Government of the People's Republic of Bangladesh

Bangladesh Preparedness and Response Plan for COVID-19

July 2020

Health Services Division

Ministry of Health & Family Welfare

Glossary of Terms

ADG	:	Additional Director General
BDT	:	Bangladeshi Taka
BGMEA	:	Bangladesh Garment Manufacturers and Exporters Association
BHE	:	Bureau of Health Education
BMRC	:	Bangladesh Medical Research Council
BPRP	:	Bangladesh Preparedness and Response Plan for COVID-19
BSL	:	Biological Safety Level
CDC	:	Communicable Disease Control
CMSD	:	Central Medical Store Depot
COVID-19	:	Coronavirus Disease 2019
CSCS	:	COVID-19 Supply Chain System
CST	:	Community Support Team
DGDA	:	Directorate General of Drug Administration
DGFP	:	Directorate General of Family Planning
DGHS	:	Directorate General of Health services
DHIS	:	District Health Information System
DPHE	:	Department for Public Health Engineering
eAMS	:	Electronic Asset Management System
e-LMIS	:	Electronic Logistics Management Information System
ESP	:	Essential Services Package
FDMN	:	Forcibly Displaced Myanmar Nationals
GDP	:	Gross Domestic Product
GoB	:	Government of Bangladesh
HBIS	:	Hospital-based Influenza Surveillance
HIS	:	Health Information System
HIV	:	Human Immunodeficiency Virus
HNP	:	Health, Nutrition and Population
HRIS	:	Human Resources Information System
ICU	:	Intensive Care Unit
IEC	:	Information, Education and Communication
IEDCR	:	Institute of Epidemiology, Disease Control and Research
IHR	:	International Health Regulations
ILI	:	Influenza Like Illness
INGO	:	International Non-governmental Organization
IOM	:	International Organization for Migration
IPC	:	Infection Prevention and Control
IPH	:	Institute of Public Health
LCG	:	Local Consultative Group
MIS	:	Management Information System
MNCAH	:	Maternal, Newborn Child and Adolescent Health
MoHFW	:	Ministry of Health and Family Welfare
MoLGRD&C	:	Ministry of Local Government, Rural Development and Co-operatives
NGO	:	Non-governmental Organization
NISB	:	National Influenza Surveillance Bangladesh
PCR	:	Polymerase Chain Reaction
PHC	:	Primary Health Care
PoEs	:	Points of Entry
PPE	:	Personal Protective Equipment
QI	:	Quality Improvement
qRT-PCR	:	quantitative Reverse Transcriptase Polymerase Chain Reaction
R	:	Reproduction Number

RCCE	:	Risk Communication and Community Engagement
R&D	:	Research and Development
RRT	:	Rapid Response Team
SARI	:	Severe Acute Respiratory Illness
SBCC	:	Social Behavior Change Communication
SDG	:	Sustainable Development Goals
SOPs	:	Standard Operating Procedures
SORT IT	:	Structured Operational Research and Training Initiative
TB	:	Tuberculosis
TDR	:	Training in Tropical Diseases
UHC	:	Universal Health Coverage
UN	:	United Nations
UNHCR	:	United Nations High Commissioner for Refugees
UNICEF	:	United Nations Children's Fund
UNFPA	:	United Nations Population Fund
USD	:	United States Dollar
WASH	:	Water and Sanitation for Health
WFP	:	World Food Programme
WHO	:	World Health Organization

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Executive summary

This document sets out the "Bangladesh preparedness and response plan" (BPRP) for the coronavirus disease 2019 (COVID-19) and outlines the objectives, planning scenarios, areas of work and priority activities required for the Bangladesh health sector to scale up its core capacities to prevent and quickly detect the spread of the virus, and characterize the response and efficiently control the threats, in a coordinated manner and as required under the International Health Regulations (2005). The main goal of the proposed plan is to prevent and control the spread of COVID-19 in Bangladesh in order to reduce its impact on the health, wellbeing and economy of the country, as well as to set out the framework to treat the population that has been infected. The key interventions to achieve this goal include: the enforcement of compulsory mask-wearing and safe hygiene practices outside the home, including within the workplace; a zoning approach to containment; community-based prevention practices, case identification, and quarantining utilizing local community health capacity for slowing spread of disease and sustaining behavior change following lockdown; the maintenance of physical distancing regulations based on latest expert and industry guidance; and the empowerment of frontline health workers and other essential workers to make them agents of change to turn the epidemic around and address their potential COVID-19 related fears and concerns. The plan outlines a multi-sector coordination structure, which includes as its principal response mechanism ten technical pillars that focus on the epidemiological response and health service delivery, including surveillance and laboratory support, contact tracing and mitigating community transmission, points of entry and quarantine, infection prevention and control, COVID-19 case management, ensuring essential health, population and nutrition services delivery as well as three cross-cutting pillars—planning coordination and response strategy, logistics and procurement, risk communication and community engagement, and research. The document also includes an estimated budget and work plan that lays out the priority activities determined by each of the technical pillars. A monitoring and evaluation framework will enable the continuous review and updating of the BPRP to reflect the progress of implementation and emergence of new evidence.

Introduction and background

COVID-19 context

Severe Acute Respiratory Syndrome Coronavirus 2 is a novel coronavirus that emerged in China in 2019 and causes COVID-19 disease. Coronaviruses are zoonotic viruses that circulate amongst animals and spill over to humans from time to time and have been causing illnesses ranging from mild symptoms to severe illness. On 7 January 2020, Chinese authorities confirmed the outbreak of COVID-19 and on 30 January 2020, the Director General of the World Health Organization (WHO) declared the COVID-19 outbreak a Public Health Emergency of International Concern. On 1st February 2020, 312 Bangladesh citizens were brought back from China's Wuhan city and quarantined for 14 days. Eight of them were immediately isolated and three more were subsequently isolated upon showing symptoms. Their samples were tested on the 2nd February 2020 in the laboratory of the Institute of Epidemiology, Disease Control and Research (IEDCR) and found negative for COVID-19. On 8 March 2020, Bangladesh confirmed its first COVID-19 case. On 11 March, WHO declared COVID-19 a pandemic. As of 8 July 2020[1], a total of 11,500,302 confirmed cases and 535,759 deaths were reported in almost all countries worldwide, except for a few remote island states. As of the same date, 168,645 Bangladeshi citizens were diagnosed positive with COVID-19 and a total of 2,151 passed away.

The WHO International Health Regulations (IHR) Emergency Committee for the COVID-19 convened on 22 and 23 January emphasized that "it is expected that further international exportation of cases may appear in any country. Thus, all countries should be prepared for containment, including active surveillance, early detection, isolation, and case management, contact tracing and prevention of onward spread of COVID-19 infection, and to share full data with WHO". Information, facts and knowledge available when the COVID-19 was first detected are rather limited. As the situation evolves globally, crucial information such as population at increased risk, case fatality ratio, complication rate, basic reproduction number and other transmission characteristics are increasingly coming to light. With the new information becoming available, the risks are being assessed and reviewed to ensure that the appropriate corresponding measures are adopted based on the most updated scientific knowledge and the latest situation. The core response strategy is based on ongoing assessment of the rate of disease spread against available health system capacity. If the disease is spreading too quickly and bed capacity is projected to be insufficient, then additional social distancing measures can be introduced at either a local or national level to further slow-down the reproduction rate of the virus while minimizing the negative impacts to the economy. Based on available studies, public mask wearing, community-based family quarantine and social distancing measures would likely need to continue until either an efficacious vaccine or treatment is widely available. Given this is a novel coronavirus, significant knowledge will also be gained as countries are learning from each other how best to suppress the epidemic waves in their populations and ultimately bring the pandemic under control while maintaining essential health services and minimizing negative impacts to lives and livelihoods. In practice, this results in a national suppression

[1] Who Coronavirus disease 2019 (COVID-19) Situation Report – 150 https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200618-covid-19-sitrep-150.pdf?sfvrsn=aa9fe9cf_2

of disease transmission followed by targeted interventions to slow spread while continually strengthening surveillance and health system capacity.

The country will implement the response activities under a national plan through committees from the national level down to the upazila level with multi sectoral involvement representing the relevant ministries, the United Nations agencies, national and international organizations and development partners through a pillar-based multi-sectoral coordination mechanism. The plan includes mechanisms for developing surge capacity to manage the patients, to sustain essential services and to reduce social impact. The response strategy and actions will have to be continuously reviewed and adjusted as necessary to ensure efficient use of financial and human resources for the effective response to the outbreak, and to be reflective of any new information, operational research advances, good practices internationally and updated recommendations from WHO.

Disease surveillance alongside response is an important component for prevention and control of the transmission. The country started screening at points of entry (PoE) and successfully quarantined a large number of persons. The country is implementing the plan through over 500 local committees. Beside, the Rapid Response Teams (RRT) from national to all subnational levels are also in place. With established community transmission, high dependence health services along with Intensive Care Units (ICU) facilities will be strengthened. Emphasis will be given to prevention of hospital acquired infections and protection of the caregiver both at the health care facility, at home and within the community. Emphasis will be given also to the prevention of a catastrophic health expenditure with the principle of 'No One is Left Behind' and social and gender inclusion. Strong concerted efforts will be taken for communication and advocacy nationally and locally using all media and means of risk communication and community engagement. In case of quarantine, especially during community-based quarantine, measures will be taken to ensure the basic needs of the people are met and the security of people's property is ensured through an active involvement of the law enforcing agency.

Sufficient budget allocation along with political commitment from the highest level will be of paramount importance for the successful implementation of the plan[2].

Bangladesh: country profile

Bangladesh is a democratic country surrounded by India from east, west and north, Myanmar from south-east with Bay of Bengal at south side. The estimated size of the population in Bangladesh is 1666.5 million (on 1 July 2019). The male to female ratio is 100.2:100. The average household-size is 4.2. The life-expectancy is 72.6 years (71.16 years for males and 74.2 years for females) (2019 and population growth rate is 1.32% (2019, SVRS)[3]. It is estimated that about 2.4 million Bangladeshis are living abroad. Bangladesh has a unitary form of government, with no state or province. There are 64 districts in the country. Each district is again divided into several upazilas (sub districts). There are 491 upazilas in the country. The upazilas are divided into unions, and each union is divided into 9 wards. There are 4,554 unions and 40,977 wards in the country and approximately 87,310 villages. The urban areas have 12 city corporations and 327 municipalities. There are 58 ministries and

[2] Bangladesh National Guidelines on Clinical Management of Coronavirus disease (COVID-19), http://www.mohfw.gov.bd/index.php?option=com_docman&task=doc_download&gid=22424&lang=en.
[3] The World Bank 2020, https://www.worldbank.org/en/country/bangladesh/overview

functional divisions. The Ministry of Health and Family Welfare (MoHFW) is one of the largest ministries of the Government of Bangladesh. Bangladesh is a country with a very high population-density. Around 63.4% of the total population in 2018 lived in rural areas. The Gross Domestic Product (GDP) growth rate is 8.2% and the GDP per capita (current price as per 2019 estimate) is US$ 1,906[4]. Bangladesh has had a long history of hosting displaced Rohingyas. In 1978, more than 200,000 Rohingyas first entered Bangladesh. While the Rohingyas legally fall under the category of "de jure stateless," the Government of Bangladesh (GoB) recognizes them as "Forcibly Displaced Myanmar Nationals". A total of 914,998 population of Forcibly Displaced Myanmar Nationals (FDMNs) are living in 211,383 households in Ukhiya and Teknaf Upazila of Cox's Bazar district.

Bangladesh: health system

The Ministry of Health and Family Welfare is responsible for planning and management of curative, preventive as well as promotive health services to the population of the country. But in urban areas, primary healthcare services are mandated to the Ministry of Local Government, Rural Development and Cooperatives. Since the late 1990s, the Government of Bangladesh and its development partners have pursued a sector-wide approach in the Health, Nutrition and Population (HNP) sector. The Ministry of Health and Family Welfare is currently implementing the 4th Health, Population and Nutrition Sector Program (2017-2022). The present government has taken steps to revitalize Primary Health Care (PHC) services by making the community clinics operational. These community clinics, one for every 6000 members of rural populations, were constructed in 2000-2001, but were not used for service delivery during the non-Awami League government. These service points have some unique characteristics. They are managed by a Community Clinic Management Group which includes local public leaders and representatives. The policy in this regard is to place the responsibility for the health of the people in the hands of the people themselves. Functional community clinics with adequate staff, supplies and logistics along with strengthened union and upazila level services are required to be rapidly institutionalized to improve the delivery of preventive and curative services at the PHC level, particularly for vulnerable women, children and marginalized populations. In the public sector, upazila health complexes and district hospitals are providing curative care at primary and secondary levels respectively. Tertiary- level curative care is mostly provided at national and divisional levels through large hospitals affiliated with medical teaching institutions. Most of the curative, preventive, promotive and rehabilitative services are rendered by public sector facilities and institutions. A large cadre of health care workers are working at the grassroot level to provide immunization, community based-family planning and other primary health care services including interpersonal communication at household and community level[5].

Non-governmental organizations (NGOs) and the private sector are also important players in the health care delivery system of Bangladesh, including COVID-19 response. In regular times, health sector NGOs deliver doorstep and clinic-based services and provide health education in many parts of the country. Many of these NGOs have health care workers who are entrenched in the communities they serve. Several NGOs concentrate their efforts in hard-to-reach areas. These NGOs

[4] Bangladesh Bureau of Statistics (BBS), 2017-2018.
[5] 185,000 CHWs, with approximately 70,000 employed by the GOB and the remainder by NGOs (Bangladesh National Strategy for Community Health Workers. MoHFW, July 2019)

have played important roles in spreading preventive messages during COVID-19 and have worked closely with local administration and government functionaries in planning/managing quarantine/isolation centres. In urban areas, a number of hospitals/clinics in the private sector has been designated as COVID-19 hospitals and have been providing management of infected patients. A substantial number of testing laboratories enrolled for COVID-19 testing also belong to the private sector. Army medical corps usually provide curative and preventive services in the cantonments and neighboring areas of the country. During emergencies, these medical corps merged with the national level response in providing testing facilities, tertiary care to patients through well-equipped hospitals. Thus, public private partnerships play an important role in providing preventive services in the urban areas with the help of NGOs funded by different donors.

The IHR capacities in Bangladesh have been significantly improved over the past several years, reaching 68% and exceeding both the global and regional averages. In Bangladesh there is national capacity to confirm COVID-19 through Polymerase Chain Reaction (PCR) testing. Preparation is also underway to expand the range of tests through introduction of newly emerging COVID-19 tests according to WHO guideline.

The Institute of Epidemiology, Disease Control and Research (IEDCR), the Institute of Public Health (IPH), the Institute of Public Health Nutrition and the National Institute of Preventive and Social Medicine are the major public health institutes of public sectors. Among these institutes, IEDCR is the focal institute for conducting public health surveillance and outbreak response and IHR focal institute.

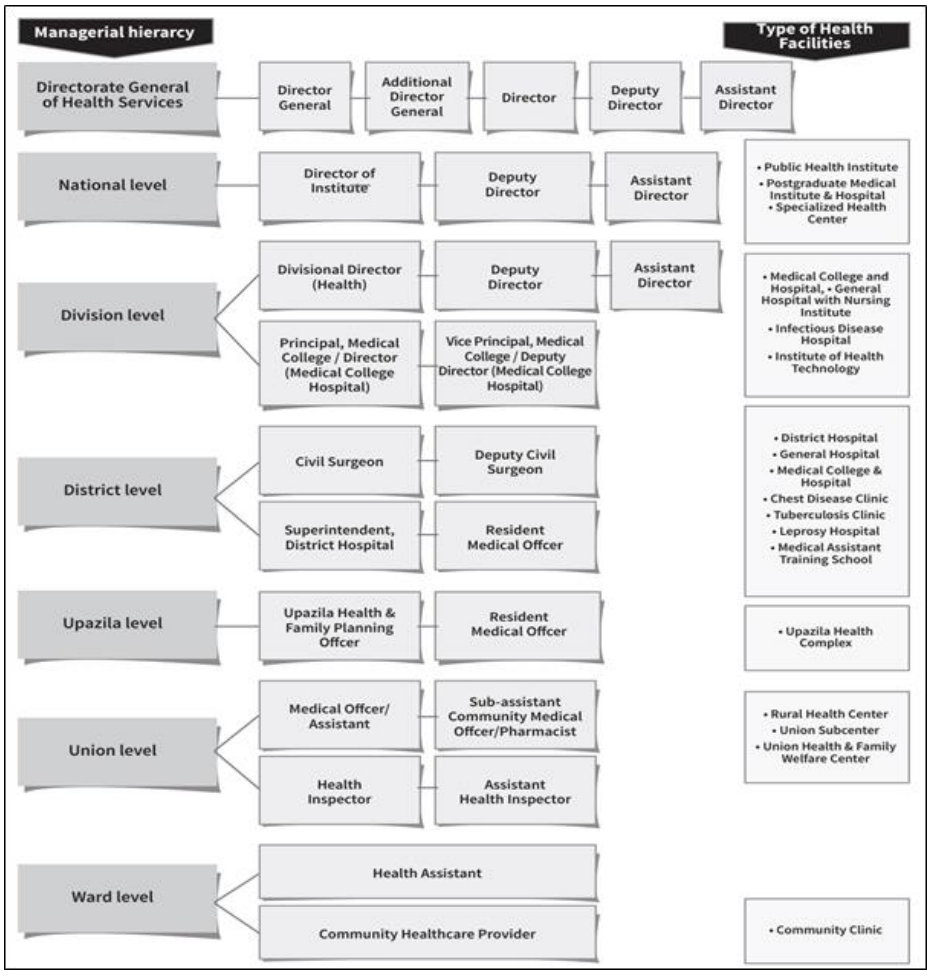


Figure 1. Managerial hierarchy according to types of facilities from national to the ward level

The Director of the Communicable Disease Control (CDC) of the Directorate General of Health Services (DGHS) is the national IHR focal point and there is a program for IHR under CDC of the 4th Health, Nutrition and Population Sector Program. CDC, DGHS & IEDCR coordinated response activities during pandemic influenza (2009), Ebola preparedness (2014), Chikungunya (2017), 1st,2nd and 3rd national avian and pandemic influenza preparedness and response plan. IEDCR identified the presence of dengue virus (2000), Nipah virus (2001), H5N1 (2008), and the first case H1N1 (2009) in the country.

Health workforce

The health workforce in Bangladesh is already overstretched, with only 8.3 health workers per 10,000 population as compared to 45/10,000 recommended by WHO[6]. The COVID-19 outbreak deepens this crisis. The MoHFW has already recruited an additional 2000 doctors and 5000 nurses to start addressing this situation, and the process is underway to recruit additional 2000 health

[6] WHO Global Health Workforce Strategy 2030

technicians. Additional innovative motivation schemes will be tested to improve the human resource management in health.

Bangladesh has a nationwide network of health facilities, medical colleges, nursing and paramedical institutes. There are 49 postgraduate medical teaching institutes (28 public, seven of them autonomous and 14 private), 113 medical colleges (75 of them are private), 77 nursing colleges (59 of them are private), 208 nursing institute (165 of them are private), 209 medical assistant training schools (200 of them are private), and 110 institute of health technology (97 of them are private). In addition to the above institutes, there are 35 dental colleges and dental units (of them 26 are private), and six Armed forces & Armed Forces Medical Colleges. In spite of this growth of the health workforce production, the country still has a health workforce shortage and geographical imbalances. Existing health workforce of Bangladesh is periodically trained in responding to emerging and reemerging diseases by CDC, DGHS & IEDCR. This trained workforce participates in surveillance and outbreak response at a national, district and upazila level.

Health information system and e-health

The Management Information System (MIS) is a department of the Directorate General of Health Services under the Ministry of Health and Family Welfare. The main objective of MIS is to establish and run the Health Information System (HIS), e-health in Bangladesh and build capacity among line directors and program managers to use the data for decision making. The HMIS data is an online system, sourcing data from different platforms, such as District Health Information System (DHIS2), Human Resources Information System (HRIS). The DHIS-2 platform is used for gathering data from different health facilities and points of entry.

A COVID-19 dashboard has been developed and is updated daily[7]. This portal displays the data from the laboratory, number of people in quarantine and isolation as well displays the number of health facilities where COVID-19 patients can be managed and provides an overview of the stock availability of the health facilities.

The Supply Chain Management data is managed through a separate system, e-LMIS and has been made interoperable with the coronavirus data dashboard.[8] While about 80% of the health facilities have reported the stock data, more work needs to be done to ensure full reporting and improved stock management, including at the Central Medical Store Department (CMSD).

MIS includes the client feedback mechanisms and manages the e-health with Shashto Batayan as major tele-medicine operator under DGHS. Additional tele-medicine capacity will be required to address the COVID-19 response.

Thanks to the “Digital Bangladesh 2021” vision launched by the country in 2009, the entire health sector (including national, sub-national and grassroots community health workforce) is digitally connected to robust national databases.

