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# National Pandemic Preparedness and Response Plan for Respiratory Pathogens, Bangladesh 2024-2030



Government of the People's Republic of Bangladesh

National Pandemic Preparedness and Response Plan for Respiratory Pathogens, Bangladesh 2024-2030

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# PREFACE

# Table of Contents

# ACRONYMS AND ABBREVIATIONS

# EXECUTIVE SUMMARY

# Part A: INTRODUCTION

## COUNTRY CONTEXT

### COUNTRY OVERVIEW

Bangladesh emerged as an independent and sovereign country in 1971, a nine-month war of liberation. It is one of the largest deltas of the world with a total area of 147,570 sq. km. Bangladesh, located in South Asia, occupies the apex of the arch formed by the Bay of Bengal and is bordered by India and Myanmar. A large number of rivers and their tributaries crisscross the country, flowing into the Bay of Bengal and making it a very fertile delta. The country is mostly flat alluvial plains, with hills in the southeast. Bangladesh is a sub-tropical country with three predominant seasons: winter (October to March); summer (March to June); and monsoon (June to October). Administratively.the country is divided into eight divisions and consists of 64 districts. . Each district is again divided into several upazilas (sub-districts); there are a total of 495 upazilas. The upazilas are divided into unions, and each union is divided into 9 wards. There are 4,562 unions and 40,987 wards in the country. The urban areas have 12 city corporations and 328 municipalities (Health Bulletin, 2019).

The estimated population of Bangladesh is 165,158,616 according to the Bangladesh Bureau of Statistics (BBS) in 2022. The population density is 1,119 per square kilometre, and 68.5% of the total population lives in the rural areas. The current annual population growth rate is 1.2% and the Crude Death rate is 5.8%. The rural to urban migration rate is 26.4%; and the male to female ratio is almost 1:1 with slightly higher numbers of female. The average family member per household is 4. The literacy rate is 75%. The life-expectancy is 72.4 years (70.8 years for males and 74.2 years for females). The GDP growth rate is 7.1%, and GDP at the current market price is 44,393 billion taka and GDP per-capita (current price as per 2015-16 estimate) is USD 2,234.

**DISASTER RISK PROFILE**

Two-thirds of the population of this country live within five metres of sea level, many of them in rapidly expanding informal settlements and on marginal agricultural land. Bangladesh frequently experiences different types of floods: flash floods, riverrine floods, rainfall induced floods and storm surges floods. deforestion/climate

Considering the significant disaster risks, Bangladesh has made rapid progress in reducing the death toll of extreme weather events through the development of early warning systems and storm shelters, as well as the reduction of poverty and improved education rates. Bangladesh's health care has improved remarkably in the last two decades. However, less than half of the population is covered by essential health services. Inequitable access to those services is one of the main issues, with wide differences in coverage between districts and economic groups.

**Emerging Infectious Disease Threats in humans**

Bangladesh, despite being situated in the northern hemisphere, the annual seasonal influenza epidemic occurs typically during the monsoon period, i.e.,

from May to September, with influenza peak activity during July and August every year based on influenza surveillance data from 2007 to 2019. The Ministry of Health, Bangladesh confirmed its first case of H5N1 infection in humanin 2008, and subsequently seven more human H5N1 cases were reported afterwards. The cases had exposure to live and slaughtered chickens.

Bangladesh has been facing a repeated bat borne Nipah virus (NiV) outbreak since 2001. As of 30 November 2023, a total 339 cases were reported with 71% case fatality rate. Health authorities worked diligently to trace, test, and isolate suspected cases, preventing further transmission. This is the only country in the globe that has been actively conducting human Nipah surveillance. A robust contact tracing system was established to identify and isolate individuals who may have been exposed to the virus. Collaboration with international health organizations and research institutions was pivotal. Bangladesh worked with global partners such as Centre for Disease Control and Prevention (CDC), Atlanta, The Coalition for Epidemic Preparedness Innovations (CEPI), and EcoHealth Alliance to understand the virus and develop diagnostic and management protocols.

Bangladesh reported a total of 2045985 laboratory confirmed Covid-19 cases with 1.4% case fatality rate as of 7th December 2023. The COVID-19 pandemic has imparted valuable lessons for shaping pandemic preparedness guidelines. It underscored the importance of early detection and rapid response, effective communication, in-country inter-ministerial and international collaboration. Robust healthcare systems, sufficient medical supplies, and strategic stockpiling proved essential. The measures taken during the Nipah outbreak have been instrumental in guiding the nation's response to the COVID-19 pandemic and serve as a model for pandemic preparedness and response globally. response to COVID-19:

Bangladesh implemented several lockdowns and restrictions to curb the spread of the virus. These measures included stay-at-home orders, closure of educational institutions, and restrictions on public gatherings. The government of Bangladesh conducted COVID-19 testing and contact tracing to identify and isolate cases. A total of 885 facilities were set up across the country to increase testing capacity during the COVID-19 pandemic. Bangladesh initiated a vaccination campaign to immunize its population against COVID-19 with an aim to vaccinate a significant portion of the population. Efforts were made to bolster the healthcare infrastructure, including the establishment of dedicated COVID-19 treatment centers and the procurement of medical supplies and equipment. The government and health authorities conducted public awareness campaigns to educate the public about preventive measures, such as mask-wearing and social distancing. Bangladesh provided financial and food assistance to vulnerable populations affected by the pandemic and lockdowns.

**Emerging Infectious Disease Threats in Animal Health**

HPAI H5N1 virus was first reported in poultry in 2007. More than 560 outbreaks have been recorded in 54 of Bangladesh's 64 districts. The majority (>80%) of outbreaks reported in commercial chicken farms. Co-circulatory strain of H5N1 HPAI and H9N2 LPAI is quite common in poultry. The role of wild migratory birds for introducing pathogenic avian influenza viruses to domestic poultry was reported. H5N6 was detected first in 2017 in domestic and migratory ducks and house crows. The evolution of viruses in poultry shown in different studies remarkably identified that an endemic virus is in circulation. This causes widespread outbreaks in poultry which eventually has been a constant threat to the human population. Indian flying fox, fruit bats were identified as reservoirs for NiV infection in humans. In addition, antibodies against NiV were detected in cattle, goats, dogs, cats and pigs.

A significant concern in Bangladesh is the poor biosecurity situation in the dominant backyard poultry practice. Around 50% of chickens are reared in backyards where the recommended bio-security measures to control AI are almost impossible to apply. Ducks are mainly free-range and are heavily dependent on natural resources with minimum supplementary feeding. Ducks often share the same habitat as wild migratory birds, enhancing the possibility of transmission from wild birds to ducks. Chickens and ducks are often raised together, providing a conducive environment for virus transmission between ducks and chickens. Ultimately this creates close proximity between potentially infected birds and humans and may create a possible environment for cross-infection of AI to humans.

During the last few decades, there has been a significant increase in commercial poultry production. Most of the farms are located in densely populated areas and minimum efforts are taken to maintain the biosecurity measures. There are Live Bird Markets (LBM) throughout the country. In most of the markets, slaughtering and manual dressing are carried out in the same place where poultry are sold. These marketplaces allow viruses from different areas and sources and spread to different areas and farms. In addition, poultry selling through mobile poultry vendors can increase the spread of avian influenza viruses from the market to households.

Migratory birds and domestic ducks and geese are intermingled together during winter which facilitates avian influenza viruses' transmission into the other wild birds and domestic birds.

Long porous borders with neighbouring countries have heightened the risk of informal trade of poultry, poultry related products, including caged birds, veterinary biologics, and feeds. In most cases, informal trade is beyond access to veterinary or wildlife supervision in the country of origin as well as destination.

There is a small nomadic group that carries indigenous pigs with them. Pig acts as a mixing vessel for the amplification and reassortment of different viruses such as influenza, and rotavirus. Zoo animals are considered as susceptible hosts for avian influenza and SARS-CoV-2.

In Bangladesh, H5N1 HPAI was first reported in 2007. Since then, a total of 561 HPAI/H5N1 outbreaks/events have been recorded in both commercial and backyard poultry of Bangladesh. The low pathogenic H9N2 virus has been circulating in poultry of Bangladesh since 2006. Concurrent infection in poultry with H5N1 HPAI and H9N2 LPAI is quite common now. Another HPAI virus H5N6 was detected first in 2017 in domestic waterfowl. The evolution of viruses in poultry shown in different studies remarkably identified that an endemic virus is in circulation. This causes widespread outbreaks in poultry which eventually has been a constant threat to the human population.



**Health Disaster risk management structures**

The government of Bangladesh established a National Emergency Operation Centre (NEOC) in Bangladesh under the leadership of the honourable Prime Minister of Bangladesh in 2015 which is responsible for responding to any disaster including health disaster.

**ACUTE RESPIRATORY DISEASE MANAGEMENT IN THE COUNTRY**

**Human Health Management**

Bangladesh is committed to ensuring Universal Health Coverage for every citizen within 2030. Health care in Bangladesh is provided by both the government and the private sector. The government health facilities provide health care at minimal cost, including preventive, curative, and rehabilitative

services. The government health care system is managed by the MoHF&W, headed by the Minister of MoHF&W, with the Secretary of Health Services Division, Secretary of Medical Education and Family Welfare as the executive heads. For the implementation of health services, the Director General of Health Services is the executive head, while the Director General of Medical Education steers the academic activities of Medical Colleges and other institutes. Bangladesh has a well-organized health infrastructure from the primary to the tertiary level. The capacity of Health services in Bangladesh is inadequate considering the large population size and high burden of disease and emerging infections. Limited distinct public health services for health protection and health promotion.

The human health care system in Bangladesh is divided into three levels that have been mentioned in Table 1, 2, 3 and 4

Table 1: Total number of government facilities under the Directorate General of Health Services (DGHS) Health Services (To be updated)

| Type of hospital | No. of hospitals |
|---|---|
| Total primary level facilities (except community clinic) | 2003 |
| | |
| Total secondary & tertiary level facilities | 255 |
| TOTAL | 2258 |
| No. of hospital beds under the DGHS | 54,6607 |

Source: National Health Bulletin, 2019

Table 2: Different types of facilities under DGHS in different administrative tiers

| National | Divisional | District | Upazilla | Union | Ward |
|---|---|---|---|---|---|
| Specialized Health Center | Medical College & Hospital | District Hospital with | Upazilla Health Complex | Rural Health Center* | Community Clinic |

| | | | | | |
|---|---|---|---|---|---|
| Post-graduation Medical Institute & Hospital with Nursing Institute<br>Public Health Institute | with Nursing Institute<br>General Hospital with Nursing Institute<br>Infectious Disease Hospital<br>Institute of Health Technology | Nursing Institute<br>General Hospital with Nursing Institute*<br>Medical College & Hospital with Nursing Institute*<br>Chest Institute*<br>Leprosy Hospital*<br>Medical Assistance Training School* | TB clinic* | Union Sub-center*<br>Union Health and Family Welfare Center* | |

* In some Districts/Upazillas/Unions but not all

Source: Health Bulletin 2011 Page 27, MIS, DGHS

Table 3: Secondary and tertiary hospitals/health centers under the DGHS, 2018 (December)

| Type | Level of facility | Name of facility | No. of facilities | No. of beds |
|---|---|---|---|---|
| Airport Health | Secondary | Dhaka Airport Health Office | 1 | 0 |
| | | Chittagong Airport Health Office | 1 | 0 |
| Chest disease clinic | Secondary | | 42 | 0 |
| Chest hospital | Secondary | | 14 | 866 |
| District level office (Civil Surgeon Office) | Secondary | | 65 | 0 |
| District level hospital (District/General hospital) | Secondary | | 59 | 9600 |
| Divisional level office (Divisional health Office) | Tertiary | | 8 | 0 |
| Dental college hospital | Tertiary | | 1 | 200 |
| Hospital of alternative medicine | Tertiary | | 3 | 200 |
| Infectious disease hospital | Secondary | | 5 | 180 |
| Leprosy hospital | Secondary | | 3 | 130 |
| Medical college hospital | Tertiary | | 18 | 15013 |
| Port Health Office | Seconda | Chittagong Port Health | 1 | 0 |

| | | | | |
|---|---|---|---|---|
| | ry | Office | | |
| | | Khulna Port Health Office | 1 | 0 |
| Specialized Health Center | Tertiary | Central Skin & Social Hygiene Center, Chittagong | 1 | 0 |
| | | National Center For Control Of Rheumatic Fever & Heart Disease | 1 | 0 |
| | | National Asthma Center | 1 | 70 |
| Specialized hospital | Tertiary | | 5 | 1450 |
| Specialty postgraduate institute and hospital | Tertiary | | 11 | 3284 |
| Trauma center | Secondary | | 6 | 120 |
| Other hospitals | Tertiary | Kurmitola 500 Bed General Hospital, Dhaka | 1 | 500 |
| | | Mugda 500 Bed General Hospital, Dhaka | 1 | 500 |
| | Secondary | Narayanganj 300 Bed Hospital | 1 | 300 |
| | | Narsingdi 100 Bed Zilla Hospital | 1 | 100 |
| | | Bangladesh Korea Moitree Hospital, Savar, Dhaka | 1 | 0 |
| | | Kuwait Bangladesh Friendship Govt. Hospital, Uttara, Dhaka | 1 | 0 |
| | | Saidpur 100 Bed Hospital, Nilphamari | 1 | 100 |

| | | | | |
|---|---|---|---|---|
| Total secondary & tertiary level facilities | | | 254 | 32,613 |

Source: Health Bulletin 2018 Page 130-131, MIS, DGHS

Table 4: Health facilities of the private sector

| Type of hospital | No. of hospitals |
|---|---|
| Registered private hospitals and clinics | 5,054 |
| Registered private diagnostic centers | 9,529 |
| TOTAL | 14,583 |
| Total number of beds in registered private hospitals and clinics | 90,587 |

Source: Health Bulletin 2018

**Laboratories for human health**

At national level, IEDCR, NILMRC, IPH, NTRL, and icddr,b laboratories are capable of conducting advanced molecular diagnosis for humans.. With the leadership of IEDCR, GoB also established a high throughput next-generation sequencing facility in collaboration with icddr,b, and ideSHi, to support countrywide genomic surveillance for respiratory pathogens.

Surveillance and outbreak investigation and response for human diseases

There are several disease surveillance platforms of respiratory illness established under the MoH&FW by different institutes, such as National Influenza and Nipah surveillance. Outbreak investigation and response is conducted by a Public Health Emergency Operation Centre (PHEOC) housed at the IEDCR through a Rapid Response Team (RRT). If the outbreak involves zoonotic and environmental factors, then One Health approach with a multidisciplinary team of relevant experts are summoned to address any outbreak.

Vaccination program and implementation in human health sector

Bangladesh has a national immunization programme run by the Expanded Programme on Immunization (EPI). This EPI program focuses on routine childhood vaccination through a comprehensive network of health facilities and healthcare workers across the country. This well-established network has the potential to act as an excellent platform for mass vaccination during any pandemic or emergency situation, e.g. GoB successfully used this platform to employ the COVID-19 mass vaccination in 2021 and H1N1pdm2009 vaccination campaign program in 2010 among healthcare workers, and high-risk groups. Vaccination for respiratory pathogens is required for most at-risk people such as pregnant women, children under 5 years, the elderly (>65 years), immunocompromised, and individuals with comorbidities. For example, the seasonal influenza vaccine and pneumococcal vaccine are yet to be included in the national immunization program.

**Animal Health Management**

According to the Bangladesh Bureau of Statistics (BBS) - 2021, the contribution of livestock in the national economy to GDP is 1.44%. Small-scale livestock farming, particularly poultry farming is growing rapidly and employment generation in the livestock sector is 20% (Directly) and 50% (Indirectly) (DLS Annual Report, 2021).

The DLS, under the MoFL, is responsible for the governance of animal health. Under the leadership of the Director General, activities of the DLS are administered through 32 Directors which covers central and as well as field level administrative activities. The coverage of animal health services reaches the upazila level for regulatory and clinical services through Central veterinary hospitals (CVH), district veterinary hospitals (DVH), and upazila veterinary hospitals (UVH). The DLS has a laboratory network consisting of a Central Disease Investigation Laboratory (CDIL) and 10 Field Disease Investigation

Laboratories (FDIL), as well as a veterinary public health laboratory and a state-owned vaccine production laboratory. The DLS has established 24 quarantine stations at different points of entry and has recently established a quality control laboratory. The Bangladesh Livestock Research Institute (BLRI) is a state-run institute for research on animal health and production. BLRI has five regional stations throughout the country with animal health research facilities. The national reference laboratory for avian influenza is hosted by BLRI. Apart from BLRI and DLS laboratories, capacities for diagnosis and research also exist in the different veterinary schools of the country. Several diagnostic laboratories are also operated by the private sector.

**Laboratories for animal health**

At national level, BLRI, CDLI and icddr,b One Health laboratory are capable of conducting advanced molecular diagnosis for zoonotic pathogens in animals. can conduct higher-level diagnostic testing. BLRI and icddr,b have established a next-generation sequencing facility to support countrywide genomic surveillance for respiratory pathogens.

Environment and Wildlife Management

Bangladesh has a national-level Wildlife Advisory Board and Wildlife Act (protection and conservation of wildlife. The Bangladesh Forest Department has six wildlife management and nature conservation divisions within the Wildlife Nature & Conservation Circle (WNCC) across the country. In addition, the Sheikh Kamal Wildlife Center (SKWC) has initiated operational research on wildlife conservation, management and health under collaborative approach with national and international research organizations.

**Animal Health surveillance system**

The Epidemiology Unit of DLS is responsible for coordinating surveillance activities. Routine passive surveillance is primarily based on regular reporting

from upazila veterinary hospitals. Active surveillance such as sink surveillance in live bird markets (LBM) and risk-based surveillance are also conducted with the help of DLS field veterinarians. Surveillance is also being conducted under the Upazila to Community (U2C) approach. With the help of FAO, DLS has recently established the Bangladesh Animal Health Intelligence System (BAHIS). All surveillance data are entered into BAHIS which facilitates easy data archiving, analysis, and retrieval. Similar facilities also exist at Bangladesh Agricultural University, Chattogram Veterinary and Animal Sciences University and icddr,b One Health Laboratory.

**Outbreak Investigation for Animal Health**

The Epidemiology Unit of DLS and field offices of DLS conduct outbreak investigations in animals. For zoonotic disease outbreaks, the Epidemiology Unit, IEDCR, Forest Department, FAO, WHO, BLRI, EcoHealth alliance, icddr,b animal investigation team jointly conduct investigation using one health approach.

**Vaccination in animal health sector**

Vaccination against HPAI was introduced in Bangladesh in 2013 on a trial basis following the vaccination strategy recommended by an expert committee. The target population for vaccination was all breeder chickens and layer type birds. One live recombinant vector vaccine (Vectormune HVT-AI) and two inactivated H5 vaccines (Re-6 and Nobilis AI) were selected for testing. Vectormune HVT-AI was recommended for DOCs and Re-6/Nobilis AI for grown chickens. Farmers pay for the vaccines. Initially two districts (Gazipur and Kishoreganj) were selected for trial vaccination. Based on the results of trial, vaccination was extended 10 selected districts. Subsequently vaccination was expanded across the country. In 2020, H9N2 vaccination in poultry was introduced.

**Wildlife and Environment Surveillance System**

At present, there is no structured wildlife surveillance system. However targeted and event-based wildlife disease surveillance is being conducted under the FD and collaborative partners on infectious and zoonotic diseases of wildlife. BFD is currently conducting a zoonotic tuberculosis (TB) surveillance program in wildlife. In addition, IUCN Bangladesh and Eco Health Alliance Bangladesh are conducting a collaborative research program on avian influenza in migratory birds and Nipah virus surveillance in bats.

**Laboratory facilities in wildlife**

The Bangladesh FD has three field laboratories in wildlife hospitals situated at two safari parks and one Eco- Park across the country. In addition, laboratory facilities are also available at CDIL, BLRI, icddr,b and laboratories of different agricultural universities.

**Purpose and scope of the document**

The goal of this National Plan is to prevent and control respiratory pathogens and to make preparations in order to reduce morbidity and mortality in both animals and humans in the event of a pandemic while minimizing socio-economic and environmental impact. The strategy of this Plan is to develop a multi-sectoral approach with community participation and collaboration with international organizations. In the past, the Government of Bangladesh developed and applied the first National Avian Influenza and Human Pandemic Influenza Preparedness and Response Plan to control Avian Influenza and Human Pandemic Influenza. The first plan covered 2006-2008 and the second plan covered 2009-2011. This was the first instance where animal and human health ministries had formally collaborated.

**Objectives of the Plan:**

**Overall objectives**

1. Minimize the risk of a respiratory pathogen pandemic including the transmission, morbidity and mortality, and socioeconomic impacts.
2. Enable appropriate and timely actions for emergency coordination, collaborative surveillance, community protection, clinical care and access to countermeasures during each operational stage.
3. Inform, engage and empower the public to maximize community resilience.

**Specific objectives**

4. Improve programme management with a focus on policy, planning, co-ordination and regulations
5. Strengthen respiratory disease surveillance.
6. Ensure prevention and control of respiratory pathogens.
7. Strengthen hospital readiness for case management.
8. Provision of dedicated pandemic/epidemic emergency assistance funds
9. Enhance Laboratory Capacity
10. Develop trained public health workforce.
11. Co-ordinate and mobilize multi-sectoral resources to contain the pandemic.
12. Ensure essential services; and
13. Strengthen national, bilateral, regional, and international collaboration.

**Target Audience**

**National**

- Ministry of Health that leads technically in the development, testing, and activation of the plan, and is responsible for health sector preparedness.

- National emergency and disaster risk management authorities that lead contingency planning and interface with political leadership including the office of the head of state and parliamentarians.
- Ministry of Fisheries and Livestock and Ministry of Environment, Forest and Climate Change responsible for animal health that focus on preventing and controlling zoonotic pathogens.
- Other ministries and institutions from sectors involved in disease emergency preparedness and response
- National public health institutes, other health authorities at national and subnational levels that interface with other stakeholders such as healthcare facilities, educational institutes, community leaders, health workers and animal health workers, non-governmental organizations, civil society organizations, philanthropic institutions private for-profit sector, and academia.

**International**

- World Health Organization (WHO), World Organization for Animal Health (WOAH) and other United Nations organizations
- International and inter-governmental agencies involved in pandemic preparedness and response; e.g. Bangladesh Red Crescent Society, IFRC and Red Cross partners.
- International health professional organizations and associations
- Funding institutions including donor governments and multilateral agencies.

**Risk of respiratory pathogen pandemics**

Respiratory pathogens affect health systems, disrupt essential services, and negatively impact societies and economies. The impact of pandemics depends on disease severity (mortality and morbidity) as well as social, economic and

political factors.

Understanding disease severity early in the course of the pandemic helps drive the scope and scale of the response needed, but as noted in both recent respiratory pathogen pandemics, understanding disease severity is a challenge. Therefore, a well-established respiratory disease surveillance is essential to reliably provide data during inter-pandemic periods. This highlights the need to strengthen the resilience of systems that provide such data, as well as to consider how the response would need to be scaled up or scaled down depending on disease severity. Building systems and decision-making agility are critical to anticipate and navigate challenges. Bangladesh needs international collaboration to access the appropriate reagents and supplies for rapid and accurate diagnosis of the novel pathogen. The establishment of a coordinated healthcare system is required for adequate testing, case management, and disease containment.

Social, economic and political factors also affect the trajectory and impact of respiratory pathogen pandemics. As observed from recent pandemics, factors that bear a negative effect include poverty, crowding, work insecurity, racial/ethnic disparities and discrimination, gender-based violence, low levels of education, poor nutrition, limited access to quality care, high prevalence of comorbidities, an infodemic, concurrent crises including conflict, armed violence and population movement. Community resilience, trust in government institutions, the presence of social and economic safety nets, agility in adjusting and communicating response measures mitigate negative effects. A comprehensive approved costed plan and sector-wise implementation mechanisms should be in place.

Groups at high risk of infection encompass health care workers, pregnant women, children under 5 years old, the elderly, and immunocompromised individuals. Those with unprotected exposure to animals carrying potential

respiratory pathogens, such as farmers, their family members,r workers, traders, wet market employees, mobile vendors and animal keepers in aviaries across various zoos, safari parks, and eco-parks who handle sick and death animals, are also at high risk. Personnel engaged in outbreak investigation and control measures may also be exposed to zoonotic respiratory pathogens during handling of sick animals and decontaminating affected environments. Additionally, health care workers in contact with human cases and laboratory personnel involved in sample handling, including collection, transportation, and processing, are considered high risk, especially if they have comorbidities.

Table 2: Range of Respiratory Pathogens

| Virus Family | Known Pathogens | Relevance |
|---|---|---|
| Orthomyxovirus | Influenza virus | Highly pathogenic Avian Influenza (H5N1, H7N9) are circulating in animals. There are sporadic human cases of H5N1, H9N2 in the country.<br>- Swine flu<br>- Pandemic influenza<br>These viruses can be a potential threat for pandemic through reassortment. |
| Coronavirus | SARS-CoV<br>SARS-CoV-2<br>MERS CoV | SARS-CoV-2 has already had its impact in the country. The new variants of SARS-CoV-2 can evolve and also be a potential threat for pandemic. |
| Respirovirus | Human parainfluenza virus | Highly contagious<br>No counter measures currently |

| | | |
|---|---|---|
| | 1 & 3 | available |
| Henipavirus | Nipah, Hendra | Zoonotic origin<br>Highly contagious<br>Highly fatal<br>No counter measures currently available |
| Rubulavirus | Human parainfluenza virus 2 & 4 | Highly contagious<br>No counter measures currently available |
| Enterovirus | EV-D68, EV-D71 | Highly contagious<br>No counter measures currently available |
| Rhinovirus | Human rhinovirus C | Highly contagious<br>No counter measures currently available |
| Pneumovirus | Human Respiratory Syncytial virus | Highly contagious<br>No counter measures currently available |
| Y. pestis | Pneumonic plague | Infects lungs.<br>Spread from person to person through the air |

# Part B

**Principles and ethical considerations for respiratory pathogen pandemic preparedness:**

In order to keep balance in rights, interests and values, setting priorities, implementing Public Health Social Measures (PHSM), and having equitable access to life-saving measures (if scarce), this document has been prepared with the following guiding principles.

- The Government of the People's Republic of Bangladesh leads the national pandemic preparedness and response for respiratory pathogens with support from national and international stakeholders if required in line with national policies and guidelines.
- The document is based on engagement and ownership from whole-of-government and whole-of-society. Community participation is also ensured in the planning and implementation process.
- One health approach has been planned to ensure coherence among multi-sectoral partners during planning, decision making and implementation.
- The Plan is in line with International Health Regulation (IHR) to protect the human rights and equity irrespective of sexual orientation and gender identity, religion, caste, geographic location, ethnic origin,

disability etc. The plan puts special emphasis on vulnerable population (Table X) and high-risk groups.

- Lessons learned from earlier pandemic, research evidence, and available statistics have been considered in preparing this document. Monitoring, evaluation and evidence generation through research will be continued to strengthen preparedness and response planning.
- Transparency and accountability have been given due importance throughout the plan.

