National Influenza Pandemic Preparedness and Response Plan (NIPPRP)

THE NATIONAL PANDEMIC PLAN

2nd Edition, 5th Revision
2025

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FOREWORD

The National Influenza Pandemic Preparedness and Response Plan (NIPPRP 2025) serves as a comprehensive framework for coordinated action to prepare for and respond to influenza and other pandemics. Spearheaded by the Ministry of Health, this plan outlines the responsibilities of all government sectors and agencies to ensure a unified response in the event of a pandemic, based on the guidance and directives provided by the Ministry.

Pandemics are inherently unpredictable in terms of timing, severity, and affected populations. Therefore, this updated version of the pandemic plan establishes a flexible framework that can be applied to any pandemic, regardless of the nature of the virus. This revision reflects changes in legislation and terminology, while maintaining the key public health interventions and decision- making processes established in earlier versions. Drawing on lessons learned from past experiences, including the influenza A (H1N1) 2009 pandemic and the recent past COVID-19 crisis, this plan remains a dynamic document, continually evolving to address emerging risks.

The global risk of pandemics persists, and their potential impact will vary with each event. The COVID-19 pandemic has underscored the need for adaptive and robust health systems and has provided valuable lessons on the importance of early detection, swift response, and clear communication. Bhutan's experience with COVID-19 has highlighted the need for strong health infrastructure, enhanced community engagement, and effective risk communication to mitigate the effects of such global health threats.

This living document is crucial for guiding Bhutan's preparedness and response efforts. The Pandemic plan represents a third-generation, risk-based approach that fosters collaboration across all levels of government, public health organizations, and the community. By setting clear

directives for partnerships, planning, risk management, and capacity building, this plan strengthens Bhutan's resilience, ensuring the country is better equipped to face future health emergencies.

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SECRETARY
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The collaborative efforts of WHO, along with national and regional stakeholders have significantly contributed to building the capacity and resilience of Bhutan's health infrastructure, ensuring that the country remains well-equipped to respond to future public health emergencies.

ABBREVIATIONS

Acronym	Definition/Full-form
AI	Avian Influenza
BFDA	Bhutan Food and Drug Authority
DLGDM	Department of Local Governance and Disaster Management
DoL	Department of Livestock
DoPH	Department of Public Health
DDMC	District Disaster Management Committee
DHS	Department of Health Services
DDMO	Dzongkhag Disaster Management Officer
DPHO	District Public Health Officer
FAO	Food and Agriculture Organization
HEDCP	Health Emergency and Disaster Contingency Plan
HEMC	Health Emergency Management Committee
HPAI	Highly Pathogenic Avian Influenza
HITAD	Health Intervention and Technology Assessment Division
ILI	Influenza-like Illness
IOC	Incident Operation Centre
KGUMSB	Khesar Gyalpo University of Medical Sciences of Bhutan
MOAL	Ministry of Agriculture and Livestock

MoF	Ministry of Finance
MoH	Ministry of Health
MoHA	Ministry of Home Affairs
NCAH	National Center for Animal Health
NDMA	National Disaster Management Authority
NEOC	National Emergency Operation Centre
NEWARS	National Early Warning Alert and Response Surveillance
NIPPRP	National Influenza Pandemic Preparedness and Response Plan
PHC	Primary Health Center
PPE	Personal Protective Equipment
PRET	Preparedness and Resilience for Emerging Threats
RRT	Rapid Response Team
SARI	Severe Acute Respiratory Infections
SOP	Standard Operating Procedures
WOAH (OIE)	World Organisation for Animal Health (formerly the Office International des Epizooties)
WHO	World Health Organization

EXECUTIVE SUMMARY

The National Influenza Pandemic Preparedness and Response Plan (NIPPRP 2025) provides a comprehensive framework to mitigate the health, social, and economic impacts of influenza pandemics in Bhutan. By employing a coordinated "whole-of-government, whole-of-society" approach, the plan aligns with global frameworks such as the WHO Pandemic Influenza Preparedness (PIP) Framework and the Preparedness and Resilience for Emerging Threats (PRET) initiative. This ensures a robust and adaptable strategy for managing pandemics effectively while fostering national resilience.

The NIPPRP 2025 focuses on strengthening Bhutan's preparedness, response, and recovery capabilities for influenza pandemics and other respiratory diseases such as COVID-19, SARS, Influenza-Like Illness (ILI), and Severe Acute Respiratory Infection (SARI). Key measures include real-time surveillance for early detection, stockpiling essential medical supplies, mass vaccination campaigns, scaling healthcare system capacity, and public health education to enhance community awareness and participation.

The plan emphasizes evidence-based decision-making, equitable distribution of resources, and the integration of the One Health Approach, recognizing the interconnectedness of human, animal, and environmental health. It also promotes collaboration across sectors such as healthcare, agriculture, and environmental management to address pandemic challenges comprehensively.

Tailored to Bhutan's unique geographic, social, and cultural context, the plan leverages strong community networks for efficient communication and equitable resource distribution, even in remote areas. It integrates a robust Incident Command Structure (ICS) to streamline roles and coordination and undergoes regular testing and updates through simulations to remain effective against emerging threats.

Collaboration with both national and international stakeholders is integral to the success of the NIPPRP. The plan involves government ministries, healthcare professionals, community leaders, NGOs, and emergency responders, while also coordinating with global partners such as WHO, UN agencies, FAO, and CDC to align with international best practices.

The NIPPRP builds on lessons learned from the COVID-19 pandemic to improve preparedness and response strategies. It aligns with Bhutan's national health priorities, including the Health Emergency and Disaster Contingency Plan (HEDCP 2024), while fostering regional and global cooperation.

Serving as a vital framework, the NIPPRP aims to safeguard Bhutan's public health, mitigate the effects of pandemics, and strengthen resilience through strategic planning and cross-sector collaboration. Specifically addressing influenza pandemics, it ensures Bhutan's readiness to manage future health emergencies while supporting the nation's well-being and developmental objectives.

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Chapter 1
INTRODUCTION

1.1. Background

Bhutan, a small landlocked country with a population of approximately 727,145, predominantly residing in rural areas (accounting for 70% of the total population), faces unique challenges in preparing for and responding to a respiratory pathogen epidemic or pandemic. The country's rugged mountainous terrain, coupled with a limited healthcare infrastructure, creates specific vulnerabilities that must be addressed to ensure a timely and effective response to any potential pandemic. Although Bhutan has a relatively low population density (19 people per square kilometer), the population density in urban centers such as Thimphu (4,389 persons/km2), Samdrup Jongkhar (2,086 persons/km2), and Phuentsholing (1,773 persons/km2) is significantly higher [1], increasing the risk of disease transmission in these areas.

Seasonal influenza outbreaks often impact children, the elderly, and individuals with comorbidities. To address this, Bhutan launched its influenza vaccination program in 2019, building on a surveil- lance system established in 2008. The program targeted high-risk groups and was integrated into routine immunization by 2019. From 2019-2022, vaccination coverage was highest in children (62.5%-96.9%) and lowest in pregnant women (47.7%-62.5%). Despite COVID-19 disruptions, Bhutan maintained high coverage through ongoing services and catch-up campaigns, with the influenza program strengthening the country's capacity for its COVID-19 vaccination rollout in 2021 [2].

Bhutan has a network of Primary Health Centers (PHCs), hospitals, and referral hospitals, but faces challenges in surge capacity during pandemics. While public health campaigns exist, awareness about influenza prevention remains limited in rural areas especially the

difficult-to-reach population like highlanders. Influenza pandemics, while infrequent and unpredictable, are recurring phenomena with the potential to severely impact public health, social structures, and economic stability [2–4].

Building on lessons from the 2009 influenza pandemic and COVID-19, WHO has updated its pandemic risk management guidelines and introduced the Preparedness and Resilience for Emerg- ing Threats (PRET) initiative. PRET strengthens global health security by focusing on prevention, preparedness, response, and resilience. It adopts a flexible framework, recognizing pandemics as evolving along a continuum rather than rigid phases, to better manage unpredictable global health threats [5]. PRET also encourages countries to consider a mode of transmission approach to epidemic and pandemic planning which increases programmatic efficiencies and enables countries to prepare for the unknown.

Bhutan's pandemic preparedness plan has been refined through multi-sector workshops in 2015, 2016, and 2019, resulting in the draft National Influenza and Pandemic Preparedness Response Plan (NIPPRP 2020). These reviews aligned the plan with WHO's updated guidelines while adapting strategies to Bhutan's unique resources and capacities, demonstrating a commitment to evidence-based risk management.

As of the latest revision, Bhutan is positioned within the inter-pandemic of the pandemic contin- uum, reflecting current global and national threat levels for influenza. The threat of transboundary incursion of highly pathogenic avian influenza in domestic poultry continues to pose a significant and ongoing risk [2]. While there is no immediate threat, continuous surveillance remains essential for

early detection and rapid response to emerging influenza strains, ensuring Bhutan's readiness for potential pandemics.4

1.2. Country Health Profile

1.2.1. Human Health System

The health system in Bhutan operates under a government-financed and managed model. The MoH is the apex body responsible for formulating health policies and ensuring the delivery of comprehensive health services. According to Section 21 of Article 9 of the Constitution of the Kingdom of Bhutan, the state guarantees free access to basic public health services, which include both modern and traditional medicine practices. The provision of free healthcare is a fundamental national commitment that ensures equitable access to essential health services. The organizational structure of the Ministry is detailed in Appendix 6.1.

The involvement of the private sector in Bhutan's healthcare delivery is intentionally limited, aligning with the National Health Policy. Private sector participation is restricted to areas such as pharmaceutical retail and selective diagnostic services, maintaining the government's central role in healthcare provision.

Key departments within the Ministry includes:

Department of Health Services (DHS): Responsible for overseeing curative and palliative care services, ensuring quality in medical care delivery across the nation. The Health Intervention and Technology Assessment Division (HITAD) under DHS conducts cost and technical assessments to evaluate new essential drugs, equipment, and hospital supplies, ensuring their quality, effectiveness, and cost-efficiency.

Department of Medical Products (DMP): DMP is mandated with procurements and supplies of essential drugs, equipment, and other hospital consumables. The department also oversees the equitable distribution of these supplies to district health facilities, ensuring operational efficiency across the healthcare network.

Department of Public Health (DoPH): Focused on health promotion, disease prevention, and control programs, as well as rehabilitation services, to maintain public health standards.

The government-centric model emphasizes a cohesive, integrated approach to healthcare delivery, leveraging limited private sector involvement to maintain equitable access. Strengthening health promotion and disease prevention strategies while ensuring the efficient management of medical supplies remain key priorities in Bhutan's health system governance.

Bhutan delivers healthcare services through a well-structured, three-tiered network consisting of a National Referral Hospital, Regional Referral Hospitals, District Hospitals, and Primary Health Centres (PHCs). According to the Annual Health Bulletin 2024, this system includes one national referral hospital, two regional referral hospitals, 55 hospitals, 187 PHCs, 51 sub-posts, and 3 Thromde Health Centres [6]. Additionally, 12 private diagnostic testing centres complement the public healthcare infrastructure.

Despite efforts to expand healthcare access, the system faces significant challenges, particularly regarding human resources. While the Human Resource Master Plan (2013–2023) projected a need for over 10,000 healthcare personnel, only just over 4,000

staff, including administrative workers, were employed as of 2023. In 2024, the doctor-to-population ratio stood at 5.2 per 10,000, and the nurse-to-population ratio was 21.0 per 10,000. Healthcare services are overseen at the district level by Chief Medical Officers (CMOs) and District Public Health Officers (DPHOs).

Regulatory bodies play a pivotal role in ensuring healthcare quality. The Medical Product Division (MPD) under BFDA safeguards human and animal health by ensuring timely access to quality safe and effective medical products, including through pharmacovigilance and preventing the marketing and use of substandard and falsified medical products. They continue to build their capacity to achieve functionality in all regulatory functions.

BFDA also ensures the quality and safety of medical equipment, diagnostic tools, and other medical devices. Furthermore, the healthcare system benefits from the collaborative efforts of various stakeholders, including government ministries, non-governmental organizations (NGOs), civil society organizations (CSOs), and international organizations. These entities contribute to national and international health goals through technical, financial, and operational support.

Despite this established framework, Bhutan's healthcare system faces several challenges, including persistent workforce shortages, increased turnover of staff and uneven access to services in rural areas. Strengthening regulatory frameworks, enhancing infrastructure, and addressing human resource attrition and gaps remain priorities. These efforts align with Bhutan's constitutional commitment to providing free, equitable healthcare services to all citizens while promoting public health and well-being.

1.2.2. Health care services at the National level

The Jigme Dorji Wangchuck National Referral Hospital (JDWNRH) serves as the National Referral Hospital in the country. It would act as the nodal hospital for providing technical backup to other hospitals during a pandemic, which would include medical specialists and treatment of severe cases.

1.2.3. Health care services at the Regional level

Mongar and Gelephu Regional Hospitals provide referral services to districts in eastern and central regions. These two Regional Referral Hospitals would act as the nodal hospital for providing technical backup to district hospitals within their region during a pandemic, which would include manpower (relevant experts) and for treatment of severe cases. The laboratories of the regional referral hospitals have been upgraded and equipped to test clinical samples for influenza or any other emergent pathogen of pandemic potential. Each hospital has its own incident command system, which addresses operations, planning, logistics, administration and finance. The incident command system at each hospital is integrated with regional plans.

1.2.4. Health care services at the District level

The district hospital is headed by Chief Medical Officer, assisted by nurses, technicians, support staff and DPHOs. The District Hospitals provide local response and treatment of cases during an outbreak. The district hospital is equipped to collect and send clinical samples to the laboratories of Regional Referral Hospitals or the PHL for testing for influenza.

1.2.5. Health care services at the Sub-District level

The Primary Health Centre (PHC) provides primary health care including treatment of common ailments and MCH services. Each PHC has one Health Assistant, one basic health worker, one ANM and one supporting staff. PHCs monitor their catchment areas and report any upsurge in ARI illnesses to the district health authorities on a weekly basis. Any unusual increase in the cases are investigated by District health officials led by the Chief Medical Officer (CMO).

1.2.6. Additional Support services

While no additional healthcare personnel are available in the country, a few groups exist that could be called upon to assist with the response to a pandemic:

1. Khesar Gyalpo University of Medical Sciences of Bhutan (KGUMSB) – KGUMSB is man- dated with medical education, research, innovation and professional development of the health professionals in the country.
2. De-Suung (Guardians of Peace) and Gyalsung (National Services)- volunteer forces that support national peace, security, and development through disaster response, crowd management, and community service.
3. Spiritual groups, such as monks, who could provide spiritual support.
4. Bhutan Red Cross Society, with personnel that are capable of supporting emergency services.
5. Retired health care personnel and medical/nursing/allied health trainees to provide surge support during pandemic.
6. Relevant CSOs and private organizations.

1.3. Animal Healthcare System

Appendix 6.2 outlines the divisions of the animal health sector under the Department of Livestock (DoL), Ministry of Agriculture and Livestock (MoAL). Human, animal, and environmental health are closely interconnected, with 60% of human pathogens and 75% of emerging diseases originating from animals [7]. Many of these diseases have epidemic or pandemic potential, causing significant human morbidity, social disruption, and economic loss. A robust animal health surveillance system is vital for early detection and response, preventing disease spread at its source.

1.3.1. Department of Livestock

The Department of Livestock (DoL) oversees animal health, livestock production, including feed and fodder development. The animal health services in the country are facilitated through a network of animal health facilities spanning various administrative levels, from gewog to the national level. This network comprises key institutions such as the National Centre for Animal Health (NCAH), National Veterinary Hospital (NVH), Regional Livestock Development Centre (RLDC), three Regional Veterinary Hospital and Epidemiology Centre (RVHandEC), 20 District Veterinary Hospitals, and 205 Livestock Extension Centres. The government provides free animal health services, including treatment, vaccinations, deworming, and sterilization, as well as emergency response to disease outbreaks, disease surveillance, and advisory support to farmers on best practices for animal health and management.