[7] Corona dashboard: http://103.247.238.81/webportal/pages/covid19.php.
[8] Corona supply chain dashboard https://scmpbd.org/index.php/covid-19-dashboard

A data management system has been developed for individual case monitoring of COVID-19 positive cases from lab sample testing, collection, results, and dissemination.
A key function of the information management system is not only to collect data from various sources and provide real-time status across a range of variables, but also integrate epidemiological data with laboratory and health systems data to enable dynamic analytics and forecasting. The required data normalization for such dynamic integration will be expedited and introduced into the core health MIS for existing datasets and further data sources will be integrated using the normalized data structure as necessary. This initiative will be led by the director of MIS.

Medical products and technologies

Enhancing the access of citizens to essential quality medicines has been one of the priorities of the government. With support from the government there is a big domestic pharmaceutical industry manufacturing drugs for the local consumption as well as exporting to other countries. Currently, the local production meets about 97% of the overall local demand for drugs and 100% of that for essential drugs. Several candidate medicines for COVID-19 treatment are being produced locally including **Remdesivir, Hydroxychloroquine, Favipiravir, Ivermectin, Doxycycline, Azithromycin and other supplementary medicines.** Several clinical trials have been conducted in-country and Bangladesh has expressed interest to participate in the WHO-led solidarity trials, to contribute to the global efforts for identification of evidence-based treatment options. Post-marketing surveillance activities are being intensified to ensure that substandard and/or falsified medical products claiming to detect, treat or prevent COVID-19 do not infiltrate the supply chain. Regulatory preparedness is needed for expedited access in case a vaccine is developed in the near future.

Health financing

Bangladesh spends 3% of its GDP on health. At present, per capita spending on health is only USD 37, whereas government spends USD 8.5 per capita on health in the country. Nominal government spending on health increased over the last few years. Government's allocation to Ministry of Health and Family welfare from its annual budget has been around 5% over last five years. Households, paying fees at the point of service (i.e. out of pocket), constitute the main source of financing for health in Bangladesh comprising 67% of total health expenditure. Against this backdrop, health system has been strained further while tackling the COVID-19 crisis. Thus, Increasing the fiscal space for health is imperative to make response for the COVID-19 crisis as well to recover and strengthen the health systems.

Communicable disease law in Bangladesh

Bangladesh updated its "INFECTIOUS DISEASES (PREVENTION, CONTROL AND ELIMINATION) ACT, 2018" on communicable diseases. Section 3(k) of the Act states "keep or quarantine any suspected person infected with an infectious disease, at a specific hospital, temporary hospital, establishment or home". This law empowers the government in notification, isolation, quarantine, sample collection and testing in emerging diseases.

Section 1: Rationale, scope, and objectives of the plan

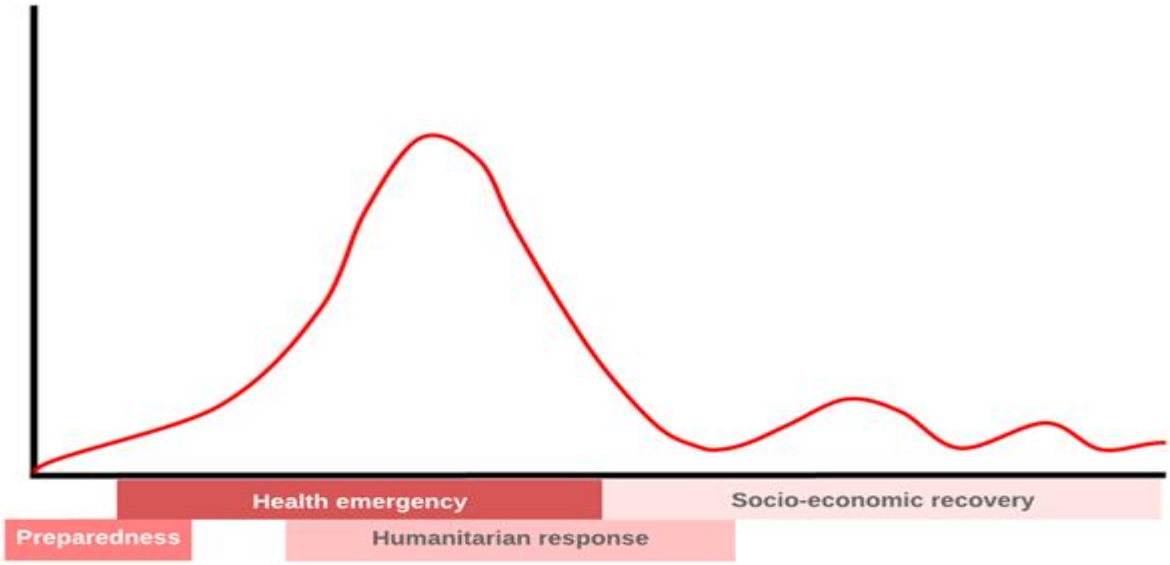
1.1 Rationale

It has been proven by numerous experiences that the ability to effectively respond to a 'threat' is strongly influenced by the extent to which such threats have been assessed in advance and prepared for with corresponding prevention and mitigation measures. Preparedness planning for health emergencies aims to reduce the burden associated with the health threat in terms of mortality and morbidity, hospitalizations and demand for health care goods and services; to maintain essential services, protect vulnerable groups, minimize economic and social disturbance and enable a quick return to normal conditions.

1.1.1 Understanding COVID-19 impact

The COVID-19 pandemic has emerged as the world's population exceeds 7.7 billion people, with high contact rates and international movements fueling global spread. Beyond the high human densities, especially in urban and slum areas, the main challenges in Bangladesh to combat the pandemic are the economic conditions compared to higher-income countries, the saturation of health structures in semi-urban and rural settings, and the inability of low and middle-income families to refraining from work due to their basic livelihood needs. Exposure of healthcare workers is also forecasted to be common given experiences in other countries, current infection prevention control practices, fragmented personal protective equipment (PPE) supplies, and general need for improving logistics and equipment availability in all health care facilities. Of particular concern are geographic areas and vulnerable populations at increased risk for rapid spread, including communities living in urban slums, of Ready-Made Garments workers, refugees/Forcibly Displaced Myanmar Nationals, street children and migrant workers. There are also continued risks of stigmatization and possibly unintended discrimination in access to healthcare and safety nets.

Figure 2: Pandemic response phases



Studies indicate that conventional social distancing tools for mitigating infectious disease outbreaks, such as case isolation, school closure, or home quarantine alone may be insufficient to flatten the curve enough to preserve intensive care capacity. Only a combination of all interventions simultaneously, referred to as "suppression", is expected to provide sufficient reduction in contact rate to blunt the epidemic. The impact of any suppression strategy is dependent on two factors: timing and the ability to diagnose cases. The Government of Bangladesh has already rapidly implemented a number of interventions which have been critical for slowing down the spread of the virus. Due to exponential growth rates of the epidemic, each day that passes before interventions are implemented results in an exponential increase in case burden and a significantly lower likelihood that the suppression interventions will thwart the outbreak. The ability to diagnose cases is also an essential requirement for the case isolation intervention, so rapidly expanded testing capacity is urgently needed.

1.2 Scope

On 30 January 2020, the Director-General of WHO declared the COVID-19 outbreak a public health emergency of international concern under the International Health Regulations (2005). Building upon core elements required to address generically different types of health threats, whether anticipated or unexpected such as COVID-19, the strategy developed in this document is based on the WHO global COVID-19 preparedness plan published in April 2020 and the WHO Country Readiness Checklist. This document sets out the 'Bangladesh preparedness and response plan' for COVID-19 Acute Respiratory Disease and outlines the planning scenarios, areas of work and priority activities required for the Bangladesh health sector to scale up its core capacities to prevent, quickly detect, characterize the response and efficiently control, in a coordinated manner to the COVID-19 threats, and as required under the International Health Regulations (2005).

1.2.1 Current situation assessment

1. The DGHS established an Emergency COVID-19 Integrated Control Center in the main office with working committees for thematic areas. The committees developed guidance and training materials that were posted on-line.
2. Although testing facilities were not yet available nationwide, sample collection was rolled out quickly across the country. actions were taken swiftly to implement a suppression strategy starting with the national holiday beginning 26 March to slow viral transmission rates; communication to promote safe hygiene practices and the combined social distancing impact of school, business, and public transport closure nationally, resulted in the COVID-19 reproductive rate (spread rate) being at its lowest level since introduction to Bangladesh in order to buy time to prepare the healthcare system and build surveillance capacity.
3. All available real-time diagnostic testing facilities (61 as of June 19) were rapidly assessed for capability to undertake COVID-19 testing. Expanded testing capacity not only enables better intelligence of the disease situation nationally, but also more precision for identifying those individuals and families who need to remain in home quarantine.
4. Immediate nationwide case searching and identification has been initiated utilizing existing community networks as well as telecom-based reporting via 16263; 333; and IEDCR hotlines. A novel Community Support Team intervention was piloted so that individuals with symptoms could be evaluated and those who meet the clinical criteria will be isolated at home with their families

with the full support of rapid response and community support teams comprised of MOHFW Community Clinic, BRAC community health, and available medical students and interns doctor staff volunteers. The Community Support Team also facilitates access to hospital care for those who develop a severe disease.

5. Procurements were launched immediately for healthcare worker PPE and hospital equipment and supplies required to expand care of critically ill and severe patients. Due to global supply chain shortages, locally manufactured solutions were also explored to enable sustained national production.
6. Healthcare worker training programs were initiated for improving infection prevention control and case management. Recently graduated intern doctors were also mobilized to support triage at hospitals with highest case burdens.
7. Risk communication and community engagement was focused on encouraging the spirit of solidarity, empowering individuals and communities to stop the spread of COVID-19 through behavioral change, informed individual decisions and collective community action. The communication strategy uses a range of communication techniques from traditional and social media communications, community radio, community influencers (Imams, social media influencers, positive role models) and community engagement and is built on a sound understanding of people's perceptions, concerns and beliefs as well as their knowledge and practices and an early identification and management of rumors, misinformation and other challenges, such as stigma and discrimination. Audience-specific messages are designed and disseminated through different networks to amplify and widen the reach. Gender-targeted messaging to address gender specific issues such as domestic violence and the psychosocial burden of increased care work at home on women were also increased.
8. National social distancing measures have been continued until sufficient testing capacity is established to assess the rate of spread. When the rate of spread has sufficiently decreased and hospitals are better prepared, distancing restrictions are being reassessed and adapted accordingly.

1.3 Goal and objectives of the plan

1.3.1 Goal

The main goal of the proposed plan is to prevent and control the spread of COVID-19 and to reduce morbidity and mortality due to COVID-19 infection in Bangladesh in order to reduce its impact on the health, wellbeing and economy of the country. The specific objectives are as follows:

1.3.2 Objectives

1. To establish, strengthen and maintain surveillance capacity nationwide for the detection, reporting, and monitoring and COVID-19 cases, including requisite laboratory capacity;
2. To slow the rate of community transmission and prevent amplification events;
3. To prevent transmission and enhance infection prevention and control in health care settings;
4. To identify, isolate and care for patients early and effectively;
5. To ensure continuation of essential health and nutrition services;
6. To communicate critical risks, disease information, and best practices to the communities and counter misinformation.

This plan is in line with WHO's overall strategic objectives for the COVID-19 response.

Section 2: Planning, coordination, and response strategy

2.1. Planning and coordination

In Bangladesh, COVID-19 triggered a national outbreak similar to those experienced in other countries. Therefore, a response of similar appropriate scale and scope is needed to mitigate both the public health impact of the disease as well as the broader impacts on the national economy and social stability, which could also threaten core development aspirations such as achieving the Sustainable Development Goals (SDG). Additionally, the highly technical nature of the national plan requires precise, efficient execution and multi-sectoral coordination. Experience with recent infectious disease crises of similar magnitude have demonstrated the effectiveness of a single, clearly structured, national multisectoral coordination system across the entire response to achieve necessary technical precision and operational scale. The current GoB and MoHFW response coordination mechanism is in accordance with global WHO operational planning guidance and consistent with the current United Nations (UN) coordination system.

2.1.1. High Level Multi-Sectoral Coordination Committee

Addressing COVID-19 essentially requires a well-coordinated multisector response. The Government of Bangladesh has formed a high level COVID-19 committee led by the Honorable Minister for Health & Family Welfare that advises the Prime Minister's Office on multi-sector interventions to reduce spread of infection.

2.1.1a. Sub-national multisectoral COVID-19 committees

The Ministry of Health and Family Welfare also constituted subnational multisectoral COVID-19 committees at each Division, District, Upazila (Sub-district), City Corporation, Municipality and Union to coordinate and enforce all local social, administrative, legal, and service delivery mechanisms to contain the COVID-19 epidemic in the respective domain on behalf of the government.

2.1.2 National Technical Advisory Committee

The MoHFW has established a high-level National Technical Advisory Committee consisting of government and independent experts to advise the government on identifying the key strategies, priority interventions and measures that need to be taken to implement the government response, based on emerging findings and recommendations, including WHO guidance, global evidence. In addition, the committee members will participate in the various operational level core committees and communicate progress and raise issues discussed in the core committees.

2.1.3 National Public Health Coordination Group

An 8-member national level public health coordination group i.e. one member for each of the 8 divisions of Bangladesh, has been formed by MOHFW for coordinating the COVID-19 containment activities in the division level. The group also provides necessary public health advice to the DGHS/MOHFW.

Coordination at the Office of the Director General of Health Services

The Directorate General has reviewed the ongoing COVID-19 situation and based on the need for adopting to the new normal in the face of COVID-19 pandemic and reenergizing the essential health services, revised the existing committees and sub-committees core of COVID-19 and constituted 10 core committees for efficient operation and coordination of the activities.

i. Coordination Committee.
ii. Committee on COVID-19 Lab testing, quality, pricing and supervision at government and private levels.
iii. Committee for clinical guideline and treatment management.
iv. Committee on strengthening healthcare capacity of public and private hospitals.
v. Committee for infection prevention and control at hospital, laboratory, and environment.
vi. Committee on mental health in COVID-19.
vii. Committee on information management, mass communication and community mobilization.
viii. Committee for maternal and child healthcare.
ix. Committee for essential and routine health services.
x. Committee for advising and applying zoning system in high risk areas for COVID-19 containment.

The names of the committees are self-explanatory and help understanding the functions of the committees. The coordination committee is chaired by Director General of Health Services. The members include chair and member secretary of each of the other committees. Both chair and member secretary of each of committee have been chosen from DGHS key personnel to ensure implementation and strong accountability. To improve coordination with the National Technical Advisory Committee and Public Health Coordination Group, representatives from each of the group have been incorporated in each of the committees except the Coordination Committee. Representatives of experts and development partners are also included in some committees. All the committees meet very frequently.

The committees have link with the technical pillars (described below) of the Bangladesh Preparedness and Response Plan (BPRP).

2.1.1.5 Issue-specific technical sub-committees

Beside the committees and group mentioned above, the respective director or committees can make temporary and regular technical committees/subcommittees to accomplish certain functions. Representatives of development partners are also included in some of the committees.

2.1.2. Pillar-based coordination

The key principle of the coordination mechanism is pillar-based technical coordination, with each pillar led by the designated DGHS official with coordination support provided by a designated UN agency. Pillar leads are tasked with providing technical guidance to the response, including development of evidence-based standard operating procedures, setting policy guided by a human rights-based approach and leave no one behind principle, mobilization of assets for the pillars, and

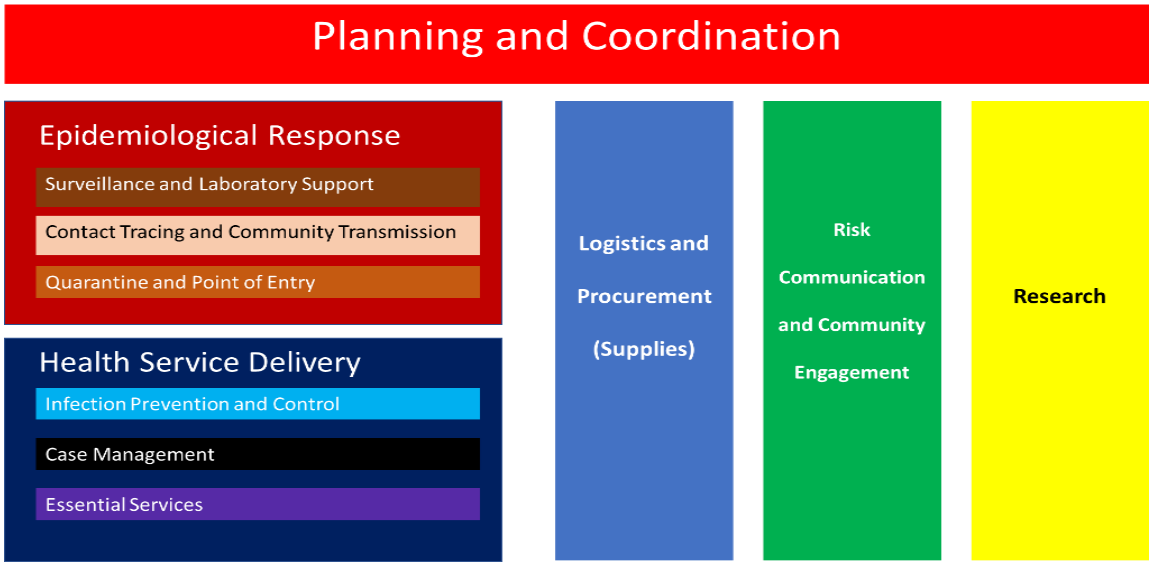
provision of technical analysis to the Government including on the socioeconomic situation and trends on the ground.

Pillar coordination builds upon the existing structures within the Ministry of Health and Family Welfare and supports integration of the COVID-19 response within existing local and national institutions. The pillar coordination mechanisms will be regularly reviewed and refined to ensure timely and effective coordination support to the Government, in coordination with the Development Partners Consortium for Health and other development partners (please refer to annex for full list of partners).

The technical pillars described in the subsequent sections are as follows:

Technical pillar	Link with core committee
Planning, coordination and response strategy	Coordination committee
Surveillance and laboratory support	Committee on COVID-19 Lab testing, quality, pricing and supervision at government and private levels
Contact tracing and mitigating community transmission (Linked with	Committee for advising and applying zoning system in high risk areas for COVID-19 containment
Points of entry and quarantine	Committee for advising and applying zoning system in high risk areas for COVID-19 containment
Infection prevention and control	Committee for infection prevention and control at hospital, laboratory, and environment
COVID-19 case management including telemedicine	Committee for clinical guideline and treatment management; and Committee on strengthening healthcare capacity of public and private hospitals
Ensuring essential health, population and nutrition services delivery while responding to COVID-19	Committee for essential and routine health and nutrition services; and Committee for maternal and child healthcare
Procurement, logistics and supply management	Committee on strengthening healthcare capacity of public and private hospitals
Risk communication and community engagement	Committee on information management, mass communication and community mobilization
Research	All core committees

Figure 3: Pillar organization



The Surveillance and Laboratory Support, the Contact Tracing and Community Transmission, and the Quarantine and Point of Entry Pillars of the BRRP encompass epidemiologic response to the pandemic. The overarching objective of these three pillars is to reduce COVID-19 transmission in Bangladesh through classic epidemiological tools such as contact tracing, surveillance, quarantine and isolation, instead of clinical and pharmaceutical tools such as vaccines and medicines.

The Infection Prevention and Control, the Case Management, and the Essential Services Pillars of the BPRP encompass the health service delivery response to the pandemic. The overarching objective of these three pillars is to ensure that both COVID-19 and non-COVID-19 patients receive essential health care services.

All the pillars that fall under the epidemiological response and health service delivery response are supported by the cross-cutting pillars of Planning, Coordination and Response Strategy, Logistics and Procurement, Risk Communication and Community Engagement, and Research.

2.2. Response strategy

2.2.1. Key multi-sector interventions to slow the spread

As the national holiday restrictions are eased for economic activities to restart, COVID-19 is expected to spread more quickly. However, the Government of Bangladesh, with technical advice from the Health Ministry, will continue to take measures that will limit spread to reduce the pressure on the national health systems, including:

1. Enforcement of compulsory mask-wearing and safe hygiene practices outside the home, including within the workplace, school and public transport: Mask-wearing is likely the most powerful and cost-effective intervention to slow down community transmission. Both nose and mouth must be covered at all times, especially when the wearer is speaking, sneezing or coughing. Enforcement of mask-wearing and access to water and soap/sanitizers to ensure safe handwashing/sanitizing should be accompanied by a strong and extensive communications campaign on mask wearing,

social distancing and safe hygiene practices (avoid touching face, including the nose and mouth, regular handwashing or sanitizing) to raise awareness and sustain behavior change, particularly at "super-spreader" interfaces with highest risk of spread such as markets, places of worship, and ferry boats. Local industry is able to manufacture affordable, high-quality, non-surgical reusable masks to prevent dependence on more expensive imports and disposable masks. Coordination with the government's law enforcement institutions will be required to ensure that compulsory mask wearing is enforced. For technical guidance on mask wearing, refer to the annex.