Above principles will be applicable in different contexts and considered for formulation of any new or revising existing guiding documents and decision making.

Considering equity, gender and human rights and inclusiveness, the following potential population groups are vulnerable during respiratory pathogen pandemic. This vulnerable groups will be prioritized during formulation of any new or revising existing guiding documents and decision making as well as implementation. Distribution of service will be provided according to the priority focusing on the vulnerable group of the society depending upon the different context especially in case of scarcity.

Table X: Potential population groups particularly vulnerable during a respiratory pathogen pandemic

| |
|---|
| • Vulnerable population, such as children, older persons, people with medical comorbidities, people with disabilities and pregnant women<br>• Women and girls, who often take caregiving roles which expose them further to disease<br>• People experiencing homelessness or living in informal settlements or |

slums

• People who are essential for business continuity to deliver essential products or services

• People living and working in institutions such as long-term care facilities, prisons, nursing, retirement or residential homes for older people, or children's homes

• People without access to health services or who cannot afford health services

• People with mental health conditions and/or in need of psychosocial support

• Socially or geographically marginalized and isolated groups, such as refugees, migrants, internally displaced persons, indigenous communities

**Legal and policy considerations**

As a signatory of IHR (2005), Bangladesh is under obligation to have adequate legislation, laws, regulations, policy, administrative requirements or other government instruments in all relevant sectors. This will support and facilitate the effective and efficient implementation of core capacities for infectious diseases to sustain the continuous preparedness process for responding to public health events such as PHEIC related to respiratory pathogens. These legal documents provide the platform for preventing and responding to the respiratory pathogens of pandemic potential including influenza. In support of these national laws, the IHR came into full effect in 2007, and ensures the reporting of any outbreaks of avian influenza and any other respiratory pathogens having pandemic potential in humans to the national authority, and subsequently to the WHO.

The provisions of Article 3(4) of the IHR require that each State Party may amend domestic laws, enact new laws, and incorporate the provisions of IHR in

the National Health Policy and other relevant policy, if any. To ensure effective prevention and response to respiratory pathogens of pandemic potentials including influenza in Bangladesh, existing legal documents (see part C, page XX) will be reviewed and if required, new legal documents will be considered for social distancing, delimiting containment and buffer zones, quarantine, disinfecting transport vehicles, and health measures for travelers at international borders.

**Roles and responsibilities in pandemic preparedness and response, including those that are legally mandated.**

According to IHR 2005, MoHFW is responsible for pandemic preparedness and response plan. However, if the pandemic potential respiratory pathogens prevalent in animal or wildlife, lead sector will involve and coordinate with other relevant government and non-government sectors depending on pathogens and preparedness phase. This plan includes detail roles and responsibilities of each relevant stakeholder in different periods and operational stages of pandemic preparedness and response (see parts D and E).

**Compliance with obligations under the International Health Regulations (2005)**

Bangladesh is a state party for implementation of IHR (2005), which is a legally binding document and committed to maintenance of core capacities relevant for Pandemic preparedness. The core capacities which are relevant for respiratory pathogen pandemic preparedness are listed below:

Table X: Component wise Core capacities relevant for respiratory pathogen pandemic preparedness

| Components | Core capacities |
|---|---|

| | |
|---|---|
| Emergency Coordination | C1: Policy, legal and normative Instruments<br>C2: Coordination<br>C3 Financing |
| Collaborative surveillance | C4: Laboratory<br>C5: Surveillance<br>C12: One Health / Zoonotic diseases |
| Community protection | C10: Risk communication and community engagement<br>C11: Points of entry and border health |
| Clinical care | C6: Human resources<br>C8: Health services provision<br>C9: Infection prevention and control |
| Access to countermeasures | C7: Health emergency management |

**Data sharing and decision making**

As per decision of the OHS steering committee, OHS is responsible for ensuring information sharing among the partners about any event having potential impact on the health of human, animal, and ecosystems. Accordingly, policy needs to be developed for strategies on data sharing and decision making in order to have early warning and multi sectoral response

**Methods for plan development**

As per the suggestion from the joint meeting of the multi-sectoral technical committee, the '3rd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh' was drafted before the COVID-19 pandemic. During

the pandemic, the draft was updated with the lessons learned in COVID-19. Considering the changing situation and context of the COVID-19 pandemic, WHO suggested a pandemic preparedness planning for broader respiratory pathogens of pandemic potential through a policy brief published in 27 April, 2022. The joint multi-sectoral working group then decided to revise the draft '3rd National Avian and Pandemic Influenza Preparedness and Response Plan' as 'National Pandemic Preparedness and Response Plan for Respiratory Pathogens, Bangladesh 2024-2028'. This National Plan is developed based on several national and international documents, including the following.

- Bangladesh National Avian Influenza and Human Pandemic Influenza Preparedness and Response Plan
- Bangladesh Preparedness and Response Plan for COVID-19
- WHO Policy Brief: Strengthening Pandemic Preparedness Planning for Respiratory Pathogens (27 April 2022)
- Respiratory Pathogens: Pandemic Preparedness Guidance (draft 30 November 2022)
- Preparedness and Resilience for Emerging Threats (Module on Planning for Respiratory Pathogen Pandemics, Version 1.0, 2 March 2023)
- A Checklist for Respiratory Pathogen Pandemic Preparedness Planning (19 October 2023)

Multi-sector and multi-level consultations (see Box 2)

From February 2022 to XXX 2023, this Plan was developed over a series of meetings, workshops and consultations (Figure X) with stakeholders from relevant government and non-government organizations (Annex X).

Figure X: Timeline and the major steps of the plan development

Approach for planning *(can include the following)*

**Leveraging existing systems and capacities**

Bangladesh participated in WHO Joint External Evaluation (JEE) of the International Health (2005) capacities during 2016 and was the fifth country to complete the process. Findings and recommendations from the evaluation is being used with the planning process for this document along with the current IHR State Party Self-assessment Annual Report (SPAR). For this plan, we focus on 12 core capacities organized according to five components related to respiratory pathogen pandemic preparedness.

The country has a plan to conduct a second JEE through the updated JEE tool (3rd edition). Bangladesh also drafted country National Action Plan for Health Security (NAPHS) in December 2019, which will be updated in 2024 with incorporation of the findings from the upcoming JEE. This plan will be aligned with the NAPHS.

**Indicators and milestones for preparedness**

Specific measures to monitor implementation of the strategies under this plan are needed to support the stakeholders to monitor progress, identify gaps and undertake necessary course corrections. A number of measures are outlined in Table 4 that aim at stimulating continuous improvements in planning and preparedness.

Table X. Indicators to monitor functional capacities for respiratory pathogen pandemic preparedness and planning (Adopted from WHO guidelines, page-38)

| Component | Measure |
|---|---|
| Emergency coordination | Exercises conducted to test, review and update respiratory pathogen pandemic preparedness plans<br>Periodic desktop review of respiratory pathogen pandemic plan |
| Collaborative surveillance | Consistent and timely reporting to the Global Influenza Surveillance and Response System<br>Sustainable capability to timely genomic sequencing for pathogens with pandemic and epidemic potential |
| Community protection | Presence of trained infodemic manager/s in relevant sectors<br>Evidence of risk communication or community engagement during acute respiratory disease events including seasonal and zoonotic influenza |
| Clinical care | Participation in WHO's Global Clinical Platform<br>Presence of national guidance on clinical management of severe acute respiratory infections |
| Access to countermeasures | Presence of a National Vaccination and Deployment Plan that addresses actions needed during a respiratory pathogen pandemic<br>Implementation of a defined regulatory approach that enables timely approval for use of pandemic products |

**Regular updating of plan based on preparedness and response needs**

This plan will be updated based on the gaps and challenges identified during the implementation stage as and when needed. The indictors for monitoring functional capacities for respiratory pathogen pandemic preparedness and planning (Table X) will be used to determine the need for update. Findings of second JEE and any requirement for aligning with NAPHS will also be considered for updating.

**Pandemic preparedness and response periods and operational stages**

During planning process and developing actions, suggested periods and operational stages were adopted from WHO PRET guidelines (Figure X).

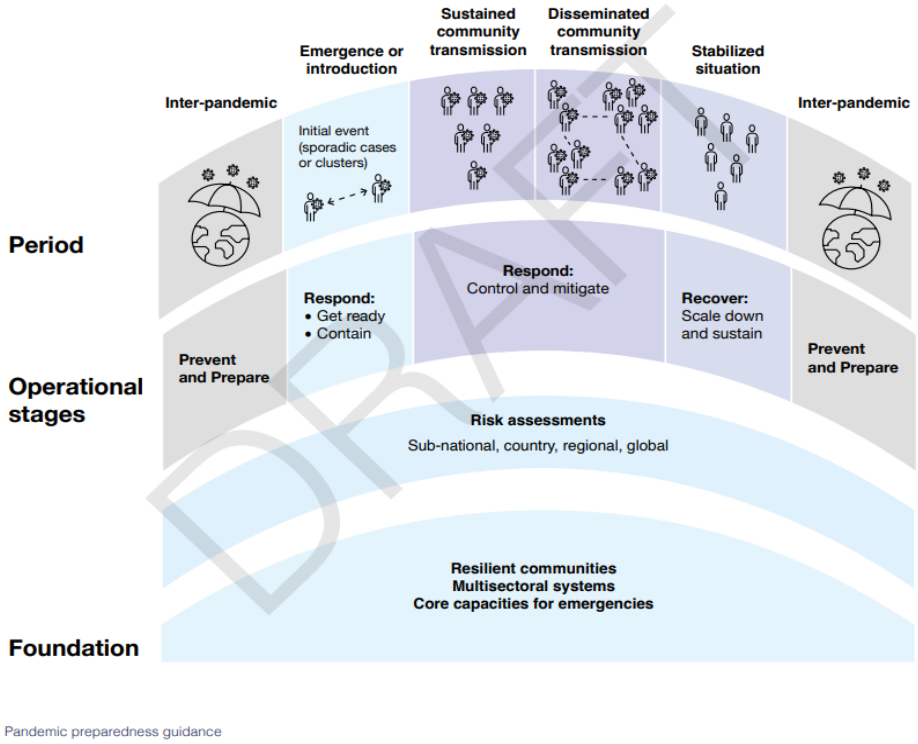



Figure X: Pandemic preparedness and response periods and operational stages (adopted from WHO PRET Guideline, page 17)

**Planning assumptions**

The pandemic response plan is prepared considering a number of assumptions, which includes but is not limited to the following:

• Inevitability but unpredictability of the next respiratory pathogen pandemic: A broad range of potential scenarios have been considered, since the time, origin, and type of respiratory pathogen for the next pandemic are unknown.

• Severity of the pandemic: The pandemic can be mild, moderate, and severe in terms of morbidity and mortality. During the early stages of the pandemic, available findings from the national, regional, and global pandemic investigations, studies, and research efforts will be utilized to support increased awareness of the pathogen, its transmission patterns, and the severity of its impact. The activities for transition between operational stages will follow accordingly.

• Immunity: As most people will have little or no immunity to a novel respiratory pathogen, response measures will be adjusted based on sub-population susceptibility.

• Pandemic course: Planning activities will accommodate for any multiple surges and reductions/increases in cases, hospitalizations, and deaths over the course of the pandemic period.

• Potential for disruption of essential services: The multi-sectoral approach has been planned to address any possible disruption of essential services (e.g. food supply, transport, education, health system).

• Potential for social disruption: Active engagement in community protection measures, risk communication and community participation will be maintained

throughout the preparedness and response process to protect health, maintain socioeconomic well-being, avoid any possible disruption of normal life and address concern among population.

• Demand for medicine and supplies: Stockpiles of products such as personal protective equipment, ventilators, medicines and other supplies will be considered based on anticipated demand during different period and stages. When supply is constrained, the key principle of equity in access to life-saving products and other essential supplies will be taken into account (Table X).

• Demand for additional health system capacity: The plan will consider readiness for expansion of health system capacities, in terms of diagnostic services, healthcare services and vaccine and therapeutics.

**Funding and resource mobilization for multi sector preparedness and response**

Dedicated, and sustained government funding is required for the implementation of the National Pandemic Preparedness and Response Plan for Respiratory Pathogens. This plan includes mechanism to ensure funding and resource mobilization for implementation of the plan at different periods and stages of pandemic. The plan will also include considerations for emergency release of fund during pandemic period and exploration of supporting fund from development partners for preparedness and response, including operational researches.

**Other national or subnational considerations**

Measures will be taken to enhance the operational capacity of the existing humanitarian actors and architecture (government agencies, NGOs and

development partners) in Bangladesh to ensure timely and effective response and to integrate activities during pandemic period into existing coordination platforms for humanitarian emergencies.

# Part C: Country systems and capacities relevant for respiratory pathogen pandemics

**Emergency coordination**

A broad range of stakeholders from human, animal, wildlife, environmental health sectors and other relevant stakeholders will participate in respiratory pathogen preparedness planning from the National level to community level. Policy, legal and normative instruments, coordination and financing will be strengthened for respiratory pathogen preparedness according to IHR and World Organization for Animal Health (WOAH) guidelines. Bangladesh has established a National Emergency Operation Center (NEOC), Health Emergency Operations Center (HEOC), Public Health Emergency Operations Center (PHEOC) and One Health Secretariat. These entities are responsible for managing and coordinating public health emergencies in consultation with related Ministries.

Policy, Legal and Normative Instruments:

Bangladesh already has substantial legal instruments, policies, guidelines and SOPs to address public health and Animal Health threats. However, there is no specific plan to cover respiratory pathogens pandemic preparedness and response.

The following Human and Animal Health, Wildlife & Environmental Health laws and plans that relates to respiratory pathogens pandemic preparedness and response plan are:

**Human Health Legislation:**

- The Bengal Prevention of Inoculation Act, 1865.
- The Bengal Vaccination Act, 1880.
- The Epidemic Disease Act, 1897.

- The Lepers Act, 1898 (Act No III of 1898);
- The Public Health (Emergency Provisions) Ordinance Act 1944.
- The Bangladesh Pure Food Ordinance, 1959 (amended in 2007);
- The Bangladesh Pure Food Rules, 1967.
- The Prevention of Malaria (Special Provision) Ordinance, 1978 (Ordinance No IV of 1978).
- The Communicable Diseases Prevention, Control and Eradication Act/Law, 2018.
- All hazard public health emergency plan for all international airports, 2019 (draft),
- Public health emergency preparedness and response plan for Sea port, Bangladesh (Draft)
- Standard operating procedure for the screening of Coronavirus disease (Covid 19) at the point of entries

**Animal Health legislation**

Regarding animal health and production, the Bangladesh Government has enacted the following acts, rules and policies.

- Animal Disease Act, 2005.
- Animal and Animal Product Quarantine Act, 2005.
- National Livestock Development Policy, 2007.
- National Poultry Development Policy, 2008.
- Animal Disease Rule, 2008.
- Animal Feed Act, 2010.
- Animal Slaughter and Meat Quality Control Act, 2011.
- Animal Welfare Act, 2018
- Bangladesh Veterinary Council Act, 2019
- Animal Slaughter and Meat Quality Control Rule, 2021.

**Wildlife and the Environment legislation**

- The Forest Act 1927
- Bangladesh Wildlife (Preservation) Act, 1973.
- Bangladesh Environment Conservation Act (BECA)-1995
- The Environment Court Act 2010.
- The Wildlife (Preservation and Security) Act, 2012
- Bangladesh Biodiversity Act, 2017
- National Environment Policy, 2018
- Environment Conservation Rules, 2023

The Infectious Diseases (Prevention, Control and Elimination) Act (2018) outlines the responsible authorities and their duties, identification, declaration and disinfection of infected areas, sample collection and testing, isolation and quarantine activities and punishment of information concealment about the spread of communicable diseases to manage public health emergencies caused by emerging and reemerging infectious diseases, including avian influenza.

The National Livestock Development Policy (2007) included sections on implementing the National Avian Influenza Preparedness Plan, strengthening the National Reference Laboratory for Avian Influenza (NRL-AI) and the capacity strengthening of DLS to manage outbreaks, including avian influenza, through surveillance and emergency response.

The National Poultry Development Policy (2008) included provisions of creating a healthy environment by improving biosecurity and waste management in all live bird markets, discouraging mixed poultry farming,

selling of live poultry and encouraging dressed poultry through cold chain systems to control avian influenza, implementing epidemiological activities, a disease reporting system for poultry, poultry disease surveillance, certification for importing poultry and other birds, and creating a special long-term plan to prevent and eradicate avian influenza.

The Animal Slaughter and Meat Quality Control Act (2011) includes sections for waste disposal for poultry farms and the live bird markets. The Animal Slaughter and Meat Quality Control Rules (2021) includes sections regarding adherence to personal hygiene standards of employees working in the slaughtering, cleaning, and meat-processing areas.
The Animal Diseases Act (2005) and the Animal Diseases rules (2008) includes sections on the management of infected or deceased birds.

The Animal Welfare Act (2019) includes provision for managing infectious poultry/animals in a humane way.

**Coordination**

The coordination mechanism depends on different phases of Health events. The one Health secretariat plays a key role in coordination among the relevant sectors in case of any significant zoonotic event.
During the outbreak situation, the Public Health Emergency Operations Centre (PHEOC) under IEDCR is the administrative head of coordination to manage outbreak, response and research from tertiary to primary level. PHEOC is responsible for response to any public health adverse event from outbreak to Pandemic situation. Concerned departments, agencies of the Govt. will be coordinated by PHEOC for the response. It will also collect, collate, analyse and

reports to the DGHS. Health Emergency Operations Centre (HEOC) act as a control room during emergency situation.

There are One Health approaches to fulfil the objectives of, reducing the zoonotic exposure and stop spill over, preventing subsequent human-to-human transmission. There is provision of joint Outbreak investigation, multisectoral surveillance, data sharing, shared resource-use and a joint Planning and Coordination mechanism. Non-state agencies are involved in coordination mechanisms whenever and wherever needed. A number of committees was formed to address One Health approach functionality for emergency situation (as outlined in the Annex).

- National Advisory Committee,
- National Multisectoral Task Force (NMTF)
- One Health Technical Committee (OH-TC)
- National Technical Committee within directorates of health and livestock
- National Coordination Cell (NCC)
- Metropolitan City multisectoral Coordination Committee
- Multisectoral Coordination Committee (MCC)
- Upazila Multisectoral Coordination Committee (UMCC)
- Rapid Response Team (RRT) at different levels

**Funding mechanisms**

The government funding is sourced either from revenue or development budget approved by the national parliament. The Government of Bangladesh has provision to mobilize funds during any sort of emergency. The initial steps start from the relevant affected sector, write to the supervisory ministry and finally, adequate funds are released from the government source to respond the situation. Simultaneously, different donor agencies come forward to help the government to respond to the situation with technical and financial

support. In a pandemic situation, the government directly releases necessary funds to respond to the situation. Multi-sectoral approach i.e., One Health approach starts immediately to create efforts up to the community level to combat the emergency.

**Human resources:**

Department of Health has set up with manpower up to the community level. Similarly, animal health sector has set-up up to the upazila level. However, manpower are inadequate to respond in emergency.

In emergency situations, the multi-sectoral adequate number of manpower are deployed. However, there is no implementable strategy for a functional multisectoral workforce.

Field Epidemiology Training Program, Bangladesh (FETP, B) and Field Epidemiology Training Program for veterinarian (FETP,V) are already introduced and activated in Bangladesh by DGHS and DLS which contribute to competency-based education programmes that are workplace-based learning and in-service programmes aligned with multisectoral workforce strategy at all levels.

The human health care system in Bangladesh is divided into three levels:

- Primary level
- Secondary level
- Tertiary level

**Primary Level (human health)**

The primary level (Upazila/sub-district level and below) is the first point of service for health care in Bangladesh. The health personnel at Upazila level: Medical Officers, Consultant, nurses, medical assistants, sanitary inspectors,

health inspectors, family planning inspectors, health assistants, technologists, and family welfare visitors /midwives. Health services at this level are coordinated and managed by the Upazila Health and Family Planning Officer (UHFPO). In each Upazila, there is at least a 31-bed health complex. In some Upazilas, this is being upgraded to 50 beds. There is a plan for all Upazila Health Complexes (UHCs) to be converted to 50-bed hospitals. The UHCs provide both preventive and curative health services. Nine medical doctors, among whom four are consultants with post graduate degrees in medicine, gynecology, surgery and anesthesia, work at each UHC.

There is one Union Health and Family Welfare Centre (UH&FWC) /Union sub-centre (USC). where preventive, curative as well as family planning services are provided. The UH&FWC/USCs acts as a basic health centre, and the UHC as the first referral hospital.

For domiciliary services, one health assistant from the health department and one family welfare assistant from family planning service approximately four to six thousand people. For each Union, there is one Family Welfare Visitor (FWV)/midwife, one Assistant health inspector (AHI), and one Family Planning Inspector (FPI). One health and sanitary inspector looks after each Upazila. For disease control, vaccination and surveillance activities, these health workers play a vital role.

Community clinics (CC) are designed to bring health care to the door of the community and ensure minimum health care. The CC is the first tier of the essential service package (ESP). It is a one-stop service outlet for health, family planning and nutrition. The CC initiative was taken in 1998 and as of May 2020, 13,779 CCs are operational. From July 2015, all the activities of CCs were being carried out under an Operational Plan of the DGHS, namely Community-based

Healthcare (CBHC) under the Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016. This is a unique example of public-private partnership as all the CCs have been constructed on land donated by the community. The healthcare-providing body of CCs consists of one Community Health Care Provider (CHCP), one Family Welfare Assistant (FWA) and Health assistant (HA).

**Health Centres within the City Corporation**

In each of the target city corporations, ideally there should be Govt. health facilities in each ward named Nagar Shasthya Kendra or Urban Primary Health Centre (UPHC). However, some health facilities are established and functional where some are not. At the implementation areas of the project, every urban ward does not have urban health centres. Some centres are dedicated for adjacent two three wards. All Govt urban Health Centers run by the support of a national NGO under the Urban Primary Health Care Services Delivery Project (UPHCSDP) project. The UPHCSDP project aims to improve access, equity, quality, utilization and institutional sustainability of urban primary health care (PHC) services in all city corporations and selected municipalities, particularly for the poor and women and children. The project is funded by Asian Development Bank (ADB) through the Local Government Division (LGD) of the Ministry of Local Government, Rural Development and Cooperatives.

**Secondary Level (human health)**

Secondary-level health service delivery is mainly provided by the district hospitals, principally for curative services. These are the referral hospitals for the Upazilas. The Civil Surgeon (district health officer) is responsible for the coordination and management of health activities including the district disease surveillance system within the districts. The district level has core human

resources for health care services and laboratory services and basic training on surveillance and outbreak investigation. They prepare and send weekly reports for Expanded Program on Immunization (EPI) diseases to the EPI headquarter and monthly disease profile to the Director of MIS. They also report unusual cluster illnesses immediately to the Director of Disease Control and IEDCR.

**Tertiary Level (human health)**

Tertiary level hospitals are the medical college hospitals and national specialized institutes, where most facilities and services are available. These are the referral hospitals at the national level.

Tertiary-level public health facilities in Bangladesh include 37 government medical colleges/hospitals and 43 specialized institutes (update MIS). There are public health institutes such as the Institute of Epidemiology and Disease Control Research (IEDCR, NIC), the Institute of Public Health (IPH), IPHN, and NIPSOM.

**Guiding principles, gender and ethical considerations**

Gender equity and equality will be considered during the pre-pandemic, pandemic and post pandemic preparedness. SoP will be developed to integrate gender equity and equality. Key considerations for integrating gender perspectives into these plans specifically related to respiratory pathogens are:

- Coordination with relevant stakeholders: Department of woman and children affairs, RCCE platform etc
- Data Collection and Analysis:
    - Sex-Disaggregated Data: To ensure collection and analysis data on the impact of respiratory diseases disaggregated by gender. This helps identify specific vulnerabilities and risk factors that affect men, women, boys, and girls differently.

- Intersectionality: To recognize that gender intersects with other factors such as age, disability, socioeconomic status, and ethnicity, leading to varied impacts. Include these intersections in data analysis.

❖ Healthcare Access and Services:
- Ensure Equitable Healthcare: Guarantee equal access to healthcare services for all genders. This includes testing, treatment, vaccines, and any other healthcare services related to respiratory pathogens.
- Address Barriers: Identify and remove barriers preventing certain genders from accessing healthcare, such as cultural norms, lack of transportation, or financial constraints.

❖ Risk Communication and Community Engagement:
- Targeted Messaging: Tailor risk communication messages to different genders. Acknowledge and address the specific concerns and information needs of men, women, boys, and girls in the community.
- Community Leaders: Involve female and male community leaders in disseminating information. Representation matters in building trust and ensuring messages resonate within diverse communities.

❖ Health Workforce:
- Workforce Training: Provide training to healthcare workers on gender-sensitive approaches. This includes understanding and addressing the unique needs and vulnerabilities of patients based on their gender.
- Representation: Encourage gender diversity in the healthcare workforce. Ensure that there are equal opportunities for men and women in all roles, including leadership positions.

❖ Protection of Vulnerable Populations:
- Focus on Vulnerable Groups: Identify and prioritize vulnerable populations, such as pregnant women, the elderly, or LGBTQ+ individuals, and develop specific strategies to protect them during respiratory disease outbreaks.

- Safe Spaces: Establish safe spaces for survivors of domestic violence and abuse, recognizing that these incidents might increase during times of crisis.

❖ Research and Development:

- Inclusive Research: Promote and fund research that explores the gendered impacts of respiratory diseases. This research can inform policies and interventions tailored to different gender needs.
- Clinical Trials: Ensure women and diverse gender identities are included in clinical trials for vaccines and treatments to understand efficacy across different populations.

❖ Policy and Decision-Making:

- Gender-Responsive Policies: Develop policies that integrate gender perspectives, ensuring that decision-making processes consider the unique needs of all genders.
- Representation in Decision-Making: Promote gender diversity in decision-making bodies and involve women's organizations and gender experts in shaping policies and response strategies.

❖ Post-Pandemic Recovery:

- Economic Recovery: Address economic disparities exacerbated by the pandemic. Implement policies that support economic recovery for businesses and individuals, considering the gendered impact on employment and income.
- Social Support: Provide social support services, including mental health services, acknowledging the differential impact of the pandemic on mental health based on gender.

**Co-ordinated One Health Collaborative Surveillance:**

One Health Secretariat (OHS) at IEDCR has developed 'One Health event base surveillance (EBS) enhancement and Data visualization system'. OHS has been coordinating to strengthen collaboration across sectors and disciplines in Bangladesh. OH surveillance has been aimed at efficiently managing hazards involving humans, animals, and ecosystems. The overall system is based on digital monitoring tools to coordinate, oversee and capture "multi sectoral data feeds." Collaboration is the key factor in the implementation of one health surveillance. It will provide an early signal of potential outbreaks, an early warning sign of potential human and animal diseases. It will also have timeliness metrics incorporated to inform the timeliness of information flow and response.