1.3.2. Bhutan Food and Drug Authority

The Bhutan Food and Drug Authority (BFDA) oversees biosecurity and food safety, regulating the import and export of animals, plants,

and related products. BFDA enforces movement bans during outbreaks of notifiable animal diseases and monitors commercial livestock farms. It operates comprehensive animal quarantine stations at six major entry points.

1.4. One Health approach

A One Health approach, integrating human, animal, and environmental health, is crucial for addressing the interconnected risks posed by emerging pandemics. Strengthening surveillance systems, enhancing border controls, and fostering cross-sector collaboration and proactive measures, using the One Health framework ensures a holistic response to mitigate risks and enhance Bhutan's preparedness for potential influenza pandemics. Bhutan's vulnerability to external biological threats is heightened by several risk factors, including limited resources for enhancing surveillance systems and knowledge gaps in pandemic preparedness.

In Bhutan, One Health approach is formally recognized with the presence of the Inter-Ministerial Committee for One Health (IMCOH), which serves as the highest steering committee for the matters related to One Health. The IMCOH is being technically advised by the multi-disciplinary One Health Technical Committee. One Health Secretariat (OHS) composed of members from OH sectors coordinates the One Health initiatives and interventions in the country. OHS actively engages with national and international stakeholders, including WHO, WOAH, and FAO, to implement One Health initiatives and access technical support. The Bhutan One Health Strategy Plan is a significant document providing a comprehensive strategy for tackling zoonoses, AMR, and emerging risks through multi-sectoral coordination.

1.5. Purpose of the NIPPRP

A severe respiratory pathogen pandemic can strain societal resources, causing significant loss of life, social disruption, and economic consequences. To minimize these impacts, comprehensive pandemic plans are essential.

The purpose of the NIPPRP is to provide a framework for preparing for and responding to an influenza pandemic, reducing its health, social, and economic effects, and ensuring a coordinated and resilient response across all sectors of society.

1.6. Scope of the NIPPRP

The pandemic plan provides a comprehensive framework to prepare for, respond to, and recover from influenza pandemics in Bhutan. The plan emphasizes a "whole-of-government, whole of society approach" and serves as a guide for the government, health authorities, and stakeholders at all levels to take coordinated actions during a pandemic.

The specific scope of the NIPPRP includes:

1. Preparedness and Response measures for Influenza Pandemics: The NIPPRP outlines government measures necessary for preparedness and response to influenza pandemics. This includes interventions such as enhanced surveillance, stockpiling essential medical supplies, mass vaccination campaigns, public health education, and improving healthcare system surge capacity.
2. Guidance for emerging infectious diseases: While the plan is specific to influenza pandemics, its approach serves as a foundational framework for responding to other emerging respiratory infectious diseases, such as COVID-19, Severe

Acute Respiratory Syndrome (SARS), and Middle East Respiratory Syndrome (MERS-CoV). Bhutan's experiences with these diseases highlight the importance of a flexible, adaptable Incident Command Structure (ICS), which the NIPPRP adopts for any pandemic scenario.

3. Incident Command System (ICS): The NIPPRP incorporates a robust ICS that facilitates clear roles and responsibilities, decision-making, and coordination during a pandemic. This structure will be directly applicable to other pandemics, ensuring consistency in national response efforts.

4. Testing and updating the plan: The NIPPRP is designed to be a living document, peri- odically tested through simulations and exercises to ensure its relevance and functionality. Lessons learned from these tests and real-world pandemics will inform updates to the plan to reflect emerging threats, advances in medical knowledge, and improvements in pandemic response strategies.

5. Focus on Bhutan's context: The plan considers Bhutan's unique geographic, social, and cultural context, such as its rugged terrain, dispersed rural population, and strong community networks. It emphasizes leveraging these factors to ensure equitable distribution of resources, efficient communication, and community participation in pandemic preparedness and response.

6. Integration with regional and global efforts: Bhutan's NIPPRP aligns with international frameworks, such as the World Health Organization's (WHO) Pandemic Influenza Preparedness Framework, while emphasizing regional coordination with neighboring countries to address cross-border health threats.

By covering these areas, the NIPPRP aims to mitigate the impact of influenza pandemics, safeguard public health, and build Bhutan's resilience to future pandemics through a structured, adaptable, and inclusive approach.

1.7. Objectives

The main objective is to produce a robust and responsive plan tailored to Bhutan's unique con- text, while also harmonizing with the national Health Emergency and Disaster Contingency Plan (HEDCP 2024) and regional and international frameworks.

The specific objectives are to:

1. Establish a real-time surveillance system for early detection, continuous monitoring, and regular risk assessments to inform response strategies.
2. Develop scalable clinical care protocols and strengthen healthcare infrastructure to manage increased patient volumes, ensuring timely treatment and resource allocation.
3. Implement community-based care strategies for vulnerable populations and ensure clear, timely communication on prevention, treatment, and available resources.
4. Ensure equitable distribution of vaccines and treatments, while providing social and economic support to individuals and businesses affected by the pandemic.
5. Foster coordinated efforts across all sectors, conduct regular preparedness training and drills, and continuously adapt the plan based on emerging data and lessons learned.

1.8. Target Audiences

The NIPPRP document is designed to serve a wide range of stakeholders engaged in the planning, preparation, and response to a pandemic in Bhutan. Its intended users include government entities for decision-making, health professionals for preparedness and response activities, and the public for coordination and communication efforts.

1.8.1. National audiences

The primary national audiences include, but are not limited to, the following:

1. Ministry of Health (MoH), including the Royal Centers for Disease Control (RCDC), hospitals, and Primary Health Centers (PHCs).
2. Department of Local Governance and Disaster Management, Ministry of Home Affairs.
3. Office of the Prime Minister (PMO).
4. Department of Livestock, Ministry of Agriculture and Livestock.
5. Ministry of Finance.
6. Educational Institutions, including schools, colleges, and universities.
7. Community Leaders, including local leaders, religious leaders, and community organization
8. Non-Governmental Organizations (NGOs) and Civil Society Organizations (CSOs), including Dessups,Gyelssups, Bhutan Red Cross Society, and the Royal Bhutan Army (RBA)/Royal Bhutan Police (RBP).

9. Emergency Response Teams, including first responders, disaster management teams, and Civil and defense personnel from the RBA/RBP.
10. Relevant authorities including RBP and Immigration Officials at the Point of Entry.

1.8.2. Regional and Global stakeholders

The document also targets key regional and global stakeholders, such as:

1. World Health Organization (WHO), World Organisation of Animal Health (WOAH), and other United Nations organizations, including UNICEF, FAO etc.
2. International and Intergovernmental Agencies involved in pandemic preparedness and response, such as the Centers for Disease Control (CDC) and Prevention, the World Bank (WB), and others.

1.9. Methodology

The revision of Bhutan's National Influenza Pandemic Preparedness and Response Plan (NIPPRP) follows a comprehensive, multi-phase approach that incorporates stakeholder engagement, evidence-based review, and alignment with global and regional best practices. This approach ensures that the revised NIPPRP is both actionable and sustainable, strengthening Bhutan's preparedness for future influenza pandemics and other zoonotic diseases. The process of revising the NIPPRP involved four key steps:

1. The strengths, gaps, and limitations of the existing plan were assessed, along with emerging pandemic threats. This included analyzing the NIPPRP (2020), HEDCP 2024, and

relevant national policies, consulting with stakeholders from government agencies, human and animal health experts, and international specialists, conducting a gap analysis, and reviewing past influenza outbreaks and COVID-19 responses to strengthen the framework.

2. Aligned the NIPPRP with global and regional standards, including WHO and IHR guidelines. The activities in this phase involved reviewing global best practices, regional pandemic plans (such as SEARO and ASEAN), and FAO guidelines. Strategies were then adapted to fit Bhutan's specific context, and key performance indicators (KPIs) were established to monitor and evaluate the effectiveness of the pandemic response.
3. Based on findings from the earlier phases, a revised NIPPRP was developed to address the gaps identified. The updated plan was structured around the key phases of preparedness, response, and recovery. It also defined clear roles for stakeholders and emphasized cross-sectoral collaboration through the One Health approach, integrating human, animal, wildlife, and environmental health considerations into the response framework.
4. In the last step, we ensured the revised NIPPRP was robust, actionable, and supported by relevant stakeholders. Workshops involving the Health Emergencies Programme, DoPH, MoH, and WHO helped review and validate the revised plan, integrating valuable feedback from stakeholders. The final version was then submitted for formal approval by the MoH and endorsed by international partners, with expert support from WHO and KGUMSB to clarify roles, responsibilities, and action plans.

1.10. Legal and Policy considerations

In Bhutan, legal and policy considerations for the NIPPRP ensure a coordinated pandemic response. Existing legislation and policies provide the framework for measures such as quarantine, travel restrictions, and vaccination, applied proportionately to protect public health and safeguard vulnerable groups. Bhutan's response will align with the International Health Regulations (IHR) for effective international cooperation. The development and implementation of the NIPPRP are guided by the following policies and legislations outlined in Table 1.1 below.

Table 1.1: Summary of the key legislative and policy frameworks guiding Bhutan's preparedness for influenza and other public health emergencies

Policy/Legislation	Description
Constitution of the Kingdom of Bhutan (Article 33)	Article 33, Section 22 of the Constitution of Bhutan states that *"The Druk Gyalpo may, on the written advice of the Prime Minister, proclaim a public emergency,"* allowing the government to take necessary measures. Section 7 of Article 33 further allows the suspension of certain constitutional rights during a state of emergency, providing a legal basis for implementing public health measures during a pandemic.
Penal Code (Amendment 2011)	In a health emergency, *"Any individuals not complying and failing to cooperate shall be liable for the offence of Criminal Nuisance under Section 410 and for the offence of Obstruction of Public Service under Section 424 of the Penal Code (Amendment 2011),"* ensuring accountability for non-compliance with health measures.

Policy/Legislation	Description
Health Bill 2020	(draft) The National Health Bill currently in draft stage should ensure that all the legislative requirements for the health emergencies, including pandemic, are incorporated in alignment with the Constitution, the Penal Code of Bhutan, and incorporate the key issues of the newly amended International Health Regulations (IHR).
Disaster Management Act of Bhutan 2013	Requires agencies to prepare and update emergency plans and mandates the MoH to manage medical services during disasters. The Disaster Management Act of Bhutan 2013 (Chapter 6, Sections 67 and 76) mandates that agencies notified by the NDMA prepare, implement, review, and update emergency contingency plans. Additionally, Chapter 10, Section 111 of the Act requires the MoH to manage emergency medical services during disasters.
National Health Policy 2011	The National Health Policy 2011 mandates health facilities to manage emergencies, epidemics, and disasters, with a revised draft under review. It supports evidence-based decision-making through the HMIS and ensures ethical research practices via the REBH and IRB. The policy also guides the MoH in prioritizing research and mobilizing funds with national and international health agencies.
Livestock Act of Bhutan 2001	The Act focuses on preventing and controlling zoonoses, including novel animal-borne pathogens that could impact public health and lead to epidemics or pandemics, ensuring Bhutan's preparedness for such events.

Policy/Legislation	Description
Health Emergency and Disaster Contingency Plan (2024)	The HEDCP, developed in 2016 and revised in 2024, enhances preparedness for disasters and health emergen- cies, including pandemics, in line with the DMAB 2013. It outlines actions, responsibilities, resources, and timelines across health institutions. Unlike the NIPPRP, it covers a broader range of emergencies, including natural disasters, epidemics, bioterrorism, biological toxins, and radio-nuclear events.
International Health Regulations (IHR 2005)	The IHR 2005 provides the legal framework for preventing and responding to global disease spread, including influenza pandemics, and is binding on 196 States Parties, including all WHO Member States. As a WHO member, Bhutan will align its laws, policies, and the NIPPRP with the IHR 2005 to ensure effective compliance and cooperation.

1.11. Principles and Ethical considerations

Bhutan's pandemic preparedness and response are anchored in principles that emphasize equity, inclusiveness, coherence, and sustainability. These guiding tenets ensure that strategies are evidence- informed, transparent, and adaptable, fostering a unified and effective approach to health emergencies. Ethical considerations further underscore the importance of non-discrimination, informed consent, and the protection of human rights, ensuring that responses are fair and just. By integrating these principles and ethical standards, Bhutan aims to enhance its health systems, promote public trust, and safeguard the well-being of all its citizens.

1.11.1. Principles for Pandemic Preparedness and Response in Bhutan

Bhutan's approach to pandemic preparedness and response is guided by the following key principles:

i. Equity: Ensuring equitable access to medical products, prioritizing vulnerable groups.

ii. Inclusiveness: A whole-of-government and society approach, fostering community engage- ment.

iii. Coherence: Promoting coordination across sectors for a unified response.

iv. Equality: Ensuring non-discrimination and protecting marginalized groups.

v. Evidence-Informed Decision-Making: Adapting strategies based on data and new evidence.

vi. Transparency: Proactive preparedness with clear decision-making to build trust.

vii. Sustainability: Long-term financial and technical sustainability in response systems.

viii. Strengthening Existing Systems: Enhancing current health systems for effective pandemic response.

ix. Continuous Learning: Using lessons from past experiences and research to improve pre- paredness.

These principles ensure that Bhutan's pandemic response is effective, inclusive, adaptable, and sustainable.

1.11.2. Ethical considerations for Pandemic Preparedness and Response in Bhutan

Pandemic preparedness in Bhutan must adhere to ethical principles that prioritize public health, human rights, and fairness. Key considerations includes:

1. Equitable Access: Ensure fair access to healthcare and resources, especially for vulnerable groups.
2. Non-Discrimination: Treat all individuals equally, focusing on marginalized populations.
3. Transparency and Accountability: Maintain clear communication,foster trust and government accountability.
4. Informed Consent: Provide accessible information to allow individuals to make informed health decisions.
5. Solidarity: Promote collective responsibility for the well-being of others.
6. Privacy: Safeguard individuals' health data and confidentiality.
7. Fair Resource Distribution: Allocate resources based on need, not influence.
8. Global Cooperation: Advocate for equitable global access to health resources.
9. Public Engagement: Involve communities in decision-making processes.
10. Healthcare Worker Protection: Ensure the safety and support of healthcare workers.

These principles ensure Bhutan's pandemic response is fair, inclusive, and respects human rights.

Chapter 2
PANDEMIC PROFILE and HEALTH IMPACT

2.1. Risk of Influenza Pandemic (Seasonal Influenza, Avian Influenza and COVID-19)

Bhutan faces significant risks from influenza pandemics, including seasonal influenza, avian influenza, and the ongoing challenges posed by COVID-19. Understanding these threats is crucial for effective public health planning and response. Such risks are described in the context of global and regional situational narratives, and narrowing down and focusing on the country specific situational analysis, in the subsequent sub-sections.

2.1.1. Global and Regional situational analysis

Influenza pandemics, though infrequent, have had significant impacts globally. Since the 1918 (H1N1 - *"Spanish Flu"*) pandemic, the world has experienced three major influenza pandemics: in 1957 (H2N2 - *"Asian Flu"*), 1968 (H3N2 - *"Hong Kong Flu"*), and 2009 (H1N1pdm09 - *"Swine Flu"*). The 2009 swine flu pandemic, caused by a new H1N1 virus, was the first influenza pandemic of the 21st century, resulting from a triple reassortment of avian, swine, and human flu strains. It established sustained human-to-human transmission and now circulates seasonally. The 1918 Spanish Flu remains the deadliest, causing 50 million deaths.