2. Zoning approach to containment: Technology-enabled epidemiological health surveillance by analyzing data from various sources has empowered the health system to predict formation of hot zones. Such techniques will be utilized to inform interventions in geographically-focused areas (zones) without the need for full national lockdown. For technical information on zoning refer to the annex.

3. Community-based prevention practices, case identification, and quarantining utilizing local community health capacity and a digital platform for slowing spread of disease and sustaining behavior change following lockdown
    a. Full family quarantine for individuals with symptoms of COVID-19 for 14 days;
    b. Targeted food distribution for 14 days to vulnerable households under isolation, zoned containment and quarantine is important for supporting those families most in need and ensuring quarantine compliance; this will be coordinated by the relevant ministries.
    c. Supportive monitoring of home quarantine via telemedicine and by local community health service providers;
    d. Strong nationwide communications to empower symptomatic individuals and their families to report symptoms. Destigmatizing the disease is essential for people to feel safe in divulging symptoms and seeking necessary assistance;
    e. Effective community engagement strategies to empower communities to support and enforce safe behaviors of mask wearing, social distancing and safe hygiene practices is essential for ensuring and sustaining safe behaviors and practices;
    f. Locally managed isolation centers for dwellers of slums and other congested areas where home quarantine or isolation is not possible because of shared facilities.
4. Maintenance of social distancing regulations based on latest expert and industry guidance as developed by MOHFW and to be enforced by higher-level committees: Recognizing their fundamental importance to slowing disease spread, social distancing measures will be applied based on epidemiological evidence with the primary objective of ensuring hospital bed capacity is not exceeded due to rapid spread of the disease. Regulations for public transportation, factories, offices, markets, shops, including in the informal sector, will be developed and reviewed regularly based on epidemiological assessments. In the case of rapid spread of the disease and insufficient bed capacity, additional social distancing measures will be introduced at either local or national level to further slow- down the reproductive rate of the virus while minimizing the broader negative impacts to the economy.

5. Empowerment of frontline health workers and other essential workers through communications and behavioral change to make them agents of change to turn the epidemic around and address their potential COVID-19 related fears and concerns: Ensuring essential frontline workers are

safe from infection is vital to maintain morale and to prevent spread of the disease by the workers themselves. Equipping them with necessary information, guidelines as well as periodic reporting of symptoms and tracking the respective management of essential workers will help supervisors to make timely management decisions including withdrawing the workers from field duty.

Given this is a novel coronavirus, significant knowledge will also be gained as countries are learning from each other how best to suppress the epidemic waves in their populations and ultimately bring the pandemic under control while maintaining essential health services and minimizing negative impacts to livelihoods.

2.2.2 Key focus areas

The COVID-19 epidemic is an emergency situation and the impact in terms of morbidity and mortality as well as social and economic consequences may be extremely high. To meet the emergency situation and reduce the impact, the response plan will need to include mechanisms for developing surge capacity to manage the patients, to sustain essential services and to reduce social impact.

The above interventions are expected to result in a national suppression followed by targeted interventions undertaken by each pillar to slow spread while continually strengthening surveillance and health system capacity, with the following key areas of focus:

1. Nationwide further expansion of lab testing capacity, ensuring good laboratory practices and biological safety, with immediate action taken on each lab result. As the outbreak unfolds, the surveillance strategy will need to evolve to account for available laboratory capacity, to ensure prioritization of testing for high-risk individuals, and to monitor disease trends and overall progress of the response strategy
2. Community-based prevention practices, case identification, and quarantining (including at points of entry) utilizing local community health capacity for slowing spread of disease following lockdown.
3. Expansion of facility-based and healthcare worker training programs nationwide, for improving triage, infection prevention control, and case management.
4. Mobilization of recently graduated intern doctors to support triage and case management at hospitals with highest case burden.
5. A set of targeted immediate actions for the Government of Bangladesh to reorganize and ensure continued access to essential quality health services for all.
6. Strong nationwide communication to empower symptomatic individuals and their families to report symptoms. Destigmatizing the disease is essential for people to feel safe in divulging symptoms and seeking necessary assistance.
7. Effective community engagement strategies coupled with access to masks, soap/sanitizers, water to empower communities to support and enforce safe behaviors of mask wearing, social distancing and safe hygiene practices for ensuring and sustaining safe behaviors and practices, particularly at super-spreader interfaces;
8. Development of a single list of supplies and use of the global supply chain system for expediting procurement of supplies in highest demand globally.

9. Optimum utilization of local manufacturing solutions, particularly for PPE production, including standardization.
10. Establishing research coordination committee / mechanism to facilitate pharmaceutical and non-pharmaceutical research related to COVID-19.

2.2.3. Monitoring of progress

Presently, Bangladesh is in the community transmission phase. The response strategy and actions will need to be continuously reviewed and adjusted as necessary to ensure efficient use of financial and human resources for the effective response to the outbreak. Any new information, Research and Development (R&D) advances, good practices internationally and updated recommendations from WHO, will need to be considered, consistently.

At the national level, information will be made available in real time to senior decision-makers through the establishment of a virtual disease and resource monitoring dashboard supported by the a2i initiative and closely tied into existing data management systems within the Health sector. In addition, conditions on the ground will be studied for early warnings of emerging social and economic dynamics.

2.3. Multisectoral coordination and partnerships

Facing the unprecedented challenge, the GoB will review the experience from other health emergencies and global guidance from WHO, to respond to COVID-19 while also ensuring that critical development programs continue. This includes the immediate response in the health sector and connect with other line ministries to respond to the needs and ensure safety nets are in place for poorest populations and population affected by COVID-19, including food security of vulnerable groups and protection of women and children from violence in their homes during public health measures such as lockdowns. The Government of Bangladesh will try at the same time to reduce negative impacts of the outbreak in the social economic and human rights spheres which disproportionately impact the well-being and livelihoods of marginalized and vulnerable groups. As the immediate response is ongoing, early planning for socio-economic recovery and planning for continued essential services will be done, with support of the UN and development partners.

Moving forward, there will be a need to coordinate the support to COVID-19 socioeconomic recovery. The role of the Local Consultative Group (LCG) mechanisms, chaired on the Government side by the Economic Relations Division Secretary, can play an important immediate role in coordinating the response to COVID-19. In addition to being, the conduit for dialogue between development partners and the Government on the 8th Five Year Plan, the LCG mechanism can serve to coordinate partners' support to the socio-economic recovery depending on the impact of the health emergency.

2.3.2. COVID-19-the case for Universal Health Coverage

The COVID-19 crisis demonstrates like no other, that universal health coverage is a must for Bangladesh. Before the crisis, Bangladesh made huge progress in poverty reduction and had about 30-40 million people who are poor, by any standard. This may rise substantially in the next few months and years. The economic shock the population faces is unpredictable and puts everyone at

risk, be it for the disease or for poverty due to job loss or lockdown. This points to the need of a publicly financed healthcare system that protects everyone from a financial shock due to health expenditure.

Covid-19 is, it is argued, the ultimate example of why we need universal health coverage (UHC)—if anyone is left out, it threatens the health security of everyone. The Ministry of health and Family Welfare has already established a UHC committee and the time is there to build a better health system, and advocate for Universal Health Financing for UHC, with a focus on basic essential health services – promotive, preventive, curative and palliative. The recovery plan for the Ministry of Health should focus on reviewing the health financing strategy that is universal and maybe launched in the course of 2021, at the time of the 50 years celebration of Bangladesh.

The COVID-19 crisis hit hardest in urban areas, such as Dhaka, where the health system is fragmented. Tertiary and specialized public hospitals fall under MoHFW management, whereas primary health care is managed by the local government institutes and private facilities are poorly regulated. This makes the role of oversight and regulation only harder. Urban health reform has been started and the urban health strategy will be accelerated to ensure improved delivery of comprehensive health services, including primary health care to the urban population in Bangladesh.

Section 3: Surveillance and laboratory support

3.1 Overview

Testing of suspected cases is critical to responding to COVID-19. The various response measures for managing the patients and reducing and breaking the chain of transmission are largely dependent on the outcome of the laboratory tests and surveillance findings.

3.1.1 Laboratory Diagnosis

Currently, real time quantitative Reverse Transcriptase Polymerase Chain Reaction (qRT-PCR) testing is the most common form of laboratory testing for COVID-19 in the country. There are currently 73 laboratories in Dhaka and Dhaka, both in government and private sector carrying out COVID-19 tests within the public health system. The National Reference Laboratory in Bangladesh for COVID-19 is the Biological safety Level (BSL)-2 laboratory at IEDCR in Dhaka. Besides this, several private hospitals are carrying out the rtPCR tests for patients seeking care at these facilities. Laboratory diagnosis is being conducted according to Standard Operating Procedures (SOP) developed by technical stakeholders following national and international guidelines.

Sample collection for testing is being carried out both through household collection and through kiosks, located in hospital premises and in other facilities in collaboration with NGOs.

Currently there are several challenges that limit laboratory testing capacity in Bangladesh. The main challenges are: limited availability of testing kits and associated consumables; inadequate numbers

of laboratories with proper infrastructure/equipment to conduct COVID-19 testing; lack of required biological safety measures in the laboratories, required for safe testing environment; shortage of necessary trained human resources such as virologists, microbiologists and medical technicians in the public health system, for conducting RT-PCR tests; proper and safe disposal of laboratory wastes.

Given the limitations in laboratory testing capacity and finite resources for COVID-19 response, it is evident that Bangladesh cannot possibly tests all individuals who need it. Instead, an optimal number of lab tests will be done per day (e.g. 10 per 100,000 population i.e. 16,500 tests per day) so as to provide standardized and comparable data for monitoring progression of COVID-19. There is a need to strengthen other forms of surveillance such as syndromic surveillance, and measures to isolate all probable and confirmed cases to reduce community transmission.

As diagnostics evolve, community-level testing via kiosks can further decentralize and expand testing capacity while antigen-based rapid testing may eventually enable immediate testing at household level, thereby greatly simplifying the logistics and reducing the overall cost of diagnostic testing.

3.1.2. Surveillance

Surveillance is the systematic and routine collection, transfer, analysis and interpretation of information related to a particular disease (e.g., COVID-19) in a country. Surveillance helps monitor trends of disease spread in respect to *persons, place* and *time*. In Bangladesh, different surveillance systems for COVID-19 will be used to guide national and local response measures to reduce COVID-19 transmission. It is important to note that COVID-19 surveillance needs to be dynamic and should adapt with the changing nature of disease transmission/progression in the country (for example, from widespread community transmission to an expected prolonged phase of low/steady transmission).

The objectives of COVID-19 surveillance are[9]:

1. Help in rapid detection
2. Guide management of suspected cases
3. Help identify and follow up contacts
4. Guide implementation of control measures
5. Detect and help contain outbreaks among vulnerable populations
6. Monitor longer term epidemiologic trends and evolution of COVID-19 virus

3.1.2.1 Existing surveillance systems for COVID-19

DGHS is providing oversight for all COVID-19 surveillance systems through its "Corona Control Room" in coordination with IEDCR and CDC. In general, Bangladesh has the capacity to conduct sentinel-based, event-based, community-based, web-based and cell phone-based surveillance. The following surveillance mechanisms are being utilized for COVID-19:

a. *Screening at points of entry (PoE)*: Screening of passengers for signs and symptoms suggestive of COVID-19 is being conducted at all 28 PoEs including air, sea and land ports (as per the directive of

[9] Based on https://www.who.int/publications/i/item/surveillance-strategies-for-covid-19-human-infection.

the National Advisory Committee and National Technical Committee). Screening is being conducted through self-declaration health forms, visual observation for respiratory-illness like symptoms, body temperature recording through a thermal scanner (metallic archway or hand held infra-red digital thermometer), and information collection (contact history) at health desks in the facilities (please see section 5 for details).

b. *Sentinel surveillance:* existing sentinel surveillance systems for influenza is being used to monitor COVID-19; these are the National Influenza Surveillance Bangladesh (NISB) and Hospital-based Influenza Surveillance (HBIS) platforms. Respiratory tract samples are being collected for influenza-like illness (ILI) and severe acute respiratory illness (SARI) from 18 sentinel hospitals of NISB and HBIS platform under the National Influenza Center, IEDCR, MoHFW.
c. *Syndromic Surveillance:* The Government of Bangladesh initiated immediate nationwide monitoring of symptoms suggestive of COVID-19 in the general population through existing community networks, web apps, as well as telecom-based reporting via a number of hotlines (e.g., 333 and 16263) and Unstructured Supplementary Service Data (USSD). These reports have helped to indicate distribution of probable cases throughout the country; in addition, individual reports were assessed using other risk criteria and those deemed to be at high risk for COVID-19, were referred for laboratory testing.
d. *Laboratory Testing Data:* Laboratory confirmed cases is considered a rather small proportion of individuals at high risk of COVID-19 (identified through self-reporting of symptoms to any of the above-mentioned platforms; contact tracing; high-risk professions such as health care providers; or individuals directly contacting private laboratory services/ kiosks) who are undergoing laboratory tests to confirm COVID-19 diagnosis. The number of laboratory-confirmed COVID-19 cases is also helping to monitor disease progression. However, there are several limitations in relying on the number of confirmed cases only as best estimate to monitor trends as the number of tests done per day for a particular area has not been standardized yet; the number of tests done is very low; there are chances that tests are not available equally across all geographic locations and among all populations (please see 3.1.2 for details).

3.2 Strategic interventions

Increase laboratory testing for appropriate case management and to provide standardized and comparable data for monitoring progression of COVID-19.

3.2.1. Strengthening laboratory testing

1. Undertake short to long term plan with target for daily laboratory testing for the medium to long term, considering available resources;
2. Implement the plan engaging stakeholders like the development partners, NGOs, private sector;
3. Increase sample collection through collection teams and kiosks.
4. Collect samples from all corners of the country to get representation of all geographic areas and populations of the country;
5. Assess RT-PCR diagnostic testing facilities in the country to evaluate if they can be converted to BSL-2 COVID-19 testing facilities;

6. Expand/establish new COVID-19 testing laboratories; where needed establish collaboration/ partnership with private providers to ensure collected samples get tested at the earliest.
7. Identify and train adequate human resources for conducting COVID-19 tests;
8. Fill in the vacant positions for virologists and medical technicians at the earliest; create new positions where required.
9. Ensure consistent availability of testing kits, PPEs and associated consumables and establish fast and efficient procurement processes;
10. Establish proper biological safety measures in all COVID-19 testing laboratories (availability of required equipment and ensure adequate training and orientation of laboratory personnel); notification;
11. Fee basis;
12. Ensure proper waste disposal from COVID-19 laboratories;
13. Introduce rapid tests;
14. Allow more private sector institutions to carry out COVID-19 confirmation tests.
15. Explore and strengthen capacity for local production of kits;

3.2.2. Strengthening surveillance

1. Ensure surveillance system is geographically representative across age, gender, vulnerability and levels of risk;
2. Strengthen community-based syndromic surveillance by empowering communities to monitor and report cases with symptoms suggestive of COVID-19, such as the Community Support Team (CST) initiative and telephone hotlines (including an active cell phone surveillance) and web app reporting. Develop artificial intelligence-based surveillance.
3. Expand the ILI and SARI sentinel surveillance systems to also capture COVID-19 cases
4. Triangulate data from different surveillance platforms to provide a comprehensive picture of COVID-19 progression in the country
5. Develop clear case definitions for probable and confirmed cases based on available data; continuously review and update case definitions (if required) based on surveillance data;
6. Establish proper population and laboratory testing denominators to aid in data interpretation
7. Ensure uniform data reporting formats across all surveillance systems and create a central data reporting platform
8. Ensure fast data analysis and reporting to detect new cases and clusters and to respond to these as soon as possible
9. Ensure daily monitoring of COVID-19 deaths in the hospitals and identify ways to capture COVID-19 deaths occurring in the community
10. Once reliable antibody-based serological tests become available, sero-surveillance can be utilized to monitor overall population exposure and to periodically assess rate of spread of the disease at both community level and within high-risk populations such as frontline healthcare workers.

3.2.3 Strengthening Laboratory Testing Capacity

1. Forecast requirement of testing kits and associated consumables and establish fast and efficient procurement processes;
2. Establish proper biological safety measures in all COVID-19 testing laboratories (availability of required equipment and ensure adequate training and orientation of lab personnel);

3. Ensure proper waste disposal from COVID-19 laboratories;
4. Standardize a maximum number of testing to be done per day (based on the availability of resources) to monitor trends in disease progression.

Section 4: Contact tracing and mitigating community transmission

4.1 Overview

Contact tracing is the process of identifying, assessing, and managing people who have been exposed to a disease to prevent onward transmission[10].

Contact tracing is a classic epidemiological tool used to reduce contact rate between an infected individual and susceptible populations, and in doing so, it reduces the effective reproduction number (R) that determines the spread of an infectious disease (if effective reproduction number/R is greater than one, then the disease will continue to spread in the population).

COVID-19 is spread through droplets and contact transmission. Evidence suggests that a large proportion of COVID-19 cases are infected through pre-symptomatic individuals[11], which means that an infected individual will likely expose a lot of contacts to the virus without realizing that they are spreading COVID-19. Manual contact tracing in the case of COVID-19 might be too slow to be effective, and in the context of densely populated Bangladesh, manual contract tracing's impact on timely identification, notification and quarantining of contacts to prevent further spread is even less promising.

The government of Bangladesh has established several quarantine and isolation facilities across the country to support suspected and probable cases to maintain quarantine and isolation, respectively, and reduce community transmission.

Contact tracing in Bangladesh is being led by DGHS. The Corona Coordination Cell played an important role in supporting contract tracing using surveillance data. However, as mentioned above, with widespread community transmission, we need to focus on other approaches to limit community transmission.

4.2 Strategic Interventions for reducing community transmission

1. Explore potential for and feasibility of implementing innovative approaches contact tracing based on the local context, stage of the epidemic, etc.
2. Implement other interventions that will lead to the same output as contact tracing, i.e., reducing contact rate between probable/confirmed cases and susceptible populations. One such intervention is the Community Support Team (CST) intervention based on syndromic quarantining of the entire household to reduce risk of COVID-19 spread;
3. Ensure widespread **use of** mask to prevent transmissibility of the virus;

[10] https://www.who.int/publications/i/item/contact-tracing-in-the-context-of-covid-19
[11] Ferretti, L.; Wymant, C.; Kendall, M.; et al. *Quantifying SARS-CoV-2 transmission suggests epidemic control with digital contact tracing.* Science 10.1126/science.abb6936 (2020) (doi: 10.1126/science.abb6936).

4. Ensure adherence to isolation for all COVID-19 confirmed cases (and their household members);
5. Ensure adherence to quarantine for all contacts (of suspected and confirmed cases);
6. Continue to improve isolation and quarantine facilities across the country to support contacts and cases to quarantine or isolate properly.

Section 5: Points of entry and quarantine

5.1 Overview of points of entry

Points of entry are passages for international entry or exit of travelers, baggage, cargo, containers, conveyances, goods and postal parcels, as well as agencies and areas providing services to them on entry or exit. In Bangladesh, screening at PoEs is being used as a surveillance approach to identify and quarantine/isolate individuals who are at risk for bringing COVID-19 across international borders into Bangladesh. This system aims to prevent further transmission in the community and will also prevent further outbreaks from international passengers once the epidemic has slowed down in Bangladesh. Currently there are 23 official land ports, three international airports and three sea ports which function as PoEs in the country. Of these, currently, five land ports (i. Benapole Land Crossing, Jashore; ii. Ahkaura Land crossing, Brahmanbaria; iii. Burimari land crossing, Lalmonirhat; iv. Banglabandha land crossing, Panchagarh; and iv. Teknaf land crossing, Cox's Bazar), one international airport (Hazrat Shajalal International Airport, Dhaka) and two sea ports (Seaport, Chattogram and Mongla Seaport, Bagerhat) are active in allowing either passengers or cargo to enter or exit the country.

The 'PoE and Quarantine' pillar is being led by the Communicable Disease Control Unit, DGHS. There are three International Health Regulation (IHR 2005) designated PoEs in the country (Hazrat Shahjalal Intl Airport, Dhaka; Seaport, Chattogram and Benapole Land Crossing, Jashore) mandated to achieve IHR core capacities. An Inter-Agency Health Mobility Management task force has been established to support coordination centrally and also at PoEs. DGHS has already started and will continue screening and implementing risk communications activities at PoEs. Rapid assessments have been conducted for eight PoEs; personnel have been trained to conduct screening of passengers; SOPs are being developed to provide detailed guidance on screening and follow-up actions, customized for airports, land ports and sea ports; healthcare personnel have been deployed in some PoEs; screening/health information booths have been established, printed materials with information on COVID-19 symptoms, contact information of hotlines/hospitals, etc. are also being provided to incoming passengers.

