for HPNSDP has been increased consistently—from 2,285 crore (FY 2011-2012) to 2,832 crore (FY 2012-2013) to 3,121 crore (FY 2013-2014).

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- **Training and workshops:** Out of the total expenditure during FY 2013-2014, nearly 8% was spent on training, workshops, seminars, and orientation, engaging a total of 1,725,818 participants [in-country training: 852,215 (49%); foreign training: 1,022 (0.1%); and workshops, seminars, orientation: 872,581 (51%)]. Among the 852,215 participants in local training, 574,889 were participants from outside the MOHFW (e.g. members of community clinic support group and community clinic management group, who received 1 to 2 day[s] training to increase their capacity in oversight of CC management and strengthening accountability for the same). During the

first three years of the program, number of participants in local training and workshops increased from 319,412 in FY 2011-2012 to 1,372,959 in FY 2012-2013 and 1,725,818 in FY 2013-14.

- **Key challenges:** (i) Delay in fund release; (ii) Lengthy procurement process; (iii) Insufficient staff and logistics for monitoring and supervision activities; (iv) Insufficient skilled manpower; and (v) Inadequate capacity for program implementation.

Table 19.1 shows the OP-wise financial and physical progress of HPNSDP implementation during FY 2013-2014.

**Table 19.1. Financial and physical progress of OPs under HPNSDP in FY 2013-2014 (Taka in crore)**

Operational plan*	Revised ADP (RADP) allocation	Fund released	Expense	% expense against release			% expense against RADP allocation	% physical progress against indicators
				GOB	PA	Total		
All 32 OPs	3,121.1	2,976.2	2,785.6	98%	92%	94%	89%	67%
MNCAH	632.0	566.6	540.9	96%	95%	95%	86%	67%
ESD	54.5	54.5	42.7	86%	76%	78%	78%	20%
CBHC	61.0	55.3	50.3	95%	91%	91%	83%	83%
TBLC	57.2	53.2	51.3	55%	100%	96%	90%	75%
NASP	38.5	38.5	36.0	75%	94%	93%	93%	60%
CDC	112.8	119.6	111.7	91%	94%	93%	99%	86%
NCDC	99.5	85.7	62.8	98%	61%	73%	63%	100%
NEC	3.4	3.4	3.1	93%	95%	94%	94%	100%
HSM	414.9	414.9	406.9	96%	99%	98%	98%	83%
AMC	11.0	10.8	9.9	100%	64%	92%	90%	25%
IST	29.2	29.1	27.7	80%	97%	95%	95%	75%
PSE	153.3	153.3	151.3	97%	99%	99%	99%	40%
PMR	11.0	10.2	9.4	81%	95%	92%	86%	60%
HIS & eHealth	95.2	94.3	53.6	100%	40%	57%	56%	100%
HEP	20.8	20.8	19.2	98%	91%	93%	93%	0%
PLSM	80.5	80.5	79.7	100%	79%	99%	99%	60%
NNS	66.6	66.5	55.6	76%	84%	84%	83%	67%
MCRAH	123.5	123.5	120.7	99%	97%	98%	98%	80%
CCSD	95.8	95.8	87.1	100%	62%	91%	91%	83%
FPFSD	272.6	253.1	233.1	98%	91%	92%	85%	75%
PME	1.8	1.8	1.8	100%	99%	99%	99%	100%
MIS	10.3	10.3	6.4	35%	67%	62%	62%	50%

Table continued...

Operational plan*	Revised ADP (RADP) allocation	Fund released	Expense	% expense against release			% expense against RADP allocation	% physical progress against indicators
				GOB	PA	Total		
IEC	23.2	23.2	21.6	82%	99%	93%	93%	100%
PSSM	10.2	10.2	10.1	99%	100%	99%	99%	80%
TRD	17.5	17.0	16.7	94%	99%	98%	95%	57%
NES	58.0	58.0	57.9	100%	100%	100%	100%	100%
SDAM	4.8	3.4	2.9	75%	85%	84%	60%	75%
PFD	537.0	502.0	497.3	100%	98%	99%	93%	60%
HRM	7.8	8.5	6.7	58%	82%	79%	86%	0%
SWPMM	3.8	3.7	3.2	73%	87%	86%	84%	67%
IFM	4.4	4.4	4.1	93%	93%	93%	93%	75%
HEF	9.2	4.3	4.1	98%	96%	97%	45%	25%

\*See acronyms in the beginning of this Health Bulletin

### History of Sector-wide Approach (SWAp) in the MOHFW of Bangladesh

During the Fourth 5-year Plan, the MOHFW of Bangladesh had the Health and Population Strategy of 1997—a project modality to implement development program for health and population sector. The experience helped take decision to move away to a sector-wide approach (SWAp) under the Fifth 5-year Plan. The first SWAp thus began in 1998 and was known as the Health and Population Sector Program (HPSP) 1998-2003. The HPSP's main focus was on decentralization of the delivery of essential service package, using a 'one-stop' service model and delivery of basic health and family planning services to the rural community from static community clinics (CCs), one for every 6,000 people. The second health-related SWAp titled "Health, Nutrition

and Population Sector Program" (HNPSP) was implemented during 2003-2011. The HNPSP's main focus was on increasing availability and utilization of user-centered, effective, efficient, equitable, affordable, accessible quality health, nutrition and population services. The third (and current) SWAp titled "Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016 began in 2011 with the aim to strengthen health systems and improve health services. Table 19.2 shows the duration, size, and partners' contributions to different SWAps.