**One health surveillance and coordination mechanism nationally:**

**Human health:** The surveillance data or any human outbreak data are reviewed and validated by the IEDCR. The validated data are disseminated/ shared through the digital platform of the One Health dashboard with the partner organizations.

**Animal health:** The Epidemiology Unit and field offices of DLS conduct surveillance. The surveillance data are deposited on the digital database BAHIS. All these data are collated, cleaned, and interpreted by the Epidemiology unit of DLS. If the data suggested any potential signal to be considered for any outbreak, the message and data are considered to take the initiative by the epidemiology unit for required investigation and response.

**Wildlife:** At present, there is no structured wildlife surveillance system with reliable incidence reporting, investigation and diagnostic capability due to absence of a dedicated wildlife disease investigation laboratory, either within the Bangladesh FD or other institutes. But targeted and event-based wildlife disease surveillance is being conducted under the FD and collaborative partners

on infectious and zoonotic disease of wildlife. Through this surveillance, FD become experienced conducting surveillance through which they will contribute to the coordination team formed by the government.

One Health Secretariat will co-ordinate data sharing and collaborative surveillance will be shared through One Health dashboard. In a Pandemic situation, NEOC will coordinate collaborative surveillance involving multi-sector.

**One health surveillance and coordination and data sharing mechanism internationally:**

**Human health:** The surveillance data are shared with the international influenza platform-FLUMART, WHO, CDC.

**Animal health:** Through surveillance if any disease listed by WOAH (World Organization of Animal Health) detected in Bangladesh, it is reported and shared to the WAHIS database under WOAH.

**Wildlife:** Bangladesh Forest Department (FD) in collaboration with IUCN Bangladesh and Eco Health Alliance Bangladesh, DLS, and other partners conducting surveillance and research on emerging and re-emerging diseases of wildlife origin. BFD and DLS report to the WAHIS database under WOAH.

**Signals verification and investigation**

**Human health:** When surveillance data detects any alert signals that amount to outbreak then the event is initially verified by the local community health settings by the relevant Rapid Response Team (RRT) to detect suspected syndrome or disease cluster. If the verification confirms that it is an outbreak, then outbreak response is initiated by URRT/DRRT/NRRT according to the area of response.

**Animal health:** As one health data dashboard is a web based electronic data

sharing mechanism, so alert signals can be detected early during surveillance data analysis and interpretation. In response to the signal detected, the epidemiology unit and field offices of DLS verify the event and conduct outbreak investigation in animals. Based on the nature of signals the events are verified by multidisciplinary approach notably the Epidemiology Unit of DLS, IEDCR, Forest Department, FAO, WHO, BLRI, EcoHealth alliance, icddr, b animal investigation team etc.

**Wildlife:** There is currently no dedicated team for outbreak investigation or disease emergency response. However, if any wildlife-related emergency arises, it is managed directly by local forest department field level staff or by forming a technical team by the Chief Conservator of Forest/Conservator of Forest, Wildlife Circle. Furthermore, at the moment, wildlife mortality events/disease outbreaks in wildlife are being carried out with the assistance of a One Health Secretariat, IEDCR, Dhaka.

Each sector conduct surveillance, verify signal generated, investigate outbreak, analyse data and share data through one Health dashboard. Based on the nature of signal, multi-sectoral collaborative surveillance initiated.

A multidisciplinary team of epidemiologists, physicians, social scientists, laboratory scientists, veterinarians and relevant experts are summoned to address any outbreak. IEDCR also coordinates and provides training on outbreak investigation on pandemic prone diseases and diseases of public health importance, to all RRT members with technical support from the US CDC and the WHO. OHS coordinate the multisectoral collaboration in zoonotic disease outbreak and surveillance and responses, risk communications.

**Health emergency (Rapid response team) alert and response team's responsibilities**

Responsibilities of response team at each tier conduct their activities according to their TOR (annex)

Briefly, respond to any emergency situation detected by surveillance for Avian Influenza and other respiratory disease, conduct Outbreak investigation of Avian Influenza and other respiratory disease in the country and undertake risk communication strategy and dissemination.

**Support for and coordination of team deployments**

**Team deployment in human health:**

On a broader aspect, the IEDCR is mandated to conduct the outbreak investigation and response. The IEDCR collaborates with icddr,b, EcoHealth Alliance and other development partners if required. If the outbreak involves zoonotic and environmental factors, then the Department of Livestock Services (DLS) and Bangladesh Forest Department (BFD) are also engaged, which will be coordinated though OHS.

The Rapid Response Team from different sectors are involved in integrated response at national, district and upazila levels to conduct outbreak investigations.

**Team deployment in animal health:**

The Epidemiology unit of DLS is responsible for coordinating surveillance activities for early detection of unusual events of outbreak potential and team member includes the veterinarians of epidemiology unit, ULO office and FDILs. Routine passive surveillance is primarily based on regular reporting from upazila veterinary hospitals. Active surveillance such as sink surveillance in live bird markets (LBM) and risk-based surveillance are also conducted with the help of DLS field veterinarians.

Though the surveillance system was initiated for influenza pandemic

preparedness, the platform can be utilized further for investigation and monitoring of signals for prospective outbreak investigation. Surveillance is also being conducted under the Upazila to Community (U2C) approach which is based on both passive reporting and participatory disease searching. Outbreak and Surveillance are mandated to coordinate by E  When necessary, DLS will engage the development partners (FAO, USAID, WOAH etc) agency to support the surveillance and outbreak investigation

**Involvement of and access to global or regional networks/teams**

RRT shares information to the IEDCR. On behalf of Bangladesh, IEDCR is the member of Global outbreak alert and response network (GOARN). If needed, through this network, there is scope to send technical expertise for outbreak response in either way.

For animal health, CVO, Bangladesh has the scope to report notifiable emergency diseases to WAHIS of WOAH and to send technical expertise for outbreak response in either way.

**Data synthesize, assessment and informed action**

Data are promptly synthesized by organizing the raw data into a right format that is easy to analyse properly. The data from ongoing surveillance of human and animal sector stakeholders are pulled from One Health dashboard and other numerous sources in various formats.

Data generated from one health integrated surveillance are summarized to take action/ measures. If data assessment signals that there is an outbreak then outbreak investigation is initiated to determine key epidemiological, clinical, and virological characteristics of cases, to find out risk factors for transmission and to suggest measures for containment and control of the diseases.

**Trigger for risk assessments**

Risk assessment is one of the most concerning facets of any outbreak response. While understanding the risks who is exposed to, valuable information for successful outbreak response, identifying risk triggers helps them anticipate when risk is about to occur. Thus, measuring risk can be more than just reactive measures.

The triggers are generated from.

1. Routine disease surveillance
2. Rumour verification
3. Reported cluster of similar cases
4. Event based surveillance.

The risk assessments are carried out by the leadership of IEDCR through NRRT, DRRT /URRRT in case of human health outbreaks and Epidemiology unit of DLS in case of zoonotic disease threats/ outbreaks. The objectives of this risk assessment are to determine the key epidemiological, clinical, and pathological characteristics of cases to investigate and manage diseases of public health importance, to find out risk factors for transmission and to suggest measures for containment and control of the diseases.

**Surveillance approaches**

The surveillance approaches to detect and monitor infectious disease of public health importance includes.

- More integrated disease surveillance infrastructure and monitoring of infectious diseases both in humans and animals
- Coordinated surveillance of Priority diseases: avian influenza, antimicrobial resistance, AMR surveillance and Rabies, Nipah, and

surveillance for other novel emerging pathogens.

- Rapid detection and assessment of emerging or re- emerging respiratory pathogens of pandemic potentials.
- Sharing data with relevant institutes on circulatory pathogens of public health importance.
- Monitoring epidemiological characteristics of respiratory pathogens in the inter-pandemic period.
- Monitoring the effectiveness of interventions in human and animal health.

The coordination and information sharing concerning pathogens is done through One Health data dashboard.

**Access to laboratory services**

Access to laboratory services is yet to be established through the formation of laboratory networking. The references or declared focal laboratories are the point of contact to ensure proper communication, dissemination of data, and distribution of resources.

The integration of laboratory data is done by the rapid response team (RRT) teams reviewing the clinical data and epidemiological link. The analysis of laboratory data commonly yields information that is necessary for evidence-based planning and decision making.

Existing laboratory for respiratory pathogen (Human health):

- National Influenza laboratory, AMR reference laboratory, National Nipah laboratory, One health laboratory at IEDCR
- Virology Laboratory, One Health Laboratory, Mycobacteriology laboratory, Clinical Microbiology laboratory at Icddr, b
- National reference laboratory institute of laboratory medicine and referral centre,
- Microbiology Laboratory at Tuberculosis hospital/TB clinic

- Covid-19 PCR laboratory at district level
- Microbiology laboratory at academia

Existing laboratories for respiratory pathogen (Animal health):

- National reference Laboratory for Avian Influenza
- National reference laboratory for AMR at BLRI
- National reference laboratory for AMR at CDIL
- Central disease investigation laboratory (CDIL)
- One Health Laboratory at icddr, b
- Field disease investigation laboratories (FDIL)
- Microbiology laboratory at academia

Ministry of Commerce, DGHS, IEDCR, DLS are responsible authority for biological sample shipment, sharing to the international reference laboratories and WHO, WOAH. Genetic information is shared in Gene Bank, GISAID.

**Cooperation of other Laboratories**

A surge in demand for laboratory testing capacity is met by co-opting other laboratories. A high-level expert panel of laboratory personnels categorize the eligibility of the labs based on their assessment report. Availability of laboratory facilities and resources—from basic reagents to IT support list, monitor, and ensure in case of a surge in demand. Aside from the distribution of necessary reagents, consumables, and control materials, staff training are carried out for the specific tests. In response to the preparedness of the next pandemic, we need to consider how to maintain enough laboratory staff with skills to provide surge capacity in infection diagnostics in sustainable, affordable, and politically feasible ways. This could be through raising staff when required or setting up a system of volunteer, retained, or permanent reserve staff.

The laboratories are listed and developed the facilities according to location, capacity and category (e.g. at BSL levels). National and international platform are used for capacity building, collaboration, technology transfer, capacity building, testing supports, and the transport and sharing of biological samples.

**Specimen transportation:**

The specimens are transported or shipped to referral laboratories nationally and internationally by following the current national SOPs of specimen's transportation. In all the steps involved in achieving the above-mentioned goals, attempts are made to meet the standard as per WHO recommendation as closely as possible.

**Quality and biosafety**

A national biosafety and biosecurity guideline is functional with some gaps to ensure proper biosafety and biosecurity. All the laboratory data is analysed and disseminated for integration through One Health approach.

Multi-source data from the health system and other sectors are used to comprehensively inform risk assessment and response actions.

**Application of data to inform Risk assessment and response:**

A Public Health Emergency Operation Centre (PHEOC) and IEDCR under the DGHS perform risk assessment for respiratory pathogen and response action. The Epidemiology Unit and field offices of DLS conduct surveillance to detect and identify signals for emergencies followed by outbreak investigations in animals.

For zoonotic diseases outbreak, IEDCR, the Epidemiology Unit of DLS, Forest Department, Department of environment jointly conduct outbreak investigation using one health approach. Various research institute & developmental

partners such as (BLRI, Academia) FAO, WHO, EcoHealth alliance, icddr,b etc. provide technical support to the government if required.

**Community protection:**

Community protection includes proactive risk communication, infodemic management, knowledge translation, public health and social measures engaging communities at all levels to build trust and co-create interventions. To ensure effectiveness of community protection, evidence-based public health and social measures (PHSM) are applied properly and monitored regularly. Health and other sectors' action are implemented based on local contexts, customs and community concerns.

**Risk Communication**

Communication is undertaken at three levels:

a) Official communication during outbreak, response and control activities;

b) Scientific communication among scientists and officials;

c) Mass communication using SBC materials, mass media, IPC and announcement.

Rapid response to public health emergencies is conducted by NRRT, DRRT and URRT. The operations are coordinated by the PHEOC. As a component of outbreak response, risk communication and community engagement are conducted by IEDCR, Civil Surgeon, and Upazila Health & Family Planning Officer (UHFPO) for respective RRTs. Behavioural scientists from other institutes like icddr,b, with its team experienced in risk communication during outbreaks and public health emergencies, also join forces with IEDCR and the local government. IEDCR coordinates the scientific communication with different government departments, icddr,b, public health professionals and clinicians,

development partners and other relevant parties based on the nature of the outbreak.

When the acute phase of public health emergencies is over, risk communication is conducted as health education by the Bureau of Health Education and Health Education (BHE) Officers. The development partners, particularly UNICEF and WHO, and other relevant parties also collaborate in planning, developing and disseminating communication strategies and materials. The overall objective is to bring about positive changes in knowledge, attitudes and practices in respect to people's health practices in their everyday life through mass communication for health education and promotion.

Following emergencies in the animal health sector, the Chief Veterinary Officer, Bangladesh involved the Director General of the Department of Livestock Services (DLS) to respond to the situation. He also reports the situation to the WOAH for notifiable diseases. The DG, DLS of the ministry of Fisheries and Livestock initiated the multisectoral collaboration. The DLS involves the Fisheries and Livestock information Department under the Ministry of Fisheries and Livestock to perform risk communication for animal health issues. During any unusual event in animals, DLS takes assistance from the Information Department to manage and control the events. DLS is also working to improve knowledge, attitude and practice on farming, biosecurity, risk mitigation and safe animal-origin food production through community engagement.

The rapid response in animal health is coordinated by the emergency control unit under the guidance of the Epidemiology unit of DLS. As a component of outbreak response, risk communication and community engagement are conducted by Epi Unit, Deputy Chief Epidemiologist, District Livestock officer (DLS) and Upazila livestock Officer (ULO) for respective RRTs. DLS, Fisheries and Livestock Information Department, behavioural scientists (experienced in risk

communication) and the local government coordinate the scientific communication with different government departments, as well as the community level communication. The overall objective is to bring about positive changes in knowledge, attitudes and practices in their everyday life through mass communication for health education and promotion.

In the Forest Department, there is currently no dedicated team for outbreak investigation or disease emergency response. However, if any wildlife-related emergency arises, it is managed directly by local forest department, field level staff or by forming a technical team with wildlife veterinarians by the Chief Conservator of Forest/Conservator of Forest, Wildlife Circle. Furthermore, at the moment, wildlife mortality events/disease outbreaks in wildlife are being carried out with the assistance of a One Health Secretariat, IEDCR, Dhaka.

**Community Engagement**

Community engagement partnering multiple groups of people that may or may not be spatially connected, but who share common interests, concerns or identities. Each sector-specific stakeholder contributes to health systems and health emergency preparedness and response, maintain partnerships with actors who convene around a common history, values, objectives or interests, such as faith and youth. Social and behavioural sciences, other relevant subsets of systems, capacities and approaches are utilized to develop respiratory pathogen pandemic preparedness. In present situation, DGHS has a good outreach program. Community clinics and CG play an important role in community engagement. The country has a good NGO network that are effectively engaged during health emergencies.

**Infodemic management**

To protect the community's health and the health of their families, relatives, friends and neighbours from misinformation and disinformation, evidence-

based interventions are applied by involving communities so that people get the right information at the right time in the right format.

**Knowledge translation**

Efforts are taken to make scientific knowledge accessible, understandable and meaningful to everyone in the community with some gaps. Limited information is synthesized and shared with the community, policymakers and other relevant stakeholders in order to strengthen evidence-informed policies and decisions to protect lives and promote health during public health emergencies.

Actions to strengthen community protection during emergency

- Provide resources for development of risk communication capacity building. Train leaders, health care professionals and other service providers in risk communication principles and encourage their application. Two-way communication channels using both digital and community listening mechanisms, and updated technology for timely information.
- Update and share knowledge related to respiratory pathogen pandemics and its impact repeatedly and consistently. Explain changes in messaging and advice to prevent confusion of the people.
- Community leaders, faith-based leaders, youth, occupational groups, and vulnerable populations will be engaged through different platforms for preparedness planning to ensure accessible communication messages.
- Develop health communications strategies to support the collection, and analysis of social listening data and use of information to develop effective respiratory pathogen public health interventions.

- Engage sector-specific stakeholder at all stages of respiratory pathogen preparedness and response to ensure information is adequately exchanged, understood. Define roles and responsibilities across the sectors for decision making and their engagement.
- Allocate resources for social listening surveillance systems and capacities to identify and develop strategies to address concerns, rumors and misinformation. This includes implementing infodemic management across sectors, and having a coordinated approach with other actors, including academia, civil society, and international agencies.
- Strengthen scientific literacy and understanding of evidence in the community through community dialogue, integration into educational curricula, and utilizing networks, media, social media and other appropriate technology. Develop tools to advocate for evidence-informed policies for public health emergencies.
- Create platforms to exchange Science based knowledge, experience and learnings among academia, researchers, media, health professionals and decision makers.
- Integrate PHSM into health emergency management plans, policies, and financing, and establish and strengthen dedicated leadership and governance for PHSM in all relevant sectors at all levels. Account for different cultural and geographical contexts, enablers, and barriers to promote effective uptake.
- Develop guidelines and SOPs to support the implementation and adjustment (scale up or scale down) of PHSM while considering commonalities and specificities of various respiratory pathogens.
- Engage multi sectoral stakeholders to develop mitigation measures

including strengthening of social protection measures or tools including provision of cash transfers, basic income support, support to furlough, provision of housing and food, added support to health systems at different levels of care, universal health coverage and any other measures to reduce the unintended negative consequences and ensure equitable implementation of PHSM.

- Build risk mitigation plans using lessons learned from COVID-19 for key risk mitigation measures such as public health advice to travellers, surveillance and case management at points of entry and on-board conveyances.
- Update and revise risk assessment and risk management procedures when needed for cross-border travel during future respiratory pathogen pandemics.
- Prepare contingency plans using lessons learned from COVID-19 that allow for maintenance of essential travel such as humanitarian corridors, essential personnel, repatriations and cargo transport for essential supplies.

**Trade and travel measures**

For travel management IHR (2005) is followed according to country context.

During COVID-19 pandemic, Bangladesh temporarily establishes isolation centre for oversees travellers at airports and land ports, thermal scanners were placed at all entry ports. These facilities can be functional when it needed. Bangladesh imposes travel and trade restriction whenever needed.

For animal related trade, imposed ban on importation of poultry and poultry products from infected countries since 2006. DLS has established 24 quarantine stations for regular screening of imported animals, poultry and birds. DLS also

follows the different regulation in trade management. DLS has already established trade and risk management wings to manage the trade.

**Clinical care:**

During outbreak, epidemic and pandemic situation, the local health authority seeks additional support (such as HR, medical equipment's, medicine and biologics) from DGHS for immediate allocation & action. The emergency medical teams should be functional for 24 hours on rotation basis. Special trained workforce including Critical Care Specialists, Anaesthetists, Nurses and etc are redistributed according to the need basis. Medical Interns and students, nursing students and community health volunteers are also involved as additional work force.

**Scaling up of facilities**

DGHS has hospital facilities to support the health facilities including number of ICU and general bed but it's not the enough for addressing the pandemic or health emergency. There are some non-hospital facilities (doctor's chambers, healthcare organizations, psychiatric facilities, home health, long-term care centers etc) has established that can be activated during health emergency. Non-hospital settings apply telephone-based hotline, follow-up at home, educating community people and volunteers etc. Burial management with safe and dignified practices are ensured according to area context.

Hospital facilities (eg. Medicine, Surgery, Paediatrics, Gynaecology and Obstetrics, CCU, ICU etc) for non-communicable and other infectious diseases during outbreak/epidemic/pandemic will be maintained.

**Provision of healthcare in non-hospital settings:**

Non-hospital settings mean the provision of medical, nursing, counseling or

therapeutic services at doctor's chambers, healthcare organizations, psychiatric facilities, home health, long-term care centers etc. In pandemic situation causes severe illness in large numbers of people, hospital capacity might be overwhelmed.

In that case, communities will need to provide care in alternative sites such as union Sub-centre, FWC, Community clinic, Maternity center, community centers, teaching institutes etc. These facilities should do the following:

- Telephone based hotline: A telephone hotline system will be used by the persons with influenza-like symptoms for primary health advice while staying at home.
- Follow-up will be done regularly of the symptomatic cases and asymptomatic contacts by the assigned person for telemedicine-based follow-up.
- Public engagement and recruitment of community volunteers: This will include educating community people about influenza-like symptoms and educating them about the primary steps about what to do. FGD on symptoms of influenza-like illness will be done at community clinics and one member of each family will be the participant so that they can serve their families.
- Outpatient providers will be designated specific providers, offices, or clinics for patients with influenza-like illness.
- Field health care providers (Health Assistant, FWV, FWA) will provide follow-up for those managed at home, decreasing potential exposure of the public to persons who are ill and may transmit infection.

**Availability of supplies and equipment at health facilities**

For continuous availability and sustained supply of the consumable and durable equipment, following steps will be followed:

- Make inventory for available medical supplies in the hospital and replenish the shortage according to need.
- Ensure the continuous availability of safety measure equipment such as PPE, disinfectants, waste management facilities.
- Assess anticipated needs for consumable and durable resources and determine a trigger point for ordering extra resources.
- Estimate the need for respiratory care equipment (including mechanical ventilators) and develop a strategy for acquiring additional equipment if needed for 250 bedded hospitals, medical college hospitals and other tertiary care hospitals.
- Different hospitals (government, autonomous, NGO, private) might consider developing inventories of equipment and determining whether and how that equipment might be shared during a pandemic.
- Develop contingency plans for situations in which primary sources of medical supplies become limited.
- Contact with the district and central health authorities for emergency supply of medicines and other logistics.

Security measures for safeguard of stocks in healthcare facilities will be ensured.

- Providing security fencing
- Improved security lighting
- Alternative power supply
- Close-circuit camera monitoring and
- Regular inventory of the stocks
- Deployment of Security forces if necessary
- Increased patrolling by round the clock security guards.

**Maintenance of essential individual and population-based health services**

During pandemic and emergencies, it is necessary to maintain continuity of service delivery of routine and essential health services. It will be achieved by

- Identifying the prioritised essential health services
- Identifying the minimum health workforce and staff for maintaining the regular services.
- Adopting virtual modes of service delivery like Telehealth initiatives,
- Restructuring operational services by of care sites
- Addressing how essential medical services will be maintained for persons with chronic medical problems served by the hospital (e.g., hemodialysis patients).
- Ensuring uninterrupted provision of medicines to patients who might not be able to (or should not) travel to hospital eg. DOTS for TB.
- Shifting of vaccination centers at hospital to nearby health facility (EPI center)

**Protection of health workers, patients and communities**

Ensuring the proper Biosafety of healthcare workers, patients and community people is challenging issue in Bangladesh. There are no/limited risk allowances for the health care providers, volunteers. Limited personal hygiene management, equipments and reagents are inplaced, that are not adecuate during health emergency. DGHS, Ministry of Information and Broadcast and other relevant departments take initiative for awareness building among the communities.

Roles of different sectors, different levels, private sector, and civil- and non-governmental organizations in the above interventions

Private sector, civil and non-government organizations take initiative for community-based education to bridge the gap between institutional guidelines and local realities. Formally the government plays the leading role in spreading public health information. Barriers of accessibility and cultural mistrusts and misbeliefs can overcome by facilitators of community-based education of NGOs. They can also arrange campaigns for donation of supplies needed to overcome pandemic.

**Access to countermeasures:**

Bangladesh has mechanisms to access countermeasures including technology transfer, manufacturing platform, procurement and emergency supply chain across the country to ensure equitable global access to countermeasures for future pandemic. Current practices and mechanisms needed to be improved in line with the IHR (2005), Bangladesh already has a National Health Emergency framework and system to respond to Public Health events including Pandemics and emergencies. The capacity and responses include public health and Social Measures (PHSM), extended programme for immunization (EPI), pharmacovigilance, development or strengthening of relevant regulations, SOPs Guidelines for Public health events.

Actions for strengthening equitable access to countermeasures:

1. Establish a multisectoral group for respiratory pathogen pandemic preparedness to support planning, implement initiatives for prevention and preparedness and be engaged in risk assessments especially for utilizing the outputs to consider risk management measures.
2. Develop national deployment and vaccination plans (NDVPs) to

incorporate lessons learned from COVID-19 and 2009 A(H1N1) pandemics.

3. Adapting, existing routine immunization programme and its infrastructure to support rapid surge capacity during the pandemic, including the health workforce.
4. Strengthen regulatory systems for new medicines, therapeutics, and vaccines, and diagnostic tools with the provision of marketing authorization of emergency vaccines (such as human pandemic influenza vaccines), post market oversight & pharmacovigilance following WHO guidelines.
5. Monitor and evaluate acceptance and uptake of other non-pharmaceutical countermeasures, including PPE and social norms such as washing hands, maintenance of social distancing, and avoiding busy places etc.
6. Review and update current procurement production and supply chain mechanism to ensure consistent emergency supply during an emergency.

Conduct public health research to access the risk and identify the factors and evaluate the effectiveness of intervention. Bangladesh has the platform to coordinate and implement research and development activities supported by the Government fund, and funds from development partners. Concerned sector will create an enabling environment to conduct research and development for the disease of pandemic threats. If the disease is zoonotic in nature, the DLS and BFD will conduct event-based surveillance, characterization of agents, communication, reporting and mass communication.