Currently, passengers are being screened for signs and symptoms suggestive of COVID-19 through self-declaration health forms, visual observation for respiratory-illness like symptoms, body temperature recording through a thermal scanner (metallic archway or hand held infra-red digital thermometer), and information collection (e.g., contact history) at health desks adjacent to the thermal scanning zones. If any suspected COVID-19 case is detected, it will be communicated with the COVID-19 Control Room as per existing Standard Operating Procedures (SOPs).

All of these measures are functioning in the active abovementioned PoEs, and are also present in some capacity in the rest of the PoEs (but requires further strengthening to achieve minimum IHR

requirement). However, thermal scanners are currently only available in Dhaka and Sylhet international airports, Chittagong sea port and Benapole land port. Other PoEs will not only require thermal scanners, but also need associated equipment, infrastructure and trained human resources to conduct screening of incoming passengers.

Since the emergence of Covid-19 outbreak till 13 June 2020, 343,483 passengers have been screened through the airports (271,735 at Hazrat Shahjalal Int'l Airport, Dhaka; 52,113 at Shah Amanat Airport, Chattogram and 19,635 at Sylhet Int'l Airport), 344,396 passengers through land ports (highest 198,918 at Beanpole), and 22,304 crew and staff screened through the seaports. Passengers with significant/severe symptoms are being sent to institutional isolation centers. At present, if screening at the PoEs identifies individuals with mild or inconclusive symptoms, the health officials are sending them to government designated institutional quarantine centers. At the institutional quarantine center, government designated authorities are in charge of food, logistics and overall management while MoHFW through DGHS is monitoring health issues and Infection Prevention and Control (IPC) measures. Passengers with no symptoms are instructed to respect a mandatory home quarantine of 14-days at their declared residence. Health officials at the PoE extract information from the Health Declaration Forms and CDC of DGHS follow up with these individuals through mobile applications/other means to ensure adherence to quarantine. During the above mentioned time, 300,975 persons have been sent to home quarantine and of them 243,738 persons have completed their 14 days of quarantine; while, during the same period 16,669 persons were sent to quarantine facilities and of them 13,121 persons have completed their tenure by this time.

Passengers with significant/severe symptoms are being sent to institutional isolation centers. At the institutional quarantine center, government designated authorities are in charge of food, logistics and overall management while MoHFW through DGHS is monitoring health issues and Infection Prevention and Control measures. Passengers with no symptoms are instructed to respect a mandatory home quarantine of 14-days at their declared residence. Health officials at the PoE extract information from the Health Declaration Forms and CDC of DGHS follow up with these individuals through mobile applications/other means to ensure adherence to quarantine.

DGHS is also continually strengthening coordination to increase awareness among travel and tourism industry personnel regarding the importance of infection prevention and control; reiterating the need for airlines to adhere to compliance guidelines developed by the International Air Transport Association; developing PoE contingency plans; and informing those in the tourism sector (hotels, cruise lines, travel agencies, etc.) about outbreak evolution, international recommendations and government's response.

5.2 Strategic priority interventions

5.2.1 Strengthening coordination

1. Ensure effective coordination between DGHS, PoE authorities, transportation authorities and law enforcement agencies/or stakeholders involved with supervision of government designation quarantine centers and isolation centers;

2. Ensuring effective coordination with the *Surveillance and Laboratory Pillar* to ensure testing of suspected cases (as and when required and feasible);
3. Ensure effective coordination with the *Case Management Pillar* to provide appropriate treatment to passengers in quarantine/isolation centers based on symptom severity (e.g., referral to hospitals for individuals with severe/critical symptoms).
4. Ensure effective coordination with the *RCCE Pillar* to produce and disseminate effective IEC materials for passengers, vehicle operators and PoE staff.

5.2.2 Providing technical guidance

1. Development of detailed SOPs and other materials guided by the International Health Regulations (IHR) for:
   - conducting screening;
   - contingency plans when passengers with indications of COVID-19 are identified;
   - managing quarantine/isolation of such passengers;
   - referral to testing facilities and hospitals;
   - protocols for following up with passengers who will maintain 14-day mandatory quarantine at home.

Note: The SOPs need to be developed for all types of PoEs (land, sea and air) and the contingent plan needs to be PoE specific.

2. Development of communication materials to educate passengers about COVID-19 and provide important information on seeking help or reporting symptoms (in collaboration with the RCCE Pillar).

5.2.3 Strengthening screening at points of entry (this refers to all air, land and sea PoEs prioritized by the government)

1. Ensure availability of all equipment/proper infrastructure (e.g., paper forms; booths; thermal scanners, protective equipment for the screeners, etc.) required to conduct screening;
2. Ensure availability of adequate trained human resources for conducting screening
3. Coordination with travel and tourism industry to facilitate screening of passengers at the point of source;
4. Training of healthcare providers and other personnel on maintaining infection prevention and control measures; data recording and follow-up;
5. Mechanisms for disinfecting vehicles (aircrafts, ships, trains, buses, etc.);
6. Mechanisms for disinfecting luggage, cargoes, containers, parcels and goods;
7. Provide communication materials containing information or signs and symptoms and where to seek medical support if needed to passengers without any indications of COVID-19, who will maintain 14-day home quarantine;
8. Ensure regular follow-up with passengers maintaining 14-day mandatory home quarantine through cell phone-based surveillance to ensure proper quarantine adherence;

5.2.4 Management of passengers with indications of Covid-19

1. Availability of a customized contingency plan for each PoE in the event any passenger with Covid-19 symptoms are identified, including details on transportation, testing, management of Covid-19 symptoms and referral to hospitals;
2. Ensure fast track process and transportation of suspected passengers to designated quarantine/isolation centers/hospitals depending on symptom severity.
3. Ensure availability of systematic transportation facilities for transporting suspected passengers (e.g. ambulances/cars, etc.) for each PoEs;
4. Ensure proper monitoring of each passenger sent to quarantine centres and isolation centers, with follow-up for testing (whenever feasible) and medical attention (as and when required).

Note: This section describes quarantine/isolation for passengers identified as eligible for quarantine or isolation through screening at Points of Entries (PoEs). Quarantine mechanisms for contacts and suspected cases identified outside PoEs are described in 4.1 and 4.2.

Section 6. Infection prevention and control

6.1 Overview

Infection Prevention and Control (IPC) measures in health-care settings are of central importance to the safety of patients, health-care workers and the environment, and to the management of communicable disease threats to the global and local community. Early identification, prompt isolation, proper patient placement and adequate ventilation, are essential to contain and mitigate the impact of pathogens that might constitute a major public health threat.

The success of the IPC system depends on practices and actions in each health facility, meaning that all concerned need to take responsibility. The leadership of the facility has a critical role to motivate each of the workers to adhere to the IPC protocols and practices and other standards related to protecting patients from infection in the facilities are upheld. In the case of COVID-19, Personal Protective Equipment (PPE) is required. Since the outbreak, national guidelines for health care providers' infection prevention control of COVID-19 pandemic, rational use of personal protective equipment[12], SOP for infection prevention and control for the burial of dead bodies, guidelines for environmental cleaning, disinfection and waste management have been developed and accessible via the DGHS's website[13]. Through mid-May 2020 DGHS, trained 2200 doctors, nurses and other staff from 240 facilities on IPC. This will be continued for others concerned. In addition, guidelines on triage, early recognition, standard precautions, isolation capacity, and referral procedures are being implemented.

Adequate water and sanitation in health facilities including soap and hand sanitizers are required in sufficient quantities for all workers, patients and their attendants to ensure infection prevention. Considerable investments are required to meet WASH in health care facility standards. Waste management is critical for the outbreak response and the protection of health workers and patients

[12] DGHS guidelines on RATIONAL USE of PERSONAL PROTECTIVE EQUIPMENT for COVID-19, https://dghs.gov.bd/images/docs/Notice/20_03_2020_PPE_FINAL_WEBSITE.pdf.
[13] DGHS guidelines on COVID-19 IPC measures, https://dghs.gov.bd/index.php/bd/publication/guideline.

and their attendants, as per the National Guideline for Health Care Provider on Infection Prevention and Control of COVID-19 pandemic in Healthcare Setting. The proper disposal and disinfection of PPE, medical and lab waste management within and outside the health facility needs to be ensured.

Since the outbreak, national guidelines for health care providers' infection prevention control of COVID-19 pandemic, rational use of personal protective equipment for COVID-19, SOP for infection prevention and control for the burial of dead bodies, guidelines for environmental cleaning, disinfection and waste management have been developed and accessible via the DGHS's website[14]. Through mid-May 2020 DGHS, trained 2200 doctors, nurses and other staff from 240 facilities on IPC. It will be continued for others concerned. DGHS with support from development partners have assessed 131 hospitals and annexed institutions to see facility readiness including for IPC and case management, WASH and waste management for Covid19. Data is being analyzed in the DGHS dashboard. This will inform both GOB and partners to identify gaps around IPC and others domains on Covid19 pandemic[15].

6.2 Strategic priority interventions for IPC

6.2.1 IPC

1. Constitute IPC or Quality Improvement (QI) Committee in each health facility with superintendents or managers of the facilities accountable for performance of their IPC or QI committees. Designate IPC focal points in all facilities under direct supervision of the superintendent.
2. Assess health facilities as per WHO standards for compliance with IPC standards.
3. Develop and implement action plans for IPC for each facility taking into account resources required.
4. Develop, disseminate IPC materials with pictorial and flowchart for HCW and patients to be displayed in the health facilities;
5. Ensure consistent availability of PPE and their allocation and use to various categories of healthcare providers, as per set guidelines.
6. Build capacity of health workforce on IPC and enhance capacity of frontline clinical and non-clinical staff on personal safety including use of PPE through continued learning, mentoring and coaching tactics;
7. Design the engineering aspects of hospital buildings to reduce the risk for infection through improved ventilation of all hospital rooms;
8. Improve airflow control in ICU to control infections in installing negative air pressure facilities;
9. Set up mechanism to monitor effective implementation of IPC measures as per national guidelines;
10. Strengthen coordination among national and sub-national stakeholders under DGHS such as Corona Emergency Cell, Hospital & Clinics, communicable disease control, community-based health care, Management information system (MIS) and primary to tertiary level health facilities for integrated approach for strengthening COVID-19 emergency responses for implementation of IPC;

[14] DGHS guidelines on COVID-19 IPC measures, https://dghs.gov.bd/index.php/bd/publication/guideline.
[15] https://dghs.gov.bd/index.php/en/component/content/article?id=5393

11. Designate IPC focal points in all facilities under direct supervision of the superintendent, develop and implement action plans for IPC and set up monitoring systems to effectively ensure the implementation of IPC measures as per national guidelines;
12. Build capacity of health workforce on IPC and enhance capacity of frontline clinical and non-clinical staff on personal safety including on use of PPE through continued learning, mentoring and coaching tactics as well as online supportive supervision; Develop protocols for tracking healthcare personnel exposed to confirmed cases of COVID-19, regularly test or check for symptoms compatible with COVID-19, and record, report, and investigate all cases of healthcare-associated infections to address root causes of infection;
13. Increase confidence among health workers in government and private sector facilities on mastering IPC practices and develop a motivational communication and behavior change campaign for health workers to improve their IPC practices (in coordination with the RCCE Pillar);
14. Assess health facilities as per WHO standards for compliance with IPC standards and develop and implement improvement plans.

6.2 Triage

1. Reorganize the facility for triage aligned with national guideline on COVID-19[16] and ensure IPC compliance and practice at the first point of care. Protect non-COVID-19 patients from possible infection in health care facilities;
2. Ensure facilities have two entrances (COVID-19 and non-COVID-19) to ensure triage.
3. Ensure the critical infection prevention measures such as wearing masks, physical distancing, provision of hand washing facilities, for care seekers visiting the health facilities through innovative strategies.

6.3 WASH in health facilities

1. Assess WASH situation of the health facilities.
2. Implement recommended protocols for hand hygiene, personal protective equipment, environmental cleaning, and waste management;
3. Improve/ expand WASH facilities in health facilities ensuring continuous and adequate supply of running water and soap. Ensure chlorination points at water source as per protocol;
4. Establish mechanism for functioning of the WASH facilities;
5. Build capacity of cleaning/ support staff in environmental and personal hygiene in the context of COVID-19;
6. Where necessary, ensure adequate cleaners in health facilities through collaboration and partnerships;
7. Ensure appropriate protection for health facility cleaners;
8. Monitor IPC and WASH implementation using the Infection Prevention and Control Assessment Framework, the Hand Hygiene Self-Assessment Framework, hand hygiene compliance observation tools, and the WASH Facilities Improvement Tool;
9. In coordination with the Department of Public Health Engineering (DPHE), support access to WASH services in public places and community spaces most at risk.

6.4 Medical waste management

[16] *Ibid.*

1. Implement waste management as per national standards, including color-coded bins, and in collaboration with relevant program managers under DGHS;
2. Ensure appropriate disinfection of the PPE and disposal as per guidelines;
3. Ensure adequate and consistent supply of necessary logistics including garbage bags, bins, gloves, boots, disinfectants, dead body disposal bags etc.;
4. Ensure medical wastewater management in coordination with local government following the national guidelines;
5. Enforce proper disposal and waste management through environmentally friendly incinerators in the facilities, through local authorities or through contracting with private entities while ensuring adequate personal protection for the operators.
6. Monitor jointly, waste disposal mechanisms of COVID-19 designated hospitals in the public or private sectors.

6.5 Safe disposal of dead bodies

1. Set up multi-sector mechanisms at local level for care of deceased persons with suspected or confirmed COVID-19 cases, observing necessary sensitivity;
2. Ensure adherence to necessary precautions (national guidelines available) for everyone attending a patient died of clinical or epidemiological history compatible with COVID-19;
3. Engage/ collaborate and strengthen the capacity of private agencies and other stakeholders involved in burial practices;
4. Follow burial guidelines for COVID-19 of the Ministry of Religious Affairs;
5. Before attending to a body, people should ensure necessary hand hygiene and personal protective equipment (PPE) supplies are available;
6. Patients who died and are suspected with COVID-19 should be tested (oral swab). In these situations, an autopsy is contraindicated;
7. Respect and protect the dignity of the dead, their cultural and religious traditions, and their families throughout the process.
8. Observe adequate IPC measures as per national guideline while preparing and packing the body for transfer from a patient room to an autopsy unit, mortuary, burial site or crematorium; The dead body must be kept whole and its handling should be minimum. Regardless of the funerary practice of the family of the patient, the body must not be embalmed. It should be disinfected with hypochlorite solution 0.05% and placed in resistant fluid extravasation body bags, which must be properly closed before burial;
9. The place and used materials need to be cleaned as per national protocol.

Section 7. COVID-19 case management

7.1 Overview of case management

Bangladesh has confirmed community transmission of COVID-19, with several epicenters, and 102,292 confirmed cases and 1,343 deaths were reported as of 18 June 2020. While most people with COVID-19 develop only a mild illness, approximately 14% develop a severe disease that requires hospitalization and oxygen support, and 5% require admission to an ICU (WHO).. Current management of COVID-19 consists of supportive care, including invasive and noninvasive oxygen support and adjunct therapy with recommended drugs.

As one of the strategic priority areas, DGHS has already developed various guidelines on Case Management and ICU Management, as well as 27 other COVID-19 guidelines[17]. The government has quickly recruited and trained 2000 doctors and recruited 5000 nurses and mobilized public health experts. Hospitals, public and private, have been designated at different levels for isolation and case management. As risk of infection is higher at health facilities, the demand for telemedicine and other options for clinical management and case follow up has increased several folds. Currently, there are several digital platforms such as "Shastho Batayon-16263", and national health call centers that provide 24/7 teleservices including on COVID-19. The strengthening and professionalization of the telemedicine system is required and may be used for COVID-19 response.

However, preparedness of the facilities to manage both streams of patients is suboptimal. Availability of high flow medical oxygen in specialized hospitals, medical college hospitals and district hospitals is insufficient. The existing ICUs do not meet the standards for infectious diseases. All medical college hospitals and district hospitals need to expand their liquid medical oxygen systems and establish an infectious disease department during the crisis that need to remain to cope with the huge burden of existing infectious diseases and future infectious disease threats. DGHS and partners are conducting training sessions and facility assessments.

7.2 Strategic priority interventions

Strategic priority interventions for COVID-19 case management include:

7.2.1 Screening and triage systems in health facilities

1. Establish a screening and triage system in all health facilities for patients with suspected and confirmed COVID-19 at the first point of contact with the health care system and through digital platforms;
2. Develop, update and disseminate the triage SOP for suspected COVID-19 cases;
3. Establish designated areas for clinical triage at different levels of facilities (public & private) to triage and screen cases with fever and respiratory distress;
4. Equip triage areas with necessary equipment (portable X-Ray);
5. Train and build capacity of health managers and service providers for screening and triage at facilities and early recognition of patients with COVID-19 including IPC and appropriate bio-hazard measures.

7.2.2. COVID-19 management in existing facilities according to clinical severity

Ensure care for all suspected and confirmed COVID-19 patients in the designated facility/treatment areas according to disease severity and acute care needs include:

1. Rapidly assess facility readiness to identify gaps and undertake necessary actions to continue COVID-19 and non-COVID-19 essential health services (public & private);
2. Develop and update guidelines, SOPs and training modules on clinical management and provide appropriate training to health professionals and support staff on case management including ICUs;

[17] DGHS novel coronavirus guidelines, https://dghs.gov.bd/index.php/bd/publication/guideline.

3. Ensure adequate HRs and capacity building on COVID-19 case management; Establish expertise to administer high flow oxygen and ICU teams for the management of COVID-19;
4. Ensure psychosocial support for health workers managing COVID-19 patients;
5. Ensure adequate oxygen supply mix, including high flow medical oxygen with appropriate training and mentoring as per level of the health system, with oxygen concentrators, liquid oxygen, oxygen plants and oxygen cylinders, with required accessories for oxygen supply;
6. Ensure adequate supply of pharmaceuticals and other consumables;
7. Equip ambulances for COVID-19 case management and IPC as per national protocols;
8. Ensure comprehensive clinical, nutritional, and psychosocial patient care and institutionalize quality improvement initiative including mentoring and death review of COVID-19 cases;
9. Support monitoring and supervision, as well as data-driven performance reviews, adjustments and knowledge management.

7.2.2.1 Management of mild and moderate cases

1. Manage all mild cases without comorbidities in designated community facilities (isolation centers) or at home with access to rapid health advice through telemedicine/ call centers and/ or community health team and refer them to hospital following the referral protocol;
2. Manage all mild cases with co-morbidities, moderate, severe and critical cases in designated Covid hospitals;
3. Ensure adherence to isolation protocols in case of home management of mild cases;
4. Ensure adequate supply of pharmaceuticals and other consumables; and functional supply chain system;
5. Establish a comprehensive eHealth platform/Web/ App based follow up for home-based care, psychosocial support and referral transport;
6. Develop guidelines and applications for telemedicine practitioners.
7. This may require collaboration with NGOs to provide feasible advice and support households especially in the slums and rural areas; others may seek guidance from the digital platforms and DGHS website; Coordinate telemedicine agencies, ensure adherence to minimum standards of clinical practices to ensure quality of care;
8. Organize community awareness sessions on risk management including using digital platforms (16263/ 333 / corona checker / chat bot etc.);
9. Ensure social protection for the poorest to alleviate financial hardship and accessing care, through appropriate line-ministry.

7.2.2.2. Management of severe and complicated cases

1. Establish Infectious disease department in all Medical College Hospitals and District Hospitals (Advocate to set up ID Department in medical universities including in BSMMU) to cope with COVID-19 in the short run, that can remain in part after the epidemic is controlled to cope with existing and future infectious disease threats in future;
    2. Equip triage areas with necessary equipment (i.e., Improve the readiness (including logistics and supply chain) of different levels of hospitals and health facilities for screening, triaging of suspected COVID-19 patients, isolation, case management and referral with proper IPC system at point of care;
    3. Establish real-time monitoring system for triaging at all facilities through integrating in the existing HMIS/ DHIS2.

7.2.2.3 Surge capacity

Surge capacity: expand the health system with increased capacity for care delivery, including rapid extension of designated hospitals to care for COVID-19 patients.

1. Establish Rapid Response Teams at divisional and district level to support the DGHS and partners to undertake rapid risk analysis and develop appropriate response plans;
2. Designate and prepare public, private and alternate facilities to strengthen in-patient care and surge capacity with clinical and support staff;
3. Establish makeshift/field hospitals as necessary;
4. Ensure essential support service and psycho-social counseling (lodging, food, transport) for the health service providers and institutionalize incentive mechanisms or risk coverage for health workers at risk;
5. Develop job aids, update guideline, and provide mental health and psychosocial support for patients and health care providers through face to face and call centers;
6. Ensure sufficient stocks of vital supplies with a functional supply chain system.