Pandemic preparedness for influenza is a global priority due to ongoing zoonotic threats, such as avian influenza (H5N1, H7N9), which can lead to rapid global spread of novel strains. Seasonal influenza alone causes 290,000 to 650,000 deaths annually. Resources like the WHO's Pandemic Influenza Preparedness (PIP) framework support influenza and broader respiratory pathogen preparedness. Additionally, the COVID-19 pandemic has highlighted the importance of robust influenza surveillance and preparedness for future threats.

South Asia, with its dense population and high human-animal interaction, faces significant zoonotic influenza risks. Countries like India, Bangladesh, and Nepal report frequent avian influenza outbreaks, with occasional human spillovers. However, South Asian nations have strengthened ILI and SARI surveillance networks, with WHO support and regional collaborations. Laboratories now integrate influenza and SARS-CoV-2 diagnostics. Despite efforts to promote seasonal influenza vaccination for high-risk groups, coverage in the South East Asia Region (SEAR) remains low due to cost, awareness, and logistical barriers. Additionally, risk factors such as wet markets, live bird trade, and backyard poultry farming contribute to the heightened zoonotic influenza transmission risks in the region.

2.1.2. Country-specific situational analysis

Bhutan remains vigilant due to the ongoing risks of zoonotic influenza viruses like H5N1 and H7N9. Following the multi-hazard STAR workshop in October 2023, seasonal influenza, avian influenza, and COVID-19 were categorized as moderate to high-risk [8]. While human-to-human transmission has not significantly increased, continued surveillance and preparedness are crucial for detecting novel strains. Bhutan's Influenza-Like Illness (ILI) and Severe Acute Respiratory Infection (SARI) surveillance systems track trends, monitor outbreaks, and identify circulating strains. The RCDC plays a key role in investigating outbreaks and analyzing samples for emerging strains.

In just five years since launching its seasonal influenza vaccination program, Bhutan has developed a successful model recognized globally. Despite initial challenges such as cost, awareness, and logistical barriers, the program's rapid progress has become an

inspiring example for other countries aiming to enhance influenza vaccination coverage.

Bhutan integrates its influenza preparedness efforts into the broader HEDCP 2024. This framework facilitates intersectoral coordination and resource optimization for pandemic response, covering areas such as operational reviews, seasonal outbreak analysis, and simulation exercises to validate response measures. As part of the WHO's SEAR, Bhutan benefits from shared resources and expertise, including the WHO's FluNet and FluID platforms, which enable data sharing and regional monitoring. Bhutan has also contributed to strengthening laboratory capacity for influenza diagnos- tics, enhancing its ability to detect both influenza and SARS-CoV-2 during the COVID-19 pandemic.

Since the first outbreak in February 2010, Bhutan has experienced 16 outbreaks of Highly Pathogenic Avian Influenza (H5N1), mainly in southern districts near India, affecting free-ranging poultry. Effective containment strategies, such as stamping out, have limited the outbreaks to poultry with no human cases. Guided by a One Health approach, these efforts continue, though Bhutan remains at risk of HPAI transmission to humans due to close human-animal interactions.

Influenza outbreaks in Bhutan typically occur in winter, with an additional peak in late summer, affecting all age groups. The 2023 Annual Health Bulletin shows acute respiratory infections as the highest disease burden. Influenza pandemics have occurred intermittently since the 16th century, with varying severity. In addition, the risk of a pandemic in Bhutan is heightened by several risk factors, including:

1. Cross-border movement: Bhutan's porous borders, especially with India, present significant challenges in managing pandemic risks due to the free movement of people, goods, and live animals. These dynamics can facilitate the rapid spread of infectious diseases, particularly during pandemics like influenza or zoonotic outbreaks.
2. Inadequate Laboratory capacity: The country's reliance on regional or international laboratories for advanced diagnostics may delay confirmation of cases during a pandemic.
3. Healthcare workforce: A limited number of trained healthcare workers and currently a high attrition and/or turnover rate poses a challenge to managing outbreaks effectively.
4. Cultural practices: Traditional gatherings and religious festivals can facilitate widespread transmission of influenza viruses.
5. Globalization and tourism expansion: Globalization and increased tourism have heightened the risk of respiratory pathogens and other infectious diseases entering Bhutan. The rise in air and land transport, coupled with diverse origins of passenger and trade, increases the likelihood of introducing new pathogens including those responsible for pandemics. Enhanced connectivity and market access pose biosecurity challenges, necessitating robust measures to prevent disease establishment.
6. Agricultural intensification and expansion: Bhutan's goal of food self-sufficiency by 2040 requires a shift to more intensive farming, increasing the import of agricultural inputs, including livestock. This transition raises the risk of influenza and other zoonotic diseases, as concentrated livestock farming creates environments that facilitate animal-

human interactions and potential disease emergence.

7. Population growth and urbanization: Rising population density, from 17 persons/km2 in 2005 to 19 persons/km2, increases pandemic preparedness challenges. Urbanization brings populations closer to sensitive agricultural and environmental areas, while high-density urban settings strain surveillance and response systems, heightening vulnerability to emerging pandemics.
8. Unauthorized cross-border activities: Unauthorized cross-border activities as well as importation in Bhutan, including the illegal importation of animals and animal products, pose significant biosecurity risks, particularly in the context of an influenza pandemic. These activities bypass established regulations, increasing the likelihood of introducing infectious diseases across borders. Strengthening border surveillance and regulatory frameworks is essential to mitigate the risk of pathogen introduction and prevent the spread of influenza and other infectious diseases.
9. Climate change:Bhutan is experiencing an increase in mean annual temperature by 0.8°C from 1976 to 2005, with winter temperatures rising by 1.3°C. Extreme weather events, erratic rainfall patterns and frequent droughts have led to water shortages in inner valleys and eastern regions, forcing communities to change and adapt agricultural practices including more interactions with animals.

2.2. Respiratory pathogens (Influenza)

Influenza poses a major health threat in Bhutan, where rugged terrain and rural settlements complicate detection and management. Seasonal outbreaks strain healthcare resources, particularly

affecting vulnerable groups. The emergence of new strains could cause widespread illness and economic disruptions. Bhutan's reliance on community-based healthcare and cross-border connectivity highlights the need for strong surveillance and rapid response. The NIPPRP focuses on surveillance, public awareness, mass vaccination, and lessons from COVID-19 to strengthen resilience and reduce the impact of future outbreaks.

2.2.1. Modes of transmission (Influenza Pandemic)

Influenza primarily spreads through respiratory droplets expelled when an infected person coughs, sneezes, or talks. These droplets can be inhaled by individuals in close proximity, making person-to-person transmission a major concern. The virus can also spread indirectly through contact with surfaces or objects contaminated with respiratory secretions, followed by touching the nose, mouth, or eyes. Airborne transmission, through small infectious particles that linger in the air, may also occur in certain conditions, such as crowded, poorly ventilated spaces.

In Bhutan, cultural and social practices such as community gatherings, religious events, and traditional ceremonies promote close interpersonal interactions, increasing the risk of influenza transmission. The communal living arrangements prevalent in many rural areas further facilitate the rapid spread of the virus. Seasonal factors, particularly during colder months, drive people indoors into confined spaces, exacerbating transmission risks. Additionally, Bhutan's reliance on cross-border trade and labor movement heightens the likelihood of introducing new influenza strains, especially in border towns with frequent cross-border interactions.

To mitigate these risks, the NIPPRP emphasizes the importance of public awareness campaigns tailored to Bhutan's socio-cultural context. These campaigns will educate the population on preventive measures such as mask-wearing, hand hygiene, and respiratory etiquette. The plan also highlights the role of targeted interventions in high-risk settings, such as schools, monasteries, and public transportation, to break transmission chains and protect the health and well-being of Bhutanese communities.

2.2.2. Influenza transmission dynamics and Epidemiological parameters

Influenza transmission dynamics are influenced by factors such as the virus's basic reproduction number (R0), incubation period, infectious period, and the susceptibility of the population. Typically, influenza has an R between 1.2 and 2.5, meaning that one infected individual can spread the virus to one to two others, depending on conditions. The incubation period is usually 1–4 days, with individuals becoming infectious 24 hours before symptoms appear and remaining so for up to 7 days after onset. These parameters contribute to the rapid spread of influenza, especially in dense populations and communal settings.

In Bhutan, disease transmission is influenced by urban hotspots with high population density, rural areas with limited healthcare and crowded households, and seasonal factors that increase indoor contact. Cross-border mobility and international pilgrimages, particularly along the southern border, also heighten the risk of new strain introductions. Given the interconnected nature of Bhutanese society, the NIPPRP focuses on both urban and rural transmission control measures. These include promoting vaccination, enhancing border surveillance, and establishing isolation protocols.

Epidemiological modeling tailored to Bhutan will guide resource allocation, public health messaging, and intervention strategies to minimize morbidity and mortality during an influenza pandemic.

2.2.3. Disease severity and Impact of Influenza pandemic

The severity of respiratory pathogen pandemics including influenza is determined by the virulence of the circulating strain, population immunity levels, and the healthcare system's capacity to respond. Influenza pandemics can range from mild, with low mortality and limited social disruption, to severe, causing widespread morbidity, significant mortality, and extensive societal and economic impact. Bhutan, with its small population and limited healthcare infrastructure, faces heightened vulnerability to the severe impacts of an influenza pandemic.

In Bhutan, high-risk groups such as the elderly, children, pregnant women, and individuals with chronic illnesses are particularly vulnerable to severe outcomes, including hospitalization and death, though the specific at-risk populations may vary depending on the characteristics of each pandemic.

The ripple effects of a pandemic extend beyond health, disrupting essential services, education, and livelihoods, particularly in rural communities reliant on subsistence farming or informal economies. Cross-border trade disruptions may lead to shortages of medical supplies, food, and other essentials.

Pandemics can vary in severity, and understanding the full scope in the early stages can be chal- lenging. Bhutan, like other countries, may need to adopt a "no regrets" approach taking proactive measures based on available evidence to minimize harm, even if

the full impact is not yet clear. A severe outbreak could overwhelm Bhutan's healthcare system, particularly regional hospitals and primary healthcare centers, with limited intensive care facilities and healthcare workforce capacity. Socio-cultural caregiving practices may also exacerbate transmission. To mitigate these impacts, Bhutan's NIPPRP emphasizes early detection, vaccination, public health interventions, and international collaboration, while strengthening community engagement and intersectoral coordination.

2.3. Phases and operational stages of respiratory pathogen pandemic including Influenza Pandemic

According to the WHO, pandemics evolve along a continuum rather than through distinct, rigid phases. WHO provides a flexible framework, divided into phases, to assess both global and local situations and guide preparedness and response efforts including context specific action plans.

Recognizing that each respiratory pathogen has its own transmission pattern and varying health and societal impacts, response and recovery plans must be tailored to the specific circumstances of each event. The five phases outlined below in Table 2.1 are based on the operational stages of pandemic response and preparedness, WHO's PRET framework, 2024.

Table 2.1: Operational Stages of Pandemic Response and Preparedness: WHO PRET Framework (2024)

Phase#		
Phase 1	Interpandemic Period	There is no new influenza virus strain circulating that is capable of causing human-to-human transmission. Influenza activity is within expected seasonal levels and does not pose a pandemic threat
Phase 2	Initial event: Pandemic Alert Period	The emergence of a new influenza virus in humans, typically from an animal source, which has the potential for human-to-human transmission, but is limited in extent (localized or sporadic cases).
Phase 3	Sustained Community Transmission: Pandemic Alert Period	Sustained human-to-human transmission of the novel influenza virus has occurred, with increasing numbers of cases in multiple regions. It is still contained in the affected area, and the situation has not yet escalated globally.
Phase 4	Disseminated Community Transmission: Pandemic Period	Widespread transmission of the novel influenza virus across multiple countries or continents. This phase indicates the onset of a pandemic, where the virus is actively circulating in the general population.
Phase 5	Stabilized Situations: Pan- demic Period, Post Peak	The situation where the pandemic wave has passed its peak, with a decline in transmission rates. The virus continues to circulate but at lower intensity, and control measures are generally in place.
Phase 6	Interpandemic Period	Following the resolution of the pandemic, operations return to the inter-pandemic period. This phase focuses on reviewing lessons learned, enhancing preparedness, and preventing future outbreaks.

As shown in Figure 2.1, preparedness, response and recovery plans for respiratory pathogens must be tailored to each event's transmission patterns and impacts. During the inter-pandemic period, the focus is on prevention and preparation. Once a pandemic potential pathogen is detected, operations shift to containment, focusing on reducing transmission through isolation, testing, contact tracing, and quarantine.

As community transmission becomes sustained, risk assessments guide containment efforts, slowing transmission to reduce strain on health systems and protect vulnerable populations. Control measures must evolve based on the situation, including new variants and resource limitations. Once the situation stabilizes, response actions can scale down, but ongoing vigilance and long-term disease control remain necessary with the focus shifting back to preparedness for future outbreaks.

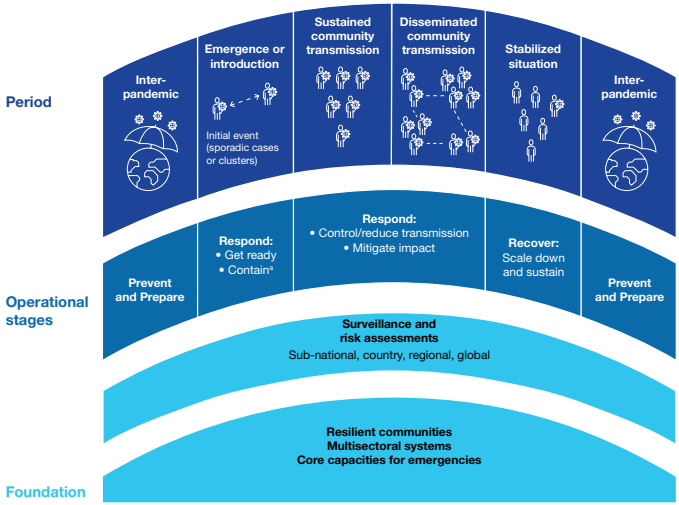

Figure 5.1: Organizing framework for respiratory pathogen pandemic planning (PRET, WHO)

Chapter 3
PANDEMIC INCIDENT COMMAND SYSTEM

3.1. Influenza Pandemic ICS

The NIPPRP 2025 is part of Bhutan's emergency management framework, governed by Acts, regulations and policies. The HEDCP 2024 provides guidance for health emergencies and disasters. A systematic institutional arrangement ensures effective planning, coordination, and communication, with lead agencies identified and their roles defined for influenza pandemic prevention and control.

The ICS for pandemic events, as outlined in the HEDCP 2024, designates the National Task Force as the highest decision-making body for an influenza pandemic, chaired by the Hon'ble Prime Minister. The Health Emergency Management Committee (HEMC), chaired by the health minister, oversees health-related emergency response, including pandemic influenza prevention, preparedness and response. During the preparedness phase and a Public Health Emergency of International Concern (PHEIC), the HEMC will manage health emergencies until the WHO declares a pandemic. At the district level, the Incident Command System (ICS) will be activated as directed by the NTF or HEMC to manage preparedness and response for epidemic and pandemic events.

The prevention, preparedness, and response of an influenza pandemic requires a whole-of-society approach, with government agencies, civil society, private entities, and the public all playing key roles. The Ministry of Health (MoH), Ministry of Home Affairs (MoHA), Ministry of Agriculture and Livestock (MoAL), and Ministry of Finance (MoF) will play a major role for preparedness and response efforts.