# Part D: Plan activation including triggers for shifting between operational stages

## Activation of plan

Decisions to escalate and de-escalate between the operational stages in the plan:

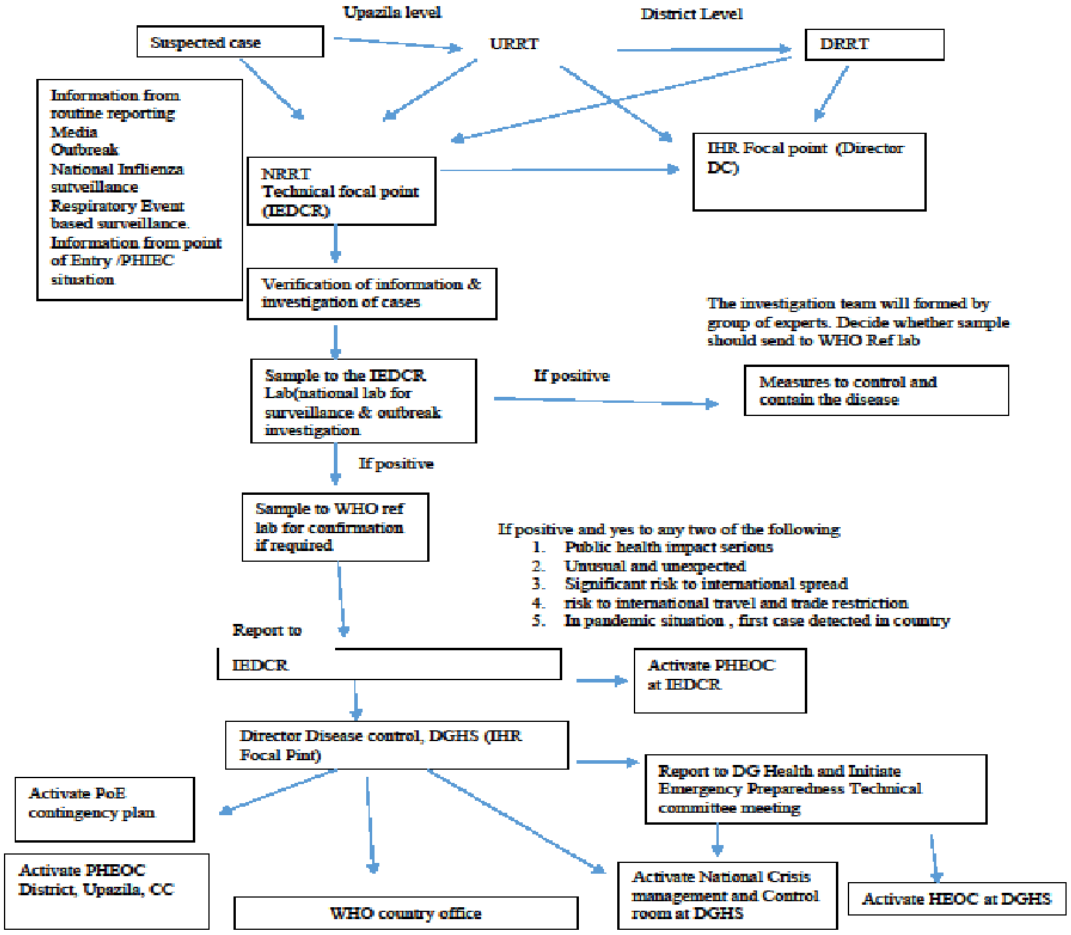
Emergency Preparedness Technical Committee will be chaired by the Director General of Health Services. This committee will review the epidemiological and laboratory data on Respiratory EIDs and analysis of the current situation reported by National Rapid Response Team. They will also recommend IHR focal person to inform the WHO country office and will share the situation report with the National Technical Committee (Human Health) for the next step. DG of DGHS, Chairperson will communicate directly with Honorable Minister MoHFW and inform about the situation. Following the approval from the Minister, the DG of DGHS, the Chairperson will communicate with the National Advisory committee.

Director IEDCR will act as Member Secretary of this committee.

Director General of Health Services Chairperson of Emergency Preparedness Technical Committee will communicate with MoHFW for escalation and de-escalation following the recommendations of this committee. Committee Annex …

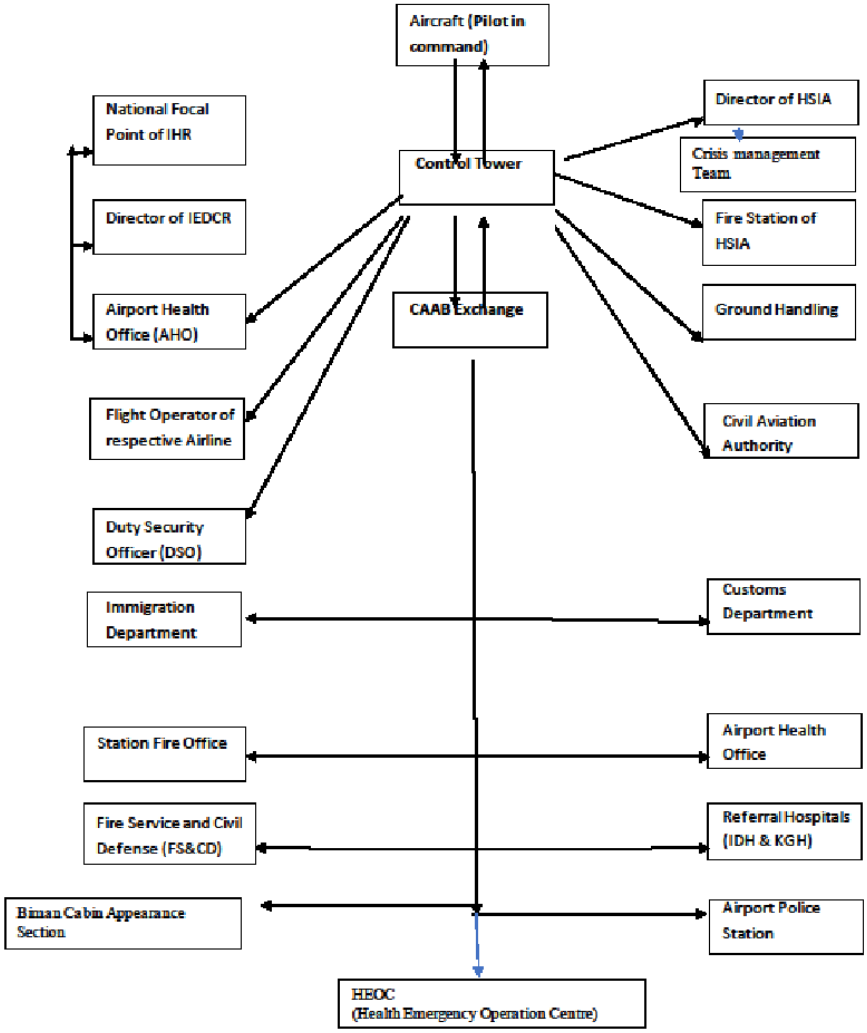
## Public Health Emergency Plan Activation Flow Chart for respiratory pathogen

## (Operational Response Organogram)

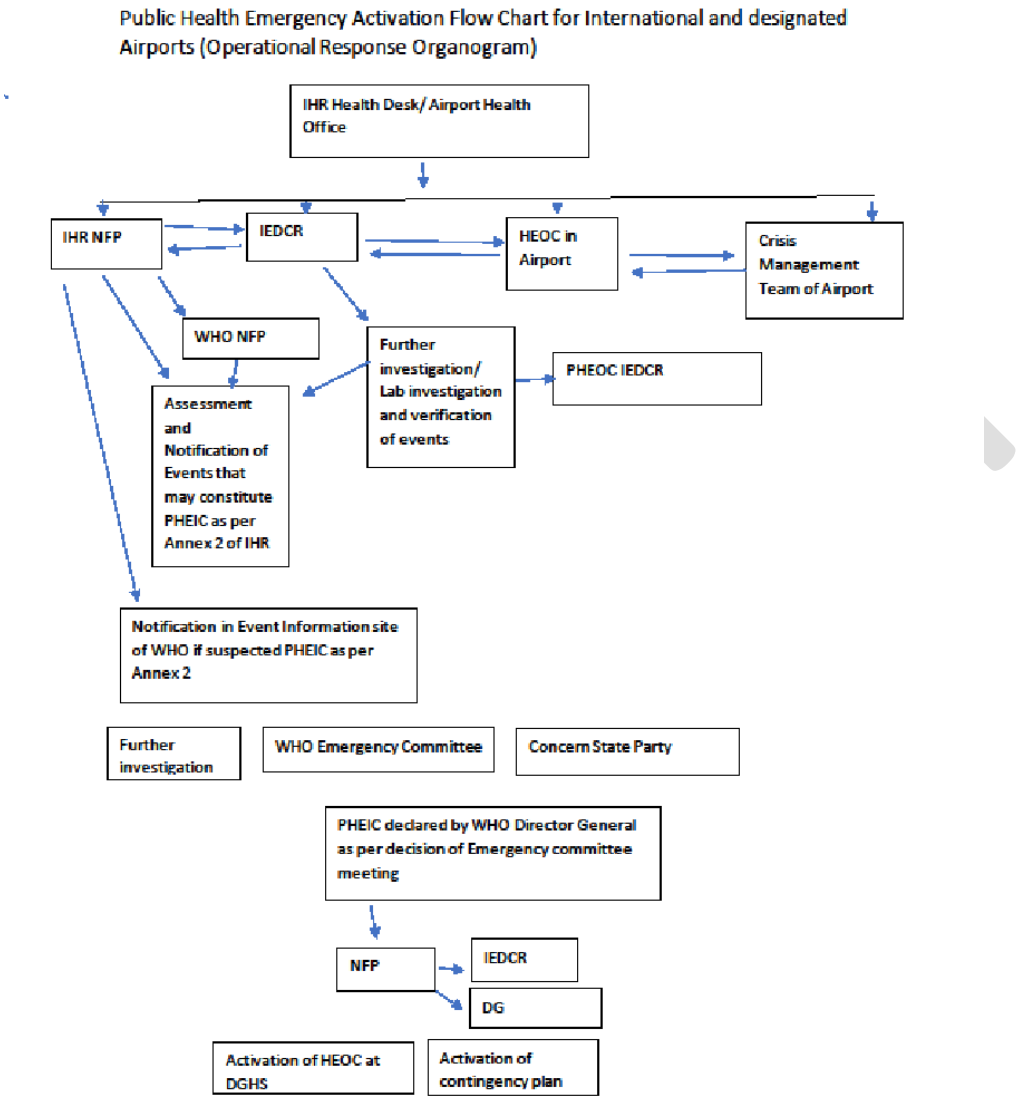


Suspected case evacuation on board Aircraft:

**Annex O: Emergency Notification System**



Suspected case evacuation from Airport/Landport/Sea port Health desk:




**Triggers for shifting between operational stages: escalation and de-escalation**.

Strategy of pandemic planning

The four global pandemic phases (inter-pandemic, pandemic alert, pandemic, and transition) describe the spread of new influenza subtypes around the world. They are used by the WHO to communicate the global situation (Figure ….). Depending on the situation, countries face different risks at different times, and the local situation may differ from the global situation. Actions at the national level should be based on national or local risk assessments and be commensurate with risk. It might be used as a template for other pandemic-prone respiratory pathogens.

Fig: Organizing framework for respiratory pathogen pandemic preparedness and
response

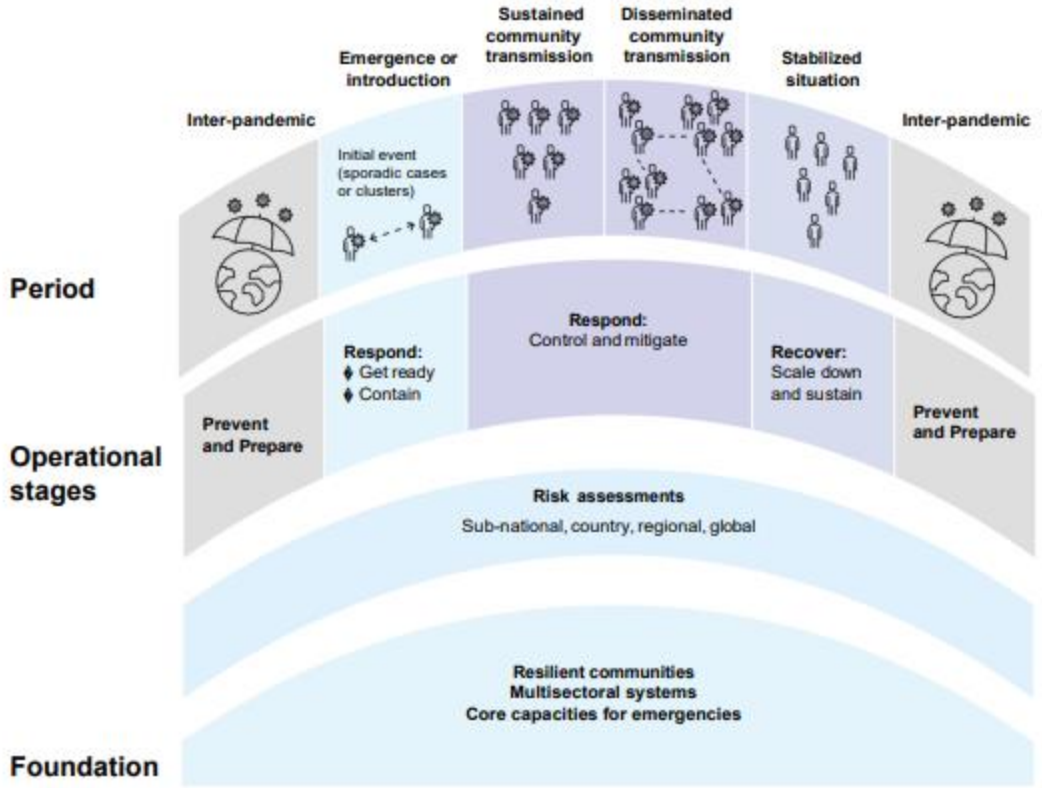



Figure: Organizing framework for operational stages

*source: Respiratory pathogens: Pandemic preparedness guidance. 2022 (draft)

**Triggers for transitioning between operational periods for pandemic preparedness and response.**

| Operational stage | Operational period | Triggers for moving between stages and sub-stages | Responsible Body for Escalation & De-escalation |
|---|---|---|---|
| Prevent & Prepare | Inter-pandemic period between pandemics | During this level, no lab-confirmed case is detected in Bangladesh.<br>Surveillance and Outbreak Response Guidelines, trainings, SOPs and Action Plans for Pandemic Preparedness | National Technical Committees (NTC) |
| Respond | Emergence or Introduction<br>Get ready.<br>Contain | Information received from IEDCR of a novel respiratory pathogen from outbreak or | ● PHEOC |
| | | outbreak outside national borders; or | ● National Technical Committees (NTC)<br>● |
| | | an alert received at national level from WHO; or | ● Emergency Preparedness Technical Committee |

| Operational stage | Operational period | Triggers for moving between stages and sub-stages | Responsible Body for Escalation & De-escalation |
|---|---|---|---|
| | | an indication from a national surveillance body of a trend in acute respiratory infections which may overwhelm health systems; or<br>declaration by WHO of a Public Health Emergency of International Concern (PHEIC). | ● |
| | | c) First case/s have been detected in-country after declaration PHEIC or emerging threat originated outside country;<br>d) clusters have been detected in-country. | e) PHEOC |

| Operational stage | Operational period | Triggers for moving between stages and sub-stages | Responsible Body for Escalation & De-escalation |
|---|---|---|---|
| | | f) Alerts/reports received from a sub-national unit seeking assistance to manage events such as atypical trends or severity associated with known respiratory pathogens; or<br>g) A request for assistance from a sub-national level associated with the event. | One health Technical Committee (OHTC) |
| | Control and mitigate.<br>Sustained community transmission. | ● Amplification and disseminated spread of the respiratory pathogen in-country; or<br>● Disseminated spread of the respiratory pathogen in other countries in different parts of the world. | ● National Multi-sectoral Task Force (NMTF) |

| Operational stage | Operational period | Triggers for moving between stages and sub-stages | Responsible Body for Escalation & De-escalation |
|---|---|---|---|
| | | | |
| | Control and mitigate.<br>Disseminated Community Transmission | During this operational sub-stage, there may be scale up or scale down of response measures depending on any or more of the following and while considering broader socioeconomic impacts:<br>● cases, deaths and hospitalizations reported in-country or globally. | ● National Advisory Committee (NAC) |

| Operational stage | Operational period | Triggers for moving between stages and sub-stages | Responsible Body for Escalation & De-escalation |
|---|---|---|---|
| | | or<br>● vaccination coverage (if available) and its effect on transmission.<br>or<br>● health system capacity to cope with the patient load.<br>or<br>● availability and effective of therapeutic options to minimize health impact.<br>or<br>● levels of population immunity in different | |

| Operational stage | Operational period | Triggers for moving between stages and sub-stages | Responsible Body for Escalation & De-escalation |
|---|---|---|---|
| | | sub-populations. | |
| | Control and mitigate. | ● Transition to Recover from It phase, and planning for a resurgence or subsequent wave<br>● Population protected by vaccination, or pandemic abated in the country.<br>● Expedite the recovery of population health, communities and society were affected by the pandemic, pandemic management | ● National Multi-sectoral Task Force (NMTF) |

| Operational stage | Operational period | Triggers for moving between stages and sub-stages | Responsible Body for Escalation & De-escalation |
|---|---|---|---|
| | | measures, or disruption to normal services | |
| Recover | ● Stabilized situation<br>Scale down and sustain. | ● Sustained global reduction in cases, deaths, or hospitalizations.<br>or<br>● Advice that the pandemic has reached a level where it can be.<br>managed under more routine arrangements; or | ● National Technical Committee (NTC) |

| Operational stage | Operational period | Triggers for moving between stages and sub-stages | Responsible Body for Escalation & De-escalation |
|---|---|---|---|
| | | ● End of the Pandemic as Public Health Emergency of International Concern declared by the WHO Director General. | |

Assessing and adjusting response measures at the country and sub-national levels.

Situational assessment:

PHEOC of IEDCR will conduct the situational assessments that may lead to adjustment of response measures.

To meet the emergency situation and reduce the impact, the Emergency preparedness technical committee will be activated. The committee will also decide on the need for activation of the multi-sectoral collaboration and coordination. The plan includes mechanism for developing surge capacity to manage the patients, to sustain essential services and reduce social impact.

**System and data for assessment of the intensity of transmission:**

1. Outbreak investigation (Emphasis on Epidemiological investigation and laboratory confirmation)
2. Disease surveillance
3. Laboratory based Disease surveillance.
4. Information from WHO about the Global outbreak

**Criteria for assessment**

1. Novel respiratory pathogen
2. Surge of existing endemic respiratory pathogens in the country
3. Surge of existing endemic respiratory pathogens at the regional and global level
4. Consider as per country levels during pandemic.

As the country situation during the pandemic might vary, following country periods will be considered during planning and implementation.

Country periods during

- Prevent & Prepare Stage
  - Inter-pandemic: period between pandemics

    During this level, no lab-confirmed case is detected in country

    Surveillance and Outbreak Response Guidelines, trainings, SOPs and Action Plans for Pandemic Preparedness
- Respond Stage
  - Emergence or Introduction:

    Single case or very limited number of cases in the country

    It is the level when a single novel Respiratory pathogen lab confirmed case or very limited numbers of cases are found but no cluster is identified.

    clusters are identified.

    When single or limited number of lab confirmed clusters are identified.
  - Sustained Community Transmission: large numbers of people are affected.

    When there is increased and substantial spread of the disease among general population.
  - Disseminated Community Transmission

    There may be scale up or scale down of response measures depending on the following and while considering broader socioeconomic impacts.

    Cases, deaths and hospitalizations reported in-country or globally.
  - Wave decreasing; detection of next wave.

    When pandemic wave is decreasing and/or a new wave of pandemic is arriving or detected.

- Recover stage.
  - Stabilized situation

  When World Health Organization (WHO) declares that the pandemic is over.

Table: Actions according to different stages

| Operational stage: Prevent and Prepare | | | | |
|---|---|---|---|---|
| | Operational period | Objectives | Actions | Actors |
| | Inter-pandemic: period between pandemics: no case is detected in the country. | ✓Formation and prepare committees of different levels | Formation and prepare of Emergency Management Committee (PMC) in Hospitals | Formation and prepare National Advisory Committee (NAC), National Multi-sectoral Coordination Committee (NMTF), National Technical Committee (NTC), |
| | | ✓ To institute containment measure | Preparedness of Rapid Response Teams (RRT) at all levels | |
| | | ✓ To alert the health system | Preparedness One Health Technical Committee (OHTC) | |
| | | ✓ To develop surge | Implement screening at the | |

| | | | | |
|---|---|---|---|---|
| | | capacity for patient management | points of entry (PoE) | |
| | | | Implement hospital surveillance for ILI and SARI | |
| | | | Preparedness of Medical counter measures (Theraputic, Diagnostics and Vaccines, stockpiles of PPEs, disinfectants and essential supplie | |
| | | | Earmark facilities and spaces for temporary field hospital | |
| | | | Reinforce infection control measures | |
| | | To conduct risk communication and community engagement (RCCE) | Strengthen Awarness activities | Health Education Bureau |

| Operational stage: Respond | | | | |
|---|---|---|---|---|
| | Operational period | Objectives | Actions | Actors |
| Get ready and contain. | Emergence or Introduction: single case or very limited number of cases in the country clusters are identified | 1. To continue containment measure | Activation of Committees and actions from Operational stage Prevent and Prepare | National Advisory Committee (NAC), National Multi-sectoral Coordination Committee (NMTF), National Technical Committee (NTC), |
| | | To monitor epidemiological pattern of case(s) | 1. Ensure detection and management of cases through RRT | PHEOC, NRRT |
| | | 2. To encourage home-based management | 2. Ensure follow up and contact tracing | |
| | | 3. To protect caregivers | 3. Implement public health measures including quarantine and isolation | CDC, DGHS |
| | | To prevent | | |

| | | | | |
|---|---|---|---|---|
| | | nosocomial infection | | |
| | | | 4. Establish and strengthen networking of healthcare facilities including laboratories | CDC, DGHS |
| | | | 5. Prepare laboratories for surge capacity | Director (Hospital and Clinics) |
| | | | 6. | IEDCR, NILMRC, icddrb |
| | | | | |
| | | | 7. Risk Communication and Community Engagement | NRRT; |
| | | | 8. Maintain triage during management of ILI | Director (Hospital and Clinics), DGHS |
| | | | 9. Select and prepare hospital for management of severe cases at national, district and upazila levels | |
| | | | Strengthen infection control in the hospital, laboratories, and community | |

| | | | | |
|---|---|---|---|---|
| | | | 1. Reactivate multi-sectoral committees of district and upazila | NMTF |
| | | | 2. Reassess and replenish surge capacity for patient care, diagnostics and essential services | NMTF |
| | | | 3. Recruit, train and engage volunteers if needed | NMTF<br><br>NTC (Human) |
| Control and Mitigate | Sustained community transmission and Disseminated community transmission | 1. To shift from containment to mitigation phase | | NMTF<br>NTC (Human)<br>CDC, DGHS; Director Hospital and Clinic |
| | | 2. To reduce morbidity and mortality | 1. Establish makeshift hospital and sample collection facilities if necessary | |
| | | 3. To increase surge capacity for management | 2. Reinforce infection control measures | |
| | | 4. To ensure | 3. Take measures for ensuring | CDC, DGHS; Director Hospital and Clinic |

| | | | | |
|---|---|---|---|---|
| | | essential services | essential services | CDC, DGHS; Health Education Bureau; IEDCR; Development partner |
| | | 5. To reduce panic and stress | 4. Take various measures for reducing panic and stress through public health communication and community engagement | CDC, DGHS; Director Hospital and Clinic<br>CDC, DGHS; Health Education Bureau; IEDCR; Development partner<br>IEDCR, icddrb |
| | | 1. To assess the evolving situation | 5. Continue hospital surveillance for ILI and SARI | CDC, DGHS; Director Hospital and Clinic<br>CDC, DGHS; Health Education Bureau; IEDCR; Development partner<br>IEDCR, icddrb<br>CDC, DGHS; Director Hospital and Clinic |
| | | 2. Continue management of the remaining patients | 6. Maintain routine health care service | |
| | | 3. To continue surveillance for ILI and SARI | Remain alert against next wave | PHEOC |

| Operational stage: Recovery | | | | |
|---|---|---|---|---|
| | Operational period | Objectives | Actions | Actors |
| | Stabilized situation: Scale down and sustain. | To document and archive the experience of pandemic | Record all relevant experience of the pandemic period for future reference | NTC (Human) |
| | | To initiate measures to return to normal function of healthcare system | Resume usual work at the health care facilities | CDC, DGHS; Director Hospital and Clinic; Director PHC |

| | | | | |
|---|---|---|---|---|
| | | | Withdraw of Makeshift health care facilities | NTC (Human) |

**Case Definition of Pandemic Respiratory Pathogens**

[As per latest scientific evidence]

Screening at points of entry

Screening is being done for detection of suspected case(s) of Respiratory Pathogens in 30(land port 24, International Airport 3, International Sea port 3) points of entry including air, sea and land ports. It is started following receipt of information of spread from the affected countries through travellers.

ILI and SARI surveillance

The community and hospital-based ILI and SARI surveillance is being continued during pandemic in one community and selected hospitals.

**Strengthening of Event Based Surveillance**

Event based surveillance has been enhanced and will be continued. Rapid response teams (RRT) of national, district and upazila are responsible for conducting event based surveillance.

**Assumptions**

Decisions about the interventions that should be used during a pandemic are based on the following assumptions:

- Communities will be affected simultaneously.
- Pandemic may occur in waves for up to 12-24 months.
- Full-fledged hospital facilities and all healthcare providers may not be available
- Supply of antiviral, vaccine, and other logistics may be hampered.
- Isolation, quarantine, and social distancing (e.g., school closings, cancellations of public events) may have to be imposed.
- Some residents will be unable/unwilling to comply with isolation.

- Risk communication will be important.
- Its impact on specific disadvantaged subpopulations (e.g., the FDMN population, ethnic and marginalized population)
- Socio-economic disruption may occur.
- Panic situation may be created.

**Actions to strengthen coordination:**

1. Review existing policy, SOPs, legal and normative instruments to identify gaps for further improvements for effective respiratory pathogen pandemic preparedness and response.
2. Develop and/or Update SOPs, policy, legal and normative instruments policies based on identified gaps.
3. Aware and sensitize relevant stakeholders on the updated legal and normative instruments for timely and effective implementation of measures at the time of an emergency.
4. Operationalize different activities engaging multiple stakeholders at different levels for data sharing and decision making regarding medical countermeasures (such as vaccines and therapeutics), and public health and social measures (such as quarantine, educational institute closures and contact tracing or others, if any).
5. Based on lessons learnt during COVID 19 pandemics, responsible actors for different aspects of the response including the role of political leadership will be identified. Dedicated focal points (national pandemic coordinators) will be appointed having a mandate to drive whole-of-government and multi-level coordination for pandemic preparedness and response. The public health leadership will be empowered by heads of state to act and lead health-related incident management structures during the pandemic period.

6. Engage with neighbour countries and international entities on preparedness planning through cross sharing experiences and identifying opportunities to strengthen regional or global cooperation.

7. Conduct a landscape analysis of capabilities and capacities, as well as mapping of key national/subnational actors, partners, and stakeholders to identify who should be involved in the preparedness planning process. Relevant national bodies, sub-national stakeholders (e.g., community and faith-based leaders), donors, multilateral agencies, and other partners will participate in the preparedness planning process during a Pandemic.

8. Reviews of national capacities and learning from exercises such as Joint External Evaluations to prepare checklists, joint risk assessments and simulation exercises by engaging the multi-level and multi-sector stakeholders during respiratory pandemic preparedness planning.

9. Other sectors (e.g. transport, local government education, law-enforcement, food supply chains, and other critical infrastructure needs.) will be encouraged to develop sector specific contingency plans that align with the national respiratory pandemic preparedness plans.

10. Plan for establishing a National Contingency fund with sustainable financing resources for preparedness, prevent and mitigate the future Pandemics through multi-sectoral coordination. Ensure mechanism of rapid release and distribution of funds during emergencies.