Section 8. Ensuring essential health, population, and nutrition services (ESP) delivery while responding to COVID-19

8.1 Overview

The health system of Bangladesh is currently facing competing demands: while shifting the health systems focus towards the COVID-19 response, the pandemic is disrupting the delivery of essential and lifesaving health, population and nutrition services. The COVID-19 pandemic is expected to have long-term impact at individual level, nationwide and across the globe, on key areas such as health care, food and nutrition, social and economy. The evidence from the MIS based service utilization data shows a drastic reduction in the utilization of the major essential health, population, and nutrition services across all levels of health systems during January-April 2020. For instance, the outpatient visits and inpatient cases dropped by 12% and 22% respectively at Upazila Health Complex and 21% and 23% respectively at the district hospitals. Indirect effects of the pandemic will likely increase mortality from other diseases rather than COVID-19[18].

8.1.1 Maternal, newborn child and adolescent health (MNCAH)

There has been significant reduction in the utilization of maternal, newborn, child and adolescent health services. In April 2020, immunization rate decreased by more than 50%, delivery in health facilities by 60% and adolescent health services by 70%, compared to January 2020. Children visiting health facilities with fever and signs of pneumonia also reduced significantly since January 2020. The services utilization in Adolescent Friendly Health Services reduced by 70% in April 2020 from January 2020.

8.1.2 Family planning and reproductive health services

The need for contraception and family planning information and services remains, despite the pandemic. House-to-house community distribution, counseling, and satellite sessions have been

[18] The Lancet Global Health- Early estimates of the indirect effects of the coronavirus pandemic on maternal and child mortality in low- and middle-income countries.

hampered while there has been a significant decrease in utilization of long- term reversible contraceptives e.g. IUDs by 46% and implants by 66.5%, for March 2020 compared to March 2019. While the central and regional warehouses of the Directorate General of Family Planning (DGFP) have adequate stocks of contraceptives, the service delivery points at lower levels are likely to face shortages due to the lockdown in the country. A review of the DGFP's e-LMIS, shows that all five modern contraceptive methods had steady consumption trends in 2019 but in March and April 2020 reports show around 30% to 40% decline in consumption of the five modern contraceptives.

8.1.3 Nutrition services

An analysis published in *The Lancet* projects that in the worst-case scenario, if there is further reduction in health services in Bangladesh, an additional 28,000 children under the age of five could die in the next six months as an indirect result of the pandemic. Wasting, a severe form of malnutrition, would be a significant contributory factor to such under-five deaths, which might increase to as high as 10-50%. The proportion of children screened for malnutrition in IMCI nutrition corners declined from 35% in March to 31% in April while admissions of children suffering from severe acute malnutrition dropped by 90%.

8.1.4 Non-communicable diseases

The service reductions can be attributed to many factors such as the shortening of outpatient visiting hours of the public facilities to prevent the virus spread or redistribution, re-assignment and task shifting of frontline health workers towards COVID-19 response. The change in health seeking behavior of communities triggered by travel restrictions during the lockdown and the loss of daily earnings of vulnerable groups, is also likely to affect utilization rate and access to routine health services.

Such a scenario demands a balance between effectively responding to COVID-19 and mitigating the risk of health system collapse as well as reducing new barriers to accessing essential health services to avoid unintended health outcomes. Guided by the WHO Global guideline on maintaining essential health services during an outbreak, a set of strategic interventions are proposed to strengthen the health systems resilience and the functional capacity of the primary health system to maintain the continuity of essential health services at the national, regional, and local level.

8.1.5 Communicable diseases

Critical communicable disease services need to continue to combat TB, Malaria, HIV, diarrheal diseases, Dengue and other communicable diseases. The general holiday (lockdown) has already led to a substantial drop in the total number of TB notifications from 24,457 in April 2019 to only 5,015 in April 2020. This when the disease, according to WHO estimates, kills an average of 129 people per day in the country. This sharp drop in notifications, TB experts warn, could not just lead to a rise in transmission of the disease as patients miss out on medical care and continue to spread the disease, but also worsen outcomes at a later stage and even accelerate dropouts from TB's long treatment cycle. Similar drop on HIV services and mitigation measures are reported. While in 2019, the health system was occupied and sometimes overwhelmed by Dengue, COVID-19 takes all capacity of the health facilities and a Dengue outbreak would lead to further severe complications in the health system.

8.2 Strategic actions for maintaining essential health and nutrition services

8.2.1 Strengthen governance and stewardship roles of the government

1. Strong stewardship role and regulatory enforcement to ensure quality health, population and nutrition services to all citizens;
    a. Declare a set of priority health, population and nutrition services as 'essential';
    b. Ensure provision of essential HNP services by all health facilities besides COVID-19 response.
    c. Ensure provision of emergency HNP services, irrespective of COVID positive or negative status;

8.2.2 Health workforce

1. Motivate and retain the existing health workforce with appropriate incentive measures;
2. Recruit health workforce to fill up existing vacancies in various positions;
3. Identify and mobilize additional qualified workers, retirees and trainees, reassign the staff from non-affected area;
4. Ensure skill mix and reallocate the health workforce within the facility to ensure a balanced redistribution to provide both COVID-19 and non-COVID-19 services;
5. Optimize utilization of existing platforms for telemedicine, both public and private, for essential health and nutrition services, with apps with standard protocols for clinical decision-making to ensure best practices;
6. Develop an e-training platform for capacity building of the service providers on essential health, population and nutrition services in the context of COVID-19. Create web-based platforms for clinical decision support for direct clinical service;
7. Develop a strategy for psycho-social support with physical teams present in facilities backed up by specialized teams available using telemedicine options.

8.2.3 Service delivery

1. Arrange/ set up infrastructure for ESP services with arrangement for isolation and triage for patients/ clients and accompanying persons as well as ensuring IPC, as per national guideline;
2. Organize catch up activities for preventive services (EPI, nutrition, FP, ANC, NCD screening and referral, TB, Malaria, HIV) and organize MR campaign to ensure full protection of the population while maintaining social distancing and HW safety measures;
3. Explore alternative and innovative strategies for continued service delivery options to reach the remote and hard to reach areas such as using digital health interventions for appointment, tele-consultation etc;
4. Develop and implement SOP to ensure quality of services in COVID-19 situation for maternal health (ANC, facility delivery, PNC, emergency obstetric care), Newborn Health (Essential Newborn Care, SCANU), immunization, IMCI, Nutrition, TB, Malaria, HIV, NCDC, mental health including psychosocial support. For example, implement the national guideline on

routine immunization during COVID-19 pandemic situation[19], adapted to the current geographic hotspots of COVID-19 cases;

5. Actively mobilize the population to rebuild trust in health services and promote essential services (immunization, ANC/PNC, institutional delivery, neonatal care, family planning, breast feeding, nutrition diet, lifestyle change) through social media platform, using FAQ, optimizing communication networks of cellular companies and cloud service providers**;**
6. Provide outbreak response support in case of other disease outbreaks (measles, cholera, dengue etc).

8.2.4 Medicine and logistic supplies

1. Ensure need-based allocation of quality essential medicines, medical devices, contraceptives, vaccines, biologicals and diagnostics and nutrition supplies.
2. Create a platform for reporting inventory and stockouts, and for coordination of re-distribution of supplies and establish on-line MIS system for essential medicines and supplies (e-LMIS) for ESP, interoperable with DHIS-2;
3. Strengthen procurement and supply chain management to ensure uninterrupted supply of necessary equipment, quality medical supplies including medicines, medical devices, contraceptives, vaccines, biologicals and diagnostics, essential nutrition commodities including anthropometric materials, and relevant tools for GMP, supplies (IFA, calcium tablets, therapeutic milk, therapeutic milk preparation kit) on priority basis.
4. Strengthen pharmaceutical services to improve appropriate use of medical products and to enhance quantification and forecasting.
5. Strengthen DGDA to reach maturity level three according to the WHO Global Benchmarking Tool indicators, to enable effective regulatory preparedness for vaccines and other medical products.

8.2.5 Health information system

1. Develop strategy and plan for routine data analysis on ESP information system during COVID-19 responses using DHIS2 & E-MIS of DGFP;
2. Closely monitor provision and utilization of ESP to understand level of sustainability in terms of equity, access, coverage and quality;
3. Carry out disease surveillance and outbreak response;
4. Conduct facility readiness assessments for delivering essential health and nutrition services during the COVID-19 crisis;
5. Conduct rapid population-based assessments on service barriers and client satisfaction for essential health and nutrition services;
6. An appropriate platform for monitoring and reporting inventory and stock-outs should be created, along with a mechanism for quick re-distribution and mobilizing supplies.

[19] National guidelines on routine immunization during COVID-19 pandemic in Bangladesh, https://drive.google.com/file/d/1lXj4QReRqvS28UNjB37SCIvEX-n5R3ey/view.

8.2.6. Health financing

1. Review the health financing strategy and ensure Universal Health Coverage through public finance options, taking the crisis as an opportunity to build a better health system fit for UHC;
2. Revisit public financial management for rapid procurement and flexible use of the budget according to needs;
3. Ensure contingency funds at the local level for procuring necessary supplies, transportation, repairing and maintenance of equipment and infrastructure by their own arrangement.

8.2.7 Multisectoral actions and community participation

1. Community engagement and mobilization for awareness raising to promote healthy social behavior across all sections of society including the urban slums;
2. Activate various community platforms (CG, CSG, MSG, nutrition clubs) and engage volunteers at the community level (urban & rural) to serve the most vulnerable populations with essential health, population & nutrition services;
3. Establish and strengthen referral linkage between community to CC to increase the coverage of essential health, population & nutrition services and tracking for improved service utilization;
4. Create awareness on essential health, population and nutrition services through social media and SBCC engagement through different communication approaches, including innovative engagements PSA, theatre, all media platform (religious leaders, influential people etc);
5. Liaise with appropriate line ministries to ensure food safety and social security of poor & vulnerable groups through social safety nets;
6. Liaise with appropriate line ministries to reduce violence against women through provision of legal and social support.

Section 9. Procurement, logistics and supply management

9.1 Introduction

The COVID-19 crisis has severely fractured global supply chains, creating shortages as demand soared for life-saving personal protective equipment and other supplies to reach frontline health workers. In order to massively scale up the procurement and delivery of critical supplies, a robust supply chain strategy is needed to identify essential needs for the COVID-19 response. It would also need to focus on coordination between stakeholders in the procurement process, conduct a gap analysis, risk management, inventory management, establishing minimum testing criteria, establishing testing and validation labs for PPEs, tracking medical supply requirements, and providing other assistance as needed to support the COVID-19 response.

The DGHS logistics working group under the Control Room plays a pivotal role in preparing the consolidated requirement of COVID-19 supplies and equipment, having also finalized the compiled

requirement plan for June – August 2020 in collaboration with the Logistics and Procurement Pillar. This is based on DGHS's priority needs and WHO's forecasting tool. The three-month supplies plan includes PPE, diagnostics, clinical management, consumables, and other essential medical non-food items. This has also been uploaded in the global supply procurement portal, as part of an effort for international procurement.

The Central Medical Store Depot (CMSD) has a critical role to play in the supply chain management in Bangladesh, complemented with the DGHS logistics working group. The CMSD has procured supplies from local and international markets. Yet, quality control of the items and the availability of some of the critical items have proven challenging. A robust automated asset management system needs to be rolled out at CMSD in coordination with the Control Room.

A COVID-19 online reporting system (COVID-19 Dashboard) has been developed to support the ongoing emergency response to capture basic logistics information of commodities, consumables and diagnostics items. The established dashboard would help the managers to make an informed decision for rational distribution of COVID-19 commodities.

9.2 COVID-19 Supply Chain System

In order to address these critical needs for the global supply chain severely affected by COVID-19 response, standard arrangements from supplies have been falling short. A UN Supply Chain Task Force has been established co-chaired by WHO and WFP to ensure the effective functioning of a COVID-19 Supply Chain System (CSCS). The CSCS is comprised of three functional teams:

1. the Task Force – a high-level supervisory body based in Geneva that convenes key partners and is responsible for providing strategic direction and guidance on the supply chain;
2. the Purchasing Consortia – a multi-stakeholder collaboration body with three focus areas: Personal protective equipment, diagnostics, and clinical medicine. This body is responsible for the coordination of demand, procurement, and allocation of supplies;
3. the Control Tower, which focuses on day-to-day operations, including working groups for each consortium, demand management and allocation, distribution and consignment.

The Control Tower is the central interface where country demands, partner procurement mechanisms, and logistics are coordinated: under the CSCS, the Control Tower has a supply portal, which is a purpose-built tool to facilitate requests for critical supplies from national authorities and all implementing partners supporting the COVID-19 national response. Any approved stakeholder who has an active role in the COVID-19 preparedness and response action plan can be a requestor within the supply portal. This includes Government agencies, UN agencies, and NGOs.

Requests made using the portal must be in line with the catalogue of items included as part of the portal's repertoire and must be in line with the approved supply national plan, while commodities which are not included in the CSCS catalogue will be procured through a standard procurement process.

In terms of downstream logistics, once the goods arrive in-country, the Central Medical Stores Depot, under DGHS, is responsible for clearing, forwarding, and storage. In addition to CMSD, there is another storage facility managed by the Control Room of DGHS for storage of COVID-19 related

commodities donated by the different agencies. The donated medical items which are received and dispatched through the Control Room are also captured through COVID-19 Dashboard.

9.3 Quality assurance of Personal Protective Equipment

As one of the most critical needs during this pandemic, a PPE technical working group has been formed to:

1. Conduct a gap analysis on the local capacity for the testing of PPEs;
2. Develop local capacity to test PPEs with methods comparable to international standards;
3. Develop technical specifications and standard operating procedures for reprocessing of PPEs, including validated decontamination methods.

The Directorate General of Drug Administration (DGDA) has approved five laboratories in Bangladesh that are ISO 17025 certified, to test locally manufactured PPEs for quality and performance. The testing parameters for gowns, coveralls, surgical mask, and respirator mask have been approved and will be the basis for the DGDA to issue a No Objection Certificate.

Local producers of PPE are repurposing their manufacturing lines to manufacture products in compliance with WHO specifications. This is an important advantage for Bangladesh in addressing the global shortages in PPE. Regulatory oversight and support is essential to ensure adherence of the locally produced PPE to internationally accepted standards, quality of the products and the required level of protection for healthcare workers and other responders and the community at large.

9.4 Asset and inventory management

A supply chain management portal, also known as the COVID-19 Commodities Dashboard, has also been established to support the CSCS enabling the MoHFW and partners to monitor the stock inventory in over 600 health facilities throughout the country.[20] The platform also provides information on movement trends and the pipeline of stock for 93 various items located in facilities at the national, district and upazila levels.

The data entry takes place as soon as any medical item received at Central Medical Storage Depot in Dhaka of DGHS from the suppliers or agencies as donation or it can be entered/received if any health facilities receive donations directly from any agencies. CMSD dispatches the medical items to the health facilities based on requisition received from the different health facilities directly and captured into the system.

A COVID-19 commodity of value/cost equivalent to or more than BDT 30,000 per unit is expected to be recorded in the existing electronic asset management system (eAMS), which is functional in the district hospitals. Furthermore, strong monitoring from the MOHFW and DGHS need to be put in place to ensure the aforementioned systems are operational and become effective and efficient.

9.5 Activities

[20] Corona Supply System dashboard https://scmpbd.org/index.php/covid-19-dashboard

The Logistics and Procurement Pillar is one of the eight technical Pillars as stated under 2.1.2.2 The main activities are as follow:

1. Identify the risks and challenges in supply chain and provide solutions in consultation with all the members;
2. Engage with other stakeholders including Bangladesh Garment Manufacturers and Exporters Association (BGMEA), private sector actors, and other potential partners, to widen opportunities for local-level production and long-term supply of Personal Protective Equipment (PPE);
3. Coordinate with WHO, DGHS and DGDA on the approved standard specifications for PPE;
4. Create a technical group and centralized bank of information for issues pertaining to the sourcing, procurement and production of PPE; including the quality assurance of the final products
5. Support DGHS by creating a systematic inventory management system for PPE to ensure that the entire supply chain is on track;
6. Liaise with the NBR/Customs/Ministries to simplify the importation process of required medical items in case of need although the SRO-92 has been issued in this regard;
7. Manage the Global Supply Chain System in local context;
8. Any other business as deemed necessary.

Section 10. Risk communication and community engagement

10.1 Risk communication and community engagement (RCCE) response

Risk communication and community engagement focuses on encouraging the spirit of solidarity, empowering individuals and communities to stop the spread of COVID-19 through behavior change, informed individual decisions and collective community action. A strong community engagement component is being put in place to engage individuals and communities in prevention, suppression and control of the disease, during outbreak and the recovery phase.

The RCCE Pillar is led by DGHS and includes representatives from Government, Public Health Expert Advisors Group, National Technical Committee, private sector, development partners, including UN, bilateral and Civil Society Organizations, who come together to design, advise implement and monitor a collective plan of action for COVID-19 response and recovery in which partner contributions and actions complement and strengthen each other in the form of a consolidated response. The RCCE Pillar proactively seeks to collaborate with and support other Pillars, especially for surveillance, contact tracing and quarantine.

10.1.1. Key objectives

Key objectives of Risk Communication and Community Engagement:

1. Ensure that people have the life-saving information they need to protect themselves and others (from the virus and to reduce its impact on health, social life, and the economy);
2. Ensure that people have internalized the life-saving information and have started to change their behaviors;
3. Ensure participation of and engagement with relevant communities, especially vulnerable groups and populations, to mitigate barriers to implementation and uptake of public health measures;

4. Ensure effective feedback mechanisms are in place and used to ensure two-way communication between health/response authorities and communities, the public and stakeholders;
5. Ensure that specific entities within DGHS such as Bureau of Health Education (BHE) and CBHC get involved in community engagement activities;
6. Ensure that allied agencies and Ministries such as MOLGRDC, Ministry of Information, Ministry of Religious Affairs, Ministry of Education etc. supports MOHFW are created in order to get the community engaged;
7. Ensure capacity development of the healthcare workers on community engagement and effective communication with patients about COVID-19, and report to the relevant health authorities and also to protect themselves in context of their exposure to the disease;
8. Ensure consistency in communication strategies and messages throughout the country;
9. Encounter and pro-actively address misinformation/rumours, fear, discrimination and stigma among people;
10. Interact with policy level initiatives such as the color-coded zoning of areas will be done in order to implement cluster lockdown;
11. Generate data on knowledge, attitude, perception and behaviors to inform RCCE and other Pillars to design and refine their programs; and
12. Inform policy makers, planners, implementers and others on RCCE interventions and how it contributes to the overall response.

It is important to note that the objectives and priorities may change over time depending on the evolution of the COVID-19 outbreak and people's reactions to the response.

10.1.2 Main activities

The main activities include:

1. Data Generation and Analysis: The RCCE will use an evidence-based approach to design and implement its interventions. Collect existing information and continually conduct rapid qualitative and/or quantitative assessments to learn about the communities (knowledge, attitudes and perceptions about COVID-19, most at risk population, communication patterns and channels, language, religion, influencers, health services and situation). Use this data to design and refine the RCCE programs;
2. Develop, disseminate and manage risk communications for the general public, as well as specific intended audience, including prevention and response messaging in close coordination with MoHFW, specially with IEDCR and CDC, current initiatives of developing color coded zoning of areas, and other Pillars and all RCCE partners;
3. Risk communication to the general public and vulnerable groups during pre-onset/sporadic cases: focus on prevention messages, including hand washing/use of sanitizers, coughing etiquette and social distancing and how to support community enforcement of safe behaviors;
4. Risk communication to the population affected or at high risk for the disease (contacts): Focus on both prevention and response messages, including information on how to recognize symptoms, where to call for advice, how to protect other people, when to seek medical assistance, and social responsibility to prevent spread;
5. Develop targeted approaches to reaching all social groups with risk communication and services, taking into account gender, age, disability, education, migration and social status;

6. Design and disseminate culturally and gender-relevant adaptations of key behaviors that curtail COVID-19 transmission and its social impacts (including psychosocial impacts of isolation, anxiety) as well as of discrimination;
7. Develop and disseminate mental health material for the general public with a focus on the health service providers;
8. Counter misinformation on all relevant channels, including through social media and traditional media;
9. Build capacity of the media and community radio program producers and reporters on developing and disseminating programs using standardize message packages in close coordination with WHO and MoHFW and National Institute of Mass Communication;
10. Balance messaging to avoid fear, panic and create a social responsive ambience for the containment of the disease;
11. Develop an automated messaging system (using a mobile based platform) based on the standardized message package, to disseminate and promote accurate information and the government's COVID-19 hotline numbers for consultation and advice;
12. Systematically establish community information and feedback mechanisms including through information and feedback centers;
13. RCCE strategies and implementation will be updated to reflect the changes in approaches as the pandemic evolves. For example, RCCE will support at-risk individuals, quarantined households, communities and key stakeholders in the different containment zones of the zoning approach, with updated prevention and response messages, including psychosocial impacts of isolation;
14. DGHS in collaboration with UNICEF will establish effective coordination mechanisms to manage the Pillar partners including Representatives of other government sectors, UN, NGOs, Public Health Expert Advisors and National Technical Committee, Private sector, Civil society, Academia, etc:
    a. Organize regular meetings with all partners to ensure consistency and coherence, avoid duplication and identify potential gaps in the RCCE response.
    b. Identify the activities the RCCE team will perform and the outcomes they are designed to achieve with target audiences (communities, at-risk populations, stakeholders, etc.).
    c. Develop a common data repository and maintain an up-to-date contact list of all partners and their focal points. Develop a monitoring plan to evaluate how well the objectives of the RCCE plan are being fulfilled.