### The HPNSDP 2011-2016

The total estimated budget for the HPNSDP 2011-2016 is BDT 56,993.54 crore (US\$ 7,701.83 million), inclusive of the development and non-development budget. The development

**Table 19.2. Three SWAps of the MOHFW of Bangladesh (1998-2016)**

Name	Duration	Funding-size (billion US\$)	GOB contribution	DP contribution
Health and Population Sector Program (HPSP)	1998-2003	2.2	62%	38%
Health, Nutrition and Population Sector Program (HNPSP)	2003-2011	5.4	67%	33%
Health, Population and Nutrition Sector Development Program (HPNSDP)	2011-2016	7.7	76%	24%

budget for 32 OPs is set at BDT 22,176.66 crore (US\$ 2,996.84 million). The DP (development partner) contribution is set at BDT 13,573.16 crore (US\$ 1,834.21 million)–61% of the total development budget. If both development and non-development budgets of the MOHFW are combined, the GOB share stands at 76% and DP share at 24%.

There are 7 strategic priorities in HPNSDP 2011-2016:

- i. Revitalize various family planning interventions to attain replacement-level fertility
- ii. Mainstreaming nutrition within the regular DGHS and DGFP services (MDG 1)
- iii. Strengthen preventive and control programs on communicable diseases (MDG 6)
- iv. Expand NCD control efforts at all levels by streamlining referral systems
- v. Strengthen various support systems by increasing the health workforce at upazila and CC levels, including their capacity-building and enhanced focus on coordinated implementation of OPs, MIS, and M&E functions
- vi. Increase coverage and quality of services by strengthening coordination with other intra- and inter-sector and private-sector service providers

Every year during the APIR, the progress on indicators is compared with the set targets to understand whether the progress is on track or not

- vii. Pursue priority institutional and policy reforms, such as decentralization and local-level planning (LLP), incentives for service providers in hard-to-reach areas, PPP, and single annual work plan.

### Measurement of OP progress in FY 2013-2014

The HPNSDP 2011-2016 has two types of progress monitoring indicators, viz. results framework (RFW) for overall HPNSDP and OP indicators to measure the individual OP progress. Every year during the APIR, the progress on indicators is compared with the set targets to understand whether the progress is on track or not. The RFW was revised in 2011, and the updated version, along with current progress, is shown in the Annex to this chapter.

**Table 19.3. Targets and assessment of HPNSDP priority indicators**

Indicator	Baseline (as in PIP)	Progress (June 2013)	Target 2016	How much on track
Infant mortality rate (IMR)	52 (BDHS 2007)	38 (BDHS 2014)	31	Yes
Under-5 mortality rate	65 (BDHS 2007)	46 (BDHS 2014)	48	Already achieved
Neonatal mortality rate	37 (BDHS 2007)	28 (BDHS 2014)	21	Challenging
Maternal mortality rate	194 (BMMS 2010)	170 (MMEIG 2013)	<143	Yes
Total fertility rate (TFR)	2.7 (BDHS 2007)	2.3 (BDHS 2014)	2.00	Likely
Prevalence of stunting among under-5 children	43.2% (BDHS 2007)	36.1% (BDHS 2014)	38%	Already achieved
Prevalence of underweight among under-5 children	41.0% (BDHS 2007)	32.6% (BDHS 2014)	33%	Already achieved
Prevalence of HIV in MARP	<1% (SS 2007)	<1.0 (SS 2011)	<1%	Yes

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DP resources have been extending increased support to the resource requirement of HPNSDP directly and indirectly with their off-budget association in the HNP sector through NGOs and other non-state actors

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Results framework of the HPNSDP 2011-2016 priority indicators is shown in Table 19.3.