Standard Operating Procedures (SOPs) for rapid response teams (RRT) have been developed, outlining roles and responsibilities, and ensuring that all involved agencies and individuals are trained and equipped for immediate action. These SOPs are adapted from the 2011 NIPPRP, COVID-19 NPRP, and other sources.

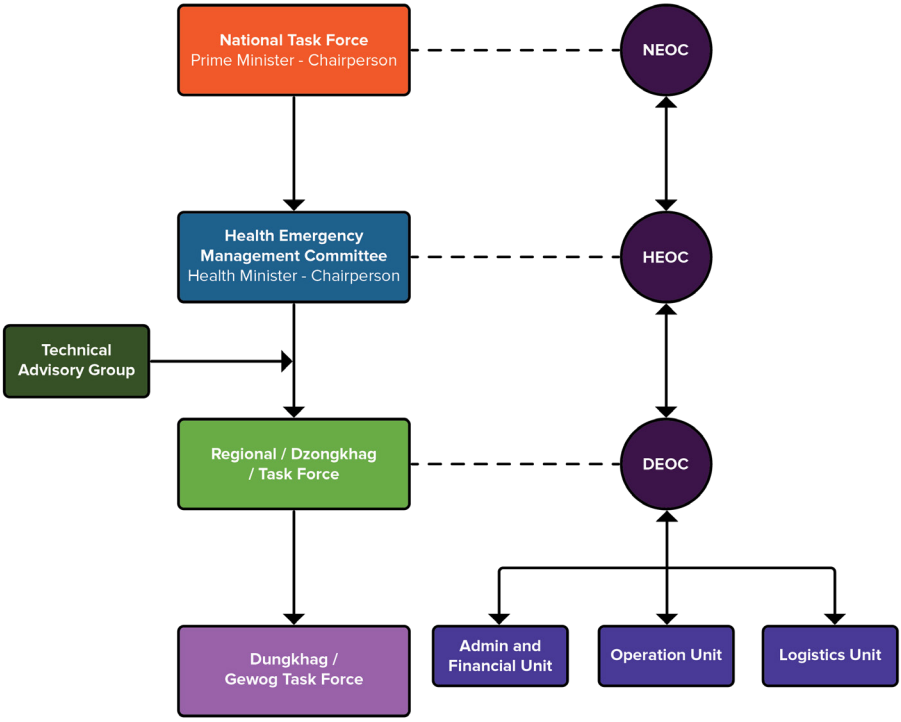

Fig 1. Incident Command System for the management of influenza pandemic

3.2. Incident Command System (ICS)

The following are the ICS at different levels:

3.2.1. National Task Force

During the COVID-19 pandemic, the National COVID-19 Task Force (NC19TF) was established as the highest decision-making body for all matters related to COVID-19 management.

In September 2024, the NC19TF was succeeded by the National Drug Task Force (NDTF), which is being chaired by the Honorable Prime Minister (HPM) and includes the Health Minister, the Secretary of the Ministry of Education and Skills Development (MoESD), the Chief Operations Officer (COO) of the Royal Bhutan Army (RBA), the Chief of Royal Bhutan Police (RBP), and a Deputy Chamberlain (Zimpon Wogma) as members.

This NDTF serves as the National Task Force for Health Emergencies for addressing any public health emergencies including allocating resources, and making high-level decisions related to pandemic responses.

3.2.2. Health Emergency Management Committee (HEMC)

The HEMC, as illustrated in Figure 1, serves as the highest decision-making body in the health sector during emergencies, including disaster-related health crises. Operating from the Health Emergency Operation Centre (HEOC), HEMC oversees command, control, and coordination for preparedness, response, and recovery.

The HEOC is activated upon WHO's declaration of a Public Health Emergency of International Concern (PHEIC) or an outbreak declaration by RCDC. For details on composition and Terms of Reference, refer to Chapter 3 of the HEDCP 2024.

3.2.3. Technical Advisory Group

A Technical Advisory Group (TAG) is vital during a pandemic, offering expert guidance, analysis, and recommendations to manage and respond effectively to influenza or other pandemics. The NIPPRP TAG will include technical experts to support the HEMC in addressing diverse pandemic scenarios and ensuring informed decision-making, as detailed below.

Team composition of TAG:

- Infectious Disease Specialist, JDWNRH
- Internal Medicine Specialist, JDWNRH
- Microbiologist, JDWNRH
- Epidemiologist, KGUMSB
- Epidemiologist, Department of Livestock, MoAL
- Epidemiologist/ Public Health Specialist, DoPH
- Emergency Physician, Emergency Department, JDWNRH
- Chief, Communicable Diseases Division, DoPH (Lead Secretariat)
- Chief, Non-Communicable Diseases Division, DoPH
- Chief, Center for Emerging Infectious Diseases, RCDC
- Chief, Food, Drug and Environment Centre, RCDC
- Other members may be co-opted in accordance with the nature of hazards.

Terms of reference for TAG:

- Provide technical guidance to the HEMC for health emergency management.

- Develop, review and update on outbreak, epidemic or pandemic situations (national and global).
- Review and recommend the requirement of emergency equipment, medicines and supplies for health emergency management.
- Conduct risk assessment and management of the event.
- Review and recommend health emergency and disaster plans, guidelines, and SOPs.
- Any other technical task assigned by the HEMC.

3.2.4. Operation Unit

3.2.4.1. National Health Rapid Response Team

The HEDCP 2024 mandates the formation of Rapid Response Teams (RRT) at national and district levels under HEMC directives to ensure early detection, investigation, and control of public health emergencies. The National Health Rapid Response Team (NHRRT) and District Health Rapid Response Teams (DHRRT) will coordinate closely, with the NHRRT serving as a reserve force for overwhelmed DHRRTs (Figure3.1). RRTs may include experts from other sectors based on the outbreak type. Refer to the Disease Outbreak Investigation and Response Manual 2024 for team composition and Terms of Reference, and SOP for deployment of HR during Health Emergencies for activation and procedures.

In times of the pandemic, Outbreak Investigation and Surveillance Team will be formed under the NHRRT to conduct case finding, contact tracing, investigating, and maintaining databases. These teams assess the cause, impact, and provide control measures while collaborating with other teams at all levels.

Team composition:

- Epidemiologist, Surveillance Unit, RCDC- Lead
- Microbiologist/Virologist, RCDC
- Epidemiologist, DOL
- Public Health Expert, MoH
- Laboratory Officer, RCDC
- Laboratory Officer, JDWNRH
- Programme Officer, HEP, CDD
- CPO/Communication and Media Officer, HPRCD
- Relevant Specialist/, JDWNRH
- Other members may be co-opted in accordance with the nature of the hazards.

Terms of reference:

- To review, verify, and advise the disease investigation and control measures implemented by DHRRT.
- If requested/needed, support DHRRT in conducting a detailed field investigation of the outbreak including confirmation of the outbreak.
- Carry out rapid needs assessments in collaboration with DHRRT at the site.
- Recommend/Provide additional resources for rapid response including supplies and medicines.
- Evaluate health information and assess potential public health risks for the community.
- Make a detailed investigation report with recommendations for follow-up by the concerned authorities.

- Develop and disseminate relevant risk communication materials, and conduct awareness campaigns.
- Provide regular updates to HEMC/higher authority on health emergency assessment and investigation in the field.

3.2.4.2. Clinical Management Team

The Clinical Management Team (CMT) ensures high-quality, patient-centered care while enhancing efficiency, safety, and compliance during influenza pandemics. Comprising healthcare professionals with expertise in outbreak management, the CMT oversees clinical operations and provides strategic leadership within healthcare organizations. Similar teams will also be formed at the regional and the district level in times of the pandemic.

Team composition of CMT (at national level):

- Medical Superintendent, JDWNRH (Team Lead)
- Clinical Microbiologist, JDWNRH (Co-Team Lead)
- Clinical Pharmacologist, JDWNRH/ KGUMSB
- Technical Representative from KGUMSB
- Chest Physician, JDWNRH
- Medical Specialist, JDWNRH
- HOD, Pediatrician, JDWNRH
- Emergency Physician, ED, JDWNRH
- Nurse Specialist, JDWNRH
- Co-opt members at Team Leader's discretion

Terms of reference for CMT:

- Provide regular updates to HEMC on the readiness of the contingency plan related to case management, and isolation.
- Review and adapt evidence based clinical management guidance for Influenza Pandemic.
- Maintain an update report to HEMC on the number of cases, hospitalised, recovered and deaths.
- Assess and appraise the need to mobilise surge capacity (HR, medical supplies and facilities).
- Review and update guidelines and SOPs for triage, case management, and isolation.
- Advise and provide technical backstopping on patient triage, case management, infection control measures, and isolation.
- Identify alternate site(s) for case management, in case the primary site is inaccessible or unsafe or if the health facility is overwhelmed.

In addition to the CMT, a dedicated Mental Health Team is recommended to form during the pandemic to provide psycho-social and mental health services.

3.2.4.3. Quarantine Team

A quarantine team (QT) is vital for controlling the spread of infectious diseases by isolating indi- viduals who are infected or may have been exposed to a contagious pathogen. The team oversees implementing quarantine protocols, monitoring individuals under isolation, ensuring adherence to health measures, and supporting the broader public health response.

Team composition of QT:

- Head, DHS (Team Lead)
- Program Officers (POs), Communicable Disease Division (CDD)
- PO, HITAD, DHS
- Royal Bhutan Police (RBP) Personnel
- Representative from KGUMSB
- De-suup Personnel
- Co-opt team members will be determined based on the relevant background

Terms of reference for QT:

- Provide regular updates to HEMC on the readiness of the quarantine management.
- Maintain and update report to HEMC on the number of people quarantined, quarantine places and compliance.
- Appraise issues and recommendations related to the quarantine management to HEMC.
- Review and update guidelines and SOPs for quarantine management.
- Advise and provide technical backstopping on quarantine management.

3.2.4.4. Media and Risk Communication Team

The COVID-19 pandemic emphasized the importance of RCCE in combating misinformation. Credible information must be shared through trusted channels. The Health Emergencies Program (HEP), with key stakeholders, will follow the 2019 Risk Communication Guidelines to verify and share information. The MoH will ensure transparent communication, with the Media and Risk Communication team as the primary source.

Team Members for Media and Risk Communication:

- CPO, Health Promotion and Risk Communication Division (HPRCD), DoPH
- Communication Analyst, HPRCD
- IMO, HPRCD
- SPO, HPRCD
- PO, PPD
- ICTO, MoH
- Representative from KGUMSB
- Other team members will be determined based on the relevant background
- Co-opt members at Team Leader's discretion

Terms of reference for Media and Risk Communication:

- Provide regular updates to HEMC on the status of risk communication.
- Develop and disseminate relevant risk communication materials.

- Conduct periodic awareness through talk shows, announcements, and social media.
- Manage and verify the rumours and misinformation.
- Produce and disseminate timely press releases and information including FAQ.
- Arrange and coordinate the press conferences.
- Conduct daily media monitoring.
- Update website and MoH's social media platforms.

3.2.5. Logistic for Medical Supply Unit

Efficient logistics for medical supplies and infrastructure is vital for an effective pandemic response. Timely delivery of essentials like Personal Protective Equipment (PPE), vaccines, medications, ventilators, and diagnostic tests ensures health systems can respond adequately. Robust infrastructure, including healthcare facilities, transportation networks, and storage, is crucial to support these efforts.

Team members for Logistic:

- Head, DMP (Team Lead)
- Representative, RCDC
- Chief, Quantification and Procurement Division (QPD), Dept. of Medical Products (DMP)
- Chief, Logistic and Management Division(LMD), DMP
- Chief, EMTD
- Head, Department of Biomedical Engineering (DBME)
- Chief, HITAD

- Representative from KGUMSB
- PO, MSQU, HCDD, DMS
- PO, VPDP, CDD
- Co-opt members at Team Leader's discretion.

Terms of reference for Logistic (Medical Supply):

- Compile, review and recommend the requirement of equipment, supplies and other materials.
- Provide regular updates to HEMC on the status of logistics and supplies.
- Maintain up to date inventory of equipment, supplies and other materials required to effectively respond to health emergencies or pandemic.
- Ensure availability and timely supply of adequate medical supply.
- Liaise with other agencies (RBP/Dzongkhag) for additional vehicles if required.

3.2.6. Financial and Operational Logistic

Financial and logistics entails the strategic planning and management of financial resources to support pandemic response efforts. This includes financing medical supplies, healthcare infrastructure, staffing, and other essential logistical needs. Establishing a dedicated finance and operational logistics team is vital to ensure a coordinated and efficient emergency response.

Team composition for Finance and Operational Logistic:

- CFO, Division of Secretariat Services (Team Lead)
- CPO, PPD (Co-lead)
- CHRO, HRD
- Finance Officer, Division of Secretariat Services
- PO, PPD
- HRO, HRD
- Procurement Officer, Division of Secretariat Services
- Adm Asst. AFD, Division of Secretariat Services
- Co-opt members at Team Leader's discretion

Terms of reference for Finance and Operational Logistic:

- Explore and mobilise necessary financial arrangements for emergency management.
- Provide regular updates to HEMC on the status of financial arrangement and expenditure.
- Assess and compile proposed budget requirements from the sections under HEMC.
- Maintain a proper record of all financial expenditures occurred during the emergency management and recovery phase.
- Delegate administrative and financial authorities to work in emergencies with minimum procedure under overall guidance and supervision of the designated officials.
- Responsible for arrangements for adequate food/water supplies for HEOC

3.2.7. HEOC Secretariat

The HEOC secretariat plays a key role in conducting the HEMC meetings and liaising with other agencies in carrying out the mandates and decisions of the HEMC and other mandates as per the TOR.

Team composition for HEOC Secretariat:

- CPO, CDD- Team leader
- PO, IHR, HEP, CDD
- PO, EPR, HEP, CDD
- PO, ZDCU, HEP, CDD
- PO, OHU, HEP, CDD
- PO, VPDP, CDD

Terms of reference for HEOC Secretariat:

- Ensure that HEOC is equipped and functional at all times
- Organize and arrange the HEMC meetings
- Record, maintain and circulate minutes of meeting
- Communicate preparedness and response plan with other stakeholders
- Liaise (Point of contact) and collaborate with other sectors including government, NGOs, private sector, and international organizations
- Ensure health facilities to develop health emergency and disaster contingency plan(s)
- Facilitate other relevant programs to develop guidelines and SOPSs for emergencies

- Coordinate and facilitate the capacity building of health workers on health emergency preparedness and pandemic management
- Receive early warning information from RCDC, NCHM and dzongkhag
- Facilitate to conduct simulations and mock drills on different types of health emergencies
- Maintain the hazard/risk maps
- Facilitate the conduct of the research on health emergency management in close collaboration with academia
- Integrate information and prepare regular situation reports to NEOC and high authorities

3.3. Dzongkhag / Thromde level

At the Dzongkhag/District level, the Dzongkhag/District Disaster Management Committee (DDMC)/ Dzongkhag Task Force, chaired by the Dzongda will oversee and manage outbreak/pandemic at local levels. *For details on the Structure, Modus Operandi, and Terms of Reference, refer to Chapter 3 of the HEDCP 2024.*

Chapter 4
MITIGATION, PREPAREDNESS and RESPONSE

Influenza pandemics pose a significant threat to global health, economies, and social structures, making mitigation, preparedness, and response essential to safeguarding lives and livelihoods. Such pandemics can overwhelm healthcare systems, disrupt essential services, and disproportionately impact vulnerable populations. Effective strategies are needed to reduce morbidity, mortality, and societal disruption while ensuring rapid recovery. Coordinated efforts among stakeholders are crucial for anticipating, managing, and mitigating the impact of an influenza pandemic. By strengthening healthcare systems and promoting resilience, proactive planning and robust interventions can minimize long-term effects, protect public health, and support faster recovery.