Section 11. Research

11.1 Overview

The world is responding to the COVID-19 pandemic at an extraordinary speed. Numerous research papers are being published and open access policies have received greater attention as a result of COVID-19 research. To date, drug trials have received greater attention than non-drug measures of containment. Yet, social and epidemiological studies could be at the forefront of providing a solution for containment but the focus on finding a therapeutic regimen has sidelined such studies.

WHO recommends that the listed drugs not be administered as treatment or prophylaxis for COVID-19, outside the context of clinical trials[21]. In this regard, clinicians are recommended to give preference to participation in clinical trials when prescribing COVID-19 related products.

Currently over 70 vaccines are under development and Bangladesh could engage with the global research bodies to be part of vaccine trials which could also help ensure early allocation of the future potential vaccines against COVID-19. In the area of diagnostics, a number of point-of-care antigen tests which can be utilized for diagnostic testing at community-level are under development globally. Tests demonstrating promise in a controlled laboratory setting could be field tested in Bangladesh in order to determine the diagnostic sensitivity and specificity when utilized at community-level as part of a community-based case identification, isolation, and family quarantine intervention.

Operational research on COVID-19 can help identify bottlenecks and serve affected populations and healthcare workers better by providing consistent and comparable data. The Structured Operational Research and Training IniTiative (SORT IT), a global partnership coordinated by WHO's Special Program for Research and Training in Tropical Diseases (TDR) and implemented with partners, has been established with the goal of promoting the aforementioned research[22].

Bangladesh Research Medical Research Council (BMRC), IEDCR, Bangladesh Institute of Tropical and Infectious Diseases, NIPSOM, WHO and the relevant institutions would be engaged in providing technical support on COVID-19 research. The focus of the COVID-19 research would be on preparedness, containment and mitigation:

11.1.1 Preparedness

The experience from local emergencies (e.g. FDMNs in Cox's Bazar) and global emergencies (SARS and MERS epidemics and other pandemics) needs to be thoughtfully considered. Given that the pandemic reached Bangladesh at a later time compared to other countries, Bangladesh has the opportunity to evaluate and learn from other countries' responses. Bangladesh can also utilize the DHIS-2 platform[23] or other platforms that are currently collecting and compiling COVID-19-related data and inform itself through the global ranking system that has been established to rank country preparedness efforts[24].

11.1.2 Containment

As part of the pandemic response, epidemiologists promote "containment strategies" designed to prevent community transmission.

[21] WHO. Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected. Updated on 13 March 2020.

[22] World Health Organization and Special Program for Research and Training in Tropical Diseases (TDR). COVID-19 responders applying skills gained from operational research training developed by TDR and partners. Available from: https://www.who.int/tdr/news/2020/sort-it-alumni-covid-19-pandemic-response/en/

[23] World Health Organization and Palestinian Ministry of Health. Tracking COVID-19 with DHIS2: Palestine's Leadership in Developing Electronic Health Registries. Available from: https://www.dhis2.org/palestine-covid-surveillance

[24] Visual Capitalist. Ranked: Global Pandemic Preparedness by Country. Available from: https://www.visualcapitalist.com/global-pandemic-preparedness-ranked/ Accessed on: 16 May 2020

11.1.3 Mitigation

When disease outpaces containment, countries turn to “mitigation strategies.” Mitigation relies on nonpharmaceutical interventions such as hand hygiene, travel restrictions, school closures, and social distancing.

11.2 Common research questions

The outbreak poses many urgent questions. How is the virus transmitted? What is the zoonotic source? What is the epidemiological profile of COVID-19 in Bangladesh and what are risk factors in Bangladeshi populations? How severely does the virus affect patients, and who is most at risk? What are possible countermeasures, e.g., diagnostics, vaccines, and therapeutics? How prepared is our health system? How do healthcare providers perceive their work and position themselves as frontliners How well prepared are labs to help diagnosis and research? What are the societal aspects of prevention and control? How can we build a resilient society to combat outbreaks like COVID-19? And what are the priority areas for research and innovation, and the most efficient ways to address them? What are the impacts of COVID-19 on nutrition outcome?

11.3 Duplication of studies, consensus and common platform

Although some replication of studies is important, the unnecessary duplication of studies, a common issue with COVID-19 research, risks wasting researcher efforts and undermining their validity. Real time dashboards providing information on ongoing trials can help reduce the issue of study duplication[25] and direct attention away from poorly designed and executed studies.

Consensus on common standards for clinical trials, specimen sharing and data sharing is important in fighting current and future epidemics. Harmonization is needed to ensure that only robust methods are used and partnership among government and non-government organizations is promoted. Standardized protocols for biological sampling, sample storage, shipment and transport, testing, record taking, and data entry and sharing of results needs to be agreed upon. A shared platform may help in this regard. Master protocols for clinical trials will ensure improved quality of trials and facilitate the aggregation of evidence. The BMRC, Bangladesh Institute of Tropical Diseases, WHO and the relevant institutions may play a coordinating role in this case. A coordination mechanism needs to be developed to prevent duplications and wastage, and to make sure that research gaps are addressed.

11.4 Activities

1. Establishment of a research coordination mechanism;
2. Establishment of a real time research dashboard;
3. Prioritization of medical and non-medical related researches (including identification of sites for vaccine trials);
4. Development of research protocols for the prioritized research area;
5. Coordinate and conduct medical and non-medical researches;

[25] National Center for Biotechnology Information. LitCVID General Information. Available from: https://www.ncbi.nlm.nih.gov/research/coronavirus/docsum?filters=topics.General%20Info

6. Coordinate and conduct research findings dissemination;
7. Prepare and publish research findings in national and international journals.

Section 12. Existing response and coordination mechanism in Cox's Bazar

12.1 Alignment of the humanitarian response in Cox's Bazar with the national response

The 2020 Joint Response Plan launched in Geneva on 3 March, jointly with the Government of Bangladesh, provides the core framework for the humanitarian community's overall response in Cox's Bazar for the FDMNs Crisis. Adequate capacity and funding for the 2020 JRP's implementation requirements, which target both the FDMNs and the host community, will be critical.

Due to the unforeseen additional needs brought by the COVID-19 pandemic, the existing coordination structure for the FDMNs crisis in Cox's Bazar, led by the Inter Sector Coordination Group, (ISCG), has worked with the humanitarian partners to develop a preliminary overview of the additional priorities, activities and requirements for COVID-19 preparedness and response.

The Government of Bangladesh's National Preparedness and Response Plan includes the FDMNs residing in Cox's Bazar, and the UN and partners are supporting this effort to ensure that the urgent and significant additional needs of both the FDMN and the Bangladeshis are met in the district.

In support of the Government's leadership for the FDMN response and building on the 2020 Joint Response Plan, the UN and partners have also formulated a COVID-19 preparedness and response plan for both FDMNs and affected Bangladeshi communities. The inter-sector plan predominantly looks to ensure the continued provision of critical health care, food security, water sanitation and health information.

The implementation of the plan will be undertaken under the leadership of the Inter-Sector Coordination Group. The health sector response is led by the Civil Surgeon in Cox's Bazar, with expert technical guidance from the WHO and support from the humanitarian partners. The plan is aligned with the strategies and areas of intervention previously set out in the Bangladesh Country Preparedness and Response Plan.

As of 15 May 2020, 243 of the total targets of 284 government isolation and treatment centers for COVID-19 have been established within the existing as well as makeshift health facility across the eight upazilas. In addition, with the support from various UN Agencies (IOM, UNHCR and UNICEF) and INGOs (FH, Hope Hospital, ICDDR,B, IFRC/BDRCS, MSF, MTI and RI), as of 04 June 2020, there are 108 and 194 active isolation and SARI beds established across 22 locations in the camps.

Furthermore, the project of additional financing for the support of the health sector through IOM, UNFPA, UNICEF and WHO has also undergone an amendment process to support COVID-19 response for FDMNs in the camps.

12.1.1 Response priorities

Given the current understanding of transmission dynamics of COVID-19, densely populated areas such as the camps and other concentrated settlements in the District present a particular challenge, since an approach based on physical distancing and the typical containment strategies used in high income settings cannot be implemented in the same way. Different work and housing patterns preclude this level of isolation. Tailored approaches are being applied instead.

Context-appropriate public health measures are being developed including maintaining distancing as far as is feasible in public spaces and encouraging physical distancing between households wherever feasible. While recognizing that this approach will not be entirely successful in this context, these interventions are likely to contribute to slowing the spread of the virus, compared to no action being taken. In low-income settings, previous outbreaks have been exacerbated by super-spreader events, at gatherings such as weddings or funerals. In camp settings, close contact gatherings may also occur during collection of regular supplies (e.g. of food, water, and fuel). Alternative delivery systems are being implemented which also take into consideration persons with specific needs who may need additional help to access assistance, as well as basic measures such as marking out queue spots to maintain minimal spacing between people at distributions, and managing numbers of people per day through frontloading rations (such as providing enough food for 4 weeks, instead of 2 weeks at each distribution).

Basic hygiene measures can reduce transmission through reduction in person-to-person transmission via fomites and direct skin contact. Recent data has confirmed that COVID-19 can persist for multiple days in viable form even on man-made surfaces like plastics. Simple personal hygiene measures can be very effective against removing the virus from skin and surfaces, and therefore enhanced hygiene promotion is an urgent priority for the response. Many of the interventions planned will require understanding and support of the target populations.

Large-scale risk communication which takes into consideration age, gender, and diversity principles is a priority, to convey current strategies and inform communities of what they can expect, and the behavior modifications that will be required of them.

12.1.2 Activities

Multi-sector actions supporting both the public health and indirect impacts of the pandemic include:

1. Reducing the footprint of the operation by delivering critical services only;
2. Mitigating the risk of interruptions to the existing life-saving response, by ensuring preventive measures are taken during all critical service delivery and urging physical distancing to the extent possible in the camp setting;
3. Communicating key messages through all Sector operations;
4. In support of the District health response, providing multi-sector support to the existing and planned isolation, treatment, and quarantine facilities;
5. Supporting families that will be providing home-based care for COVID-19 patients;
6. Protecting older persons;
7. Adjusting cyclone and monsoon preparedness plans to account for COVID-19;
8. Augmenting Government social safety nets for the poorest and most vulnerable Bangladeshis in the District whose livelihoods will be impacted by the pandemic.

Monitoring and Evaluation (M&E) & Implementation Frameworks

To be developed jointly.

Annex 1: Activities workplan and budget

A detailed activities workplan and budget for the Bangladesh Preparedness and Response Plan for COVID-19 can be viewed by clicking in softcopy of this document in this link.

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Surveillance and Laboratory Support					
Surveillance					
Active case finding in health facilities or suspect cases such as SARI/ILI in PIP and NICs sentinel sites	Now	1	15,000	1	15,000
Active case finding in health facilities or suspect cases such as SARI/ILI in PIP and NICs sentinel sites	Later	1	15,000	1	15,000
Data management and analytical capacity in to inform decision making	Now	1	13,000	1	13,000
Data management and analytical capacity in to inform decision making	Later	1	13,000	1	13,000
Support to MIS to develop software and App for COVID-19 case tracking, data management and follow up of COVID-19 positive cases, interoperable with DHIS2	Now	1	120,000	1	120,000
Enhance case detection of both local and imported cases in place through Event Based Surveillance (EBS)	Now	1	500,000	1	500,000
Enhance case detection of both local and imported cases in place through Event Based Surveillance (EBS)	Later	1	200,000	1	200,000
Training on case definitions to be able to detect signs and symptoms of disease as per case definition 30 persons x 64 districts	Now	1	100,000	1	100,000
Training on case definitions to be able to detect signs and symptoms of disease as per case definition 30 persons x 64 districts	Later	1	50,000	1	50,000
Activating the COVID-19 surveillance system (Incorporate COVID-19 surveillance in existing surveillance system) / WB		1	2,350,000	1	2,350,000
Sensitization/ orientation/ refresher training of health and other concerned staff on detection, and response (including risk communication) / WB		1	1,180,000	1	1,180,000
Innovative approaches in ICT for emergency preparedness (ICT Based disease surveillance, Data Management, Data Visualization, M&E, Real time community based diseases surveillance, Artificial intelligence and machine learning, Development of Mobile APP for screening and tracking cases, Development for APP for ambulance services (GPRS),Corona Doctors Pool, Upgradation of 16263 services, etc.) / WB		1	8,240,000	1	8,240,000
Sample Collection					
Specimens transport from health facilities/quarantine facilities/specimen collection points to testing laboratories	Now	50	2,000	2	200,000
Specimens transport from health facilities/quarantine facilities/specimen collection points to testing laboratories	Later	50	2,000	1	100,000

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Training and deployment of staff involving in specimen collection and transport, for safe specimen collection and safe transport at district level (2 persons/Upazila /CC ward and 10 persons in district) (including Salary for Sample collectors)	Now	1	1,500,000	1	1,500,000
Training and deployment of staff involving in specimen collection and transport, for safe specimen collection and safe transport at district level (2 persons/ Upazila /CC ward and 10 persons in district) (including Salary for Sample collectors)	Later	1	2,900,000	1	2,900,000
Lab					
Rapid inventory and assessment of national real-time PCR testing capacity followed by lab staff training of suitable lab sites	Now	1	40,000	1	40,000
Conduct biosafety and biosecurity training and monitor laboratory biosafety protocols of new COVID-19 test laboratories (on-site hands on training)	Now	1	10,000	1	10,000
Conduct biosafety and biosecurity training and monitor laboratory biosafety protocols of new COVID-19 test laboratories (on-site hands on training)	Later	1	5,000	1	5,000
Develop, review and disseminate SOPs for the molecular detection of COVID-19	Now	1	3,000	1	3,000
Develop, review and disseminate SOPs for the molecular detection of COVID-19	Later	1	2,000	1	2,000
External quality assessment of the laboratory tests (proficiency test; all positive samples and 5% of negative samples to be sent to reference lab in ensuring quality of laboratory test)	Now	1	10,000	1	10,000
External quality assessment of the laboratory tests (proficiency test; all positive samples and 5% of negative samples to be sent to reference lab in ensuring quality of laboratory test)	Later	1	10,000	1	10,000
Online reporting of laboratory results to national authorities and WHO	Now	1	6,000	1	6,000
Online reporting of laboratory results to national authorities and WHO	Later	1	6,000	1	6,000
Certification of existing biosafety cabinets	Now	1	400	50	20,000
Rapid inventory and assessment of national real-time PCR testing capacity followed by lab staff training of suitable lab sites	Later	1	10,000	1	10,000
Embed staffs to increase the testing capacity (4 staff)	Now	1	10,000	1	10,000
Embed staffs to increase the testing capacity (4 staff)	Later	1	20,000	1	20,000
IT Equipment (Computer & Phone)	Now	1	100,000	1	100,000
IT Equipment (Computer & Phone)	Later	1	20,000	1	20,000
Additional staff to increase testing capacity of the labs (07 person per lab for 50 labs for 03 months)	Now	50	5,600	3	840,000
Additional staff to increase testing capacity of the labs (07 person per lab for 50 labs for 06 months)	Later	50	5,600	6	1,680,000
Functional BSL 3 LAB of IEDCR & BITID / WB		1			

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
			4,460,000	1	4,460,000
Surveillance and Laboratory Support TOTAL					**24,748,000**
Contact Tracing and Mitigating Community Transmission					
Designing and dissemination of tools on contact tracing	Now	1	50,000	1	50,000
Designing and dissemination of tools on contact tracing	Later	1	30,000	1	30,000
Embed additional human resource for contact tracing (3 physicians at IEDCR)	Now	1	5,000	1	5,000
Embed additional human resource for contact tracing (3 physicians at IEDCR)	Later	1	10,000	1	10,000
Establishment of mobile phone case tracking system	Now	1	65,000	1	65,000
Establishment of mobile phone case tracking system	Later	1	65,000	1	65,000
Transport for Case investigation and Contact tracing (6 vehicles+ 4 vehicles)	Now	1	60,000	1	60,000
Transport for Case investigation and Contact tracing (6 vehicles+ 4 vehicles)	Later	1	30,000	1	30,000
Active case identification and contact tracing / WB		1	2,350,000	1	2,350,000
Formation and Training of rapid-response teams to investigate cases and clusters, and conduct contact tracing / WB		1	410,000	1	410,000
Contact Tracing and Mitigating Community Transmission TOTAL					**3,075,000**
Points of Entry and Quarantine					
POE					
Develop and/or update and disseminate guidelines	Now	1	5,000	3	15,000
Develop and/or update and disseminate guidelines	Later	1	5,000	10	50,000
Conduct rapid needs and capacity assessment at PoEs	Now	1	80,000	1	80,000
Provision and distribution of PoE kits and PPEs for the PoE staffs	Now	1	560,000	1	560,000
Design and distribute IEC materials and awareness raising) at PoEs and local border communities	Later	1	40,000	1	40,000
Support and monitor Health screening activities at the PoEs (10 national consultants, 6 months)	Now	10	1,500	6	90,000
	Now	1	110,000	1	110,000
Vehicle support for awareness raising and referral systems	Now	1	840,000	1	840,000
Information Management at PoEs & Quarantine Centers (15 Data Management Staff, 6 months)	Now	15	1,000	6	90,000
Information Management at PoEs & Quarantine Centers (20 Data Management Staff, 12 months)	Later	20	1,000	12	240,000
Printing of Forms, SOPs and booklets	Now	3	2,000	4	24,000
Support and monitor Health screening activities at the PoEs (10 national consultants, 12 months)	Later	10	1,500	12	180,000
Establish 26 Medical units in 26 Land Ports / ADB		1	3,720,000	1	3,720,000

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Establish 16 Medical Units in 3 Int Airport, 8 domestic Airport & 3 Sea port / WB		1	2,720,000	1	2,720,000
Quarantine					
Mobilization of community health care workers and volunteers for case identification and quarantine	Now	1	6	300,000	1,800,000
Mobilization of community health care workers and volunteers for case identification and quarantine	Later	1	6	600,000	3,600,000
POE and Quarantine TOTAL					**14,159,000**
Infection Prevention Control					
IPC					
Introductory training IPC, including on donning and doffing of PPE for healthcare workers in all districts (30 participants, 2 trainings). This includes triage, isolation, WASH.	Now	2	3,529	64	451,764
Review of IPC guidelines, protocols, SOP, Job aids, training modules for all health workers (public & private sector); printing of guidelines	Now	1			100,000
Training of newly appointed HW on IPC (online, face to face where possible), through ToT and decentralized training with technical support for training quality assurance; set up mentoring, support groups for continuous learning	Now	1	32	7,000	224,000
Training on waste management of PPE and infectious materials in all districts (30 participants, 2 trainings) cost for PPE is not costed. Replenish from CPRP.	Now	2	3,529	64	451,764
Support medical waste management (in partnership with Local government)	Now	3	30,000	64	1,920,000
Production of social behavioral change communication (SBCC) materials on IPC for health facility and community (leaflet, poster, flyer, job-aids, pictorial etc.)	Later	1	8,000	12	150,000
Develop and conduct SBCC campaign for IPC among health worker, empowering health workers to protect themselves and the patients for infections	Now	1	400,000	1	400,000
Production of SOPs, poster, training module, job-aids, video clips on IPC and rational use of PPE	Now	1	250,000	1	250,000
Training and capacity building (including detection and treatment of COVID-19, infection prevention and control (IPC), and appropriate bio-hazard measures) / WB		1	880,000	1	880,000
Facility Management					
Development of micro-plan and committee/command system at health facilities from UHC up to tertiary hospitals	Later	1	2,000	700	1,400,000
Functional IPC/QI committees in all facilities (UHC, DH, MCH, specialized hospital)	Now	1	100	595	59,500
Orientation on health facility preparedness and readiness assessment and roll out in 64 district and 421 upazila and 23 Medical college hospitals (3 training of assessor, facility visits, data compilation and reporting-HR is required not costed here .	Now	2	197	508	200,152
Expand WASH in HF with hand washing stations with soap and hygiene facilities as per national standards;	Now		5,000	595	2,975,000
Monitoring includes facility visit checklist preparation and periodic report (HR is required not costed here. Replenish from HR component of CPRP)	Later	1	1,250	64	80,000