# Part E: Actions during each operational stage

**Table : PREVENT & PREPARE STAGE (Inter Pandemic)**

| Component | Activities | Action Point | Responsible Agencies/Sector | Partner agency/institute | Timeline/Frequency | Output |
|---|---|---|---|---|---|---|
| Emergency Coordination | Coordination of among One health Technical Committee and sectoral National Technical Committees (NTC) | Arrangement of OH-TC meetings | One health secretariate | DGHS, DLS, IEDCR, BLRI; DAE; FD; icddrb, OHS; WHO, FAO | Once yearly | Meeting |
| | | Arrangement of sectoral NTC | Disease Control, IEDCR; DLS | BLRI; DAE; FD; icddrb, OHS; WHO, FAO | Twice a year | Meeting |
| | Coordinate with relavant Ministries | Arrangement of meetings with relavant ministries | MoHFW | Relavant agencies/institutes | When necessary | Meeting |
| | Facilitate tabletop simulation exercise countrywide with relevant stakeholders (if necessary) | Tabletop exercise | Disease Control | DLS, IEDCR, BLRI; DAE; FD; icddrb, OHS; WHO, FAO | Once in two year | Tabletop excercise |
| | Capacity development of Public health emergency operation | Training of personnel of PHEOC | IEDCR | Disease Control, MIS, DGHS; OHS; WHO; US-CDC | Once a year | Conducted training |

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| | Centre (PHEOC) | Develop, Review and Update of protocol & SOPs | IEDCR | Disease Control, MIS, DGHS; OHS; WHO; US-CDC | When necessary | Reviewed & updated Protocol & SOPs |
| | Incident Management System (IMS) from national to grassroots level | Development of IMS guideline | Disease Control and IEDCR | MIS, DGHS; DLS; OHS; WHO; US-CDC | 2024 | IMS guideline |
| Collaborative Surveillance | Establishment of Integrated surveillance platform for Respiratory pathogens | 1. protocol development, 2. Capacity building, 3. Laboratory networking including private laboratories, 4. Sample collection and testing | IEDCR, Epi unit (DLS); FD | IEDCR, DLS, CDIL, BLRI, Disease control, NILMRC, DLS, BLRI; BFD, DOE; IFRC, OH secretariat; WHO, FAO, icddrb, USCDC | 6/1/2024 | |
| | Inter-sectoral data sharing through One Health Secretariat (OHS) | Strengthening of Onehealth data sharing dashboard. Integration of IEDCR web and BAHIS software to One Health Dashboard; development of data sharing software for FD | Onehealth secretariet, IEDCR, Epi unit (DLS); FD | Epi unit (DLS), BLRI; BFD, DOE; NILMRC, MIS, Disease Control; icddrb, WHO, FAO, | Dec-24 | |

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| | Development/Expansion of laboratory capacity for pathogen/genomic surveillance up to regional/divisional level (infrastructure, HR, Facilities, equipments) | 1. Strengthening laboratory capacity at central level (CDIL, BLRI, IEDCR); 2. Establishment/strengthening and capacity building at regional/divisional lab, 3. Establishment of laboratory at FD and capacity building. 4. Recruitement of necessary manpower, 5. training for HR capaciity building, 6. Ensure instrumental facilities at all level. 7. Ensure supply of reagents and consumables. | DGHS, DLS, BLRI, FD | IEDCR, NILMRC, IPH, USCDC, DLS, icddrb, WHO, FAO, WCS, IUCN | Jun-25 | |
| | Prepardness for Community Surveillance | 1. Devlopment of community surveillance guideline and SOP 2. Trial on community surveillance and fine tuning of the guideline and SOPs for community surveillance | IEDCR | Disease control, MIS of DGHS CDIL, Epi Unit of DLS, | | |

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| | Introduction of Artificial Intelligence (AI) for Big Data Management | 1. Hiring consuting farms and capacity building for intruduction and management of Artificial intelligence for big data 2. Data storage facility development | IEDCR, Epi unit of DLS | MIS, P&R, Disease control, NIPSOM, icddrb private hospital, DGHS; BAHIS, DLS, Ministry of Sience and Technology, BFD | | Dec-25 |
| Community Protection | Continuation and upscaling of Public health education(social and behavioural change) for prevention from respiratory pathogens | Identification and recruitment of Public health education personnel upto upazilla level | MoHFW(Disease Control, DGHS, IEDCR,Bureau of Health Education) | MoEdu(Primary & Secondary), MoFL(DLS); MoEFCC(BFD), WHO, Unicef, BDRCS & other relevant agencies | Identified and recruited | 2024-2025 |
| | | Development of guidelines and SOPs | MoHFW(Disease Control, DGHS, IEDCR,Bureau of Health Education) | MoEdu(Primary & Secondary), MoFL(DLS); MoEFCC,BFD, WHO, Unicef, BDRCS & other relevant agencies | Developed | 2025 |
| | | Training module prepare and training of public health personnel (multimodal) | MoHFW(Disease Control, DGHS, IEDCR,Bureau of Health Education) | MoEdu(Primary & Secondary), MoFL(DLS); MoEFCC,BFD, WHO, Unicef, BDRCS & other relevant agencies | Prepared | 2026 |

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| | | Development of public health messages (multimodal) | MoHFW(Disease Control, DGHS, IEDCR,Bureau of Health Education) | MoEdu(Primary & Secondary), MoFL(DLS); MoEFCC,BFD, WHO, Unicef, BDRCS & other relevant agencies | Developed | 2026 |
| | | Periodical tabletop exercise and simulation exercise target community | MoHFW(Disease Control, DGHS, IEDCR,Bureau of Health Education) | MoEdu(Primary & Secondary), MoFL(DLS); MoEFCC,BFD, WHO, Unicef, BDRCS & other relevant agencies | Exercise conducted | 2026-2027 |
| | Multi-sectoral involvement in Risk communication and community engagement | Development of Quarantine and Isolation guidelines and SOPs | MoHFW | DGHS(Disease Control,IEDCR, Bureau of Health Education), MoFL; MoLGRD, MoCHTA WHO, FAO, Unicef, BDRCS & other relavent agencies including civil society and professional bodies | Developed | 2024-2025 |

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| | | Designation of facilities for Quarantine and Isolation (Govt. School, college at district and Upazila community) at appropriate places (Preferably near Hospitals) | MoHFW | Cabinet Division,DGHS(Disease Control, IEDCR, Hospital and Clinics,), MoPA, MoLGRD, MoCHTA, MoCAT, MoS, PHC, CAAB, Port Authority, BDRCS | Designated | 2024-2025 |
| | | Designation of Quarantine facility for Health service provider | MoHFW | DGHS(Disease Control,IEDCR), MoPA, MoLGRD, MoCHTA WHO, Unicef, | Designated | 2024-2025 |
| Clinical Care | Identification and training of the relevant health care personnel | | DGHS | Director Hospitals and Clinics, Disease Control, PHC, DGHS; DGNM, DGME; WHO | | |

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| | Provision of Health Care service delivery, Preparation of health care facility down to upazilla level for Medical counter measures ( Diagnostics, therapeutics and Vaccines & others) | 1. Development of SOP for service delevery 2. renovation of designated hospital/units for health care survice delivery, 3. supply of rapid diagnostic facilities down to the Upazilla level hospitals, 4. supply of vaccines, therapeutics and logistics | MoHFW | Director Hospital & Clinics, Disease Control, Primary Health Care, IEDCR, DGHS; EPI unit, DLS | | |
| | Stockpile of all necessary equipments and accessories, (including medical supplies and PPEs for use during activation), | Procurement of all necessary equipments and accessories, (including medical supplies and PPEs for use during activation), | MoHFW; | Disease Control, , DGHS; Hospitals and Clinics; IEDCR, P&R, DGHS, WHO; | | |
| | Ensure the IPC facility and practice in health care facilities and laboratories | 1. Development of IPC materials. 2. Development of protocols. 3. Dissemination of protocols among the clinicians and health service providers. 4. Monitoring of Practice. | Disease Control | Director Hospitals and Clinics, IEDCR, WHO, FAO, icddrb, WOAH | | |

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| | • Development of Good Farm/Animal husbandry Practice guideline | Finalization (approval) of guideline | MoFL | DLS, CDIL, FAO, BFD, | Approval by MoFLCC | 2024 |
| Access to countermeasures | • Development of SOPs for animal trade, transport and slaughter of live animal | Formation | MoFL, DLS | CDIL, FAO, BFD, | Draft SOP | 2025 |
| | | Approval | MoFL, DLS | CDIL, FAO, BFD, | Approval by MoFLCC/DLS | 2026 |
| | | Establishment of functional animal quarinetine station at POE (Land, sea and air) | MoFL, DLS | CDIL, FAO, BFD, | 70% functional (logistic and HR) of exsisting quarinetine station | 2030 |
| | | Solid and liquid waste management SOPs for Live animal market and slaughter house | MoFL, DLS | LGRD, CDIL, FAO, BFD, | Approval by MoFLCC/DLS/LGRD | 2028 |

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| | Improvements of infrastructures in live animal markets and slaughter places, biosafety and biosecurity, waste management | | LGRD | DLS, MoEFCC, CDIL, FAO, | Update of city corporation market operational guideline | 2030 |
| | Establishment and operationalization of hyginic saughter house at division, district, upazilla and city corporation level | Establishment of hyginic slaughtering slab at wet market at upazilla level | LGRD, DLS, | DGHS, MoEFCC, CDIL, FAO, | 30% upazilla with hyginic slaughter slab | 2026 |
| | | Establishment of hyginic slaughtering house at district level | LGRD | DLS,DGHS, MoEFCC, CDIL, FAO, | 20% district with hyginic slaughter house | 2026 |
| | | Establishment of hyginic slaughtering houset at City corporation level | LGRD | DLS, DGHS, MoEFCC, CDIL, FAO, | 20% city corporation with hyginic slaughter house | 2030 |

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| | | Ensuring logistic and HR at slaughter houses at district and city corporation (Divisional) | LGRD | DLS, DGHS, MoEFCC, CDIL, FAO, | Established slaughter house will be equiped with proper logistics and expert HR | 2030 |
| | | Training of slaughter house workers and vendors of live animal market on biosafety & biosecurity and hygienic practices | LGRD, MoFL(DLS) | DGHS, MoEFCC, CDIL, FAO, | Well trained HR at established slaughter houses | 2030 |
| | Restriction of movement in reported outbreak area, quarantine and isolation | | MoFL, DLS, BGB & Law enforcing agencies | CDIL,BLRI, DGHS(Disease control, IEDCR) FAO, | Outbreak containment | Throughout the interpandemic phase |
| | Control illegal animal hunting and trading | | MoEFCC, | DLS, BFD, Custom, Law enforcement agencies | | Throughout the interpandemic phase |

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| | Identification of roles and responsibilities for liaising with national and/or international partners to ensure sustainable access to countermeasures. | | MoHFW | Disease Control DGHS, MoEFCC, MoFL, MoFA, P&R, DGHS, DLS, BFD, FAO, WHO, | | Throughout the interpandemic phase |
| | Strengthened population-based services for immunization and other public health measures. | Human Health | MoHFW | EPI, MNC&AH, MoLGRD, MoCHTA, Disease Control, PHC, MNCH, DGHS; WHO; UNICEF, BDRCS | EPI target achieved | Throughout the interpandemic phase |
| | | Animal Health | MoFL | DLS, DoEFCC, FAO | Vaccination target achieved | Throughout the interpandemic phase |

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| | Stockpile of logistics (PPE, Antiviral drug etc) | | MoHFW | DGHS(Disease control, IEDCR), CMSD, Hospitals and Clinics | Yearly ensuring Stockpile for preparedness of PHEIC | Throughout the interpandemic phase |

**Table: Emergence or Introduction (Pandemic)**

| Component | Activity | Action Point | Responsible(s)/Agencies/institute | Partner agency/institute | Timeline | Output |
|---|---|---|---|---|---|---|
| Emergency Co-ordination | Situation analysis | Activate Emergency Preparedness Technical Committee (EPTC) | Disease Control, IEDCR | P&R MIS, DGHS; DLS and all relevant agencies under GOB & Non-government sector | National decision following declaration of PHEIC or pandemic situation by WHO | Meetings (EPTC) |
| | | Report preparation from the assessment/ analysis of Surveillance (Epi and Lab data) | Disease Control, IEDCR | MIS, DGHS; NIPSOM, DLS, FD, icddrb, EHAWHO, FAO | | |
| | | Analysis of Global and regional situation of pandemic potential disease | Disease Control, IEDCR | MIS, DGHS; NIPSOM, DLS, FD, icddrb, EHAWHO, FAO | | Reports |

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| | | Assessment of National capacity for Pandemic response | Disease Control, IEDCR | MIS, DGHS; NIPSOM, DLS, FD, icddrb, EHAWHO, FAO | | Reports |
| | | Sharing of disease surveillance and outbreak data | Disease Control, IEDCR | MIS, DGHS; NIPSOM, DLS, FD, icddrb, EHAWHO, FAO | | Report sharing |
| | Review and update the action plan according to the situation analysis to accommodate any recommandatio | Gap analysis of the existed Plan | Disease Control; PMR; IEDCR | OHS, DLS, BFD, WHO, USAID, US-CDC and other stakeholders | National decision following declaration of PHEIC or pandemic situation by WHO | Gap identificatio n |

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| | n for disease specific plan | Review and Update of the document | Disease Control; PMR; IEDCR | OHS, DLS, BFD, WHO, USAID, US-CDC and other stakeholders | | Updated plan |
| | | Approval from NMTF of the document | MoHFW | OHS, DLS, BFD, WHO, USAID, US-CDC and other stakeholders | | Approved Plan |
| | | Activation and accelaration of activities of revised Plan | Disease Control; PMR; IEDCR | Relavant stakeholders (CMSD, Hospitals & Clinics, DLS, BFD, WHO etc) | | Implementation of Plan |

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| | Response to the detected Pandemic potential respiratory pathogens | Activate and organize public health emergency operation Centre (PHEOC) | Diesease Control; IEDCR | Hospitals and Clinics, CMSD, PHC, OHS, DLS, BFD and other relavant stakeholders | National decision following declaration of PHEIC or pandemic situation by WHO | |
| | | Ensure participation of the relevant ministries and departments/agencies | Cabinet division | Hospitals and Clinics, CMSD, PHC, OHS, DLS, BFD and other relavant stakeholders | | |
| | | Generation and sharing of situation report (SitRep) | Disease Control, MIS; IEDCR | Hospitals and Clinics, PHC OHS, DLS, BFD and relavant stakeholders | | |

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| | | Human resource mobilization | Director Administration, DGHS; | Hospitals and Clinics, PHC OHS, DLS, BFD and relavant stakeholders | | |
| | | Logistic resource mobilization | Disease Control | CBHC, IHSM, UHC; CMSD, PHC and other relavant stake holders | | |
| | Activation & Strengthen of Incident Management System (IMS) at national and subnational level | Functioning of the IMS following the Guideline | Director Hospitals & Clinics | MIS, CMSD, Health Edu burau, Div Dir, Civil surgeons, PHC, MNCH, OHS, WHO and other stakeholders | National decision following declaration of PHEIC or pandemic situation by WHO | Functioning IMS |

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| | | Recruitment and deployment of Human Resources | Director Administration, Disease Control | IEDCR, MIS, CMSD, Health Edu burau, Div Dir, Civil surgeons, P&R, Hospital & Clinics, PHC, DGHS, MNCH, OHS, WHO and other stakeholders | | |
| | | Capacity building of the IMS human resources | Disease Control | IEDCR, MIS, CMSD, Health Edu burau, Div Dir, Civil surgeons, P&R, Hospital & Clinics, PHC, DGHS, MNCH, OHS, WHO and other stakeholders | | |
| | | Resource alocation and mobilization | Director Administration, Disease Control | IEDCR, MIS, CMSD, Health Edu burau, Div Dir, Civil surgeons, P&R, Hospital & Clinics, PHC, DGHS, MNCH, OHS, WHO, other Dev. Partners and | | |

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| | | | | other stakeholders | | |
| | Coordination and strengthening of existing surveillance and outbreak response | Coordination of surveillance system among Human, Animal health and wildlife (Intra-sectoral and intersectoral) | IEDCR; DLS; BFD, | OHS, MIS, DG-PMR; BLRI; EHA, icddrb; WHO, other Dev. Partners and other stakeholders | National decision following declaration of PHEIC or pandemic situation by WHO | Enhancement of surveillance activity |
| | | Sharing of disease surveillance and outbreak data | IEDCR; DLS; BFD | OHS, Disease Control; MIS, DG PMR; BLRI; EHA, icddrb; IHR; WHO, other Dev. Partners and other stakeholders | | |

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| | Scale up health care system surge capacities | Immediate recruitment and deployment | DGHS | IEDCR; Disease Control,MIS, P&R, Hospital and Clinics, Primary Health care, WHO and other stakeholders | Through out Pandemic period | Scaled up health care system |
| | | Capacity building of the health care system for surge management | DGHS | Relavant stakeholders | | |
| | | Strengthening of Database management system | MIS | IEDCR; Disease Control, P&R, Hospital and Clinics, Primary Health care, DLS, BFD WHO and other stakeholders | | |
| | | Resource alocation and mobilization | DGHS | Relavant stakeholders | | |

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| | Engage other sectors to activate their own measures | Activation of all relavant committees following National Plan | Cabinate divition | | National decision following declaration of PHEIC or pandemic situation by WHO | Meetings of relavant committees |
| | | Other sector relavant stakeholder mapping and identify the line of communication | MIS | Relavant stakeholders | | |
| | Prepare and distribute health alert massages at point of entry (POE) among incoming and outgoing travellers. | Preparation of health alert message for POE | Disease Control; IEDCR | Life style and Health Education and Promotion; CAAB, Port Auhtority; RCCE platform; | National decision following declaration of PHEIC or pandemic situation by WHO | |
| | | Distribution of health alert message for POE | Disease Control | CAAB, PoE; RCCE platform; LGRD | | |
| | Preparation and Distribution of health cards among incoming travellers at point of entry (PoE) | Preparation of health Cards | Disease Control; IEDCR | Life style and Health Education and Promotion; CAAB, PoE; RCCE platform; | National decision following declaration of PHEIC or pandemic situation by WHO | |
| | | Distribution of health Cards | Disease Control | CAAB, PoE; RCCE platform; LGRD | | |

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| | Activate/alert "Crisis Management Team" at respective PoE | Orientation of the team on pandemic situation | Disease Control | Life style and Health Education and Promotion; MIS; CAAB, Port Auhtority; RCCE platform; | | |
| | | Defining of Specific tasks | Disease Control | Relavant stakeholders | □ | |
| | | Deployment of Human resources | Disease Control | Relavant stakeholders | □ | |
| | | Logistic resource alocation and mobilization | Disease Control | Relavant stakeholders | □ | |
| | Activation of "Health Screening Center" at respective PoE | Deployment of Human resources | Disease Control | Life style and Health Education and Promotion; MIS; CAAB, Port Auhtority; RCCE platform; | □ | |
| | | Logistic resource alocation and mobilization | Disease Control | Life style and Health Education and Promotion; MIS; CAAB, Port Auhtority; RCCE platform; | □ | |
| | Conduct training of technical personnel to scale up the services during pandemic | Training of Health personnel | Disease Control | IEDCR, CAAB, Port authorities, RCCE platform, ABSAC, WHO and other relavant stakeholders | | |

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| | situation at PoE | Training of non-health personnel | Disease Control | IEDCR, CAAB, Port authorities, RCCE platform, ABSAC, WHO and other relavant stakeholders | | |
| | Coordination for Quarantine and Isolation center near PoE | Coordination meeting for identification of Quarantine and Isolation centers near PoE | Disease Control | IEDCR, CAAB, Port authorities, ABSAC, LGRD and other relavant stakeholders | | |
| | | Making Quarantine and Isolation centers operational | Disease Control | IEDCR, CAAB, Port authorities, ABSAC, LGRD and other relavant stakeholders | | |
| | Strengthen capacities in the healthcare sector at all levels, stockpiles, use and distribution of medical countermeasures | Need assessment existing capacities | Disease Control; MIS | Relavant stackholders | National decision following declaration of PHEIC or pandemic situation by WHO | |
| | | Need assessment existing stockpile inventory | Director Hospitals & Clinics; MIS | UzHC; CMSD, Relavant stackholders | | |
| | | Plan for emergency supply chain management | Director Hospitals & Clinics; MIS | UzHC; CMSD, Relavant stackholders | | |

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| | Strengthen two-way communication channels for effective information exchange and crisis management | operationalize the two-way communication | MIS | Relevant stakeholders | | |
| | Organize link between public health and security authorities | Assign focal person for Communication | DGHS | MoHome Affairs, MoPA; Bangladesh Police, BGB, Ansar & VDP; Armed forces division | | |
| | | Establish the communication link | DGHS | MoHome Affairs, MoPA; Bangladesh Police, BGB, Ansar & VDP; Armed forces division | | |
| | Emergency Risk management financing plan | Development of Financial proposal for Emergency Risk management | Director Finance | Disease Control, Planning & Research and relevant stakeholders | | |

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| Collaborative Surveillance | Enhancement of Integrated surveillance platform for Respiratory pathogens | implement developed surveillance protocol , human resource Capacities and Laboratory network for surveillance | MoHFW | IEDCR, DGHS, CDIL & epi unit of DLS, BLRI, BFD, icddrb, WHO, FAO, | | |
| | Strengthening of laboratory capacity | 1. Deputation/recruitement of more HR for sample collection and laboratory testing, 2. Training of HR for lab activities. 3. ensure Increased supply of necessary reagents, equipements and logistics; 4. Development of alternative HR to support emergency situation. 5. Development and implementation of SOP for sample handling, testing and waste disposal and also report writing. | IEDCR | Disease Control, DLS, BFD, NILMRC icddrb, WHO, FAO,IEDCR, CDIL, BLRI | | |
| | Inter-sectoral data sharing through One Health Secretariat (OHS) | 1. capacity building for immidiate serveillance data sharing at different sector | MoHFW | OHS, Disease Control, P&R, MIS, DGHS, DLS, BFD, BLRI, WHO, FAO | | |

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| | Enhance collaboration between public and private sectors for surveillance and laboratory networking | 1. Activation of the lab network for testing and data sharing. 2. dissimination of developed SOP for sample collection, respiratory pathogen testing, handling and waste disposal 3. mechanism development for data sharing among the private and Govt. institutes. 4. capacity building of private lab for rapid data sharing, | MoHFW | Relevent Private Hospitals , Clinics, Laboratories and other sectors | | |
| | Collaboration assistance with WHO and other member states as per article 44 of IHR 2005 | IEDCR/Disease control, DGHS will take initiatives for collaboration assistance. | MoHFW | IEDCR(Focal Institute) and all other relavent departments including WHO, IHR focal point (Director Disease control) | | |

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| | Establishment of molecular testing and genomic charecterization & evolution of respiratory pathogens | 1. activation and implementation of the developped SOP for respiratory pathogen testing upto the regional level laboratory, And also to the private laboratories 2. dissimination of rapid test facilities upto the upazilla level hospital laboratory. 3. Ensure increased supply of reagents and logistics for molecular testing of the pathogen 4. Installation of NGS (Next generation sequence) facilities to the regional laboratories along with necessary reagents for genome analysis from the clinical samples. | MoHFW | IEDCR, DGHS; CDIL, DLS; BLRI; icddrb, WHO, FAO, EHA, & other relavent technical partners, | | |
| | Establishment of Community Surveillance | 1. Activation of Community surveillance guideline and SOPs 2. implementation and reporting on community surveillance. | IEDCR, DGHS | Disease control, Director Hospital and Clinics, primary Health care, CBHC, DGHS and other relavent departments | | |

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| | establish diagnostic facilities at peripheral level of health system | 1. Procurement and supply of rapid test kits and capacity building through training 2. dissemination of SOP for safe handling, sample collection, waste disposal and reporting | Disease control, Hospital and clinics | IEDCR, DGHS; NILMR; WHO; | | |
| | Establishment of network with WHO collaboration centres (WCC) for Respiratory pathogen | | MoHFW, MoFL, MoEFCC, | IEDCR, DGHS, DLS, BFD, icddrb, WHO, FAO, EHA, & other relavent technical partners, | | |
| Community Protection Absent | Develop & practicing behavioural change communication (BCC)/ Advocacy, Communicatio n and Social Mobilization (ACSM) | 1. Development of Behavioural communication (BCC) materials. 2. involvment of electronic and print media for social communication. 3. Dissimination of BCC materials 4. Sensitization and engagement of community people through awareness program | DGHS, MoHFW | Health Education Bureau, Mo Information & Broadcast; MoRA, DGHS, DLS, UNICEF, And members of RCCE/RCCM; Islamic foundation; | | |

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| | Update professionals and officials with current information on respiratory pathogens situation, spread and risks to human | 1. Situation Analysis 2.Workshop/seminar/symposium for dissimination of current information. 3. Simmulation exercise | Disease Control | Disease Control, Health Education Bureau, IEDCR Hospitals and Clinics-DGHS, and other relavent sectors | | |
| | Ensure rapid communication among different tiers of government and NGOs/private organizations | 1. Relavant stakeholders identification 2. Establish four way (EPI, LAB) communication linkage for data sharing and response. 3. consultative workshop/meeting/virtul workshop for sensitization and data sharing and risk communication | MoHFW, All relavent ministries | DGHS,CDC, IEDCR other relavent agencies | | |

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| Community Protection | Review and update communication strategy | 1. Eview Analysis study | MoHFW, All relevant ministries | Diesease Control, IEDCR, Health Education Bureau, DGHS, Icddrb, DLS, UNICEF, And members of RCCE/RCCM, EcoHealth Alliance (EHA) | | |
| Clinical Care | Motivation and Sensitization of Health care personnel on public health emergency | 1. Care Analysis study | MoHFW, All relevant ministries | Disease control, Director Hospital and Clinics, DGHS, DGME, DGMS, DGNS | | |
| | Develop a mechanism for timely and adequate deployment of Human Resource during surge management | 1. Of Analysis study | MoHFW, All relevant ministries | Disease control, Director Hospital and Clinics, DGHS, DGME, DGMS, DGNS | | |
| | Prepare health care facility down to upazilla level for Medical counter measures | 1. Measures Analysis study | MoHFW, All relevant ministries | Disease control, Director Hospital and Clinics, DGHS, DGME, DGMS, DGNS | | |

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| | (Including Diagnostics, therapeutics and Vaccines). | | | | | |
| | Develop SOP and Guideline on Communicatio n | 1. Develop Analysis study | MoHFW, All relevant ministries | Disease control, Director Hospital and Clinics, DGHS, DGME, DGMS, DGNS | | |
| | Training of Health care workers on Infodemic management | | MoHFW | Disease Control, IEDCR, BHE, DGHS | | |
| | Quarantine centre in the community | 1. Uarantine Anmoysis study | MoHFW, MoPA; MoLGRD; MoHA | Disease Control, IEDCR, PHC; Local Govt. Law Enforcing agengcies | | |
| | Isolation facilities in the community | 1. Solation Anmoysis study | MoHFW, MoPA; MoLGRD; MoHA | Disease Control, IEDCR, PHC Local Govt. Law Enforcing agengcies | | |
| | Preparation and dissemination of clinical management guidelines to all level health | | MoHFW | Disease Control, DGME, Professional Society/group | | |