4.1. Lessons learned from the COVID-19 pandemic

Despite the valuable lessons learned from the COVID-19 pandemic, key challenges persist in maintaining continuous preparedness. These challenges include ensuring timely virological analysis amidst competing public health priorities and addressing gaps in understanding pandemic prepared- ness at both local and national levels.

The COVID-19 pandemic underscored the need for a multisectoral approach and strong leadership to implement effective emergency plans. Public solidarity, supported by advocacy campaigns, complemented government efforts. Bhutan's strategic measures, including timely lockdowns, gradual relaxations, and simulation drills, were key in breaking the transmission chain.

The establishment of a unified ICS improved coordination, while capacity-building for health professionals strengthened the health system. Bhutan also swiftly rolled out its COVID-19 vaccination

program, administering initial doses within days and ensuring prompt distribution, including to remote areas, resulting in one of the highest vaccination rates globally. Additionally, continuous monitoring of safety protocols and mental health initiatives, such as counseling services and hotlines, ensured both physical and psychological resilience. These efforts laid the foundation for a more robust healthcare system and enhanced pandemic preparedness moving forward.

4.2. MITIGATION during Influenza Pandemic

Mitigation during a pandemic is aimed at reducing the overall impact on public health, healthcare systems, and society, ensuring continuity of essential services, and enabling a swift recovery post-pandemic. It begins with assessing vulnerabilities within healthcare infrastructure and workforce capacity, followed by strategic actions to strengthen preparedness and improve resilience. This includes optimizing resource allocation, building capacity, and upgrading infrastructure to handle future pandemics more effectively.

1. **Key Mitigation strategies:** Key mitigation strategies during a pandemic include non- pharmaceutical interventions (NPIs) such as physical distancing, mask-wearing, hand hygiene, and communication campaigns promoting protective behaviors.
2. **Evidence and process for selection of measures:** Public health and social measures will be based on scientific evidence, expert advice, and real-time surveillance data. Measures will be chosen considering factors like virus spread, healthcare capacity, and risk to vulnerable groups, with adjustments based on the severity of the situation.

3. **Impact assessment:** The effectiveness of measures will be monitored through indicators like infection rates and healthcare capacity. Continuous evaluation will help adjust interventions to ensure they are effectively controlling transmission.
4. **Communication to the public:** Measures will be communicated clearly through media, community leaders, and social platforms. Public updates will explain the rationale for actions, their expected outcomes, and any changes, aiming to build trust and encourage compliance.
5. **Additional measures:** Further actions, such as restricting mass gatherings, closing schools, and implementing workplace protocols, will be considered to slow transmission. Resource allocation will prioritize support for vulnerable populations while maintaining critical services.

4.2.1. Functional and Non-structural vulnerability assessment

Hospitals are crucial during an influenza pandemic, and it is essential to evaluate their safety and readiness to remain functional. Vulnerability assessments should focus on the ability of hospital infrastructure to withstand the strain of a pandemic, ensuring that facilities can continue to operate under high patient volumes. Regular assessments of both functional and non-structural vulnerabilities will help ensure that hospitals are equipped to manage the surge in cases and remain functional during a pandemic.

4.2.2. Capacity assessment

The capacity assessment of Bhutan's health sector evaluates its readiness to respond to an influenza pandemic, highlighting strengths, gaps, and areas for improvement for pandemic preparedness. Key areas of capacity assessment include:

1) Healthcare System Capacity:
   - Hospital Capacity: Assessing the availability of hospital beds, intensive care units (ICUs), and ventilators.
   - Healthcare Workforce: Evaluating the number of healthcare professionals, their training, and their ability to handle a surge in patients.
   - Medical Supplies: Assessing the availability of essential medical supplies, including antiviral medications, personal protective equipment (PPE), and vaccines.
   - Laboratory Capacity: Evaluating the ability to conduct rapid and accurate testing for influenza viruses.

2) Public Health Capacity:
   - Surveillance Systems: Assessing the ability to detect and monitor the spread of influenza viruses.
   - Contact Tracing: Evaluating the capacity to trace and quarantine individuals who have been exposed to the virus.
   - Vaccination Programs: Assessing the ability to rapidly distribute and administer vaccines.
   - Risk Communication: Evaluating the ability to effectively communicate public health messages to the population.

3) Essential Services Capacity:
   - Supply Chain: Assessing the ability to maintain the flow of essential goods, such as food and pharmaceuticals.
   - Transportation: Evaluating the ability to maintain transportation services for essential workers and supplies.
   - Critical Infrastructure: Assessing the resilience of critical infrastructure, such as power and water systems.

4) Governance and Coordination:
   - Emergency Response Plans: Evaluating the effectiveness of existing pandemic response plans.
   - Interagency Coordination: Assessing the ability of different government agencies and organizations to work together.
   - Legal and Ethical Frameworks: Evaluating the adequacy of legal and ethical frameworks for pandemic response.

Tools like WHO's Pandemic Influenza Severity Assessment (PISA) and CDC's Influenza Risk Assessment Tool (IRAT) can be used for the assessment.

4.2.3. Infection prevention and control

Infection control is vital in managing influenza pandemics, protecting healthcare workers, patients, and communities from healthcare-associated infections (HCAIs). Adherence to the National Guideline on Infection Control and Medical Waste Management (2018) is essential. Key measures include:

1. **Training and awareness:** Continuous training on evidence-based practices for healthcare workers and communities.
2. **Outbreak management:** Strengthening surveillance and response to hospital-acquired HCAIs.
3. **Hygiene and sanitation:** Enhancing Water, Sanitation, and Hygiene (WASH) services, strict device reprocessing, waste management, and safe handling of deceased bodies.

These measures are critical to reducing infection risks and ensuring effective clinical care during influenza pandemics.

4.2.4. Nutrition in emergencies

During an influenza pandemic, the risk of malnutrition rises due to disruptions in food systems, reduced access to nutritious foods, and increased nutritional needs among vulnerable groups such as children, pregnant and lactating women, and the elderly. To mitigate this, the latest Guide to Nutrition in Emergency Situations for Bhutan should be followed, ensuring the delivery of appropriate and quality nutrition interventions. These measures are crucial to maintaining nutritional well-being and preventing the deterioration of health during the pandemic.

4.3. PREPAREDNESS for the Influenza Pandemic

Preparedness is critical to an effective response to an influenza pandemic. Bhutan's National Influenza Pandemic Plan follows the 5Cs framework (Capacity, Coordination, Communication, Collaboration, and Community Engagement). Key actions include strengthening surveillance systems for early detection, stockpiling essential supplies (antivirals, vaccines, PPE), and enhancing

laboratory and diagnostic capacities. Training and simulations for healthcare workers will ensure readiness for pandemic scenarios.

The plan focuses on coordinated response through clearly defined roles and responsibilities across government and health agencies. Inter-agency collaboration and cross-border coordination will optimize resources, while data-sharing mechanisms will support timely decision-making. Risk communication strategies will ensure transparent, timely information, with crisis communication training for officials to maintain public trust and compliance.

Collaboration with international partners, including WHO and regional health bodies, is integral. The plan includes joint One health exercises, access to vaccines and medications, and community engage- ment efforts through public awareness campaigns, local health worker mobilization, and volunteer involvement to ensure an inclusive, resilient response across all sectors.

4.3.1. Immunisation and Vaccine

Immunization is a proven intervention against infectious diseases. Bhutan's Expanded Programme on Immunization (EPI) ensures high vaccination coverage, preventing vaccine-preventable diseases (VPD). Lessons from Bhutan's exemplary COVID-19 vaccination campaign, including its National Vaccine Deployment Plan (NVDP) and prioritization of vulnerable groups, underscore the importance of robust immunization frameworks. Access to quality safe and effective medical countermeasures requires timely authorisation from BFDA. Sustaining high coverage requires adherence to the EPI Manual for Health Staff (2022) and adapting services to emerging needs.

4.3.2. Medical waste management

During an influenza pandemic, effective medical waste management is essential to prevent infection transmission and environmental pollution. While 85% of medical waste is non-hazardous, the remaining 15% includes infectious, toxic, or hazardous materials requiring special handling (refer Categorization of medical waste figure 2 in HEDCP 2024). The MoH should strictly enforce the National Guidelines on Infection Control and Medical Waste Management 2012 to ensure proper waste segregation, handling, and disposal during health emergencies.

4.3.3. Biosafety for Health workers

During an influenza pandemic, health workers face increased risks, including biological, chemical, and psychosocial hazards. To protect them and patients, it is crucial to establish clear protocols, provide training on infection prevention and control (IPC), and ensure proper use of Personal Protective Equipment (PPE). Additionally, robust biorisk management is essential, encompassing biocontainment protocols, safe laboratory infrastructure, and regular safety monitoring. These measures help safeguard healthcare workers, ensure continuity of care, and effectively manage public health during the pandemic.

4.3.4. Emergency medical supplies stockpile

Supply chain disruptions may arise due to transportation restrictions, lockdown and the closure of entry points or border checkposts during the pandemic. To address this, the MoH should maintain strategic stockpiles of essential medicines, vaccines, PPE, and other medical supplies at emergency medical stores in Paro, Thimphu, Phuentsholing, Samdrup Jongkhar and Gelephu.

4.3.5. Risk Communication

The MoH in collaboration with key stakeholders, will take the lead in the collection, verification, and dissemination of crucial public health information, as outlined in the ***Risk Communication Guideline for the Health Sector (2019).*** This guideline is designed to establish clear protocols for effective communication during health emergencies, ensuring that information is accurate, timely, and accessible to the public.

By adhering to these guidelines, the MoH ensures transparency in its response efforts, which is vital for building public trust and confidence, especially during an influenza outbreak or other health crises. Clear and consistent communication is essential to manage public anxiety, address misinformation, and ensure that individuals have the necessary information to protect themselves and their communities. Effective communication in this manner supports not only immediate public health goals but also builds a foundation of trust and credibility of the agency.

The Media and Risk Communication team will serve as the central coordinating body for dissemi- nating information regarding influenza outbreaks, health advisories, and updates on government measures. This team will collaborate with other stakeholders including local health authorities, mass media and print media to ensure unified messaging across all channels.

The direct sources of information, in this case, will ideally include media spokespersons from the local government authorities, who will be tasked with providing official statements and updates. These spokespersons are critical for maintaining consistency in messaging and ensuring that the public receives accurate and trusted

information. Additionally, health focal points, typically located in public health offices or district health centers, will provide specific, localized updates, allowing for more targeted communication efforts. These health focal points will also assist in coordinating with healthcare providers, helping to clarify health protocols and reinforce preventive measures in their respective regions.

The Incident Commander of the HEMC shall be the media spokesperson for the health emergency at the national level. He or she shall appoint a relevant person to talk on the technical aspect of the pandemic if required.

Table 4.1: Possible sources of information for risk communication during pandemic

Sl#	Agency	Source of information
1	Ministry of Health	CPO/PO, HPRCD, DoPH, media, and risk communication focal person. Relevant official, HEP, DoPH. Royal Center for Diseases Control. Bhutan Food and Drug Authority.
2	Ministry of Home Affairs	Department of Local Governance and Disaster Management.
3	Royal Bhutan Police	Traffic Division.
4	Ministry of Agriculture and Livestock	Department of Livestock.

4.3.6. Collaborative Surveillance in Influenza Pandemic management

Collaborative surveillance is a cornerstone of effective influenza pandemic management, enabling the timely detection, monitoring, and response to outbreaks. This approach integrates efforts across health systems, governmental agencies (including animal and environment/wildlife sector), and international organizations to gather, analyze, and share critical epidemiological data.

Surveillance systems monitor trends in disease spread, identify emerging variants, and evaluate the effectiveness of interventions. By fostering cross-border collaboration and linking Points of Entry (PoE) data with national surveillance systems, nations can strengthen early warning systems, enhance global preparedness, and enable swift containment measures.

In addition, the ***Mosaic Respiratory Surveillance Framework*** developed by the WHO is a vital inter-pandemic tool for strengthening respiratory disease surveillance. It helps countries enhance preparedness through robust monitoring and data collection systems. By incorporating this frame- work, Bhutan can enhance early detection and response, ensuring more effective management of future influenza pandemics.

Partnerships between public health authorities, healthcare providers, laboratories, and commu- nity networks are essential for robust surveillance. These stakeholders contribute real-time data on clinical cases, hospitalizations, and laboratory-confirmed infections, which inform policy decisions and resource allocation. Innovative surveillance strategies, such as genomic sequencing, waste water surveillance and digital health tools, further enhance

collaborative surveillance, providing deeper insights into virus mutations and transmission dynamics. Through these coordinated efforts, collaborative surveillance not only mitigates the impact of pandemics but also builds long-term resilience in health systems.

4.3.7. Laboratory Surveillance: Broader roles of the RCDC in Influenza Surveillance and Response

The RCDC, Bhutan's National Influenza Reference Laboratory and WHO-designated National Influenza Centre (NIC), plays a pivotal role in the country's influenza surveillance and response efforts. In addition to conducting laboratory surveillance for influenza, SARS-CoV-2, RSV, and other respiratory viruses, RCDC is integral to several key functions essential for pandemic preparedness and response.

Quality assurance (QA): RCDC ensures the reliability and accuracy of laboratory results by implementing strict quality assurance protocols, including routine calibration, validation of testing methods, and proficiency testing. These efforts help maintain the integrity of viral diagnostics across Bhutan's regional labs.

Biosafety and biosecurity: With its BSL-3 facility for handling highly pathogenic Avian Influenza (HPAI), RCDC adheres to the highest biosafety and biosecurity standards. This ensures safe handling of infectious agents, minimizing the risk of laboratory-acquired infections and contamination, which is crucial during pandemics.

Planning and monitoring: RCDC plays a central role in strategic planning for pandemic pre- paredness, monitoring surveillance data, and guiding response efforts. By

coordinating with regional laboratories, RCDC ensures a unified national response and the timely mobilization of resources during surges in cases.

Supervision and training: RCDC provides ongoing training and technical support to regional and district labs, ensuring that laboratory staff are equipped with the necessary skills to handle emerging pathogens. Regular supervision and training are essential for maintaining a competent workforce, especially during high-demand periods.

These functions, along with RCDC's surveillance and diagnostic activities, are integral to Bhutan's capacity to effectively respond to respiratory pandemics. By maintaining these core capabilities, RCDC ensures a robust national network for detecting, monitoring, and responding to influenza and other infectious diseases.

Additionally, RCDC conducts case-based surveillance for influenza, SARS-CoV-2, RSV, and other respiratory viruses through ILI and SARI sentinel surveillance, providing technical support to national, regional, and district labs. The NIC is equipped with real-time RT-PCR for virus detection and characterization, as well as a BSL-3 facility for handling HPAI and performing gene sequencing. In the field, rapid diagnostic tests are used for suspected influenza cases, confirmed by RT-PCR.

The NIC shares virus isolates and clinical samples with the WHO Collaborating Centre for genetic characterization. It is supported by regional RT-PCR laboratories in Mongar, Dewathang, Phuentsholing, and Gelephu. Additionally, the NIC submits weekly ILI and SARI surveillance data to WHO's GISRS via FluNet and FluID, contributing to global influenza surveillance.

I. **National Early Warning Alert and Response Surveillance:** The National Early Warning Alert and Response Surveillance (NEWARS) is a web-based and mobile SMS system launched in 2014 for real-time national disease surveillance. It includes indicator-based surveillance (IBS), reporting cases and deaths of 11 diseases weekly and 16 diseases immediately including mPoX, and event-based surveillance (EBS), which involves reporting unusual events, outbreaks, or clusters. NEWARS reports are published monthly as a disease epidemiology report and quarterly as a bulletin on the RCDC website: www.rcdc.gov.bt.