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Facility strengthening which includes field implementation, facilitation, monitoring for triage, CM and IPC	Now	1	5,000	700	3,500,000
IPC TOTAL					13,042,180
COVID-19 Case Management					
Coordination meeting bi-weekly (DGHS and key stakeholder, partners)	Now	1	3,000	6	18,000
Implement triage systems in all facilities (green (non Covid-19), yellow (suspected COVID-19), and red zones (COVID-19 confirmed cases);	Now	1	50	595	29,750
Case management and IPC pillar coordination	Later	1	24,000	3	72,000
Coordination meeting weekly at divisional, district, Upazila level for IPC and CM		1	200	564	112,800
Develop/update guideline and training module on case management	Now	1	20,000	1	20,000
Development/update of triage algorithm for suspected and COVID-19 case at different level facilities	Now	2	20,000	1	20,000
Print and disseminate the triage SOP for COVID19	Now	1	10	5,000	50,000
Training on mild to moderate and severe case management for healthcare workers (30 participants, 2 trainings)	Later	2	3,529	280	1,976,470
Training on critical case management for intensivist, pulmonologist and ICU staff in all districts (25 participants, 2 trainings)	Now	2	3,529	160	1,129,411
Training of doctors, including newly appointed, on ICU management as per national package (25 participants/batch*40 batches, 2 trainings)		2	5,500	40	440,000
Training of nurses including newly appointed, on ICU management as per national package (25 participants/batch*120 batches, 2 trainings)		2	2,000	120	480,000
Training of support staffs, including newly appointed, on ICU support services (25 participants/batch*40 batches, 2 trainings)		2	1,500	40	120,000
Training of the health manager on organization and management for COVID hospitals (25 participants/batch*60 batches, 1 training)		1	2,000	60	120,000
Establish psycho-social care counselling and care through tele-medicine/call-center a) Develop guidelines; b) Orientation of the Psychologist; c) Establishment cost for tele-medicine/call center		1	200,000	1	200,000
Establish and institutionalize clinical mentoring (virtual and on-site) and quality improvement initiative including death review of Covid19 cases in partnership with professional association, i.e. Society of medicine and critical care a) Establish Virtual Mentoring HUB (VMH) at DMCH/BSMMU b) Support services for coordination and management (One medicine specialist, 1 MIS personnel, 1 Support staff) c) ICT equipment and logistics (CCTV, Monitor, Laptop/Desktop, etc.) d) On-site mentoring by Roaming team		1	250,000	1	250,000

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Establishment of 10/20 beds Makeshift Isolation Center/ Hospitals					990,000
Strengthening in patient care and surge capacity (Demarked area for flu syndrome, contracting in/ recruitment of health care providers, placement of required staffs, procured and supply of required logistics) / WB					1,180,000
Establishment of dedicated COVID-19 Hospital for Frontline Workers in DNCC Market Mohakhali / WB					7,300,000
Contracting in/ Recruit all necessary HR and Training of facility support staffs / ADB					2,360,000
Training in the proper use and disposal of PPEs / WB		1	1,180,000	1	1,180,000
Repurposing of big corporate and university hospitals (private/army/public) to increase ICU capacity from 500 to 2000	Later	1	1,180,000	6	6,000,000
Establishment of makeshift hospitals to address overloaded patients at primary-tertiary hospitals	Later	1	3,000,000	1	3,000,000
Provision of ambulance service in all districts for COVID-19 patients	Later	1	200,000	6	1,200,000
Surge capacity (Food, accommodation and transport for doctors, nurses and medical technologists from other districts/hospitals)	Now	1	100,000	6	600,000
Equipment maintenance and service contract	Later	1	250,000	2	500,000
Establish a comprehensive eHealth platform for home-based care (mild cases), psychosocial support and referral transport					500,000
Development of triage, IPC and case information management (record) system	Now	1	100,000	1	100,000
Establishment of 50 beds Isolation Unit in MCH (n=17 out of 37): 50 Beds in each MCH. Total 850 beds / ADB		1	12,510,000	1	12,510,000
Establishment of 20 beds Isolation Unit in DH (n=64): 20 Beds in each DH, Total 1280 beds / WB		1	18,520,000	1	18,520,000
Establishment of 10 beds Critical Care Unit in MCH (n=17): 10 Beds in each MCH Total= 170 beds / ADB		1	3,140,000	1	3,140,000
Establishment of 5 beds Critical Care Unit in DH (n=64): 5 Beds in each DH, Total 320 beds / WB		1	6,720,000	1	6,720,000
COVID-19 Case Management TOTAL					70,838,431
Essential Health Services					
Establish mechanisms and protocols to govern essential health service delivery in coordination with response protocols.	Now	1	2,000	3	6,000
Establish intersectoral and intra-sectoral coordination to response	Now	1	2,000	2	4,000
Endorse urban health strategy and develop urban health action plan (costed)	Later	1	50,000	1	50,000
Strengthen inter-OP coordination to improve nutrition service delivery	Now	1	5,000	3	15,000
Strengthen coordination among the multiple stakeholders at national & sub-national level) to improve the services delivery performance	Now	1	5,000	6	30,000

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Restore the normal visiting hours for outdoor patients and public facilities	Now				
Play a strong stewardship role over all public and private facilities to oblige them to provide basic and live saving services to all citizens	Now				
Ensure strong regulatory enforcement in place for those facilities who refuse to provide OPD, IPD and emergency services to all patients including	Now				
Set targets that activate a phased reallocation of routine comprehensive service capacity towards essential services, through the specific mechanisms	Now	1	2,000	3	6,000
Strengthen a transparent system to get the feedback from the clients and take necessary actions based on the findings.	Now	1	3,000	1	3,000
Provide supervision supports at District and below level facilities with an uniform support supervision tools and additional human resources	Later	1	134,440	1	134,440
Establish mechanism to hold regional and district level authority accountable for recovering essential service delivery	Later	1	6,000	1	6,000
Conduct rapid financial assessment to identify the resources (medicine, supplies and human resources) gaps at public facilities to ensure readiness at primary facilities	Now	1	30,000	1	30,000
Revisit public financial management for rapid procurement and flexible using the budget according to the need.	Now	1	5,000	1	5,000
Ensure contingency fund at local level for procure necessary supplies and maintenance and repairing of equipment, infrastructure by their own arrangement (BDT 20000 for each UHC (425) for 3 months BDT 500000 for each DH(64) for 3 months)	Now	1	4,122,353	1	4,122,353
Review health financing strategy for UHC to increase public financing mechanisms	Later	1	80,000	1	80,000
Conduct Comprehensive economic evaluation of the investment for the delivery of essential health services at public facilities	Later	1	100,000	1	100,000
Track the expenditure for ESP from next National Health Account.	Later	1	50,000	1	50,000
Ensure rational budget planning and allocation ofr operational plans related to essential service delivery	Later	1	60,000	1	60,000
Ensure additional budget for medicine and diagnostics at public facilities to reduce out of pocket payment	Later	1	1,948,234	1	1,948,234
Strengthen financial monitoring mechanism for ensuring transparency in resource utilization.	Later	1	100,000	1	100,000
Train, repurpose and mobilize the health workforce according to the priority services including ESP.					$ -
Identify and re-distribute the health workforce available for surge capacity demands and essential health care services	Now	1	30,000	1	30,000
Set up a centralized roster of all available health workforce at the appropriate level (local, municipal, regional, national) through HRIS	Now	1	25,000	1	25,000
Ensure all the health workforce in community- and hospital-based services are provided with COVID-19 training (online or in designated community training facilities) including WHO online training	Now	1	50,000	1	50,000

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Expand tele medicine options for essential health services	Now	1	220,000	1	220,000
Repurpose and upskill for rapid deployment to meet surge capacity needs and deliver essential health care services	Now	1	20,000	1	20,000
Develop a health workforce strategic plan for optimum delivery of ESP and strengthening surge capacity	Later	1	30,000	1	30,000
Ensure safety and protection of health workers involved in frontline of health care services delivery through on-site and off-site training	Now	1	50,000	1	50,000
Ensure all health workers know how to identify and report any symptoms of COVID-19	Now	1	35,000	1	35,000
Organize Catch up activities for EPI, ANC, nutrition, FP, NCD screening and referral	Later	1	2,500,000		2,500,000
Establish a dedicated hotline for psychological support for the health workers	Now	1	15,000	1	15,000
Review existing incentives provisions and adopt innovative approaches to boost up motivational level of the frontline health workers	Later	1	80,000	1	80,000
Establish a mechanism to monitor health workers for illness, stress and burn-out	Later	1	15,000	1	15,000
Team arrangements that include non-professionals and professionals are considered to alleviate stress and help distribute tasks	Later	1	20,000	1	20,000
Conduct rapid assessment to identify the supply gaps for essential service delivery during Covid-19 crisis	Now	3	20,000	1	60,000
Ensure un-interrupted supply of necessary equipment, quality medical supplies including medicines, medical devices, vaccines, biologicals, and diagnostics	Now	5	15,000	1	75,000
Strengthen the immunization supply system at delivery channels particularly outreach and satellite centers.	Now	5	25,000	1	125,000
Ensure adequate availability of family planning methods	Now	10	50,000	10	5,000,000
Make available antihypertensive and diabetics drugs	Now	10	30,000	10	3,000,000
Make asset management tool functionals (tool is ready)	Later	1	30,000	1	30,000
Expand sustainable online reporting system for medicines availability, expiration and stock out	Later	1	30,000	1	30,000
Ensure need based allocation of quality medicines, medical devices, vaccines, biologicals and diagnostics	Later	5	20,000	1	100,000
Develop system for rational use of medicines through prescription quality assurance mechanism, quality assurance system for medical supplies, inventory management, forecasting and supply system sustainability.	Later	10	24,000	2	480,000
Develop coordination mechanism among health facilities and national pharmacovigilance center	Later	5	20,000	1	100,000
Develop online pharmacovigilance and drug safety reporting system within the health facilities and national pharmacovigilance center	Later	1	30,000	1	30,000

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
1. Assess and monitor ongoing delivery of essential health services at all levels to identify gaps and potential influencing factors to inform policy reform towards restoring continuity of essential health services. 2. Establish effective patient flow (screening, triage, and targeted referral) at all levels		1	255,000	1	255,000
Disseminate information to prepare the public and guide safe care-seeking behavior	Now	1	35,000	1	35,000
Establish screening of all patients on arrival at all sites using the most up-to-date COVID-19 guidance and case definitions	Now	1	300	510	153,000
Establish clear criteria and protocols for targeted referral (and counter-referral) pathways, especially in the context of COVID-19	Now	1	35,000	1	35,000
Ensure ambulance services are available for referral of complicated cases and follow strict infection prevention and control guidelines, especially in the context of COVID-19	Now	1	500	510	255,000
Strengthen service delivery capacity at primary and secondary level to ensure continuity of care					$ -
Explore and design alternative/innovative service delivery models as appropriate at various of care	Now	1	35,000	1	35,000
Strengthen the functional capacity of PHC facilities, outreach centers for ensuring essential services at remote and hard to reach areas.	Now	1	100	1,000	100,000
Develop preparedness of health facilities to respond to emerging disease outbreak such as dengue.	Now	1	25,000	1	25,000
Different corners/kiosks can be established for mothers and children provide TT vaccines, iron-folic acid and micro-nutrient supplements.	Now	1	450	510	229,500
Extensive family planning campaign should be established to reduce pregnancy rate during the crisis	Now	2	10,000	1	20,000
Safe blood transfusing mechanism should be established. (eg. Corona testing before collecting blood)	Now	1	40,000	1	40,000
Enhance health promotion and Community mobilization activities for recovering essential services (immunization, institutional delivery, breast feed, nutrition diet, lifestyle change) through social behavior change campaign based on evidence	Later	1	30,000	1	300,000
Strengthen health information system for essential health services					
Strengthen coordination mechanism among key stakeholders of MoHFW and DGHS to oversee the routine health information of essential health services.	Now	1	24,000	1	24,000
Monthly coordination meeting to review and analysis ESP reports and service status	Now	1	10,000	1	10,000
Develop strategy and planning for ESP information system during COVID19 responses.	Later	1	30,000	1	30,000
Hiring statistician and data entry operator at central level and divisional level	Later	3	1,925	8	46,200
Provide training of local level health managers on data quality mechanism	Later	1	15,000	1	15,000
Strengthening data monitoring mechanism					

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Weekly online monitoring meeting through video conference among MIS unit of central and local level.	Now	1	24,000	1	24,000
Support central MIS monitoring team to produce weekly monitoring report on ESP reporting status.	Now	1	15,000	1	15,000
Support central MIS for data quality desk review on ESP indicators.	Now	1	10,000	1	10,000
Develop online platform and tracking system for focused essential services like antenatal care, counseling for non-communicable diseases, referral system, Nutrition.	Later	1	25,000	1	25,000
Onsite monitoring visit from central and local level (M&E)	Later	1	30,000	1	30,000
Develop dashboard on ESP reporting status and services information according to facility hierarchy.	Later	1	20,000	1	20,000
Establish reporting system for telemedicine services.	Later	1	15,000	1	15,000
Conduct Physical verification to check data quality for ESP indicators	Later	1	25,000	1	25,000
Control aedes mosquito breeding to prevent dengue outbreak	Now	1	2,000	3	150,000
Management of GBV associated with COVID-19	Now	1	2,000	3	150,000
Develop/revise/adopt guidelines/SoPs on IYCF, GMP, SAM management, adolescent & maternal nutrition	Now	1	500	10	5,000
SAM case Management in all the SAM units across the country including 11 City Corporations.	Now	1	80	3,300	264,000
Continuing essential nutrition services/volunteers in PHC centers, outreach sites & community sites following COVID-19 contextual approach	Now	1	177	7,000	1,240,400
Build capacity of the health care providers through hands-on/e-learning courses in the targeted primary health care facilities, urban& rural (CC, UHC, FWC, PHCC, CRHCC) on essential nutrition specific services in the context of COVID)	Now	1	667	1,600	1,067,200
Enhance capacity of health care providers (medical college, district and upazilla level) to manage SAM cases	Now	1	625	200	125,000
HR support to rural and urban facility (CC, PHCC) & City Corporation for reaching the most vulnerable population through 'Pay for Performance (P4P)' based incentives	Now	3	305	7,000	6,406,515
Develop training packages (both online and instructor-led) & IEC materials/ job-aids to ensure essential nutrition service delivery at different tiers	Now	1	100,000	1	100,000
Develop training of the telemedicine/ tele-nutrition team for nutrition practice guidance & use, dissemination of essential messages through social media platform	Now	1	100,000	1	100,000
Supply of essential nutrition commodities including anthropometric and relevant tools for GMP, supplies for all tiers of facilities with support to strengthen supply chain system for nutrition logistics.	Now	1	810	10,000	8,100,000
Strengthen routine monitoring for every month through DHIS2 & EMIS of DGFP	Now	1	10,000	1	10,000
Use of RapidPro platform for monitoring of institutional functionality and quality of service delivery	Now	1	100,000	1	100,000
Establish and strengthen tele-nutrition services for most vulnerable target group	Now	1	100,000	1	100,000
Expand A2i for incorporating nutrition messages/ services	Now	1			

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
			100,000	1	100,000
Continue SAM Facility readiness assessment in every quarter	Now	1	15,000	1	15,000
Utilize Cloud services (survey monkey, etc.) for assessment	Now	1	30,000	1	30,000
Establish & strengthen referral linkage between community to CC/ PHC	Now	1	200	7,000	1,400,000
Create awareness on essential nutrition services through social media and SBCC engagement	Now	1	500,000	1	500,000
Essential Health Services TOTAL					40,604,842
Procurement, logistics and supply management					
Catheter, nasal, 40 cm, with lateral eyes, sterile, single use; different sizes: 10 Fr, 12 Fr, 14 Fr, 16 Fr, 18 Fr	Now	1	8	30,000	231,000
Nasal oxygen cannula, with prongs, adult	Now	1	1	150,000	105,000
Nasal oxygen cannula, with prongs, pediatric	Now	1	1	16,500	13,200
Mask, oxygen, with connection tube, reservoir bag and valve, high-concentration, adult, nonsterile, single use	Now	1	2	150,000	285,000
Mask, oxygen, with connection tube, reservoir bag and valve, high-concentration, pediatric, non-sterile, single use	Now	1	2	16,500	33,000
Venturi Mask, with percent O2 Lock and tubing, adult	Now	1	1	150,000	195,000
Venturi Mask, with percent O2 Lock and tubing, pediatric	Now	1	2	16,500	36,300
Infrared thermometer	Now	1	40	4,035	161,400
Pulse oximeter - portable handheld, with cables and sensor	Now	1	250	35,000	8,750,000
Pulse oximeter - fingertip	Now	1	40	-	
Pulse oximeter - table top, with cables and sensor	Now	1	950	7,000	6,650,000
Patient monitor, multiparametric, including ECG, non-invasive blood pressure (NIBP), oxygen saturation (SpO2), respiratory rate (RR), temperature (TEMP), with sensors and cables	Now	1	7,901	2,000	15,802,000
Patient monitor, multiparametric, NIBP, SpO2, TEMP, respiratory rate (RR) with sensors and cables, (without ECG)	Now	1	1,300	10,000	13,000,000
Concentrator O2, 10 L, with accessories	Now	1	883	4,000	3,532,000
Oxygen plant, pressure swing absorption (PSA)	Now	1	-	20	
Tubing, medical gases, int. diam. 5 mm	Now	1	3	1,046	2,824
Bubble humidifier	Now	1	4		
Connector, biconical, symmetric, ext. diam. 7-11 mm	Now	1	1	-	
Flow splitter, 5 flowmeters 0-2 L/min, for pediatric use	Now	1	137	1,000	137,000
Flowmeter, Thorpe tube, for oxygen 0-15 L/min	Now	1	100	400	40,000
Patient ventilator, intensive care, for adult and pediatric, with breathing circuits and patient interface	Now	1	28,384	2,500	70,960,000

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Patient ventilator, transport, for adult and pediatric, with breathing circuits and patient interface	Now	1	7,250		
Filter, heat and moisture exchanger (HMEF), high efficiency, with connectors, for adult, single use	Now	1	4	10,800	43,200
Filter, heat and moisture exchanger (HMEF), high efficiency, with connectors, for pediatric, single use	Now	1	4	1,200	4,920
Compressible self-refilling ventilation bag for adult, capacity > 1500 mL, with masks (small, medium, large)	Now	1	62	2,000	124,000
BiPAP, with tubing and patient interfaces for adult and pediatric, with accessories	Now	1	1,800	1,500	2,700,000
CPAP, with tubing and patient interfaces for adult and pediatric, with accessories	Now	1	5,606	1,500	8,409,000
High Flow Nasal Cannula, with accessories	Now	1	0	1,500	600
APRON PROTECTION, plastic, disposable	Now	1	0	197,200	39,440
GLOVES, SURGICAL, s.u., sterile, size 6.5, pair	Now	1	0	-	
GLOVES, SURGICAL, s.u., sterile, size 7, pair	Now	1	0	-	
GLOVES, SURGICAL, s.u., sterile, size 7.5, pair	Now	1	0	1,037,790	415,116
GLOVES, SURGICAL, s.u., sterile, size 8, pair	Now	1	0		
GLOVES, SURGICAL, s.u., sterile, size 8.5, pair	Now	1	0		
GLOVE EXAMINATION, nitrile, pf, size S	Now	1	0		
GLOVE EXAMINATION, nitrile, pf, size M	Now	1	0		
GLOVE EXAMINATION, nitrile, pf, size L	Now	1	0	6,269,550	626,955
GLOVE EXAMINATION, nitrile, pf, size XL	Now	1	0		
GLOVE EXAMINATION, nitrile, pf, size XXL	Now	1	0		
FACE SHIELD, clear plastic, disposable	Now	1	1	1,890,000	1,890,000
RESPIRATOR, mask, FFP2/N95	Now	1	2	1,500,000	2,250,000
MASK, MEDICAL / SURGICAL, type II or higher	Now	1	0		4,177,287
GOWN, SURGICAL/ISOLATION, non-sterile, size S	Now	1	6		
GOWN, SURGICAL/ISOLATION, non-sterile, size M	Now	1	6	3,166,740	19,000,440
GOWN, SURGICAL/ISOLATION, non-sterile, size L	Now	1	6		
GOWN, SURGICAL/ISOLATION, non-sterile, size XXL	Now	1	6		
GOGGLES PROTECTIVE, wraparound, soft frame, indirect vent	Now	1	13	3,220,740	41,869,620
BIO-HAZARD BAG, Disposal bag, 50 microns, mini 30 liters	Now	1	0	1,245,600	498,240
Lab screening test kit (Primers and probes)	Now	1	8		
RT PCR reaction kit	Now	1	3	900,000	2,970,000
Extraction kit	Now	1			