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| | facilities | | | | | |
| | Research (including clinical trial) on severity of disease, transmission patterns, effectiveness of pharmaceutical and non-pharmaceutical countermeasures, etc. | 1. Pharmaceutical And Non-Pharmaceutical Countermeasures Analysis study 2.Workshop/seminar/symposium f d dissimination of severity of. 3. Simmulation exercise | MoHFW | IEDCR, Planing and Research, DGHS; DLS, DGME, icddrb, WHO, UNICEF, US-CDC | | |
| | Training of the relevant personnel following the Public health emergency Plan, guideline for clinical care | 1. Guideline Analysis and update 2. Train healthcare proffesionals. | Disease control, Director Hospital and Clinics | DGME, DGMS, DGNS, WHO, UNICEF, UNFPA, FAO,WOAH and others | | |

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|---|---|---|---|---|---|---|
| | Review and update of IPC guideline and implement of appropriate Infection prevention and control process practice | 1. Consultative workshops to review and update of IPC guideline 2. Develop SOP and implement IPC practice | Disease Control | IEDCR; WHO; DGME; icddrb; Primary Health care, Hospital and clinics unit, DGHS; Private clinics owner's association | | |
| | Isolation unit in the hospitals | 1. Review current status and need assesment. 2.Establish Isolation corner and Quarentine unit as required. | Director Hospital and Clinic unit, Disease Control, MoFinance; MoPlaning | DGME; DGNM; DGMS; | | |
| Access to Countermeasures | Strengthening and expansion of Laboratory network | Enhancemnet of diagnostic capacity Extending Coverage | MoHFW | DGHS, Hospital and Clinics Unit, DGHS; IEDCR; NILMR | Enhanced | Earlier part of the pandemic phase |
| | | Identification and recruitment of Public health work force for laboratories | MoHFW | DGHS, Hospital and Clinics Unit, DGHS; IEDCR; NILMR | Identified and recruited | Earlier part of the pandemic phase |

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| | | Stockpile of all necessary equipments and accessories including medical supplies and PPEs for use during emergency plan activation | MoHFW | DGHS, DGME, DGMS, DGNS, CMSD, Disease control, Hospital and Clinics | Stockpiled | Earlier part of the pandemic phase |
| | | Development and implementation of Strategy on sample collection and transportation from local site to district, regional and national laboratories | MoHFW | Disease control,IEDCR, Hospital and Clinics, DGHS, | Developed | |
| | | Training for laboratory personal | MoHFW | DGHS, Hospital and Clinics Unit, DGHS; IEDCR; NILMR | Trained | Earlier part of the pandemic phase |

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| | Implementation of Triage system at Hospitals | Increased capasity in OPD | MoHFW | Disease control,Hospital and Clinics, DGHS, DGME, DGMS, DGNM, | Increased | Earlier part of the pandemic phase |
| | | Maintanance of IPC protocol | MoHFW | Disease control,Hospital and Clinics, DGHS, DGME, DGMS, DGNM, | maintained | Earlier part of the pandemic phase |
| | | Establishedment of refarral system | MoHFW | Disease control,Hospital and Clinics, DGHS, DGME, DGMS, DGNM, | Established | Earlier part of the pandemic phase |
| | Strengthening of Special care unit(ICU, HDU, CCU, NICU, dialysis unit) | Increased capasity of Special care unit(ICU, HDU, CCU, NICU, dialysis unit) | MoHFW | Disease control,Hospital and Clinics, DGHS, DGME, DGMS, DGNM, | Strengthened | Earlier part of the pandemic phase |

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| | | Maintanance of IPC protocol | MoHFW | Disease control,Hospital and Clinics, DGHS, DGME, DGMS, DGNM, | Maintained | Earlier part of the pandemic phase |
| | | Training of medical personals | MoHFW | Disease control,Hospital and Clinics, DGHS, DGME, DGMS, DGNM, | Trained | Earlier part of the pandemic phase |
| | | Supply of emergency medical supply, treatment equipments | MoHFW | Disease control,Hospital and Clinics, DGHS, DGME, DGMS, DGNM, CMSD | Supplied | Earlier part of the pandemic phase |

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| | Liaising with national and/or international partners to ensure sustainable access to countermeasures | Regular communication with Global health agencies (WHO, USCDC, NIH etc) about evedance based prevention and control measures | PMO | DGHS, MoHFW, MoFL, MoF, MoFA & all relavent ministries, BDRS, WHO, FAO, UNICEF & other developmental partners | | Earlier part of the pandemic phase |
| | Development of deployment plan for vaccine and other countermeasures | | MoHFW,EPI, | DGHS, ADB; UNICEF, WHO, BDRC, BRAC | Deployed | Earlier part of the pandemic phase |
| | Conduct Research on access to counter measures | Vaccine development | MoHFW, | DGHS(PMR), DLS; MoFL, BMRC UNICEF, WHO, BDRC, BRAC, icddrb, BLRI and other relavent vaccine | Developed | Earlier part of the pandemic phase |

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| | | | | developmental agencies | | |
| | | Theraputics development | MoHFW, | DGHS(PMR), DLS; MoFL, BMRC UNICEF, WHO, BDRC, BRAC, icddrb, BLRI and other relavent vaccine developmental agencies | Developed | Earlier part of the pandemic phase |
| | | Diagnostics development | MoHFW, | DGHS(PMR), DLS; MoFL, BMRC UNICEF, WHO, BDRC, BRAC, icddrb, BLRI and other relavent vaccine developmental | Developed | Earlier part of the pandemic phase |

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| | | | | agencies | | |
| | Procurement and distribution of supplies and therapeutics | Vaccine supply | MoHFW | DGHS, DGDA BMRC,MoLGRD, CMSD WHO; Unicef; USAID; ADB | Supplied | Earlier part of the pandemic phase |
| | | Theraputics supply | MoHFW | DGHS, DGDA BMRC,MoLGRD, CMSD WHO; Unicef; USAID; ADB | Supplied | Earlier part of the pandemic phase |
| | | Diagnostics supply | MoHFW | DGHS, DGDA BMRC,MoLGRD, CMSD WHO; Unicef; USAID; ADB | Supplied | Earlier part of the pandemic phase |

**Table: Sustained Community transmission**

| Component | Activity | Action Point | Responsible Agnecies/institute | Partner agency/institute | Timeline | Output |
|---|---|---|---|---|---|---|
| Emergency Coordination | Situation analysis | weekly assessment of the community transmission | Disease Control; IEDCR; MIS | Hospital & Clinics Unit; DLS, icddrb, IPH; NILMRC; WHO and all relavant agencies under GOB | | |
| | | Data sharing with policy makers | Disease Control; IEDCR; MIS | Hospital & Clinics Unit; DLS, icddrb, IPH; NILMRC; WHO and all relavant agencies under GOB | | |
| | Review and update the action plan according to magnitude and extent of pandemic | Intra action review of the action plan | Disease Control; IEDCR; | MIS; OHS; DLS; BFD; PoE; CAAB; WHO, USAID, US-CDC and other | | |

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| | | | | stakeholders | | |
| | Containment Pandemic potential respiratory pathogens | | MoHFW,MoPA; MoFL; MoEFCC; AFD; MoFA; | DGHS, LGRD; DLS; BFD; relavant Technical partners and NGOs | | |
| | Activation of Incident Management System (IMS) from national to grassroots level. | | Cabinet Division, Prime Minister's Office, MoPA; MoHFW; MoHA; MoFL; AFD; MoFA; MoEFCC | DGHS,Disease Control; IEDCR; LGRD; Law enforcment agencies DLS, BFD, Banglades Customs; Immigration and passports | | |
| | Enhance surveillance and response | | MoHFW, MoFL, MoEFCC | DGHS,IEDCR; DLS; BLRI; a2i; icddrb and relavant technical partners | | |

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|---|---|---|---|---|---|---|
| | Scale up health care system capacities | | MoHFW, MoFinance; MoPlaning; MoLGRD | DGHS, Disease Control, Planing & Research, Hospitals and Clinics Section; DGDA, PHC, MNCH, LGRD | | |
| | Engage other sectors to activate their own measures | | Cabinet Division, Prime Minister's Office, All relavent ministries | DGHS, All relavant agencies | | |
| | Prepare and distribute health messages and health card at point of entry (POE) among incoming and outgoing travellers. | | MoHFW, MoFA, MoCAT, MoHA, MoShipping | Disease Control, DGHS, BHE, DGHS; CAAB; Immigration Police; BGB;Port authority; | | |
| | Activate/alert "Crisis Management Team" at respective PoE | | MoHFW, MoFA, MoCAT, MoHA, MoShipping | Disease Control, DGHS, DGHS; CAAB; Immigration Police; BGB;Port authority; | | |

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|---|---|---|---|---|---|---|
| | Activatation of "Health Screening Center" at respective PoE | | MoHFW, MoFA, MoCAT, MoHA, MoShipping | Disease Control, DGHS, CAAB; Immigration Police; BGB;Port authority; | | |
| | Conduct training of technical personnel to scale up the services during pandemic situation at PoE | | MoHFW, MoFA, MoCAT, MoHA, MoShipping | Disease Control, DGHS, IEDCR; CAAB; Immigration Police; BGB;Port authority; | | |
| | Coordination for Quarantine and Isolation center near PoE | | MoHFW, MoFA, MoCAT, MoHA, MoShipping; MoFL, MoEFCC | Disease Control, DGHS, DLS; BFD; Immigration Police; BGB;Port authority; | | |
| | Follow the relavant Standard operating procedures to ensure response actions. | | MoHFW, All relavant Ministry under GOB | | | |
| | Activate PHEOC in response mode and Ensure participation of the relevant ministries and departments/agencies | | MoHFW, All relavant Ministry under GOB | IEDCR, All relavant agencies | | |

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| | Initiation of response based on expected and available data and information | | MoHFW, All relavant Ministry under GOB | DGHS, All relavant agencies | | |
| | Strengthen & maintain two-way communication channels for effective information exchange and crisis management | | MoHFW, All relavant Ministry under GOB | DGHS, Disease Control, MIS, Hospital & Clinics Unit, DGHS and all relavant agencies under GOB | | |
| | Organize link between public health and security authorities | | MoHFW, PMO, MoHA, AFD, MoD | DGHS, Disease Control, IEDCR, NSI, Bangladesh Police, BGB, Bangladesh Ansar and other relavent security agencies | | |
| | Deployment of adequate human resources for emergency activities | | MoHFW, MoPlaning; MoLGRD; MoPA; MoFL; MoEFCC; MoCHTA (Ministry of Chottogram hill tracts Affairs) | DGHS, DGNM; DGME; DLS; BFD; LGIs | | |

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| Collaborative Surveillance | Enhancement of Integrated surveillance platform for Respiratory pathogens at hospital and community | 1. Expansion and continuation of surveillance for Human, Animal and wildlife and environment 2. Strengthening of laboratory capacity 3. Active data sharing | IEDCR (MoHFW), DLS, BFD | DGHS, DLS, BFD, DOE, icddrb, WHO, FAO, EHA & other relavent technical partners, | | |
| | Enhancment of laboratory capacity | | | NILMRC; IPH icddrb, WHO, FAO, USCDC, EHA, & other relavent technical partners, | | |
| | Continuation of Community Surveillance | | | DGHS, DLS, BFD, icddrb, WHO, FAO, EHA, & other relavent technical partners | | |
| | Contact tracing and collection of epidemiological data | 1. Train on contact tracing 2. collect epi data and samples | IEDCR | DGHS, icddrb, WHO & other relavent technical partners, | | |
| | Enhancement of genomic surveillance for respiratory pathogens | 1. Train HR on sequence analysis 2. Ensure support with necessary reagents, consumables and logistics | IEDCR | IEDCR, DGHS, CDIL, FDIL, BLRI, BFD, icddrb, WHO, | | |

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| | | | | FAO, EHA, & other relavent technical partners | | |
| | Conduct operational research for public health interventions | Develop research protocols and implement for the evaluation of intervention | IEDCR | IEDCR, DGHS, DLS, BLRI, BFD, icddrb, WHO, FAO, EHA, & other relavent technical partners | | |
| | Strengthening of laboratory capacity | | | | | |
| | Strengthening of laboratory diagnostic facilities at peripheral level of health system | | | | | |
| | Collaboration assistance with WHO and other member states as per article 44 of IHR 2005 | Data sharing and visualization(?) by WHO/WOAH | IHR focal point (Director Disease control) | IEDCR(Focal Institute) and all other relavent departments including WHO | | |

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| Community protection | Strengthening of Behavioural change communication (BCC)/ Advocacy, Communication and Social Mobilization (ACSM) for social and behavioural change | Conduct advocacy programme (multimodal) | MoHFW | Mo Information & Broadcast; MoRA, DGHS, DLS, UNICEF, And members of RCCE/RCCM; Islamic foundation; , Health Education Bureau | Conducted | From mid-pandemic till recovary phase |
| | | Conduct SBCC (Social and behavioral change) programme (multimodal) | MoHFW | Mo Information & Broadcast; MoRA, DGHS, DLS, UNICEF, And members of RCCE/RCCM; Islamic foundation; , Health Education Bureau | Conducted | From mid-pandemic till recovary phase |

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| Update professionals and officials with current information on respiratory pathogens situation, spread and risks to human | Conduction of trainings/workshop/seminar/orientation programme | MoHFW | Disease Control, DGHS, BHE, MoFL IEDCR Hospitals and Clinics-DGHS; DGNM; DGMS; DLS and other relavent sectors | Updated | From mid-pandemic till recovary phase |
| Strengthening of rapid and multimodal communication among different tiers of government and NGO/private | | MoHFW | Disease Control, DGHS, BHE; IEDCR Hospitals and Clinics-DGHS; DGNM; DGMS; Mo Information & Broadcast; MoRA Islamic foundation; DLS and other relavent technical partners | Strengthened | From mid-pandemic till recovary phase |
| Engagement of members of RCCE/RCCM | Review and update the action plan of RCCE and Risk communication message | MoHFW | Disease Control, DGHS, Health education bureau, DLS; BDRS; Unicef and other technical | Engaged | From mid-pandemic till recovary phase |

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| | | | | pertners | | |
| | Spokesperson designated to conduct regular communication with mass media | Identification and designation of specific spoke person at different tiers | MoHFW | DGHS, Disease Control, IEDCR, MIS, Planing & Research | Identified and designated | From mid-pandemic till recovary phase |
| | | Traning of the designated spokeperson | MoHFW | DGHS, Disease Control, IEDCR, MIS, Planing & Research | Trained | From mid-pandemic till recovary phase |
| | Infodemic managemnet | Strengthening epidemic intelligence management through amplification communication cycle will include situational awareness. | MoHFW | DGHS, BHE; IEDCR; Disease Control, DGHS;Mo Information & Broadcast; Islamic foundation; WHO; Unicef DLS and other relavent technical partners | Strengthened | From mid-pandemic till recovary phase |

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| | | Social listening and media monitoring:Explore and use community resources, such as hotlines, media resource centre and websites to respond to local questions | MoHFW | DGHS, BHE; IEDCR; Disease Control, DGHS;Mo Information & Broadcast; Islamic foundation; WHO; Unicef DLS and other relavent technical partners | Monitored | From mid-pandemic till recovary phase |
| | | Continuation of training and Refresher training of Health care workers on Infodemic management | MoHFW | Disease Control, DGHS, IEDCR, BHE, DGHS; | Trained | From mid-pandemic till recovary phase |
| | | Regular update of media and website (dashboard) as and when necessary | MoHFW | Disease Control, DGHS, IEDCR, BHE, DGHS; | Updated | From mid-pandemic till recovary phase |
| Clincal Care | Isolation facilities in the community | 1. Selection and declaration of isolation facilities 2. Deployment of HR 3. Supply of logistics | Disease Control | MoPA; MoLGRD; MoHA, IEDCR, PHC Local Govt. Law Enforcing agengcies | | |

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| | Review of clinical management guidelines for updating available to all staff in all healthcare facilities during a pandemic. | Workshops and meetings | Disease Control | DGME, DGHS,IEDCR, Professional Society/group | | |
| | Continue training on clinical management guidelines for staffs in all healthcare facilities during a pandemic. | Conduct training | Disease Control | DGME, DGHS, IEDCR, Professional Society/group | | |
| Access to counter measures | Maintanance of Isolation facilities in the community | Regular monitoring of the isolation facilities () | MoHFW | Disease Control, DGHS, IEDCR,MoPA; MoLGRD; MoHA PHC Local Govt. Law Enforcing agengcies | Maintained | From mid-pandemic till recovary phase |
| | | Regular medical follow-up and diet regulation | MoHFW | Disease Control, DGHS, IEDCR,MoPA; MoLGRD; MoHA PHC Local Govt. Law Enforcing agengcies | Monitored | From mid-pandemic till recovary phase |

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| | | Supply of medical logistics, equipments and trained HR | MoHFW | Disease Control, DGHS, IEDCR,MoPA; MoLGRD; MoHA PHC Local Govt. Law Enforcing agengcies | Supplied | From mid-pandemic till recovary phase |
| | Review, update and dissemination of clinical management guidelines and SOPs to all staff in all healthcare facilities during sustained community transmission | | MoHFW | DGHS, DGME, Professional Society/group | Reviewed and updated | From mid-pandemic till recovary phase |
| | Continuing training on clinical management guidelines for all staff in all healthcare facilities during a pandemic. | | MoHFW | Disease control, Hospital and Clinics, DGHS, DGME, DGMS, DGNM, All relavent ministries | Trained | From mid-pandemic till recovary phase |
| | Conduction of Research to identify severity of disease, transmission patterns, effectiveness of pharmaceutical and non-pharmaceutical countermeasures | | MoHFW | DGHS, MoFL; MoEFCC, DLS; BLRI; BFD; WHO; Unicef; icddrb; US-CDC | Researched and identified | From mid-pandemic till recovary phase |

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|---|---|---|---|---|---|---|
| | Continuation of Risk assesment | | MoHFW | DGHS, MoFL; MoEFCC, DLS; BLRI; BFD; WHO; Unicef; icddrb; US-CDC | Assessed | From mid-pandemic till recovary phase |
| | Strengthening of Special care unit(ICU, HDU, CCU, NICU, dialysis unit) | Review and strengthening of hospital bed, Oxygen supplies, High dependency Unit & ICU capacities (including HR) | MoHFW | Disease Control; MIS, PHC; Hospital & Clinics, UzHC-OP DGME, DGNM, MoFinance; MoPlaning | Reviewed | From mid-pandemic till recovary phase |
| | | Isolation unit in the hospitals | MoHFW | Disease Control; MIS, PHC; Hospital & Clinics, UzHC-OP DGME, DGNM, MoFinance; MoPlaning | Isolated | From mid-pandemic till recovary phase |
| | Strengthen and ensure biosafety & biosecurity in laboratories at all level | | MoHFW | Disease control, IEDCR, DGHS, Hospitals & Clinics unit, DGHS; DGME; MoFinance; MoPlaning WHO | Strengthened | From mid-pandemic till recovary phase |

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| | To create a network or platform to Communicate and information sharing with clinicians, healthcare professionals and healthcare services authorities on the clinical management of severe cases | | MoHFW | Disease Control, DGHS, Hospitals & Clinics unit, DGHS; DGME;MIS; PHC; DGMS; DGNM | Created | From mid-pandemic till recovary phase |
| | Research (including clinical trial) on severity of disease, transmission patterns, effectiveness of pharmaceutical and non-pharmaceutical countermeasures, etc. | Development of vaccine | MoHFW | IEDCR, Planing and Research, DGHS; DLS, DGME, icddrb, WHO, UNICEF, US-CDC | Developed | From mid-pandemic till recovary phase |
| | | Development of Therapeutics | MoHFW | IEDCR, Planing and Research, DGHS; DLS, DGME, icddrb, WHO, UNICEF, US-CDC | Developed | From mid-pandemic till recovary phase |
| | | Development of Diagnostics | MoHFW | IEDCR, Planing and Research, DGHS; DLS, DGME, icddrb, WHO, UNICEF, US-CDC | Developed | From mid-pandemic till recovary phase |

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| | Review and update of IPC guideline and implement of appropriate Infection prevention and control process practice | | MoHFW | Disease Control, DGHS, IEDCR; WHO; DGME; icddrb; Primary Health care, Hospital and clinics unit, DGHS; Private clinics owner's association, | reviewed | From mid-pandemic till recovary phase |
| | Training of the relevant personnel following the Public health emergency Plan, guideline for clinical care and IPC | | MoHFW | Disease control, Hospital and Clinics, DGHS, DGME, DGMS, DGNS, All relavent ministries | Trained | From mid-pandemic till recovary phase |
| | A network or platform for frequent and rapid exchange of information and experience among Hospitals and Laboratories | | MoHFW | Disease Control, DGHS, IEDCR; WHO; DGME; icddrb; Primary Health care, Hospital and clinics unit, DGHS; Private clinics owner's association, Professional associations; | | From mid-pandemic till recovary phase |

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| | Stockpile and distribution of all necessary equipment and accessories including medical supplies and PPEs for use during emergency plan activation upto upazila level | | MoHFW | Disease control, DGHS, DGME, DGMS, DGNS, CMSD Hospital and Clinics, All relavent ministries | stockpiled | From mid-pandemic till recovary phase |
| | Strengthening of the Triage system | | MoHFW | Disease control, Hospital and Clinics, DGHS, DGME, DGMS, DGNM, | Strengthened | From mid-pandemic till recovary phase |
| | Strengthening of critical care units (ICU, HDU) | | MoHFW | Disease control, Hospital and Clinics, DGHS, DGME, DGMS, DGNM, | | From mid-pandemic till recovary phase |
| | Liaising with national and/or international partners to ensure sustainable access to countermeasures | | PMO | DGHS, MoHFW, MoFL, MoF, MoFA & all relavent ministries, World Bank; ADB; BDRS, WHO, FAO, UNICEF & other | ensured | From mid-pandemic till recovary phase |

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| | | | | developmental partners | | |
| | Execution of deployment plan for vaccine and other countermeasures and update as and when required | | MoHFW, | EPI, DGHS, DGME; MoLGRD World Bank; ADB; UNICEF, WHO, BDRC, BRAC | deployed | From mid-pandemic till recovary phase |
| | Conduct Research on access to counter measures | | MoHFW, | DGHS, MoFL(DLS); UNICEF, WHO, BDRC, BRAC, icddrb; BLRI and other relavent vaccine developmental agencies | Researched report submitted | From mid-pandemic till recovary phase |

**Table: Recovery Stage**

| Component | Activity | Action Point | Responsible agencies/partner | Partner agency/institute | Timeline | Outline |
|---|---|---|---|---|---|---|
| Emergency coordination | Analysis, interpretation and recommendation from the data acquired during Pandemic period | Multisectoral workshop on Pandemic Preparedness Plan and way forward. Update of the current Pandemic Preparedness Plan according to the lesson learned. Periodical Sim Ex | MoHFW, MoICT; MoFL; MoEFCC | DGHS (Disease Control, MIS & IEDCR), DLS; BFD; a2i; WHO; Unicef; BDRCS; icddrb | Yearly | |
| | Phase wise withdrawl of deployed human resources for emergency activities | Turning back the deployed HR to their original working station. Planning for regular set up. | MoHFW, MoPlaning; MoLGRD; MoPA; MoFL; MoEFCC; MoCHTA (Ministry of Chottogram hill tracts Affairs) | DGHS, DGNM; DGME; DLS; BFD; LGIs; | According to need | |

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| | Data sharing at national and international level(aggregated) | After/Inter Pandemic review and dissemination of data finding scenario about co-ordination and other associated factors. | MoHFW, MoFL; MoEFCC | DGHS, Disease Control, IEDCR; MIS; DLS; BFD | Once | |
| Collaborative surveillance | Review and update of strategy to continue the Integrated surveillance for Respiratory pathogens | | MoHFW | IEDCR, DGHS, DLS, BFD,MoFL, MoEFCC, icddrb, WHO, FAO, EHA, & other relavent technical partners, | Reviewed and updated | Post pandemic |
| | Review and update of strategy for continuation of animal value chain based surveillance | | MoFL | MoHFW, MoEFCC,,BLRI, BFD(DLS), IEDCR, FAO, icddrb, EHA & other relavent technical partners | Reviewed and updated | Post pandemic |
| Community Protection | Continuation and upscaling of Public health education(social and behavioural change) for prevention from respiratory pathogens | Identification and recruitment of Public health education personnel upto upazilla level | MoHFW(Disease Control, DGHS, IEDCR,Bureau of Health Education) | MoEdu(Primary & Secondary), MoFL(DLS); MoEFCC(BFD), WHO, Unicef, BDRCS & other relevant agencies | Identified and recruited | 2024-2025 |
| | | Development of guidelines and SOPs | MoHFW(Disease Control, DGHS, IEDCR,Bureau of Health Education) | MoEdu(Primary & Secondary), MoFL(DLS); MoEFCC,BFD, WHO, Unicef, BDRCS & other relevant agencies | Developed | 2025 |

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| | | Training module prepare and training of public health personnel (multimodal) | MoHFW(Disease Control, DGHS, IEDCR,Bureau of Health Education) | MoEdu(Primary & Secondary), MoFL(DLS); MoEFCC,BFD, WHO, Unicef, BDRCS & other relevant agencies | Prepared | 2026 |
| | | Development of public health messages (multimodal) | MoHFW(Disease Control, DGHS, IEDCR,Bureau of Health Education) | MoEdu(Primary & Secondary), MoFL(DLS); MoEFCC,BFD, WHO, Unicef, BDRCS & other relevant agencies | Developed | 2026 |
| | | Periodical tabletop exercise and simulation exercise target community | MoHFW(Disease Control, DGHS, IEDCR,Bureau of Health Education) | MoEdu(Primary & Secondary), MoFL(DLS); MoEFCC,BFD, WHO, Unicef, BDRCS & other relevant agencies | Exercise conducted | 2026-2027 |
| | Multi-sectoral involvement in Risk communication and community engagement | Development of Quarantine and Isolation guidelines and SOPs | MoHFW | DGHS(Disease Control,IEDCR, Bureau of Health Education), MoFL; MoLGRD, MoCHTA WHO, FAO, Unicef, BDRCS & other relavent agencies including civil society and professional bodies | Developed | 2024-2025 |

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| | | Designation of facilities for Quarantine and Isolation (Govt. School, college at district and Upazila community) at appropriate places (Preferably near Hospitals) | MoHFW | Cabinet Division,DGHS(Disease Control, IEDCR, Hospital and Clinics,), MoPA, MoLGRD, MoCHTA, MoCAT, MoS, PHC, CAAB, Port Authority, BDRCS | Designated | 2024-2025 |
| | | s | MoHFW | DGHS(Disease Control,IEDCR), MoPA, MoLGRD, MoCHTA WHO, Unicef, | Designated | 2024-2025 |
| Clinical care | Review and update of strategy for continuation of Community Surveillance | 1.Gap analysis and update of strategy 2.Implementation of updated guideline | IEDCR | MIS, Disease Control, DLS, BFD, icddrb, WHO, FAO, EHA, & other relavent technical partners, | | |
| | Review and update of strategy for continuation of genomic charecterization & evolution of respiratory pathogens | 1. Train HR on sequence analysis 2. Ensure support with necessary reagents, consumables and logistics | IEDCR | NILMRC, IPH, NIPSOM, CDIL, BLRI, BFD,BITID, icddrb, iDeshi, WHO, FAO, EHA, & other relavent technical partners, | | |

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|---|---|---|---|---|---|---|
| | Review and Revised strategy for utilization of Strengthened laboratory diagnostic facilities at peripheral level of health system | 1.Organized consultataive workshops to review and revise strategy 2.Lavarage this strategy for the detection of other pathogens/diseases | DGHS,IEDCR | Disease Control; Director Hospitals & Clinics Unit, Academic Institute, NILMRC; icddrb, WHO; | | |
| | Sero-prevalence study at animal-human-ecosystem interphase. | Develop protocol and implement | IEDCR, DLS, BFD, | Disease Control, CDIL epi unit, DLS, BLRI, , BFD, DOE, icddr, b, EHA and reTechnical partners | | |
| | Conduct operational research for recovery and gap analysis | Develop protocol and implement | IEDCR, DLS, BFD, | Disease Control, CDIL epi unit, DLS, BLRI, , BFD, DOE, icddr, b, EHA and reTechnical partners | | |
| | Data archive and management | Archive data in developed data storage facility | MIS, DGHS | One health Secretariat,IEDCR , DLS, BFD | | |
| | Review of implemented RCCE activities & Gap analysis | Workshp/seminar/symposium | MoHFW | Disease Control, MIS, IEDCR, BHE; DLS; BDRS; WHO; Unicef and other relavant technical pertners | | |
| | Continuation of post-pandemic clinical care of patients affected by pandemic | Ensure supply of logistics, medicines, vaccines | Hospital and clinics | DGHS, DGME, DGNM, Hospital & Clinic | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | complication | | | | | |
| | Review & Update of treatment, diagnostic and laboratory protocol, guideline and SOPs | Workshop/seminar/meeting for protocol review and updatation | Disease control, DGHS | IEDCR, DLS, CDIL, BLRI, ; FD; NILMRC, WHO, UNICEF, | | |
| | Review and update of vaccination deployment strategy | Gap analysis and implementation of updated vaccination strategy | EPI, DGHS | MoLGRD,MoCHTAMIS, Disease Control, IEDCR, | | |
| Access to countermeasures | Review and update of counter measure strategies | | MoHFW | Disease control, IEDCR, Hospital & Clinics, EPI, CMSD, DGMS, DGME | Reviewed and updated | Post pandemic |
| | Liaising with national and/or international partners to ensure sustainable access to countermeasures | | PMO | DGHS, MoHFW, MoFL, MoF, MoFA & all relavent ministries, World Bank; ADB; BDRS, WHO, FAO, UNICEF & other developmental partners | Ensured | Post pandemic |
| | Execution of deployment plan for vaccine and other countermeasures and update as and when required | | MoHFW, | EPI, DGHS, MoLGRD, MIS,DGME; World Bank; ADB; UNICEF, WHO, BDRC, BRAC | Updated | Post pandemic |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Conduct Research & Gap analysisfor utilization to counter measures | | MoHFW, | Disease Control,PM&R DLS; IEDCR, MoFL UNICEF, WHO, BDRC, BRAC, icddrb; BLRI and other relavent vaccine developmental agencies | Research report submitted | Post pandemic |
| | Review the strategy of Procurement and distribution of supplies and therapeutics | | MoHFW | DGHS,Disease Control, CMSD, Hospital and Clinics | Reviewed and updated | Post pandemic |

## Reporting and notification

Reporting and notification are integral parts of management of pandemic influenza. When a case is suspected or confirmed at the point of entry, at Influenza Information Centre (IIC), in health care facility, diagnostic lab or in the community, it is to be reported to the RRT of different levels. The sources of information are surveillance system, media or other sources like local elites, public representatives and so on. Following receipt of information the RRT will onward transmit the information to NRRT at IEDCR for investigation, laboratory testing, if necessary management and reporting to Director, Disease Control, DGHS. When a case is confirmed in the laboratory, it will be reported to WHO as per guideline of IHR 2005.