The NEWARS system is crucial for influenza pandemic preparedness as it provides real- time surveillance, enabling early detection of influenza outbreaks and unusual patterns of illness. By rapidly identifying and reporting cases, it allows for quick response and contain- ment measures, reducing the spread of the disease.

The system's integration of both indicator-based and event-based surveillance ensures comprehensive monitoring of both known cases and emerging threats. This helps health authorities track trends, allocate resources efficiently, and implement targeted interventions, ultimately improving national preparedness for influenza pandemics.

II. **Surveillance for ILI and SARI:** The NEWARS is complemented by routine sentinel surveil- lance for Influenza-Like Illness (ILI) and Severe Acute Respiratory Infection (SARI), monitoring influenza, SARS-CoV-2, RSV, and other respiratory viruses. Sentinel surveillance for ILI began in 2008 and for SARI in 2012, with seven hospitals selected for ILI and eleven for SARI based on geographic

factors and major PoE with high population dynamics. Data from these sites is submitted daily for SARI and weekly for ILI through a web-based system. This data helps monitor trends, detect outbreaks, and trigger responses. Surveillance reports are published weekly and shared with sentinel sites, the MoH, WHO country office, and other relevant sectors.

Sentinel surveillance for ILI and SARI is crucial for early detection and rapid response during the initial phase of influenza pandemic or outbreak. It provides key insights into the spread of respiratory diseases, helping to identify emerging threats, track trends, and monitor the severity of infections. By focusing on specific sentinel sites, the system enables targeted surveillance in high-risk areas, ensuring more accurate and timely data collection.

In the event of a pandemic, expanding surveillance to all health centers and points of entry (airports, ground crossings) ensures comprehensive monitoring, allowing for the early identification of cases and preventing further transmission. The data collected also supports evidence-based decision-making for public health interventions, resource allocation, and coor- dination with national and international health authorities, ultimately improving the overall response to the crisis.

4.3.8. Intersectoral approach and Community engagement

An effective response to an influenza pandemic requires a multi-level, multi-sectoral approach, emphasizing the importance of collaboration across government and society. The COVID-19 pandemic highlighted the need for a whole-of-government and whole-of-society approach, underpinned by strong leadership,

partnership, and coordination among relevant agencies. Public support, through advocacy and awareness, is essential for the success of community measures such as school closures, public movement restrictions, and safety protocols.

Each government agency, guided by the MoH, plays a crucial role in planning, preparedness, and response within their sectors. Agencies also monitor key areas like workforce absence, border movements, and impacts on critical infrastructure. A coordinated effort is necessary for effective pandemic response, with the MoH engaging non-health sectors to address critical areas of the national response, ensuring an integrated approach (Table 4.2).

During the pandemic, key vulnerable populations identified and categorized as affected, interested, and vulnerable, with tailored interventions designed for each. Emphasizing community at the core of public health efforts, engagement was intensified through local leaders, associations, businesses, media, and influencers. To foster national unity and combat misinformation, the Ministry of Health launched the "Our Gyenkhu (Our Responsibility)" campaign, leveraging social media influencers to promote awareness and strengthen risk communication. This initiative not only reinforced COVID-19 mitigation but also initiated a nation-building movement, fostering a sense of responsibility and encouraging active citizen participation.

During COVID-19 pandemic, community engagement efforts were intensified by engaging local government leaders, associations of elderly and disabled people, business communities, journalist associations, civil society organizations, religious figures, and social media influencers. With the primary objective of fostering

national unity during and after the COVID-19 era, MoH initiated the "Our Gyenkhu (Our Responsibility)" campaign. Under this campaign, various social media influencers such as popular actors, bloggers, artists, and sports personalities were engaged to combat misinformation and promote awareness about COVID-19.

Table 4.2: Integrated approach involving intersectoral and community engagement during influenza pandemic

Sl#	Agency	Source of information
1	Ministry of Health	Health
2	Ministry of Home Affairs, RBP and RBA	Law and Order/Border security
3	Ministry of Agriculture and Livestock	Animal Health
4	Ministry of Agriculture and Livestock and The Ministry of Industry, Commerce and Employment	Food and Essential Supplies try, Commerce and Employment
5	Ministry of Education and Skills Development	Education
6	Ministry of Industry, Commerce and Employment, Royal	Economy Monetary Authority, and Banks
7	His Majesty's Secretariat	Welfare
8	Ministry of Infrastructure and Transport	Infrastructure and Transport
9	Ministry of Energy and Natural Resources	Water and Sanitation

Sl#	Agency	Source of information
10	Ministry fo Foreign Affairs and External Trade	External Affairs and Trade
11	GovTech, Bhutan Telcom, Tashi Cell and Media	Tele-communications and News
12	De-suung Office	Support Services

4.3.9. Mapping of Vulnerable Groups

Mapping vulnerable groups is crucial to ensure at-risk populations receive timely care and resources during a pandemic. This process addresses their specific needs and supports equitable resource distribution.

Key vulnerable groups include:

People with a weak immune system:

- Children (especially young children)
- Elderly persons
- People with immunosuppression, including HIV
- Pregnant women

People with underlying medical conditions:

- E.g. cardiovascular diseases for COVID-19 and influenza

People living/working in crowded, confined places:

- People living and working in institutions such as prisons, retirement or residential homes for older people, or children's day care centers

Vulnerable groups needing special support during crisis:

- People with disabilities
- People living in informal settlements or huts or herds
- Socially or geographically marginalized and isolated groups
- Indigenous/Highlanders or nomads' communities

People at higher risk of becoming infected due to greater exposure to sick people:

- All categories of health workers
- Women and girls, who often take caregiving roles which expose them further to disease

4.3.10. Simulation exercises

Simulation exercises play a critical role in stress-testing the NIPPRP 2025, ensuring the preparedness and agility of systems, procedures, and personnel. These exercises are designed to mimic real-world pandemic scenarios, providing an opportunity to assess response mechanisms, test equipment, build interagency collaboration, and enhance team performance under crisis conditions. By conducting regular simulations (at least once a year), stakeholders can identify potential challenges and gaps, ultimately refining and improving pandemic response strategies.

For the conduct of simulations exercise, refer MoH's Guideline for Conducting Emergency and Disaster Simulations and Drills in Health Facilities or WHO guidance on simulation exercise

4.4. RESPONSE during Influenza Pandemic

4.4.1. Activation of Health Emergency Operation Center

The Health Emergency Operation Center (HEOC) will be activated based on the following criteria reflected in the HEDCP 2024:

- Declaration of disease outbreak or epidemic by HEMC upon confirmation by the RCDC and DoPH
- Declaration of public health emergency of international concern (PHEIC)/Pandemic by the WHO

When these thresholds are met, the MoH activates emergency plans, scaling up measures by mobilizing resources and strengthening healthcare capacity, and scaling down as conditions improve. The HEMC should be convened at HEOC to coordinate the response, ensuring timely decision-making, efficient resource allocation and coordination across all sectors.

4.4.2. Enhanced Surveillance and early detection

Surveillance and early detection should be strengthened at both national and regional levels, focusing on monitoring influenza cases in healthcare facilities and at points of entry, such as airports and border check posts. Border Community Action Groups (CAGs), established by local governments and Thromdes, should facilitate rapid alerts and information sharing during influenza outbreaks across borders.

Widespread access to diagnostic tests, including rapid testing, is essential for early case identification. Additionally, epidemiological investigations must track disease spread, identify clusters, and pinpoint high-risk areas to inform targeted response efforts.

4.4.3. Risk communication and public awareness

Timely risk communication and public awareness efforts should focus on providing clear, accurate, and timely information to the public regarding prevention measures, symptoms, and treatment options, using trusted sources such as health authorities and the media. Community engagement is essential, with public health education campaigns encouraging behaviors like vaccination, hygiene practices, and social distancing to reduce the spread of influenza.

4.4.4. Vaccination and Antiviral distribution

During an influenza pandemic, mass vaccination campaigns should be mobilized for high-risk populations, such as the elderly, healthcare workers, and pregnant women, using available vaccines. Based on Bhutan's experience during the COVID-19 pandemic, it is recommended that the country adopt a comprehensive strategy to ensure timely access to vaccines and antiviral medications in future pandemics. This includes continued engagement with global initiatives like the COVAX facility for equitable access, as well as pursuing bilateral agreements with manufacturers and neighboring countries to strengthen supply chains.

Additionally, exploring advance purchase agreements (APAs) will help secure necessary sup- plies in advance, minimizing the risk of shortages. Finally, prioritizing strategic stockpiling of vaccines and antivirals will ensure rapid deployment when needed, enabling Bhutan to provide equitable access to critical health interventions, particularly for vulnerable populations, during future pandemics.

4.4.5. Healthcare system capacity and medical supplies

To strengthen the healthcare system during an influenza pandemic,

MoH will expand ICU capacity by upgrading facilities, adding ICU beds, and equipping them with necessary medical equipment like ventilators and oxygen supplies. Additional healthcare staff, including intensivists and nurses, will be trained to manage critical care.

To ensure the availability of PPE, MoH will implement a robust procurement and distribution system, maintaining strategic stockpiles and ensuring timely supply to healthcare facilities, POE, and frontline workers. Medical logistics will be streamlined for efficient delivery to high-risk areas. A clear referral mechanism will guide patient transfers to appropriate facilities, ensuring optimal care without overburdening any single facility, thus enabling effective management of an influenza pandemic.

4.4.6. Quarantine and Isolation measures

During an influenza pandemic, isolation protocols should be enforced for suspected or confirmed cases to prevent transmission, particularly in healthcare settings and communities. Similarly, quarantine measures should be implemented for travelers and individuals with suspected exposure, ensuring access to essential services like food and medical care.

4.4.7. Coordination across sectors and agencies

In an influenza pandemic, intersectoral coordination is essential to ensure the continuity of critical services like education, transport, and infrastructure. To support at-risk populations during an influenza pandemic, MoH will collaborate with local authorities, community organizations, and NGOs to ensure targeted care for the elderly and those with underlying health conditions. This

will involve coordinating home-based care, ensuring equitable access to vaccines and medical supplies, and mobilizing resources for vulnerable groups, such as food and transportation. Local authorities will help identify at-risk individuals, while community partners will assist in providing essential services and support.

4.4.8. Continued risk assessment and adjustments

Regular monitoring of the influenza pandemic's progression will be conducted through regular risk assessments to evaluate and refine public health interventions. These assessments will track case trends, healthcare system capacity, and emerging risks, ensuring an agile response to potential subsequent waves. Response strategies will evolve based on lessons learned from previous waves and the ongoing assessments.

4.4.9. Field hospitals

To enhance healthcare surge capacity during an influenza pandemic, temporary field hospitals should be established near major hospitals. These field hospitals will provide additional inpatient and medical/surgical care when hospital capacity is exceeded.

4.4.10. Surge capacity

If a hospital is overwhelmed during an influenza pandemic, the deployment of health capacity will follow a structured medical surge mechanism (Figure 4.1) to ensure timely and effective response. Activate the hospital surge plan based on capacity assessments, reallocating resources like medical supplies, PPE, and staff. Expand facilities by converting non-clinical spaces and establishing field hospitals near affected areas.

Coordinate patient redistribution with regional health authorities, maintaining referral pathways for critical care. Implement standardized triage protocols to prioritize patients and ensure equitable resource use. Strengthen collaboration with public health programs, military, NGOs, and private healthcare providers. Establish a centralized command center for real-time communication, capacity monitoring, and logistics management. This mechanism ensures hospitals can manage surges effectively, minimizing the impact of an influenza pandemic on public health.

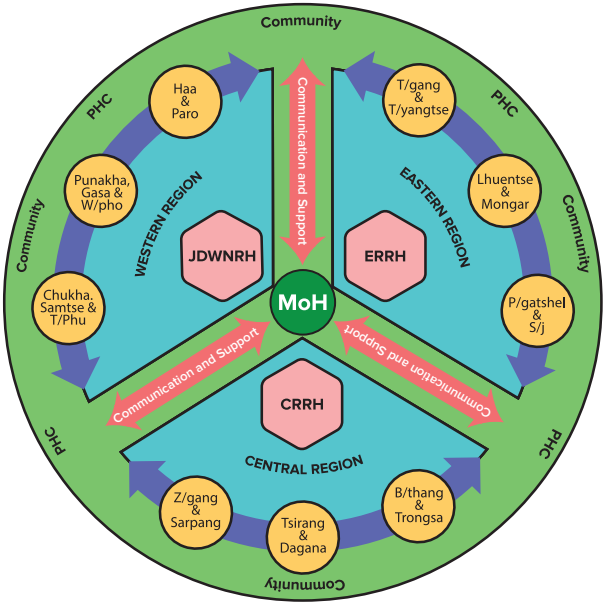

Figure 4.1: Surge capacity planning [Source: COVID-19 Contingency plan]

4.4.11. Dead body management

The MoH should work closely with local stakeholders such as volunteers, forensic experts, and NGO/CSO representatives to ensure that culturally appropriate funeral and burial practices are followed accordingly.

Establish clear SOPs for the dignified and proper handling of dead bodies during emergencies and disasters. These SOPs should align with international guidelines and best practices and build on the SOPs developed during COVID-19 for managing people deceased of infectious diseases.

During the COVID-19 pandemic, the Bhutan Red Cross Society (BRCS) has constituted multidisciplinary teams at community levels for immediate intervention. To ensure the continuity and effectiveness of this collaborative approach, MOH and BRCS must formalize these partnerships through Memorandums of Understanding (MOUs), establishing clear roles, responsibilities, and communication channels. These formal partnerships will enable MOH and BRCS to mobilize resources rapidly, coordinate response efforts, and provide timely assistance to communities. Similar approach can be also done with Dratshang Lhentshog and other relevant partner.

If the dead patient is an expatriate, information sharing and coordination should be done through the Ministry of Foreign Affairs and External Trade.

4.4.12. Mental health and Domestic violence management

An influenza pandemic significantly impacts mental health, exacerbating psychological distress and increasing the risk of domestic violence due to heightened stress, social isolation, and economic challenges. A comprehensive response includes integrating mental health and psychosocial support (MHPSS) into pandemic plans, establishing helplines, counseling services, and safe spaces for victims of domestic violence. Public health messaging should promote awareness of coping strategies, reduce stigma around seeking help, and provide information about available support services. Special attention must be given to vulnerable groups, including frontline workers, individuals experiencing trauma, and victims of abuse.

During the COVID-19 pandemic, several countries implemented dedicated helplines and mental health services to support individuals experiencing anxiety, depression, or stress due to the crisis. In Bhutan, for example, a dedicated helpline was established to provide mental health support to the public. Services like counseling, psychological first aid, and support for victims of domestic violence were made accessible through these platforms. These services proved crucial in mitigating the mental health burden during the pandemic, offering confidential support and guidance to those in need.

For further assistance, individuals can contact the national mental health helpline(s). These resources aim to provide immediate support and continue to play a vital role in addressing the mental health challenges posed by public health emergencies.

4.4.13. Recovery and Restoration of health services

After the pandemic's peak, prioritize the restoration of routine health services, including maternal and child health care, vaccinations, and other essential non-pandemic-related services. Additionally, offer mental health and psychosocial support to healthcare workers, patients, and affected communities to address psychological challenges resulting from the crisis.

By focusing on these key activities, the response to an influenza pandemic can be swift, coordinated, and effective in minimizing the health impacts and ensuring the resilience of the healthcare system.

Chapter 5
PHASES OF PANDEMIC and ACTION PLAN

5.1 Phases in Bhutan's National Influenza Pandemic Preparedness and Response Plan and triggers and actions

To ensure a coordinated and effective response throughout the course of a pandemic, Bhutan's NIPPRP is organized into phases. The table below (Table 5.1) provides an overview of these phases, aligning them with the corresponding WHO stages and specifying the trigger points and actions for transitioning between each phase in Bhutan's context.