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
			4		
THERMOCYCLERS for RT PCR	Now	1	25,000		
Swab and Viral transport medium	Now	1	2		
Near patient PCR machine, 2 modules Instrument	Now	1	12,500		
Near patient PCR machine, 4 modules Instrument	Now	1	18,000		
For Near patient PCR machine - RT PCR cartridge	Now	1	20		
Test Kits	Now	1	15		
Infusion pump	Now	1	1	30,000	21,300
Airway, nasopharyngeal, sterile, single use, set with sizes of: 20 Fr, 22 Fr, 24 Fr, 26 Fr, 28 Fr, 30 Fr, 32 Fr, 34 Fr, 36 Fr	Now	1	1	8,000	6,720
Airway, oropharyngeal, Goeddel, set with sizes of: No. 2 (70 mm), No. 3 (80 mm), No. 4 (90 mm), No. 5 (100 mm)	Now	1	1	8,000	6,720
Colorimetric End Tidal CO2 detector single use (adult)	Now	1		24,000	
Cricothyrotomy, set, emergency, 6 mm, sterile, single use	Now	1		2,400	
Endotracheal tube introducer	Now	1	0	8,000	720
Tube, endotracheal	Now	1	0	8,000	720
Laryngeal mask airway (LMA)	Now	1	0	8,000	1,920
Tube with screw cap	Now	1	0	1,242,000	188,784
Ziplock bag	Now	1	0	2,484,000	83,063
Hand sanitizer	Now	1	1	1,442,000	1,443,189
Coverall	Now	1	4	648,000	2,572,560
Heavy-duty gloves	Now	1	6	224,100	1,319,322
250 ml Hexi sol hand rub	Now	1	2	57,465	94,726
Liquid Soap 250 ml	Now	1	1	604,000	853,409
Oxygen therapy - Accessories and consumables (Bubble humidifier; Connector, biconical, symmetric	Now	1	2	40,000	61,200
Oxygen Cylinder (with Bull Nose Valve 0.7 M3 with Trolley, Gas Capacity- 0.7 M3; water capacity- 5L Origin: BTIC (China)	Now	1	169	10,000	1,693,200
Additional biosafety cabinets for expanded sample processing	Now	1	4,757	60	285,411
ALCOHOL-BASED HAND RUB, solution, 100 ml, bot.	Now	1	1	150,000	141,293
Body bag, Infection Control, Adult	Now	1	2	1,000	1,780
Body bag, Infection Control, Child	Now	1	2	500	890
Cap, surgical, bouffant, non-woven ,box/100	Now	1	8	1,500	12,360
Closed colored bin	Now	1			

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
			21	1,500	31,455
CV line cannula, 3000 units	Now	1	0	9,000	1,350
DNAase and RNAase Water (1 liter)	Now	1	989	300	296,817
Expand ICU beds nationwide	Now	1	221	1,000	220,620
High capacity RNA extractor	Now	1	4	30	118
Infusion pump	Now	1	1	6,000	4,260
PCR machine and maintenance	Now	1	41,225	30	1,236,749
Sodium hypochlorite (0.5%)	Now	1	4	1,500	6,180
Sodium hypochlorite (bleach) 1L	Now	1	4	3,000	12,360
SPRAYER DISINFECTANT (IK-12 BS) , 12 liters	Now	1	13	1,500	19,826
Syringe pump	Now	1	8	9,000	72,000
VIRAL RNA EXTRACTION KIT (QIAamp) , for RNA preps, kit-250	Now	1	3	900,000	3,114,000
Sample Collection Kit (Including VTM & Swab Stick)	Now	1	155	900,000	139,842,000
Eppendorf tube 1.8 ml, 500/pack	Now	1	236	900,000	212,014,134
Cryovial 1.8 ml tube	Now	1	24	150,000	3,532,500
Refrigerator [laboratory +4 degree C for sample and reagent storage, 5 feet 350 liter	Now	1	450	30	13,500
Freezer [laboratory -20 degree C] for sample and reagent storage, 5 feet 350 liter	Now	1	5,358	30	160,754
Micropipette set of 4 (0-2ul, 20 ul, 200 ul, 1000 ul)	Now	1	0	30	1
Micropipette set TIPs of 0-2ul Filtered TIPs, 960/box	Now	1	0	900,000	20,700
Micropipette set TIPs of 20 ul Filtered TIPs	Now	1	0	900,000	20,700
Micropipette set TIPs of 200 ul Filtered TIPs	Now	1	0	900,000	20,700
Micropipette set TIPs of 1000 ul Filtered TIPs	Now	1	0	450,000	10,350
PCR plate,96 well [10 plate box]	Now	1	177	9,000	1,590,120
multichannel pipette, 500 ul	Now	1	458	30	13,740
Micro-centrifuge Machine (for COVID-19 PCR purpose)	Now	1	391	30	11,718
PCR Gloves (Powder free)	Now	1	11	45,000	503,550
Nebulizer Machine	Now	1	72	1,500	108,450
Suction Machine, 2 bottle, electric	Now	1	72	1,500	108,450
ABG machine with glucose and lactate	Now	1	70	100	7,000
Defibrillator, External	Now	1	1,125	200	225,000
ECG Machine, 12 Channel	Now	1	1,118	200	223,672

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Dehumidifier 25 L	Now	1	1,100	300	330,000
Hepa filter & Negative pressure System	Now	1	517	100	51,682
Sample Collection KIOSK	Now	1	160	1,636	261,760
Medical Gas System (Oxygen, air and vacuum)	Now	1	150	100	15,000
Procurement of Rapid test kit (antibody test kit) / WB	Now	1	5,880,000	1	5,880,000
Procurement of MSR, equipment, kit, reagent, etc.) / ADB	Now	1	17,060,000	1	17,060,000
Cloth masks for vulnerable groups in CHT, Haor, Tea Garden, Urban slums (including street children, social workers)	Now	1	1	19,448,802	12,584,520
Phase 1 mask procurement: Cloth masks for at-risk urban populations and super spread locations (DNCC, DSCC, Narayanganj, Gazipur, Chittagong) @ 2 masks per person	Now	1	5,769,127	1	5,769,127
Procurement, logistics and supply management TOTAL					**619,136,692**
RCCE					
Technical Support GoB/DGHS in Coordinating the communication response / Communication Coordination Centre Forge alliances with Cabinet Div, LGD, MoDMR, MoRA, MoE, MOWCA, MOI and bring various stakeholders together; strengthen capacities of the different Ministries to ensure utilization of all key channels of communications are used to effectively communicate with affected populations Smooth coordination will enable integration of all Government and partner activities to ensure that resources are used most efficiently and effectively. This will enable key stakeholders and partners to operate as a unified team Staff to support the Centre - develop a clear TOR for the Centre (UNICEF will provide technical staff to support DGHS in coordinating the response (ensure regular meetings, monitoring of the implementation plan, addressing bottlenecks, reviewing and adjusting the RCCE response plan, etc.) - Replicate the coordination structure at the Divisional, District and Upazilla level	Now				
Behavioral Assessment and Analysis: - Includes Quick Perception Study in Six Divisions to understand key target audience, perceptions, concerns, influencers and preferred communication channels - Continued assessments including Emergency Polls (Rapid, short quantitative survey of the audience that allow us to identify what fraction of the audience has certain experiences and holds certain views (80,000*3) - Establish monitoring mechanisms to monitor update the RCCE Plan	Now	1	350,000	1	350,000
Establish Feedback mechanism(s) to collect feedback on the services and risk communication and community engagement activities: Collect feedback from youth/ imam/community people for the rapid assessment through U-Report mobile-based messaging platform	Now	4	75,000	1	300,000
Engage religious leaders, Local Government Division, Mosques, local clubs to call for actions through miking and community engagement	Now	4	80,000	1	320,000

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Train imam volunteers on online data collection/reporting, develop data base, engage in SMS based communication, rumor control, addressing stigma, field monitoring; Reference materials for the religious leaders, teachers, elected representatives	Now	1	200,000	1	200,000
Develop risk communication materials for different phases: print materials, PSA, radio program, meena animation, drama, infographics etc. Risk communication to specific audiences and communities: Engage District Information Officers, community radio, local NGOs to dissemination messages on preventive measures, social distance for general people -reaching vulnerable groups Including local influencers such as community leaders, religious leaders, community volunteers, women's groups, youth groups, business groups, traditional healers, urban slum dwellers	Now	1	360,000	1	360,000
Awareness raising via miking among 12 tea garden managers and workers and their families on prevention measures and raising awareness. Work together with C4D, Sylhet office and UN Partners (ILO, UNWOMEN, UNFPA and UNRC office) Support to the BTA to establish a database to collect and maintain data of respiratory diseases in the affected tea communities or any kind of sickness during the pandemic (jointly with UNFPA)	Now	1	6,200	1	6,200
Develop and Agree on the channels and key messages for the different segments of audiences - To be done through the Govt Communication Coordination Centre - Messages for the different segmented groups of audiences (government staff, private sector, health care workers, informal workers and other vulnerable groups) - Message for the different government Ministries and their functionaries at all levels (esp MoH, Doctors, Nurses, Case workers and other Health care providers; Cab division and LGD - Div Comm, Dep Comm, District and other Upazilla staff; Teachers; Social Workers, etc.) + Other Need-based messages will be developed & Agency for branding,	Now	1	225,000	1	225,000
Establish a One Stop Communication Data Repository - An easily accessible communication point for the different stakeholders to get information (Managed by UNICEF - no costs involved)	Now	1		1	$ -
Daily Press briefings (costs are for Press briefings) and Press Releases	Now	1	72,000	1	72,000
Established Hotline Numbers (Functioning and therefore not costed currently)					
Social Media Coverage: Bulk SMS and Mobile Phone Messaging, Strengthening Hotline Centre (Infrastructure strengthening, Server Management, App and web management, course management, volunteer management, incentives and appreciation) (Technical Support)	Now	1	25,000	1	25,000
E-learning on muktopath (for Doctors on Case Management)	Later	1	80,000	1	80,000

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Risk communication to general population: Prevention, response and knock-on effects messaging to, as well as engagement with, general population and segmented audiences such as children, youths, parents through social media, traditional media, and other mass media platforms. - UNICEF CAP 730,428 (Detailed costing: Social media and other online content production and boosting; traditional media content, relations and partner support incl. TV, print and radio) - a2i (Technical Support); a2i - Social media (60,000) - UNFPA (Technical support)	Now	1	810,000	1	810,000
Addressing increased violence at homes: Strategies that guide parents on how to talk to their children about Covid-19, and also posts that encourage parents to be kind and gentle, to stay calm, and to prevent violence at home.	Now	1	50,000	3	150,000
Healthcare Professionals - through the district level committees under the leadership of the Civil Surgeons disseminate messages on safety and protection and energize in discharging their responsibilities, including midwives and maternal healthcare workers (Phased Approach - Phase 2 by end April) (Technical support on messages and content)	Now	1		1	$ -
Messages for High Risk Groups (people older than 70 years of age) and Patients with co-morbidities	Now	1	45,000	1	45,000
Orientation Meetings with associations of businesses & industries to motivate them to support prevention and care seeking behaviors among their employees – hygiene education, adequate provisions for sanitation and hygiene	Now	1	100,000	1	100,000
Messages for Persons in self-quarantine and isolation in through multiple partnerships (Technical support)	Now	1		1	$ -
Response messages for social media (how to recognize symptoms, how to protect people around you, when to see a doctor). PSAs on both prevention and response to TV and radio	Now	1	50,000	1	50,000
Promote safe water collection practices handwashing before collection of drinking water from a public water point (Unions);Reinforce handwashing messages through front line staff of DSS and SSS-CHT (union);Enhance hygiene practices, environmental cleanliness and preparedness for other risks and emergencies like dengue fever or natural hazards (Districts);Promote environmental hygiene to reduce risk of other infectious and vector-borne diseases and the burden on the health system (# of districts)	Now	1	539,400	1	539,400
Disseminate messages in urban slums through miking, using cable operators, promoting content on social media targeting specific zone. Required budget: $50,000	Now		50,000		50,000
Develop and disseminate awareness raising materials for vulnerable women - PWDs, people with different sexual orientation, migrant workers, returnees, domestic workers in partnership with women led CSOs/NGOs	Now	1	119,500	1	119,500
Social media posts for awareness raising on VAW, mental health, exacerbated burdens of unpaid care work due to COVID 19	Later				$ -
Develop videos and messages on COVID 19 effects on women VAW, mental health, HH labor, women's special needs to disseminate through BTV	Later				$ -

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Establish an agile system to effectively track and address rumors, myths and misconceptions (Social media posts and animated content)	Now	1	34,000	1	34,000
Support DPHE and other partners in coherent and coordinated risk communication and community engagement as it relates to safe hygiene practices, Child Protection and Stopping transmission of COVID-19. - Reinforce handwashing messages, protection from and prevention of the spread of COVID-19, child protection, coping during times of stress, addressing discrimination and stigma through front line staff of DGHS and SSS-CHT para workers of CHT	Now	1	110,200	1	110,200
Capacity Development of the Media Professionals	Now	1	50,000	1	50,000
Leaflets on home quarantine	Now	1	-	50,000	1,500
Online/Digital training course on COVID-19 for doctors, nurses, other healthcare providers	Now	1	30,772	1	30,772
Online/Digital training course on COVID-19 for journalists	Now	1	17,647	1	17,647
Online/Digital training course on COVID-19 for religious leaders (imams). And miking and khutba guide development	Now	1	5,882	1	5,882
Audiovisual contents on rumor management, myth busters, myth about age, handwashing, mitigation, home quarantine, community engagement, social distancing, cooperation with neighbors, trust building, symptoms, transmission and spread, what to do if you have symptoms, seeking treatments, pregnancy, services and referral points, medicine, temperature, hotlines, mental health, worry and stress, stigma. HOW-TO videos on triage, PPE, IPC, etc.	Now	1	35,394	1	35,394
Radio contents on general info on COVID-19 - rumor management; stay at home; myth buster; home quarantine; trust building; handwashing; community engagement; information on services and referral points; mitigation and mental health	Now	1	21,296	1	21,296
Providers job aids/e-learning course for the frontline workers on community engagement and Interpersonal Communication during emergency (pandemic and others) (Technical inputs from a2i)	Now	1	40,000	1	30,000
Provide technical support to the Community Radio stations to link with RCCE pillar messages and develop effective new messages on COVID-19	Now	1	30,000	1	30,000
Community feedback and analysis (including Corona Kotha bulletin)	Now	1	17,259	3	51,776
Capacity Strengthening and Mentoring for grass roots organizations	Now	1	5,447	3	16,340
Content Production -- Reactive content production based on demand from grass roots organizations addressing gaps in communication materials and content	Now	1	47,994	3	143,983
Three online training videos = BDT 5 Lacs each 2-handheld devices for 200 frontline healthcare workers = BDT 10K each for BRAC frontline healthcare workers and field- staff	Now	1	41,176	1	41,176
Outreach by BRAC frontline workers to 500 pharmacies under Jeeon network 2. Two advisory videos 3. Recorded voice message and sms for Pharmacy - compounders and village doctors	Now	1	29,412	1	29,412

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Digital (social media and Google ads) videos and static posts - 3 videos and 10 static posts/boosting 2. Media outreach (details below) 3. Telephone push calls and recorded audio messages - through BRAC microfinance call center for Symptomatic people To increase self-reporting and encourage self-isolation	Now	1	120,000	1	120,000
Digital (social media and Google ads) videos and static posts - two videos and social media boosting 2. Media outreach (details below) for Doctors and frontline responders To recognize their efforts and to motivate them to give their bests	Now	1	82,353	1	82,353
Outreach by BRAC frontline workers 2. Rural miking (2400 branches, per day miking cost BDT 1500 - two times in 6 months) for Rural adult men/ community awareness to Practice social distancing and hygiene behaviors & Encourage others in the community to do the same	Now	1	84,706	1	84,706
Social Media (Facebook and YouTube) videos - 3 videos 2. Media outreach 3. Gamification - two games for Youth and adolescents to comply with social distancing and take responsibility in community awareness/safety	Now	1	25,000	1	25,000
Produce and place television public service announcements (PSAs)	Now	1	280,000	1	280,000
Produce and place radio PSAs	Now	1	100,000	1	100,000
Billboards	Later	1	80,000	1	80,000
Pamphlets and factsheets	Later	1	80,000	1	80,000
Produce and place newspaper advertisements	Later	1	100,000	1	100,000
Social media engagement	Later				
Information for key populations for HIV (sex workers, males having sex with males and people who inject drugs) and PLHIV via community radio and IPC	Now	1	3,000	1	3,000
Assessment among PLHIV and key populations for HIV	Now	1	6,000	1	6,000
Developing and testing messages and materials for the COVID-19 outbreak / WB		1	120,000	1	120,000
Mobilizing the local community (trusted community groups, community leaders, local networks, and media personnel) to support messaging / WB		1	1,180,000	1	1,180,000
Risk communication activities to communicate critical risk and event information to all communities and counter misinformation / ADB		1	460,000	1	460,000
Inter-personal communication at community level (volunteers) for mask use campaign		1	1	1	10,000,000
RCCE TOTAL					**17,172,537**
Operational Research					
Record keeping of Health care provider perspectives of dedicated COVID hospitals	Now				30,000
Intervention on hand washing	Now				50,000
Epidemiological and clinical characteristics of COVID-19 cases	Now				250,000
Clinical audits of in-patient deaths due to COVID-19	Now				50,000
Virologic assessment of hospitalized patients with COVID-19	Now				50,000
Effectiveness of drugs (Solidarity study)	Now				318,000
Sero-surveillance of COVID contact tracing (UNITY study)	Now				245,000

Activity description	Now or later	Unit	Unit Cost (US$)	Quantity	Subtotal (US$)
Services availability and readiness assessment (SARA)/Health facility survey	Now				130,000
Study on health workers behavior and motivational enablers	Now				150,000
KAP study for general people (telephone interview survey)	Now				60,000
Assessment of RT-PCR labs	Now				70,000
Immunological tests	Now				110,000
Health professionals survey (KAP, training needs, etc.)	Now				110,000
Evaluation of three phases	Now				50,000
Assess the impact of COVID-19 on Nutrition outcome?	Later				300,000
Conduct epidemiological research into risk factors for COVID-19, clinical trial to assess diagnostics, therapeutics, and vaccines as appropriate					1,000,000
Adopt international R&D blueprint guidance and WHO protocols for special studies					500,000
Operational Research TOTAL					**3,473,000**
Strategy, planning and coordination					
IT equipment of Situation Room	Now	1	1,000	10	10,000
Situation Room construction works	Now	1	15,000	1	15,000
Technical and operational support to Situation Room and Response Coordinator	Now	1	25,000	3	75,000
Situation Room ICT dashboard development	Now	1	25,000	1	25,000
Daily sitrep meetings	Now	1	200	90	18,000
Bi-weekly pillar coordination meetings	Now	1	1,000	24	24,000
Weekly PMO briefing	Now	1	1,000	12	12,000
Internet, electricity, security for Situation Room	Now	1	2,000	3	6,000
Travel support	Now	1	500	24	12,000
Report publication	Now	1	5	1,200	6,000
Conducting research/ operational research/ Survey / ADB + WB		1	3,580,000	1	3,580,000
Providing support project implementation unit (PIU) providing project management consultant to support the ADB components for the entire implementation period / ADB		1	540,000	1	540,000
Providing support to functioning project implementation unit (PIU), including financial management and procurement, and monitoring and evaluation including environment & social specialist hiring and preparing ES Plan / WB		1	350,000	1	350,000
Improving the capacity of Public Health Emergency Operations Center (PHEOC) following the Incidence Management System (IMS) structure at the national and sub-national level / ADB		1	40,000	1	40,000
Enhancing infrastructures to disseminate information from national to sub-national levels, and between the public and private sectors / WB		1	240,000	1	240,000
Developing and maintain stockpiling of critical medical supplies as needed and based on forecasting and strengthened distribution channels to the sub-national level, and development of an inventory system / ADB		1	610,000	1	610,000
Strategy, planning and coordination TOTAL					**4,953,000**
GRAND TOTAL					**811,202,682**

Annex-2 World Bank and ADB supported COVID-19 Assistance Project

So far the mitigation measures, both for health interventions as well as for the whole of government responses, for COVID-19 have been implemented by the Government of Bangladesh maximally from its own fund, with also participation from the development partners and other corporate and social enterprises. The World Bank and Asian Development Bank signed with the Government separate agreements for assistance for the COVID-19 response for 3-year period (Y2020-Y2023). The projects have been approved by the ECNEC (Executive Committee of the National Economic Council) on 2 June 2020. The names of the projects are COVID-19 Emergency Response and Pandemic Preparedness (BDT 112,751.61 lakh taka, and COVID-19 Response Emergency Assistance (136,456.37 lakh taka) respectively. The contributions of GOB in these projects are BDT 27,751.61 lakh taka and BDT 51,459.50 lakh taka respectively.

Annex 4: Contact Tracing procedure

In the softcopy of this document, Contact Tracing procedure document can be found through clicking HERE

Annex 5: List of Pillar Partners

In the softcopy of this document, a list of partners involved with each BPRP pillar can be found through clicking HERE.

Annex 6: Technical Guidance

- Government of Bangladesh's office COVID-19 website: www.dghs.gov.bd; and www.corona.gov.bd
- In the softcopy of this document, click in this link to get WHO's International Health Regulations (2005) which provides a definition and guide on the IHR requirements for PoEs and Quarantine
- In the softcopy of this document, click in this link to get Covid-19 supply chain dashboard