Figure: Flow chart of reporting during pandemic

## Mortality reporting and notification

The collection of hospitalization and mortality data will help to monitor the severity of a pandemic and determine which age groups and areas are most affected. All hospitals have to report to NIC, Bangladesh during pandemic. These data will help to take decision for policy makers at national and local level.

## Prevention and Control Activities during Pandemic Period

*Activities*

- Risk communication during a pandemic is informed by evidence that is consistent from different authorities, across sectors, and at different organisational levels. The mass media are informed about the communication

strategy and there are regular press conferences planned during the response phase in order to channel the information disseminated by the media to the general public.

- A spokesperson within the ministry in charge of the response has been appointed to conduct regular press conferences during a pandemic. An alternate spokesperson is available should the lead ministry change.
- Communication materials and distribution channels that have been tested in the interpandemic period (e.g. information about pandemic vs. seasonal influenza, personal protective measures, etc.).
- Methods (such as population surveys, focus groups) for regularly monitoring the perception and opinions of the public and healthcare workers during a pandemic in order to enhance interpretation and understanding of the messages and to guide the risk communication efforts.
- The communication cycle will include situational awareness, achieved with epidemic intelligence using media monitoring techniques and targeted communications for public health professionals.
- Convene meeting of the National Communication Committee
- Develop and disseminate key messages and materials.
- Develop SOP and Guideline on Communication
- Arrange training of personnel of different levels on risk communication
- Provide updates about situation when needed using different media.
- Explore and use community resources, such as hotlines, media resource centre and websites to respond to local questions.
- Promptly respond to rumors and inaccurate information
- Coordinate activities among different stakeholders.
- Regular update of media and website as and when necessary

*Clinical Care*

Clinical management of pandemic influenza cases includes symptomatic and supportive treatment, antiviral and infection control measures including isolation. The cases will be managed according to the national guideline. The guideline will be updated by a Core Committee formed by the National Technical Committee for Influenza according to evolving situation, recent scientific information and country level of influenza pandemic.

Activities for clinical management

- The clinical management guidelines can be made rapidly available to all staff in all healthcare facilities during a pandemic.
- Treatment of patients is on the basis of clinical assessment alone rather than awaiting laboratory confirmation for pandemic influenza. This is particularly important when considering the use of AV.
- The administration of AV to patients is informed by surveillance that monitors for the emergence of AV resistance in the pandemic virus.
- Research (including clinical trial) protocols with prior ethical and review board approvals implemented in order to study severity of disease, transmission patterns, effectiveness of pharmaceutical and non-pharmaceutical countermeasures, etc.

Laboratory testing for Clinical Purpose

- In the early stages of a pandemic, it is desirable to test all cases for both risk assessment and clinical management purposes.
- When infections are widespread, testing of a subset of mild and severe cases should suffice for risk assessment and surveillance purposes, but throughout the pandemic – depending on resources – which may strive to laboratory-confirm all fatal cases and possibly also severe cases, e.g. those requiring critical care. The results of testing performed for clinical purposes can

also contribute to risk assessment and surveillance and should, where possible, be coordinated by the NIC.

- The treatment of patients with symptoms of respiratory illness, whether mild or severe, is initiated based on clinical judgement alone, without waiting for laboratory test results. This includes supportive treatment, such as the administration of oxygen, as well as AV.
- Clinicians request testing of all patients that do not react to AV to determine if the cause is a pathogen other than pandemic influenza or if resistance to the AV has developed.
- Testing is performed for infection control purposes if needed to ensure that infected patients are placed in the correct section of a healthcare facility.
- Testing for clinical management purposes and for secondary bacterial infections is performed in situ, i.e. by the hospital laboratory. If this is not possible, arrangements are in place with another laboratory.
- All laboratories that test clinical specimens from patients suspected of infection with the pandemic virus have established appropriate biosafety procedures in accordance with their own risk assessment and refer to national and WHO guidelines.

Communication with clinicians, information sharing among clinicians.

- During the preparedness phase, medical professional groups and HCW have been informed how information will be provided in a pandemic, e.g., through a dedicated website, professional medical associations etc.
- Mechanisms have been tested to rapidly inform medical professional groups and HCW about the situation, risk groups for severe disease as soon as they are known, and up-to-date guidance and/or practice notes for the clinical management of patients.

- This communication channel includes information on decisions taken at national or subnational levels on measures to be implemented and on any changes in the response, e.g. whether confirmed cases are notifiable, where patients should seek care, updates to guidelines for clinical care, laboratory testing, etc.
- Communication channels have been tested and a range of decisions has been exercised before a pandemic to determine the feasibility of implementation of the proposed measures and increase the likelihood of timely implementation of measures in an actual pandemic.
- A network or platform for frequent and rapid exchange of information and experience among clinicians, nurses, public health laboratories, public health authorities, and healthcare services authorities on the clinical management of severe cases and on healthcare facility needs when resources are stretched. Such networks can also be utilised during a severe seasonal influenza epidemic.

**Infection Prevention and Control**

Infection prevention and control consists of Pharmaceutical and Non-pharmaceutical interventions. Pharmaceutical intervention includes antiviral drugs and vaccine and non-pharmaceutical interventions include awareness raising on cough etiquette, standard precautions like hand washing, surface and environmental cleaning, use of PPE, quarantine, isolation, social distancing and proper waste disposal.

Pharmaceutical Intervention

- Antivirals

- Antiviral drugs active against influenza viruses include the neuraminidase inhibitors *Oseltamivir* and *zanamivir*. Appropriate use of these agents during an influenza pandemic may reduce morbidity and mortality and will also decrease the load of hospital admission.
- Vaccine Seasonal
    - influenza vaccine

Seasonal vaccination not currently practiced in our country. Seasonal influenza vaccine itself does not play any role in preventing the infection with novel influenza virus. But it can help in reducing the chance of reassortment or mixing. Seasonal influenza vaccine is recommended for.

- Health service providers
- Pregnancy
- Extreme age groups,
- Immunosuppressive status due to disease or chemotherapy or radiation, HIV infection
- Person with co morbid conditions: chronic respiratory, heart, renal and liver diseases, diabetes mellitus.

Pandemic influenza vaccine

If vaccine is available, it will deploy according to latest scientific guidance from WHO. Bangladesh is conducting mass vaccination of COVID-19 among the adult population of Bangladesh. This experience will contribute towards mass vaccination in the future pandemic of Influenza.

Once a vaccine against the circulating pandemic virus strain becomes available, its distribution and delivery will be a major focus of pandemic response efforts. Public health goals for vaccination during an influenza pandemic include:

- Developing strategies for vaccine stockpiling and distribution
- Accelerating isolation of a pandemic virus reference strain and distribution of the strain to vaccine manufacturers
- Ensuring efficient and equitable distribution of pandemic vaccine
- Rapidly determining vaccine effectiveness
- Providing ongoing and timely monitoring of vaccine safety and coverage

Activities in relation to vaccination

1. Estimation of number of doses of pandemic vaccine
2. Planning for vaccine procurement, storage, distribution, and tracking.
3. Updating the healthcare and public health workforce on projected timelines for availability of vaccines against pandemic influenza.
4. Training on vaccination and vaccine monitoring for public health staffs.
5. Evaluation of all response activities, including vaccine tracking and delivery, adverse event monitoring, and communications at the post pandemic period.

Projected number of doses of pandemic vaccine to be collected.

1. To bring 80% of the target population under vaccine coverage if vaccine is available
2. To prioritize the recipients if vaccine is not available for 80% of the target population.

The experience of National Vaccine Deployment for COVID-19 will be utilized for this projection and coverage.

Non pharmaceutical intervention

- Standard precaution
- Quarantine of exposed/contact persons

- Isolation
    - Home isolation
    - Hospital isolation
- Social distancing
- Prevention of Travel-Related Risk of Disease Transmission

**Risk Communication and Community Engagement**

Public health risk communication includes measures for raising awareness, guiding to action and alleviating panic among general population, scientific communication, and official communication within the country and between the government/country, development partners and international agencies on emergent health issue. Communication is an essential component of an influenza pandemic planning and response strategy.

Effective communication requires cooperation and participation of people, government, non-government and private organizations, community and different professionals' groups.
The communication strategy has to be flexible, adaptable and expandable to accommodate new policy measures and evolving disease threat.

*Key Elements*

1. A communication mechanism with communication committees and spokesperson at different levels.
2. A system to ensure that news media receive timely and accurate information.
3. A comprehensive operational research programme to ensure that communications effectively meet public needs.

*Strategy*

1. To follow the national communication strategy on Influenza for implementation of public health risk communication
2. Existing methods of communication like print and electronic media, interpersonal communication and other methods of communication will be utilized.
3. To review and reorganization of the 'National Public Health Risk Communication Committee' for Pandemic Influenza
4. To form Sub Committee for Communication at national level to assist the National Technical Committee for Influenza during emergency situation.

*Roles and responsibilities of the National Communication Committee*

1. Will produce and provide information and select appropriate spokesperson for the media.
2. Will tailor messages for specific audiences (illiterate people, ethnic minority, disabled etc.);
3. Will co-ordinate communication activities among stakeholders.
4. Will respond to rumours and inaccurate information promptly to minimize concern, social disruption, and stigmatization.
5. Will conduct orientation program for spokesperson to handle media.

Spokespersons of different levels (ministry, directorate, district, upazila)

- Hon'ble Health Minister at MoH&FW
- Secretary, MoH&FW

- Director General of Health Services
- Director, IEDCR the technical focal point
- Director (DC) of DGHS at DGHS
- Civil Surgeon at district level
- UHFPO at upazila level
- However, any other person designated by the appropriate authority may act as spokesperson.

Methods of Risk communication

For risk communication the following methods of communication will be used:

1. Mass communication
2. Communication with Group
3. Communicating with individual

Flow chart of risk communication with community and professionals

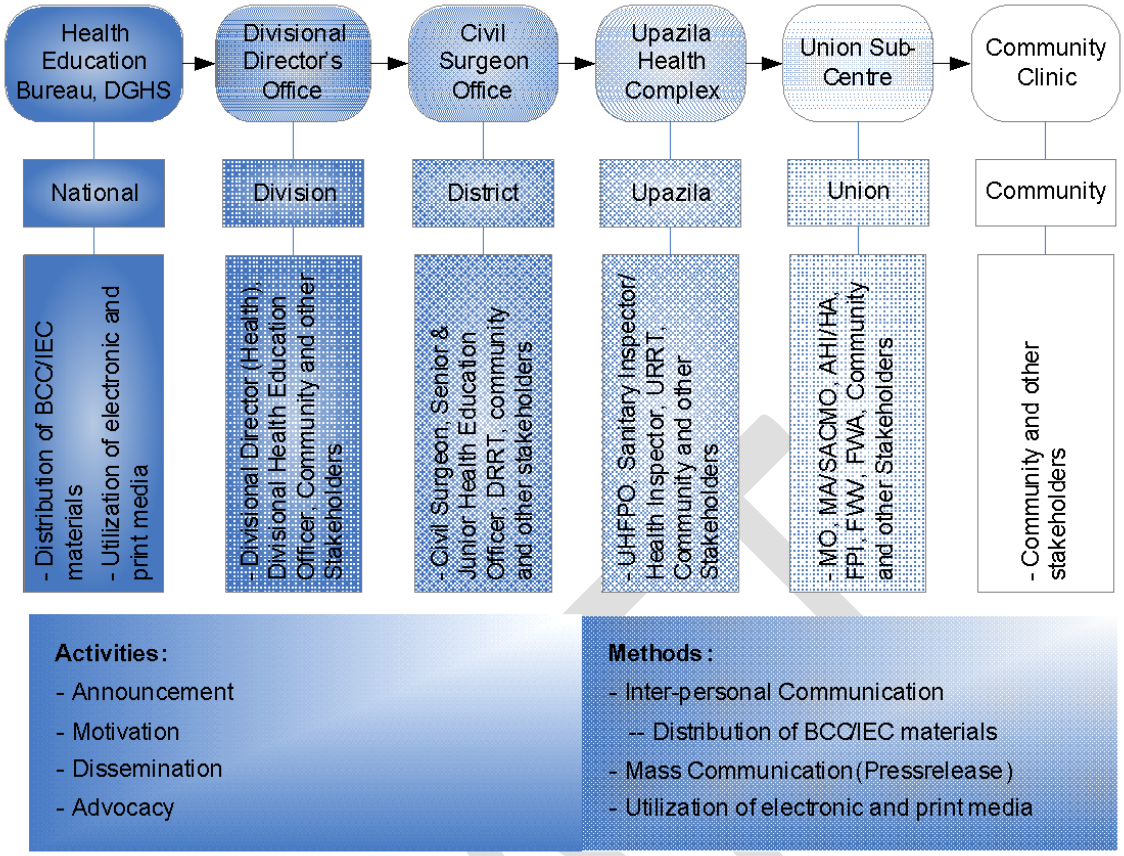
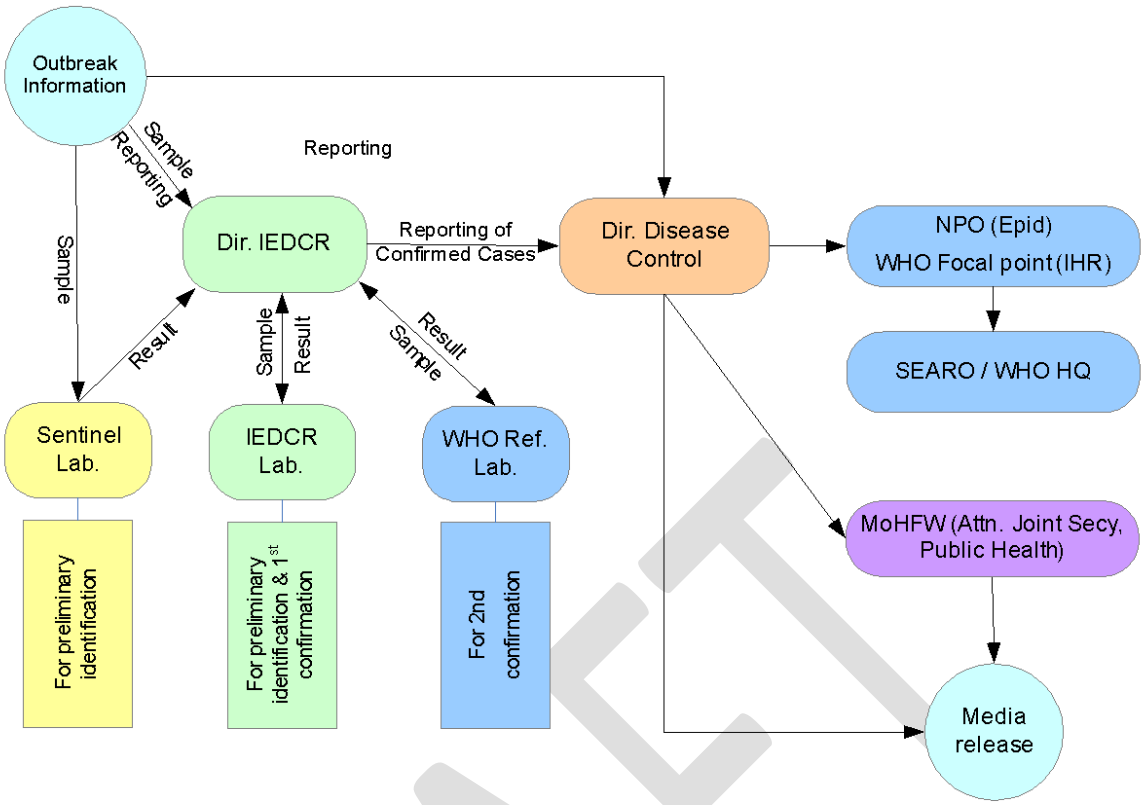



Figure: Flow chart of official communication procedure




**Psychosocial support for Health Care Providers**

Influenza pandemic might have physical, psychological and social impact on the people in general and the providers of health care and essential services. There will be measures to address the psychosocial needs of the affected people. Special planning is also needed for providers of health care and essential services to maximize personal resilience and professional performance.

*Strategy*

1. Ensure basic essentials for the affected people as well for the service providers.
2. Counselling service for emotional support for affected general people and service providers.
3. Rehabilitation for the broken family
4. Mitigating socio economic disruption of general population and service provider

*Activities*

For General Public

- Meet basic needs such as food, shelter, and clothing of the affected people.
- Establish rehabilitation centres for bereaved families.
- Set up counselling centres for psychological support.
- Provide basic psychological support (psychological first aid) through interpersonal counselling.
- Arrange makeshift educational facilities.
- Arrange Income generating ……
- Provide free medical services for the affected population.
- Ensure essential services.
- Develop and disseminate effective communication messages for alleviating existing panic among general population.

For Essential Service Providers

The essential service providers include:

- Heath personnel of hospital, clinic and labs
- Members of rapid response teams
- Planners and health managers
- Personnel belonging to essential services like electricity, fire service, security,
- Persons involved in burial and cremation process.
- Provide psychological and social support services for employees and their families.
- Provide assistance in reintegration for workers who were deployed or isolated from work and family.
- Provide support for life insurance of the staff at risk.

- Provide risk allowance for the staff at risk taking in account of the risk involved in providing service during the pandemic.
- Deploy several persons as a team to maintain frequent contact and provide mutual help in coping with daily stresses.
- Frequently monitor the occupational safety, health, and psychological well-being of deployed staff.
- Provide medical, public health, and community partners with educational and training materials.
- Provide behavioral health services, as requested.

**Surge Capacity:**

During pandemic, if there is an increasing number of patient (Surge), health services may have to increase their capacity to manage the added load. Health facilities may need to increase number of health care personnel, physical facilities in OPD, Emergency, IPD and ICU, logistics like medicine, equipment, antiseptics and disinfectants, PPE, linens, food, stationeries, forms etc. The surge of patients may be so large that, the whole hospital may have to be used temporarily for only the influenza patients or even provision have to be made for healthcare in non-hospital settings like community centres, teaching institutes, playground, worship places etc.

For better management of surge of influenza cases in the hospital, it should have a 'Pandemic Influenza Management Committee (PIMC)'. The URRT and DRRT will act as PIMC respectively at Upazila Health Complex and district hospital. For the district modern hospitals (with bed capacity of 250 and more), tertiary and specialized hospitals the structure has been outlined. Healthcare

facilities should plan ahead to address emergency staffing needs and increased demand for isolation wards, ICUs, assisted ventilation services, and consumable and durable medical supplies.

*Staffing*

- Assessing staff need according to the surge of patient.
- Develop adequately trained manpower (Anesthetists, Critical Care Specialists, Nurses) for ICU units
- Explore opportunities for recruiting healthcare personnel from other healthcare settings.
- Coordinate staffing.
- Using trainees (e.g., medical and nursing students)
- Using patients' family members in an ancillary healthcare capacity
- Training of personnel to provide support for essential patientcare at times of severe staffing shortages (e.g., in emergency departments, ICUs, or medical units)

Bed capacity

- Review and revise admission criteria for patients other than influenza during surge
- Determine which elective procedures will be temporarily postponed.
- Determine whether patients who require emergency procedures will be transferred to another hospital.
- Develop policies and procedures for expediting the discharge of patients who do not require ongoing inpatient care (e.g., develop plans and policies for transporting discharged patients home or to other facilities)
- Arrange at-home follow-up care for patients who have been discharged early and for those whose admission was deferred because of limited bed

space.

- Contact relevant authorities on plans and processes to expand bed capacity during times of crisis.
- Coordinate with relevant authorities to make best utilization of ICU facilities existing in other government health facilities.
- Make arrangements with autonomous, NGO and private sectors health facilities to facilitate the use of their ICUs during crisis
- Develop Mutual Aid Agreements (MAAs) or Memoranda of Understanding/Agreement (MOU/As) with other local facilities who can accept non-influenza patients who do not need critical care.

Establishment of ICU facilities:

- Additional ICU capacities to be built in addition to existing ICU capacities which ere being used for management of COVID-19 patients.

Consumable and durable supplies

- Make inventory for available medical supplies in the hospital and replenish the shortage according to need.
- Assess anticipated needs for consumable and durable resources and determine a trigger point for ordering extra resources.
- Estimate the need for respiratory care equipment (including mechanical ventilators) and develop a strategy for acquiring additional equipment if needed for 250 bedded hospitals, medical college hospitals and other tertiary care hospitals.
- Different hospitals (government, autonomous, NGO, private) might consider developing inventories of equipment and determining whether and how that equipment might be shared during a pandemic.
- Develop contingency plans for situations in which primary sources of

medical supplies become limited.

- Contact with the district and central health authorities for emergency supply of medicines and other logistics.

**Continuation of Essential Medical Services**

- Address how essential medical services will be maintained for persons with chronic medical problems served by the hospital (e.g., hemodialysis patients).
- Develop a strategy for ensuring uninterrupted provision of medicines to patients who might not be able to (or should not) travel to hospital eg. DOTS for TB.
- Shifting of vaccination centres at hospital to nearby health facility (EPI centre)

**Protection of Health Care Workers**

- Plans at healthcare facilities include modifications to standard infection prevention and control procedures that may be required in a pandemic, according to the severity and transmission characteristics of the virus.
- Plans at healthcare facilities include provisions for personal protective equipment, a plan for providing healthcare workers (HCW) with AV, and prioritisation of HCW for receiving pandemic vaccine.
- Healthcare facilities have policies and procedures in place should HCW get sick or need to care for sick family members. HCW who are reluctant to come to work during a pandemic will be encouraged to do so by providing proper protective measures, by making arrangements to allow them to care for sick family.
- members, etc. The ethical aspects of staff refusing to work will be discussed with HCW as part of pandemic.
- preparedness planning.

Security

Healthcare facilities should plan for additional security. This may be required given the increased demand for services and possibility of long wait times for care, and because triage or treatment decisions may lead to people not receiving the care they think they require.

Planning for provision of care in non-hospital settings

Planning and effective delivery of care in outpatient settings is critical. Appropriate management of outpatient influenza cases will reduce progression to severe disease and thereby reduce demand for inpatient care. A system of effective outpatient management will have several components.

- Plan to establish and staff telephone hotlines - To decrease the burden on providers and to lessen exposure of the "worried well" to persons with influenza, telephone hotlines should be established to provide advice on whether to stay home or to seek care.
- Most persons who seek care can be managed appropriately by outpatient providers. Health care networks may designate specific providers, offices, or clinics for patients with influenza-like illness.
- Nevertheless, some persons with influenza will likely present to all medical offices and clinics so that planning and preparedness is important at every outpatient care site.
- In underserved areas, health departments may establish influenza clinics to facilitate access.
- Hospitals should develop a strategy for triage of potential influenza patients, which may include establishing a site outside of the Emergency Department where persons can be seen initially and identified as needing emergency

care or may be referred to an outpatient care site for diagnosis and management.

- Finally, home health care providers and organizations can provide follow-up for those managed at home, decreasing potential exposure of the public to persons who are ill and may transmit infection.

- Effective management of outpatient care in communities will require that health departments, health care organizations, and providers communicate and plan together. Issues to address include:

- Within health care networks, develop plans on the organization of care for influenza patients and develop materials and strategies to inform patients on care-seeking during a pandemic.
- For clinics and offices, develop plans that include education, staffing, triage, infection control in waiting rooms and other areas, and communication with healthcare partners and public health authorities.