Table 5.2: Summary of Pandemic phases, situations, triggers and actions in Bhutan

Bhutan Phase	Bhutan situation and triggers	WHO pandemic phase/period	Global situation
Prevention (Green)	**Situation** • No new human influenza virus strains causing widespread human infections. • Routine seasonal flu activity observed, with no significant threat of a pandemic • Surveillance shows expected patterns of influenza-like illness (ILI) with no significant deviation from seasonal norms **Triggers** • Routine surveillance detects influenza activity at expected seasonal levels. • Monitoring for novel strains that could pose a pandemic risk • Maintain stockpiles of vaccines, antivirals, and personal protective equipment (PPE) for seasonal preparedness	**Phase 1** Interpandemic Period	No new influenza virus subtypes circulating among humans that poses a risk for widespread human infection. The goal is to prevent the emergencies or introduction of a new pathogen and to prepare for future events.

Bhutan Phase	Bhutan situation and triggers	WHO pandemic phase/period	Global situation
Prevention and Early Detection	**Situation**	**Phase 2**	
	• No cases detected in Bhutan, but may be reported in the neighboring countries	Initial Event: Pandemic Alert Period.	The emergence of a new influenza virus in humans, typically from an animal source, which has the potential for human-to-human transmission, but is limited in extent (localized or sporadic cases).
	Triggers		
	• Early warning signs such as increased clusters of ILI with atypical characteristics. • Initial reports of community transmission of the novel virus in neighboring countries		

Bhutan Phase	Bhutan situation and triggers	WHO pandemic phase/period	Global situation
Rapid Containment (Orange)	**Situation** • One or few isolated cases detected in a few districts in the country • Regional spread of the pandemic strain, with confirmed cases in neighboring countries and increased international awareness • Increased numbers of hospitalized cases due to the pandemic strain. **Triggers** • Confirmed widespread human-to-human transmission with outbreaks in few districts within Bhutan • Increased number of severe cases, especially in vulnerable groups (elderly, children, those with comorbidities • Rising absenteeism from work, schools, and other essential services	**Phase 3** Sustained Community Transmission: Pandemic Alert	Sustained human-to-human transmission of the novel influenza virus has occurred, with increasing number of cases in multiple countries. It is still contained in the affected area and the situation has not yet escalated globally.

Bhutan Phase	Bhutan situation and triggers	WHO pandemic phase/period	Global situation
Full scale response (Red)	**Situation** • Widespread and sustained community transmission in most parts of Bhutan including urban and rural areas • Healthcare system under strain, with limited capacity to treat all patients, especially those requiring critical care • Severe impact on society, with high absenteeism affecting essential services, transportation, and public life. • Global pandemic phase, with cases reported in many countries **Triggers** • High levels of sustained transmission, with increased incidence in both urban and rural areas of Bhutan • Widespread severe cases, including critical illness requiring intensive care • Healthcare facilities are overwhelmed, leading to challenges in providing care for non-pandemic conditions • Increased reports of mortality, particularly among high-risk groups (elderly, children, and those with co-morbidities)	**Phase 4** Disseminated Community transmission: Pandemic Period	Widespread transmission of the novel influenza virus across multiple countries or continents. This phase indicates the onset of a pandemic, where the virus is actively circulating in the general population.

Bhutan Phase	Bhutan situation and triggers	WHO pandemic phase/period	Global situation
Recovery Phase (Scaling down)	**Situation** • Decline in new infections and hospitalization rates, with community transmission showing signs of slowing. • Flattening of the curve, indicating that the pandemic strain is moving toward endemic levels or manageable outbreaks. • Resumption of some normal activities but vigilance remains high. • Healthcare system recovery as the situation stabilizes **Triggers** • Continued decline in cases, with a marked reduction in new severe infections. • Improved healthcare capacity as hospitals recovers from the surge • Epidemiological indicators showing stabilization, such as reduced transmission rates and hospitalizations	**Phase 5** Stabilized Situation: Post Peak Pandemic	The situation where the pandemic wave has passed its peak, with a decline in transmission rates. The virus continues to circulate but at lower intensity, and control measures are generally in place. As the situation stabilizes, response actions are scaled down. The focus shifts to long- term disease control and mitigation measures. Although emergency response actions decrease, continued vigilance is necessary to monitor for new variants or any resurgence.

5.2. Action plan based on different phases of pandemic

The Action Plan is a central element of the NIPPRP, guiding the implementation of actions across three phases. Phases 1-2 (Table 5.3) focus on preparedness and capacity development when the infection primarily affects animals with limited human transmission.

Phases 3-4 (Table 5.4) activate response and mitigation measures once human-to-human transmis- sion is confirmed. Phase 5 (Table 5.5) addresses post-pandemic recovery and the restoration of normal conditions.

Structured around five key components aligned with IHR 2005 core capacities, the Action Plan aims to build resilient communities, strengthen multi sectoral systems, and enhance capacities for effective prevention, preparedness, and response to health emergencies. These interconnected com- ponents provide a unified approach to addressing respiratory pathogen threats, ensuring Bhutan's readiness to respond to influenza pandemics and other health emergencies.

1. **Emergency Coordination:** Focus on robust planning, coordination, sustainable financing, and a trained health workforce, engaging all stakeholders to strengthen policy, legal, and financial frameworks for pandemic preparedness.
2. **Collaborative Surveillance:** Enhance surveillance systems at local, national, and global lev- els, incorporating One Health approaches for early detection and timely response to emerging pathogens.

3. **Community Protection:** Involve communities in co-developing prevention and control strategies, prioritizing vulnerable groups, promoting risk communication, and implementing evidence-based public health measures.
4. **Clinical Care:** Strengthen health system flexibility to surge during emergencies while main- taining essential services, with an emphasis on equitable access to care and the protection of healthcare workers.
5. **Access to Countermeasures:** Ensure equitable access to countermeasures through prioritized research, streamlined development, and coordinated procurement and distribution efforts at national and global levels.

Table 5.2: Action Plan during phase 1-2: Interpandemic to Initial Event phases

Area of intervention	Action	Responsible agency
Emergency Coordination	Review and revise the National Influenza Pandemic Preparedness and Response Plan periodically.	DoPH
	Establish roles and responsibilities of different stakeholders at all levels of pandemic response.	DoPH
	Conduct regular simulation exercises/drills to test the plans using pandemic scenarios and develop a SimEx report	DoPH and DCS
	Develop a checklist to assess and evaluate pandemic preparedness.	DoPH, MoH
	Convene coordination meetings with relevant stakeholders at national and community level to clearly define roles and responsibilities for pandemics.	DoPH
	Develop/review/update SOP for activation HEOC	DoPH
	Activate HEOC	DoPH
	Establish and coordinate actively with NTF for pandemic preparedness and response.	HEMC/TAG
	Convene Health Emergency Management Committee (HEMC) and TAG meeting for management of pandemics.	HEMC Secretariat
	Deploy Rapid Response Teams (RRT) at different levels.	NTF/HEMC
	Develop joint investigation and control plan for avian influenza outbreaks	DoPH/DoL
	Follow IHR communication protocol to communicate with WHO and relevant international agencies, and maintain regular communication	DoPH
	Establish a mechanism for coordination and communication with neighboring countries and other international stakeholders	DoPH/MoFAET

Area of intervention	Action	Responsible agency
1. Emergency Coordination	Involve non-health sectors (University/NGOs/CSOs) to develop sector specific contingency plans to clarify their roles and responsibilities during pandemic	DoPH
	Submit daily/weekly situational reports to the NTF	HEMC Secretariat
	Assess human resource requirements for pandemic preparedness and response	
	Maintain a database of multidisciplinary professionals and surge human resources to be activated in emergency situations	
	Develop surge capacity and deployment plan at all levels	
	Develop training needs assessment and plan for pandemic.	
	Provide regular and relevant training to the clinical, and allied health workforce to respond to pandemics.	
	Develop sustainable financing mechanisms, including multi-year budgets, to prevent and mitigate future pandemic	
	Develop mechanisms for rapid disbursement of funds during pandemic to enable more flexible and timely use of funds while avoiding extra budgetary processes or risk of misuse	
2. Access to countermeasures	Review and develop the legal provision for all Public Health and Social Measures (PHSM) that are likely to be implemented during a pandemic response, such as quarantine; isolation; contact tracing; risk-based travel or movement restrictions; closure of educational institutions; and prohibition of mass gatherings; off-licence use of drugs and vaccines; compulsory vaccination; and use of private facilities in coordination with relevant stakeholders.	DoS, PPD/DoPH
	Develop vaccination plan for prioritization of target/high risk groups including health workers during pandemic	
	Identification and mapping of available resources and supply systems in health and other sectors.	

Area of intervention	Action	Responsible agency
2. Access to countermeasures	Establish a monitoring system for vaccine coverage and the reporting of adverse events.	
	Develop procurement, distribution, and vaccination plan for the pandemic influenza vaccine, in collaboration with regional and international agencies	
	Forecast the demand for procurement and distribution of antiviral drugs, PPE, diagnostic test,	
	Develop plan to select, procure, stockpile, distribute and deliver antivirals, essential pharmaceuticals, personal protective equipment, ventilation support and diagnostics test kits	
	Develop an inventory and estimate of the medicines and supplies required for different phases of pandemic.	
	Develop a logistic plan for all pandemic phases including ambulance and transportation services.	
	Enhance regulatory pathways to expedite the importation, marketing authorization and licensing of pandemic influenza vaccine during a pandemic emergency.	
	Establish bilateral or regional agreements with neighbouring countries on public health emergencies to address trans-border issues including interoperability of plans	
	Conduct need assessment to identify needs for additional facilities, trained staff, equipment (including personal protective equipment [PPE and reagents to operate during a pandemic	
	Ensure identification of quarantine facilities at all levels (national and local)	DCS/DoPH/NITAG
3. Community Protection	Review and update existing risk communication plan in the context of pandemics (See Risk Communication Guideline for Health Sector in Public Health Emergency and Disaster)	DHS/DoPH/NTF
	Prepare public awareness programs and develop communication strategies for influenza prevention and control at community and individual level	

Area of intervention	Action	Responsible agency
3. Community Protection	Engage multi sectoral stakeholders to develop mitigation measures including strengthening of social safety nets to reduce the unintended negative consequences and ensure equitable implementation of Public Health and Social Measures (PHSM)	
	Establish a mechanism to monitor and assess the effectiveness and wider societal and economic impacts of PHSM.	
	Establish mechanism to ensure social protection measures such as provision of basic income support, rent protection, support for daily wage earners, and provision of housing during pandemics for the vulnerable people	
	Identify and develop adequate facilities at PoEs required for screening, isolation and quarantine of travelers (See SOP for quarantine and isolation)	
	Build capacity at PoEs to identify and, where required, transport travellers with suspected pandemic influenza infection to designated health facilities	
	Develop plans and procedures for effective implementation of risk-based travel measures based on the available evidence and country's specific situations	
	Develop policies for research and innovation including participation in regional/global platforms focused on research during public health emergencies	
4. Collaborative surveillance	Maintain existing Influenza Surveillance network with WHO National Influenza Center (NIC) and reference laboratories	RCDC/NCAH/ DoPH/DoL
	Maintain BSL-III laboratory to undertake influenza detection and characterization	
	Develop/ reinforce a training package for sample collection, transportation, data reporting, biorisk management etc	
	Enhance laboratory capacity to confirm novel or pandemic influenza cases, and ensure access to laboratories with the required testing capabilities	

Area of intervention	Action	Responsible agency
4. Collaborative surveillance	Provide appropriate biosafety and biosecurity training to staff (refer to National Guidelines for Biosafety and Biosecurity for Laboratories-2021)	
	Increase and expand capacities for specimen collection, storage, packaging, and shipment of specimens and viruses in accordance with existing local and international SOPs/protocols/ guidelines	
	Establish mechanisms for coordinated data management by LIS that allow for sharing, integration and centralization of information from different sectors during the inter-pandemic period	
	Strengthen existing surveillance systems including seasonal Influenza Surveillance for ILI and SARI and maintain capacities to monitor and characterize influenza activity, linking epidemiological and virological information.	
	Sustain molecular and genomic sequencing capacities established for SARS CoV-2 at national (RCDC) and district levels	
	Share representative clinical specimens or virus isolates of seasonal influenza specimens with WHO collaborating centres/ GISRS and notify any unsubtypable isolates to designated WHO collaborating centres immediately	
	Establish systematic and timely sharing of One Health data and information between animal health sector, wildlife sector and human health surveillance units to support rapid identification of emerging strains	
	Ensure reporting capabilities and coordination with the national IHR focal point to promptly notify WHO of any novel influenza virus infections, in accordance with the requirements of the IHR (2005).	
	Strengthen indicator-based and event-based surveillance systems in NEWARS and capacities across health facilities to detect signal events for immediate notification to public health authorities	

Area of intervention	Action	Responsible agency
4. Collaborative surveillance	Share animal samples with WOAH/international collaborating laboratories for confirmation, characterization, and development of diagnostic reagents and to develop a candidate vaccine for animal / human species	
	Develop and implement comprehensive surveillance strategies to detect human-to-human transmission of novel influenza, including active case finding through contact tracing and chart review.	
	Establish protocols for case definition reviews and public health interventions based on surveillance findings and pandemic progression	
	Establish reporting formats and channels for sharing surveillance data with decision-makers and stakeholders	
	Ensure timely data submission to international influenza databases (e.g., FluNet, FluID)	
	Strengthen the national public health laboratory system (RCDC), including networks with national and international reference laboratories, and collaborate with laboratories from other sectors, such as veterinary laboratories (NCAH), to support surge capacity.	
	Strengthen surveillance at airports and ground crossings during the early stage of a pandemic to mitigate the risk of importing or exporting cases of pandemic influenza	
	Ensure the National and District Health Rapid Response Teams (DHRRT) have the necessary capacities and training	
	Ensure protocols, guidelines and SOPs for outbreak investigations are in place.	
	Develop and maintain active surveillance systems in areas where cases are reported, animal outbreaks are occurring, or the source of infection is suspected	
	Develop surveillance strategies to monitor the pandemic and transition phases	

Area of intervention	Action	Responsible agency
4. Collaborative surveillance	Review control measures, public health interventions and pandemic response plans, based on surveillance analysis	
	Document the pandemic's evolution, including changes in population susceptibility, clinical features, spread, trends, and impact	
	Ensure timely data submission to international influenza databases (e.g. FluNet and FluID)	
	Adapt WHO's Influenza Pandemic Risk Assessment (TIPRA) tool, to guide public health actions at the national level	
	Identify parameters to assess pandemic influenza severity indicators (transmissibility, disease severity, and impact) using the PISA framework and risk assessment SOP.	
	Establish mechanisms to review control measures, public health interventions and pandemic response plans, based on pandemic risk and severity assessment findings.	
	Conduct risk assessments according to the established risk assessment plan/SOP including cross-border risk assessment (CS)	
5. Clinical care	Develop/Review contingency plan at all levels of health facility to ensure the continuation of essential health services during the pandemic	DoPH/DCS/DHS
	Review and develop reporting format to monitor the status of essential health service delivery during a pandemic.	
	Map existing healthcare facilities in terms of level of care, number of beds, isolation and intensive care and mortuary capacity	
	Ensure isolation facilities are available at all level of facilities	
	Identify public facilities that may be used as alternative health-care facilities or quarantine center (e.g. schools, community halls and military barracks) and determine the level of care that can feasibly and safely be provided in these facilities.	