The MPIR 2014 provided an opportunity to assess the state of implementation progress of HPNSDP programs and served as a platform to build on the lessons learnt for way forward. MPIR also brought to light some key implementation challenges being faced by the implementers and those that were raised during various TG meetings and frank GOB-DP dialogues. The following issues were emphasized with the hope that these may be considered by the policy-makers and the relevant stakeholders for initiating changes in policy and program:

### **1. Need for sustaining new initiatives**

A number of new initiatives have been included in HPNSDP, which have potential for bringing about positive changes in service delivery and system improvement. Only four are mentioned here as examples:

- (a) Successful revitalization of the community clinics with institutional scope created for participation by the community representatives in its management;
- (b) Mainstreaming nutrition through the established service delivery arrangement in the DGHS and DGFP, along with steps for utilizing the newly-introduced primary level of PHC service providers in the CCs, supported by revised indicators of related OPs (e.g. MNCAH, MCRAH, NNS, MIS/FP, HIS & eH, CBHC, etc.) to incorporate nutrition data;
- (c) Steps for strengthening RHIS, currently being piloted in selected upazilas (n=4) and district hospitals (n=2), as HPNSDP is investing in upgrading IT infrastructure in both DGHS and DGFP and the broad agreement to use the DHIS2 platform by both the directorates; and
- (d) The introduction of two new institutions—PMMU and PLMC—to strengthen critical aspects of the Program: (i) management and monitoring and (ii) procurement. Both may be utilized to produce results which can contribute to higher efficiency and help achieve better results.

All the four interventions need mentoring and close supervision to address various challenges faced by them. Failure to do so can be costly and counterproductive.

### **2. Improving program management**

The following three issues mentioned below need careful consideration:

- (a) Special attention needs to be urgently paid to improvement of the functioning of HRM and IFM OPs since both need close and continuous coordination between the Development- and Revenue-funded activities of the MOHFW as a whole. The problems these two areas face go beyond the management control of HPNSDP (which is seen as falling only within the Development function of MOHFW) and cannot be resolved unless the unity of this multibillion-dollar enterprise (i.e. HPNSDP) is fully realized by the senior management in both Revenue and Development parts of the Ministry;
- (b) A related issue is the decision-making relating to the use of GOB financial resource, which comes as one allocation from the national budget to the MOHFW under MTBF arrangement. The share of resources between conducting the Revenue and the Development functions of the MOHFW and the distribution of the development budget (ADP) between HPNSDP and the Ministry's



parallel projects need careful balancing and intimate policy support in view of the increasing public expectations from the MOHFW service providers. The MOHFW has been simultaneously expanding its recurring revenue obligations due to large recruitment of additional manpower (and pay-scale upgrading, in some cases) and the expenditure in non-recurrent development activities because of the adoption of new projects (some being lumpy expenditure, like new medical colleges, which will claim large financial and human resources over long period of time). The combined effect of both these financial obligations would be to increasingly constrain the size of GOB contribution to the HPNSDP unless steps are taken to augment budget allocation and simultaneously limit the financial demand of new projects in ADP; and

- (c) DP resources have been extending increased support to the resource requirement of HPNSDP directly and indirectly with their off-budget association in the HNP sector through NGOs and other non-state actors. There is scope and need for developing pathways of coordination by the DPs with the MOHFW planners and vice versa for achieving the best HNP results.

### **3. Strengthening organizational structures of program planning and implementation**

- (a) HPNSDP realized the need for providing support to the Planning Wing, MOHFW, for program management and more so for program monitoring and evaluation and created the PMMU, with the provision of technical support. While TA has been made available for technical support, a full-time counterpart MOHFW team could not be made available in the absence of needed manpower. The issue may be revisited in the interest of sustainability of the arrangement and that of future programs. It is also needed that the Planning Units of both DGHS and DGFP be provided with technical support for better monitoring of program implementation and coordinating at the agency as well as ministry levels.

- (b) Similarly, attention may be paid to strengthening the planning and implementation structure of the directorates–DGHS and DGFP, with the DNS receiving DPA support for comprehensive improvement, which has been long overdue.

### **4. Improving oversight on implementation of priority commitments**

- (a) The Financial Agreement between GOB and IDA of the World Bank signed on 12 September 2011 stipulated a number of actions to be undertaken by GOB within HPNSDP period. Considerable progress has been made against 16 activities while 13 activities need to be expedited because progress has been slow. It also found that ‘no progress’ was made for 11 activities. The MOHFW management needs to pay special attention to ensuring that the slow activities are expedited and the uptakes of activities with no progress are energized within the next two years.
- (b) The Prioritized Action Plans, jointly developed by the MOHFW and the DPs following the APR of 2012 and 2013, identified 30 actions in PAP-12 and 18 in PAP-13. The review of status of implementation of these activities has identified 7 actions of PAP-12 and 6 actions of PAP-13 which need to be expedited. The MOHFW management may like to intensively monitor progress of implementation of the lagging PAP activities to ensure that these activities are implemented with the priority that these deserve.
- (c) The RFW for evaluating and assessing progress of HPNSDP implementation contains 33 indicators under 4 Results in Component I and 10 Results in Component II. Review of progress of these indicators needs to be conducted on a regular basis by the program management so that the concerned line directors focus attention on achieving the time-bound targets, keeping in view the identified means of verification. The MTR consultants may like to revisit the appropriateness of the indicators in RFW, their baseline, target and means of verification, etc. to make the RFW better-aligned to serve its purpose.



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Ministry of Health and Family Welfare