Non-hospital healthcare facilities

If an influenza pandemic causes severe illness in large numbers of people, hospital capacity might be overwhelmed. In that case, communities will need to provide care in alternative sites such as union Subcentre, FWC, Community clinic, Maternity centre, community centres, teaching institutes etc. These facilities should do the following:

- Create a planning team and develop a written plan.
- Establish a decision-making and coordinating structure.
- Develop policies and procedures for managing pandemic influenza in patients and staff.
- Educate and train healthcare personnel on pandemic influenza and the healthcare facility's response plan.

- Determine how the facility will communicate and coordinate with relevant authority.
- Determine how the facility will communicate with patients and help educate the public regarding prevention and control measures.
- Develop a plan for getting the supplies (e.g., personal protective equipment [PPE])
- Determine how the facility will participate in the community plan for distributing either antiviral drugs or vaccine.

The selection of alternative care sites for pandemic influenza should specifically address the following infection control and patient care needs:

- Bed capacity and spatial separation of patients
- Facilities and supplies for hand hygiene.
- Lavatory and shower capacity for large numbers of patients
- Food services (refrigeration, food handling, and preparation)
- Medical services
- Staffing for patient care and support services
- PPE supplies
- Cleaning/disinfection supplies
- Environmental services (linen, laundry, waste)



**Part F: Annex**

**National Advisory Committee (NAC)**

The NAC is the apex body with Ministers of relevant ministries as the members. The Ministry of MoFL and MoH&FW will lead the NAC as outlined in the strategy. Honorable Minister of the respective ministry will chair the committee. During the pandemic period concerted activities will be carried out under the leadership of the Honorable Prime Minister of Government of Bangladesh or MoH&FW or MoFL on behalf of the PM's Office

➢ **Members (Not according to warrant of precedence):**

1. Honorable Prime Minister (Chairperson)
2. Minister, Ministry of Health and Family Welfare
3. Minister, Ministry of Cabinet Division
4. Minister, Ministry of Public Administration
5. Minister, Ministry of Fisheries and Livestock
6. Minister, Ministry of Commerce
7. Minister, Ministry of Environment, Forest and Climate change
8. Minister, Ministry of Finance
9. Minister, Ministry of Law, Justice and Parliamentary Affairs
10. Minister, Ministry of Defense
11. Minister, Ministry of Home
12. Minister, Ministry of Foreign Affairs
13. Minister, Ministry of Education
14. Minister, Ministry of Information and Broadcasting
15. Minister, Local Government, Rural Development and Cooperative
16. Minister, Ministry of Agriculture
17. Minister, Ministry of Food
18. Minister, Ministry of Civil Aviation and Tourism
19. Minister, Ministry of Social Welfare
20. Minister, Ministry of Religious Affairs

21. Minister, Ministry of Disaster Management and Relief
22. Minister, Ministry of Shipping
23. Minister, Ministry of Women and Children Affairs
24. Minister, Ministry of Primary and Mass Education
25. Cabinet Secretary (Member Secretary)

➢ **Terms of reference (TOR)**

- Decision on proposals sent by Multi-sectoral Task Force
- Advise for implementation of the National Plan during Pandemic stage
- Supervise and monitor the activities under the plan
- Convene at least once in a year, and as & when required
- Co-opt member (s) when necessary

**National Multi-sectoral Task Force (NMTF)**

The NMTF committee comprises representatives from relevant ministries, directorates, professional bodies, business bodies, NGOs, civil society and nominated members. The Secretary of the relevant ministry will chair the committee. (Annex 4)

➢ **Members (Not according to warrant of precedence):**

1. Minister, Ministry of Health and Family welfare (Chairperson)
2. Cabinet Secretary, Cabinet Division
3. Principal Secretary, Prime Minister Office
4. Secretary, Ministry of Public Administration
5. Secretary, Ministry of Fisheries and Livestock
6. Secretary, Ministry of Commerce
7. Secretary, Ministry of Environment, Forest and Climate change
8. Secretary, Ministry of Finance Division
9. Secretary, External Resource Division

10. Secretary, Ministry of Law, Justice and Parliamentary Affairs
11. Secretary, Ministry of Defense
12. Secretary, Ministry of Home Affairs (All division)
13. Secretary, Ministry of Foreign Affairs
14. Secretary, Ministry of Education
15. Secretary, Ministry of Information and Broadcasting
16. Secretary, Local Government, Rural Development and Cooperative
17. Secretary, Ministry of Agriculture
18. Secretary, Ministry of Food
19. Secretary, Ministry of Disaster Management and Relief
20. Secretary, Ministry of Civil Aviation and Tourism
21. Secretary, Ministry of Social Welfare
22. Secretary, Ministry of Religious Affairs
23. Secretary, Medical Education and Family Welfare, MoHFW
24. Secretary, Security Service Division
25. Secretary, Public Security
26. Director General of Health Services
27. Director General of Medical Education
28. Director General of Livestock Services
29. Chief Conservator of Forest, Forest Department
30. Director General of BLRI
31. Director General Medical Services (Ministry of Defense)
32. Director General of BDR
33. Inspector General of Police
34. Director General of Ansar and VDP
35. Director General, NGO Bureau
36. Director & Line Director, Disease Control and Communicable Disease Control Programme, DGHS

37. Director, Institute of Epidemiology, Disease Control & Research (IEDCR) and National Influenza Center (NIC)

38. In-charge, National Reference Laboratory for AI, BLRI

39. Representatives from Armed Force Division, PMO

40. Representatives from NGOs as nominated by NGO Bureau

41. Representative from FBCCI

42. Representative from Bangladesh Poultry Industries Association (BPIA)

43. Representative from Bangladesh Medical Association (BMA)

44. Representative from Bangladesh Veterinary Association (BVA)

45. Representatives of relevant UN bodies

46. Focal Points from Donor Agencies

47. Secretary (Health Service Division), Ministry of Health and Family Welfare (Member secretary)

➢ **Terms of reference**

1. Decision on proposals sent by technical committees

2. Support the National Advisory Committee

3. Coordinate activities of this National Pandemic Preparedness and Response Plan through Technical committee

4. Advisory role to Joint Technical Committee

5. Support to implement of recommendation from Joint Technical Committee

6. Approval of the strategy and contingency plan

7. Supervise and monitor implementation of the National Plan

8. Meet every six month and when required

9. Co-opt member (s) when necessary

**One health Technical Committee (OHTC)**

The JTC looks into matters of common interest for both human and livestock sectors. It is comprised of the DGs of both Health and Livestock directorates, Focal Points of both directorates, the DG of BLRI, the Director of NIC, IEDCR, and member secretaries of NTCs. The DG of respective Directorate of the lead ministry will chair the meeting. The One Health Secretariat will provide supportive service to the OHTC.

➢ **Members (Not according to warrant of precedence):**

1. Director General of Health Services (Chairperson)
2. Director General, Department of Livestock Services
3. CCF
4. DG, Department of Environment
5. DG, DAE
6. Focal Point, Avian Influenza, DLS
7. Director General, BLRI
8. Director, IEDCR
9. Direcror (Admin), DLS
10. CF, Department of Forest (Wild Life)
11. Member Secretary, NTC (Health)
12. Member Secretary, NTC (Livestock)
13. Representative from OHS
14. IHR Focal Point, Bangladesh (Member Secretary)

➢**Terms of reference:**

1. Decide matters arising from issues concerning decision of both National Technical Committee

2. The committee will sit every six month andwhen required
3. Co-opt members if needed

**National Technical Committees (NTC) within Directorates of Health & Livestock**

The NTC formed within the Directorate General of Health Services and Department of Livestock Services implement the respective parts of the plan and coordinate related activities (Annex 7 & 8).

- **National Technical Committee (Human Health)**

➢ **Members (Not according to warrant of precedence):**

1. Director General of Health Services (Chairperson)
2. Additional Director General, Administration, DGHS
3. Additional Director General, Planning and Development, DGHS
4. Director Disease Control and & Line Director Communicable Disease Control Programme, DGHS
5. Line Director, Non-Communicable Disease Control, DGHS
6. Line Director, Lifestyle Change, Health Education Bureau DGHS
7. Line Director, Planning Monitoring and Research, DGHS
8. Director (Administration), DLS
9. Director (Hospital), DGHS
10. Director (PHC), DGHS
11. Director, Planning and Research, DGHS
12. Director, MIS, DGHS
13. Director, NIPSOM
14. Director, NIDCH
15. Director, IPH
16. Director, National Institute of Laboratory Medicine & Referral Center

17. Director, DMCH

18. Director, SSMC & Mitford Hospital

19. Director, BSMMU

20. Representative ,DGMS, Ministry of Defense

21. Representative, Minister Civil Aviation (Hazrat Shahajalal International Airport)

22. Representative, Port Authority

23. Chief, Health Education Bureau, DGHS

24. Chairman, Department of Virology, BSMMU

25. Director, Bangladesh Institute of Tropical & Infectious Diseases (BITID), Chittagong

26. Chief Health Officer, Dhaka City Corporation (North and South)

27. Chief Scientific Officer, Virology, IEDCR

28. Chief Scientific Officer, Epidemiology, IEDCR

29. Representative, UNICEF

30. Senior Director, Infectious Diseases Division, icddr,b

31. Head, Programme for Emerging infectious Diseases, icddr,b

32. Team Lead, Zoonotic Disease Research Group, IDD, icddr,b

33. Team Lead, Health and Safety Emergency, WHO

34. Focal Point from Donor Agencies

35. Subject specialist from Bangladesh Medical Association (BMA)

36. Representative, Red Crescent Society, Bangladesh

37. Representative, Police Headquarter, Bangladesh Police

38. Program Manager (Communicable Disease Control), DGHS

39. Director, Institute of Epidemiology, Disease Control & Research (IEDCR) and National Influenza Center (NIC) (Member Secretary)

➢ **Terms of Reference:**

1. Recommendation on the National Plan to incorporate provided feedback
2. Implementation of respective section of the National Plan (Human Health)
3. Review and propose amendment of the National Plan (NPPRP,RP)
4. Prepare budgets for the different activities within the sector;
5. Review and approve relevant strategies and guideline along with any revision required
6. Review, adopt and implement proposals at the Directorate level;
7. Review and approve of communication materials;
8. Coordinate with other Directorates involved in the Plan;
9. Approve any effective intervention to prevent and control infective diseases;
10. Will recommend the action for any novel disease detection/epidemic emerge and response
11. Monitor and evaluate the activities of the National plan
12. Coordinate activities of relevant non-government sectors (i.e. NGOs)
13.
14. Facilitate the allocation of funds for the different activities within the sector;
15. Coordinate with other Directorates involved in the Plan;
16. Meet quarterly and when the country situation requires
17. Co-opt member (s) if necessary

- **National Technical Committee (Animal Health)**

➢ **Members (Not according to warrant of precedence):**

1. Director General, Department of Livestock Services (Chairman)
2. Director General, Bangladesh Livestock Research Institute (BLRI)
3. Director (Administration), DLS

4. Director, Finance and coordinator one health (Animal Health Sector)
5. Director Aquaculture, Department of Fisheries
6. Director Field service DAE
7. Director Wildlife Crime control Unit
8. Director Sheikh Kamal Wildlife Center, Gazipur
9. Director (Research, Training and Evaluation), DLS
10. Director (Extension) DLS
11. Director (Production) DLS
12. Director, Central Veterinary Hospital, Dhaka
13. Representative, Ministry of Fisheries and Livestock
14. Representative, Minister Civil Aviation (Hazrat shahajalal International Airport)
15. Representative, Port Authority
16. Conservator of Forest, Wild Life and Nature Conservation Circle, Ban Bhavan, Dhaka
17. Chief Scientific Officer (CSO), Animal Health Research Division, BLRI
18. Head, Programme for Emerging infectious Diseases, icddr,b
19. Team Lead, Zoonotic Disease Research Group, IDD, icddr,b
20. Principal Scientific Officer (PSO), Central Disease Investigation Laboratory (CDIL), Dhaka
21. Laboratory-in-charge, National Reference Laboratory for Avian Influenza, BLRI
22. Head, Epidemiology Unit, DLS
23. Member Director (Livestock), Bangladesh Agricultural Research Council (BARC)
24. Representative, Remount Veterinary and Farm Corps, Bangladesh Army
25. Representative, Police Headquarter, Bangladesh Police
26. Representative, Ansar Headquarter, Anser and PDV Bangladesh

27. Veterinary Officer, Dhaka City Corporation (North and South)
28. Veterinary Surgeon/Officer, Forest Department
29. Wildlife and Biodiversity Conservation Officer, Forest Department
30. Ornithologist, Forest Department
31. Subject specialist from Bangladesh Veterinary Association (BVA)
32. Representative, IHR program Bangladesh
33. Representative from OHS (Human Health)
34. Deputy Director, Epi Unit, DLS (Member Secretary)

➢ Terms of reference

1. Recommendation on the National Plan to incorporate provided feedback
2. Implementation respective section of the National Plan (Animal health)
3. Review of the National Plan
4. Prepare proposal budgets for the different activities within the sector;
5. Review relevant strategies and guideline along with any revision required
6. Implementation proposals at the Directorate level;
7. Approval of communication materials;
8. Coordinate with other Directorates involved in the Plan;
9. Approve any effective intervention (e.g; Vaccination, Stamping out etc) to prevent and control of infectious diseases;
10. Recommend the action for any novel disease detection/epidemic emerge and response
11. Advice the Monitoring activities in wet market, live bird market, pet and game bird market
12. Monitor and evaluate the activities of the National plan
13. Facilitate the allocation of funds for the different activities within the sector
14. Coordinate activities of relevant non-government sectors (i.e. NGOs)

15. Quarterly meeting and when requires
16. Co-opt member(s) if necessary

**National Coordination Cell (NCC)**

It will be situated at MoH&FW. National Coordination Cell will provide support for the

Implementation of the National plan. It will be situated at MoH&FW.

**Members and terms of reference of the cell will be decided upon by NMTF.**

➢ Members (Not according to warrant of precedence):

1. CDC (DGHS)
2. MIS
3. IEDCR
4. Dept. Hospital and Clinic (DGHS)
5. Finance Dept. DGHS
6. Planning Research, DGHS
7. MNCAH (EPI)
8. Health and Lifestyle Bureau
9. DLS
10. Wildlife
11. SKWC
12. icddr,b
13. BLRI
14. Representative from One Health Secretariat (OHS).
15. Non-government stakeholders

➢ **Terms of reference**

1. Incorporation of Recommendation and feedback on the National Plan

2. Prepare budgets for the different activities within the sector;
3. Prepare relevant strategies and guideline along with any revision required
4. Prepare of communication materials;
5. Coordinate with other Stakeholders involved in the Plan;
6. Prepare strategies for any effective intervention (e.g; Vaccination, Stamping out etc) to prevent and control infective diseases;
7. Monitor infection control measures in wet market, live bird market, pet and game bird market
8. Coordinate activities of relevant non-government sectors (i.e. NGOs)
9. Biannual meetings and when as necessary when
10. Co-opt member(s) if necessary

**Metropolitan City Multi-sectoral Coordination Committee (MCMCC)**

This committee will coordinate between sectors involved to control Respiratory pathogens in human and animals within respective metropolitan city areas during and following outbreaks (Annex 9). The MCMCC will be headed by the respective Mayor.

**Committee Members:**

1. Mayor
2. Chief Health Officer
3. Civil Surgeon
4. Chief Veterinary Officer.
5. Veterinary Surgeon of City Corporation
6. UHFPO (Sadar)
7. District Livestock Officer (DLO)
8. ULO (Metro)

➢ **Terms of Reference:**

1. Work following guidelines and link with JTC, NTC and NRRT
2. Coordinate pandemic activities of Respiratory Pathogens in City Corporation.
3. Mobilize resources from local governments (if required) for the implementation of the plan
4. Implement pandemic influenza and SARI activities in City Corporation.
5. Monitor and evaluate different wards' multi sectoral activities
6. Take appropriate measures to control cross border spreading of respiratory pathogens.
7. Take timely measures including stamping out activities
8. Meet quarterly, and whenever necessary
9. Co-opt member(s) if necessary

**District Multi-sectoral Coordination Committee (DMCC)**

This committee is responsible for coordination between sectors involved to control avian influenza in poultry and to prevent avian influenza in humans. It coordinates the response process during and following outbreaks (Annex 10). The District One Health committee will provide technical assistance.

➢ **Members (Not according to warrant of precedence):**

1. Deputy Commissioner (Chairman)
2. Mayor of the Pouroshova of the district headquarter
3. Chairman, Sadar Upazila
4. Superintendent of Police
5. Civil Surgeon (Member Secretary)*
6. District Livestock Officer
7. Deputy Director, Agriculture extension

8. District Family Planning Officer
9. District LGED Officer
10. Divisional Forest Officer
11. District Primary/Secondary Education Officer
12. District Social Welfare Officer
13. District Information Officer
14. District Adjutant of Ansar and VDP
15. Upazila Nirbahi Officer (Sadar)
16. Upazila Health & Family Planning Officer (Sadar)
17. Upazila Livestock Officer (Sadar)
18. Representative from Sector BDR (if any)
19. Representative from Army Medical Corps (if any cantonment in that district)
20. Representatives from Local NGOs
21. President, local Chamber of Commerce
22. President, Local Poultry Industries Association
23. President, Local Bangladesh Medical Association (BMA)
24. President, Local Bangladesh Veterinary Association (BVA)
25. President, Local Press club

*According to situation of outbreak in animal/human DLO/CS will act as Member Secretary

➢ **Terms of Reference:**

1. Coordination of District Avian Influenza activities
2. Implement district Respiratory pathogen activities
3. Monitor and evaluation of upazilas multi sectoral activities
4. Implement activities whatever National Multisectoral Coordination Committee directs

5. Take appropriate measures to control cross border spreading of Respiratory pathogen and zoonotic diseases.(in

6. Taking timely measures of contact tracing.

7. Ensure and take measures what technical committees (Health and Livestock)

8. recommend.

9. Meet quarterly, and whenever necessary.

10. Co-opt member (s) if necessary

**Upazila Multi-sectoral Coordination Committee (UMCC)**

This committee coordinates between sectors involved to control avian influenza in poultry and to prevent Avian influenza and other Respiratory pathogen in human during and following outbreaks (Annex 11).

➢ **Members (Not according to warrant of precedence):**

1. Upazila Chairman (Chairman)
2. Mayor of Pourashava
3. Upazila Nirbahi Officer (Coordinator) **
4. Upazila Health & Family Planning Officer (Member Secretary)*
5. Upazila Livestock Officer
6. Upazila Agricultural Officer
7. Upazila Engineer, LGED
8. Officer in-charge, Thana
9. Upazila Ansar & VDP Officer
10. Forest Ranger
11. Upazila Primary Education Officer
12. Upazila Family Planning Officer
13. Upazila Social Welfare Officer

14. Union Parishad Chairman (All)
15. Representatives, NGOs
16. Representatives, Poultry Industries Association
17. Representative, Local Press Club

**In absence of Upazila Chairman, UNO will act as chairperson

➢ **Terms of Reference:**

1. Coordination of Upazila Respiratory pathogen activities
2. Implement Upazila Avian Influenza activities
3. Monitor and evaluation of upazilas technical committee activities
4. Implement activities whatever District Multisectoral Coordination Committee direct
5. Taking timely measures of stamping out activities
6. Ensure and take measures what technical committees (Health and Livestock)
7. recommend.
8. Meet monthly, and whenever necessary.
9. Co-opt member (s) if necessary

**Rapid Response Teams (RRT) of Different Levels**

The rapid response teams of national, district, and upazila levels conduct outbreak investigation and response in both human and animal health sectors. The teams are as follows

- **National Rapid Response Team (NRRT)**

➢ **Members (Not according to warrant of precedence):**

The NRRT consists of members from different departments of IEDCR and partner institutes

with Director of IEDCR as Convener and one senior officer of IEDCR as Member Secretary

1. Director, IEDCR (Convener)
2. CSO, Epidemiology, IEDCR (Member Secretary)
3. PSO, Epidemiology, IEDCR
4. PSO, Microbiology, IEDCR
5. PSO, Virology, IEDCR
6. PSO, Parasitology, IEDCR
7. PSO, Entomology, IEDCR
8. PSO, Medical Sociology, IEDCR
9. PSO, Biostatistics, IEDCR
10. Coordinator, PHEOC
11. Representative from OHS
12. Clinician (Medicine, Pediatrics, Psychiatry)/Relevant personnel from other partner institutions/sectors (when and where needed)

➢ **Terms of Reference:**

1. Surveillance for Respiratory pathogens
2. Conduct Outbreak investigation of Respiratory pathogen in the country
3. Surveillance of High Risk group
4. Send specimens to reference laboratories when necessary
5. Undertake risk communication strategy and dissemination
6. Conduct research related to the outbreak
7. Provide technical support to National Technical Committee

- **DISTRICT RAPID RESPONSE TEAM (DRRT) Health**

➢ Members (Not according to warrant of precedence):

1. Civil Surgeon (Convener)

2. Superintendent of other government hospital (if present)
3. Deputy Civil Surgeon
4. Medical Officer, Civil Surgeon (Member Secretary)
5. Resident Medical Officer (RMO)
6. Consultant, Medicine
7. Consultant, Pediatrics
8. Consultant, Pathology
9. Upazila Health & Family Planning Officer (Sadar)
10. Surveillance Medical Officer (SMO)
11. District Immunization Medical Officer (DIMO)
12. Public Health Nurse
13. Chief Laboratory Technician

➢ **Terms of Reference:**

1. Investigation for suspected Respiratory pathogen patient
2. Monitoring the High Risk group surveillance after stamping out of poultry
3. Ensure the drug distribution to the High risk group after stamping out of poultry
4. Prepare District Hospital for Respiratory pathogen patient and their management
5. Coordinate with District RRT (Livestock)
6. Provide technical support to District Multi Sectoral Coordination Committee

- **UPAZILA RAPID RESPONSE TEAM (URRT) Health**

➢ Members (Not according to warrant of precedence):

1. Upazila Health & Family Planning Officer (UH&FPO) (Convener)

2. Resident Medical Officer (RMO)

3. Medical Officer ( Disease Control) (Member Secretary)

4. Consultant, Medicine

5. Consultant, Pediatrics

6. Nursing Supervisor

➢ **Terms of Reference:**

1. Investigation for suspected Avian Influenza patient

2. Monitoring the High Risk group surveillance after stamping out of poultry

3. Ensure the drug distribution to the High risk group after stamping out of poultry

4. Coordinate with Upazila RRT (Livestock)

5. Provide technical support to Upazila Multi Sectoral Coordination Committee

- **National Rapid Response Team (NRRT) Livestock**

➢ Members (Not according to warrant of precedence):

1. Director, Administration - Chairman

2. Director - Central Veterinary Hospital

3. Director, National Reference Laboratory for Avian Influenza

4. Principal Scientific Officer- CDIL

5. Epidemiologist- Epi. Unit, DLS

6. PD-Avian Influenza Preparedness and Response Project.

7. Principal Scientific Officer- Veterinary Public Health

8. Principal Scientific Officer- FDIL ( Nearest outbreak area)

9. Principal Scientific Officer- Newcastle Disease Section, LRI

10. Principal Scientific Officer- Quality Control of Vaccines and Drugs Section, LRI

11. Assistant Director, Animal Health- Member secretary

➢ **Terms of Reference:**

1. Conduct Outbreak Investigation of Avian Influenza in the country.
2. Technical assistance to District and Upazila Rapid Response Teams.
3. Provide technical support to National Technical Committee.
4. Monitoring and supervision of the stamping out procedure
5. Collection of sample (if necessary)
6. Co-opt members (when necessary)

● **DISTRICT RAPID RESPONSE TEAM (DRRT) Livestock**

➢ Members (Not according to warrant of precedence):

1. District Livestock Officer- Chairman
2. Additional Livestock Officer
3. Upazila Livestock Officer (all)
4. Representative, Forest Department
5. Veterinary Surgeon (all)
6. Veterinary Surgeon, District Veterinary Hospital
7. Upazila Livestock Officer (Sadar)- Member secretary

➢ **Terms of Reference:**

1. Technical Coordination
2. Communication
3. Supervision and Monitoring of the Stamping out activities
4. Recommendation to District Multi Sectoral Coordination Committee to take
5. appropriate measures.

6. Co-opt member (if necessary)

- **Upazila Rapid Response Team ( URRT) Livestock**

➢ **Members (Not according to warrant of precedence):**

1. Upazila Livestock Officer- Chairman
2. Upazila Livestock Assistant
3. Veterinary Field Assistant
4. Compounder
5. Dresser
6. Veterinary Surgeon- Member secretary

➢ **Terms of Reference:**

1. Outbreak management of Avian Influenza
2. Post outbreak surveillance
3. Collection of sample
4. Monitoring post outbreak activities
5. Communication with Upazila Multisectoral Coordination Committee
6. Coordination with the Upazila Rapid Response Team (Human)
7. Co-opt members (when necessary)

**City Corporation RRT**

It is proposed to have a RRT for City corporation. However, the roles and responsibilities will be identified after consulting with the city corporation.

**Joint National Rapid Response Team (JNRRT)**

Multisectoral representation should be reflected by

**Emergency Preparedness Technical Committee**

**Members (Not according to warrant of precedence):**

1. Director General of Health Services (Chairperson)
2. Additional Director General, Administration, DGHS
3. Additional Director General, Planning and Development, DGHS
4. Director Disease Control and & Line Director Communicable Disease Control Programme, DGHS
5. Line Director, Non-Communicable Disease Control, DGHS
6. Line Director, Planning Monitoring and Research, DGHS
7. Line Director, MNC&AH
8. Director (Administration), DLS
9. Conservator of Forest
10. Director (Hospital), DGHS
11. Director (PHC), DGHS
12. Director, Planning and Research, DGHS
13. Director, MIS, DGHS
14. Director, IPH
15. Director, National Institute of Laboratory Medicine & Referral Center (NILMRC)
16. Chief, Health Education Bureau, DGHS
17. Chief Scientific Officer, Virology, IEDCR
18. Chief Scientific Officer, Epidemiology, IEDCR
19. Program Manager (Communicable Disease Control), DGHS
20. Director, Institute of Epidemiology, Disease Control & Research (IEDCR) and National Influenza Center (NIC) (Member Secretary)

**Terms of Reference of Emergency Preparedness Technical Committee:**

1. Review the epidemiological and laboratory data on Respiratory EIDs and analysis of the current situation
2. Recommend IHR focal person inform WHO country office
3. Sharing the situation report with inter-sectoral steering committee
4. Recommendation on activation of the pandemic preparedness plan as necessary
5. Recommendation for escalation and de-escalation between the operational stages to inter-sectoral steering committee
6. 
7. Review and approve relevant strategies and guidelines along with any revision required
8. Coordinate with other Directorates involved in the Plan;
9. Will recommend the action for any novel disease detection/epidemic that emerges and response
10. Facilitate the allocation of funds for the different activities within the sector;
11. Meet quarterly and when the country's situation requires
12. Co-opt member (s) if necessary
13. May invite relevant experts to attend the meeting to give their expert opinion.

?? Emergency Management Committee (PMC) in Hospitals