Area of intervention	Action	Responsible agency
5. Clinical care	Review the status and distribution of specialists, MOs, nurses, and other healthcare workers at each level of health facility.	
	Review policies to manage and retain staff during emergencies, including insurance, incentives, sick leave, occupational health, and safety	
	Establish services to support response staff, such as health monitoring, counseling, stress management and psychosocial/mental health support	
	Develop protocols for mental health services and train healthcare providers to recognize and respond to mental health needs	
	Develop or review SOPs/guidelines for management of dead bodies.	DMS/DoPH/ DHS
	Map locations and storage capacities of mortuary facilities in hospitals	
	Identify resources and alternative sites for emergency mortuary facilities	
	Identify and train civil society and nongovernmental organisations such as Bhutan Red Cross Society (BRCS) and De-suung for managing excess mortality	
	Review and revise clinical management guidelines for patients with suspected or confirmed pandemic influenza infection	DoPH/DCS
	Provide training for all hospital staff on clinical management and infection prevention and control practices.	
	Ensure that patients and visitors are given clear instruction on appropriate IPC measures	
	Ensure availability of supplies needed to implement recommended IPC measures (e.g. PPE and hand hygiene supplies).	
	Assess the capacity of existing health facilities to ensure continuity of services.	

Table 5.3: Action Plan during phase 3-4: Sustained Community Transmission: Pandemic Alert, and Disseminated Community Transmission: Pandemic Period

Area of intervention	Action	Responsible agency
	Activate EOC at all levels (Response phase)	HEOC
	Adapt a case definition depending on the evolving situation	
	Convene regular meetings of the NTF/HEMC/TAG to ensure effective decision-making and coordination.	
	Submit daily situation reports and relevant information to the NTF	
	Maintain continuous communication with WHO and leading international agencies to inform and coordinate containment activities	
	Ensure timely and coordinated communication with WHO in accordance with IHR	
	Maintain coordination and communication with neighboring countries and other international stakeholders to enhance collaboration	
	Identify and allocate human resources required to support and coordinate rapid containment activities.	DoS/DHS
	Mobilize funds in line with established funding	
	Implement the surge capacity and deployment plan at all levels	
	Activate the logistics plan for all pandemic phases including ambulance and transportation services during the containment phase	
	Implement bilateral or regional agreements with neighboring countries on public health emergencies to address trans-border issues, including the interoperability of plans	

Area of intervention	Action	Responsible agency
2. Access to countermeasures	Procure vaccine following a pandemic declaration by WHO	DoS, PPD/DoPH
	Procure, stockpile, distribute, and deliver antivirals, essential pharmaceuticals, personal protective equipment, diagnostic test kits, consumables, ventilation support, and vaccines based on inventory and estimated needs for containment.	
	Reinforce legal and ethical provisions for the vaccination of healthcare workers, essential service personnel, and individuals at high risk	
	Facilitate and expedite medical countermeasures' marketing authorization review by BFDA and importation of the influenza vaccine during a pandemic emergency	
3. Community Protection	Implement risk communication strategies to inform communities and the public, particularly in affected areas about the pandemic	
	Implement non-pharmaceutical interventions as per the plan	
	Enforce all public health and social measures during the containment phase, including isolation, quarantine, movement restrictions, closure of educational institutions, prohibition of mass gatherings, and compulsory vaccination	
	Ensure public health presence at points of entries and implement processes for referral, assessment and screening of travelers	
	Continue surveillance at Points of Entries (POEs) to mitigate the risk of importing or exporting influenza virus throughout the containment phase	
	Develop and disseminate targeted risk communication messages for travelers, POE staff, and crew.	
	Assess the effectiveness of travel restrictions in slowing the spread of the pandemic, based on available evidence both in-country and globally.	

Area of intervention	Action	Responsible agency
4. Collaborative surveillance	Confirm and promptly report cases to national and international authorities in accordance with IHR protocol	RCDC/DCS/DoPH
	Conduct both active and passive surveillance to detect cases and break the chain of transmission.	
	Ensure rapid virological characterization in collaboration with WHO and lead international agencies	
	Collaborate with international agencies to gather relevant clinical and epidemiological data to assess pandemic parameters (e.g., pathogenicity, transmissibility)	
5.Clinical care	Activate national and district RRT, according to existing protocols for RRTs	HEOC Secretariat/ TAG/RRT
	Review and update protocols and guidelines on quarantine and clinical management	
	Comply with any national guidelines for surveillance, diagnosis and treatment and IPC	
	Liaise with HHC to prioritize the use of Ambulance service	
	Reinforce the use of personal protective equipment during case management, surveillance and screening.	
	Isolate the confirmed cases, and quarantine suspected and close contacts as per the case definition.	
	Address psychological impact and provide mental health support to HCWs and clients	
	Consider establishing isolation centres at the public/private facilities	
	Implement guidelines for the management of mass fatalities	
	Review and update clinical management protocols/guideline	DCS/Hospital management
	Ensure continuous capacity building of health workers on case management and IPC	DCS/DoPH

Table 5.4 : Action Plan during Stabilized Situation (Phase 5): Pandemic Period, and Post-Peak phase

Area of intervention	Action	Responsible agency
Emergency Coordination	• Conduct after-action review • Disseminate the findings to the stakeholders • Review and update recovery plans. • Review the lessons learnt about planning and coordination across all sectors and share experiences with the international community. • Review and revise NIPPRP.	HEOC Secretariat / HEMC
Access to countermeasures	• Review policy and legal basis for all public health measures that were implemented during a pandemic response. • Review regulatory pathways for expediting the importation, marketing authorization and licensing of pandemic influenza vaccine during the pandemic. • Review ethical issues that surfaced during the pandemic	HEMC
Community Protection	• Review and update the existing risk communication plan in the context of lessons learnt from pandemic. • Descale surveillance at POEs.	RCDC
Collaborative Surveillance	• Review current surveillance activities and maintain those required during the transition to full recovery. • Resume seasonal influenza surveillance incorporating the pandemic virus subtype as part of routine surveillance. • Consider conducting sero prevalence studies. • Disseminate surveillance data and situation reports in a timely manner • Continue to collect and share virus isolates for genomic studies. • Continue the pharmacovigilance programme.	RCDC/DCS

Area of intervention	Action	Responsible agency
Clinical Care	• Resume routine health services • Organize debriefings in respective health facilities • Revisit, review and revise hospital contingency plans accordingly. • Replenish stock of antivirals and other essential drugs/consumables. • Review and revise adequateness of existing health facilities for future pandemics. • Assess the gaps in number and training of identified and mobilized staff. • Maintain buffer stock of vaccines and antivirals • Review procurement and distribution plan of drugs and vaccines.	DCS/DoPH/ DoMSHI

5.3. Monitoring and Evaluation (MandE)

The Monitoring and Evaluation (MandE) plan outlined in Chapter 5, Section 5.4 of the HEDCP 2024 serves as a detailed framework for the next five years, specifying responsibilities, collaborating agencies, and timelines to ensure a prompt, effective, and coordinated response to health emergencies, including future influenza pandemics. This MandE plan will guide the evaluation of the influenza pandemic response, ensuring regular updates to the NIPPRP to maintain its relevance and effectiveness.

The MoH will ensure the plan remains adaptable and responsive to the dynamic challenges of managing influenza pandemics and other health crises. The HELP team, in partnership with the DoPH-MoH, will lead its implementation. By working closely with sector leads, relevant agen- cies, and stakeholders, the team will ensure a cohesive, well-coordinated, and flexible response framework.

5.4. Financing for Influenza Pandemic emergencies

Bhutan's financing for health emergencies is guided by national frameworks and supported by international mechanisms to ensure a rapid and effective response. As a member of WHO, Bhutan can access the South-East Asia Regional Health Emergency Fund (SEARHEF) within 24 hours during emergencies, provided there is a state of emergency declaration, an official request for external assistance, and the appointment of a humanitarian coordinator. Additionally, the WHO Contingency Fund for Emergencies (CFE) provides rapid, flexible funding for health crises.

Domestically, the DM Act 2013 and the Operational Guidelines for Disaster Financing 2017 outline financial arrangements for emergency response, including relief, restoration of infrastructure, capacity building, and recovery efforts. The NDMA and the MoF ensure adequate resources, while the National Health Policy safeguards funding for healthcare services and protection against catastrophic health expenditures. These provisions serve as the foundation for financing response efforts during an influenza pandemic or other health emergencies.

5.5. Financing for Response and Relief activities

In the context of an influenza pandemic, financing for response and relief activities is governed by the Operational Guidelines for Disaster Financing 2017, serving as the foundational framework. The DDMCs and relevant agencies are tasked with utilizing their annual budgets to address immediate response and relief needs during emergencies. The MoF reimburses only the actual expenditures incurred for these activities.

Response and relief measures include providing food, shelter, medical care, and other essen- tial resources to affected individuals and frontline responders. These activities must adhere to the minimum standards established by the DLGDM. This system ensures that resources are effec- tively allocated to minimize the pandemic's health and socio-economic impacts while maintaining accountability and alignment with national preparedness and response priorities.

5.6. Financing for immediate Restoration of Essential public infrastructure and service centers

In the event of an influenza pandemic, the Operational Guidelines for Disaster Financing 2017 provide the basis for financing the immediate restoration of critical public infrastructure and service centers. This ensures uninterrupted delivery of essential services vital to public health and community functioning. To qualify for financing, the affected infrastructure must meet specific criteria: it must be wholly government-owned and non-profit, form an integral part of public infrastructure, and its disruption must significantly impact normal community operations.

5.3. Financing for Recovery and Reconstruction activities

Upon receiving a request for funds, the Department of Planning, Budget, and Performance (DPBP) will allocate resources from the General Reserve for Disaster Relief to the relevant agency. This mechanism facilitates prompt restoration efforts, ensuring that critical public services such as healthcare, communication, and transportation are swiftly reestablished to support an effective pandemic response.

5.7. Financing for Recovery and Reconstruction activities

During an influenza pandemic, recovery and reconstruction efforts for public assets and infrastructure will adhere to the post-disaster assessment framework established by the NDMA. Agencies must conduct comprehensive damage assessments to inform recovery planning. Budget requirements for these activities will be integrated into the normal planning and annual budgeting processes, ensuring a structured approach to rebuilding and restoring critical infrastructure essential for public health and societal resilience.

5.8. Contingency fund and Resource mobilization for Influenza Epidemics and Outbreaks

To strengthen national resilience against influenza pandemics, a dedicated Contingency Fund should be established to ensure rapid financial response without diverting resources from other critical sectors. This fund will address urgent needs during health crises and be more cost-effective than the economic fallout from uncontrolled outbreaks. The MoH should develop guidelines for the fund's establishment and eligible expenditures.

In addition, the MoH will coordinate resource mobilization efforts, drawing from local health facilities, international partners, and NGOs. A comprehensive inventory of medical supplies, equipment, and personnel should be maintained and periodically updated to identify gaps. Pre-agreements with suppliers will ensure rapid procurement of essential items, adhering to quality standards and enabling timely delivery during emergencies.

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Chapter 6
APPENDIX

MoH Organogram

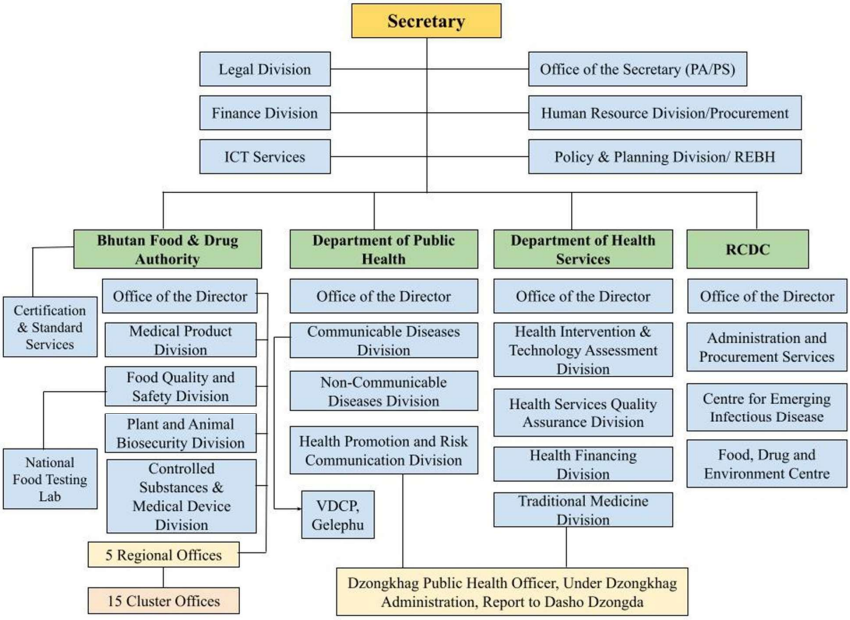

Figure 6.1: MoH Organogram

DoL, MoAL Organogram

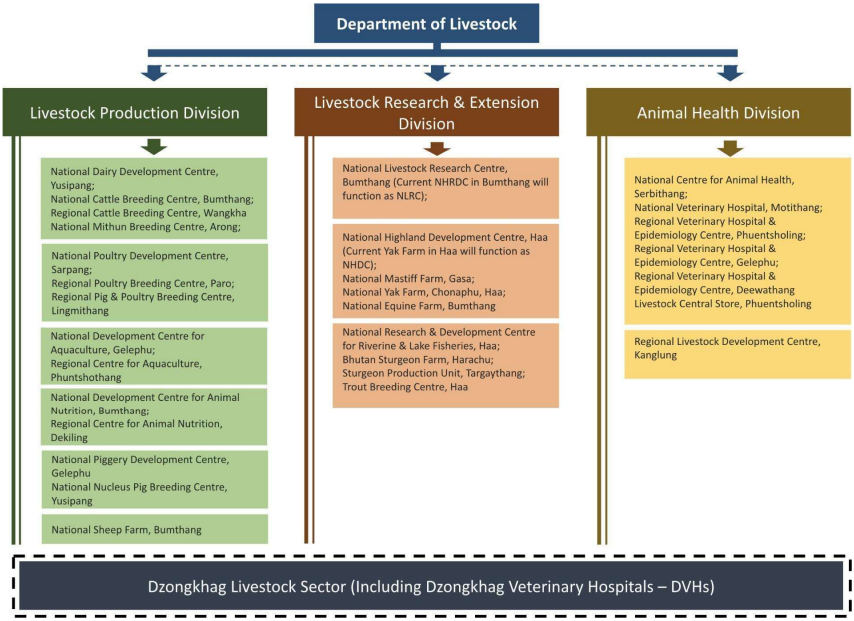

Figure 6.2: DoL Organogram

Additional References

List of Standard Operating Procedures (SOPs)

1. SOP for Health Emergency Operations Centre Activation, Operation and Deactivation
2. SOP for Human Resource Deployment
3. SOP for Pandemic Influenza Outbreak Investigation
4. SOP for Sample Collection, Shipment and Testing
5. SOP for Infection Prevention and Control during Influenza Pandemic
6. SOP for Emergency Medical Supplies
7. SOP for Designated Facility Quarantine
8. SOP for Home Quarantine
9. SOP for Community Quarantine
10. SOP for safe and dignified management of dead body in the event of an influenza pandemic

List of Protocols

i. Protocol for hand hygiene

ii. Protocol for respiratory hygiene/cough etiquette for all health- care facilities

iii. Protocol for family member/visitor in health care facilities

iv. Protocol for patient transport within health-care facilities

v. Protocol for waste disposal

vi. Protocol for dishes and eating utensils

vii. Protocol for linen and laundry

viii. Protocol for environmental cleaning and disinfection

ix. Protocol for preparation of the isolation room

x. Protocol for use and removal of facemask or reusable cloth-mask

xi. Protocol for planning and implementing of non-pharmaceutical interventions

xii. Protocol for travelling passengers (airport and land/ border crossing