FINAL DRAFT
INFLUENZA PANDEMIC PREPAREDNESS PLAN

National Department of Health
Communicable Disease Control
Emerging and Re-Emerging Infectious Diseases
South Africa

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1. Introduction

The World Health Organisation [WHO] and health authorities throughout the world have recognised the threat of influenza pandemic, which could potentially have serious effects on the health of the human population. Previously, major pandemics have occurred in 1889, 1918/19, 1957 and 1968. Due to the advent of new subtypes of highly pathogenic bird flu, otherwise know as Avian Influenza, health experts anticipate the occurrence of major pandemics in the near future.

The 1918/19 influenza pandemic was one of the most deadly pandemics of communicable diseases to have affected the world. This pandemic was directly responsible for over 20 million deaths worldwide. In South Africa the pandemic killed over 300 000 people, and in turn overwhelmed the ability of the authorities to dispose of the corpses. Furthermore it resulted in total paralysis of the health care system, which struggled to manage patients.

The main challenge to health authorities is the inadequacy of the tools to predict where and when future pandemics will occur. It is against this background that the WHO and its Member States are encouraged to prepare contingency plans to best prevent and control future pandemics. South Africa is one of the countries that supports epidemic/pandemic preparedness and as a result, has developed these plans to safeguard the health of everyone in the country.

Management of pandemics requires large stock of antivirals, access to an effective vaccine, human resources, and a multisectoral and multidisciplinary approach. South Africa faces the challenge of competing with first world countries for limited supplies of drugs and vaccines. To add to this, such a pandemic would potentially make very serious demands on the healthcare system and create a great deal of public consternation.

It is for these reasons that this pandemic preparedness plan has been developed as a working document. The WHO has established an Influenza Pandemic Task Force to
prepare a “blueprint plan” to guide governments in preparing for future pandemics. This document is adapted from the WHO “blueprint plan” and its main objective is to assist the South African Department of Health and its partners best prepare for potential pandemics.

1.1 Potential Flu Pandemic Threats

The extent and the impact of a future major pandemic cannot be predicted with any degree of certainty. However, data from previous influenza pandemics may be of some value in contingency planning. The WHO reported the 1918/19 Spanish Flu killed over 40 to 50 million people worldwide. Furthermore, many countries experienced serious social disruption and economic losses. Influenza experts predict that if a flu pandemic were to occur, the world would face up to 233 million outpatient visits, 5.2 million hospitalisations, and 7.4 million deaths, within a very short period.

Due to improved health systems, therapeutic care and global preparedness strategies; it is unlikely for the world to have the same number of deaths as in 1918/19. However, there are more risk factors that may predispose most people to infections. For example, increased travel, population displacements, conflicts, poverty, overcrowding, possibly HIV and AIDS and inadequate infrastructure. South Africa is not an exception and is likely to be affected at the same time as the first world countries.

In the UK, it has been predicted that new general practitioner consultations would exceed 500/100 000 population in a new major pandemic. This would mean that a practice with a patient base of 10 000 would see at least 50 new patients per week. At the peak of the 1957 pandemic general practitioners recorded seeing 80-100 cases per day, whereas in the 1969 pandemic these reached up to 1,260/100 000 population over a 2 week period. In the UK at the peak of the 1957 pandemic, between 25-30 000 additional cases of acute respiratory disease were admitted to National Health Service hospitals.

In the UK new sickness benefit claims totaled 2.5 million out of 17.5 million insured. In 1968/69 more than 1 million were received over a 5-month period. It was estimated that 8-10% of the insured population lost 3 or more working days during the 1957 epidemic.
Healthcare workers were particularly adversely affected with 12.6 to 19.4% of nurses absent in one district and in one hospital, nearly a third of nurses were absent.
2. THE INFLUENZA VIRUS

2.1 Influenza
Influenza or 'flu' is a respiratory illness associated with infection by influenza virus. Symptoms frequently include headache, fever, cough, sore throat, aching muscles and joints. There is a wide spectrum of severity of illness ranging from minor symptoms through to pneumonia and death.

2.1.1 Influenza Virus
The influenza virus was first isolated in 1933. There are three main types that cause infection: Influenza A, B and C (of respectively importance). Influenza A usually causes a more severe illness than influenza B. The influenza virus, like most Ribonucleic Acid [RNA] viruses, is genetically highly variable and this variability gives rise to a constant changing of the antigenicity of the virus. However, what is characteristic to the virus is that the antigenic changeability constantly gives rise to new strains of virus, which are able to escape the immunity, which the population builds up, to the predecessor strain, which it now replaces. The epidemiology of influenza is thus characterised by the constant advent of new antigenic strains of the virus resulting in recurring outbreaks or epidemics.

2.1.2 Classification of Influenza Viruses
Influenza is classified into 3 types based on the antigenicity of a protein called nucleoprotein, which surrounds the RNA genome of the virus. The 3 types are referred to as type A, type B and type C. Type A influenza virus is further subdivided into subtypes based on the antigenicity of the 2 proteins embedded in the envelope of the virus, which are used to attach and to penetrate into the host cell. These are haemagglutinin (HA) and neuraminidase (NA). Sixteen different HA viruses and nine different NAs have been identified in various combinations in wild aquatic birds, the reservoir host for influenza viruses. Only 3 subtypes are known to infect humans and these are H1N1, H2N2 and H3N2. Presently 2 of the subtypes are circulating in humans, namely H1N1 and H3N2.

2.1.3 Mechanisms of Influenza Virus Variability
There are 2 ways in which an influenza virus changes its antigenicity, i.e. antigenic shift and antigenic drift.
**Antigenic Shift**

Influenza virus is one of the few viruses where the individual genes occur on separate and discrete pieces of nucleic acid instead of the more usual complete single strand for the whole genome. As a result of this if two different subtypes happen to infect the same cell, genes from different origins may be swapped when the progeny virus is put together in the assembly phase of the virus’ replication. The alien gene or genes then produces hybrid progeny virus, which usually dies off. This process is called reassortment and the hybrid offspring are referred to as reassortants.

The primary mixing bowls where reassortment is thought to take place in nature are the vast flocks of wild birds, including waterfowl, found in China and human influenza virus is the pig, which can act as an intermediate host for man. In China and the Far East the human populations come into close contact with these animal reservoirs that harbour a great variety of influenza subtypes. Nevertheless, reassortment producing a new human virus is a rare event, which can give rise to a new pandemic about once every 10-40 years.

When reassortment occurs, it gives rise to a completely new subtype of virus acquiring a totally new HA or/and sometimes a new NA protein. As a result, the human population becomes susceptible due to dramatic and sudden classical pandemics such as the 1918/19 Spanish Flu, the 1957 Asian Flu, and the 1968 Hong Kong Flu. The sudden and major change in antigenicity of the virus is hence called **antigenic shift**.

**Antigenic Drift**

This is a more subtle change in the antigenicity of the HA protein, which is critical in the attachment of the virus to its receptor on the host cell. Even subtle changes (i.e. sometimes only 1 or 2 amino acids) may enable the virus to elude the host's immunity. These HA mutations occur readily and continually although point mutations (i.e. substitution of 1 amino acid) usually do not translate on their own into a significant antigenic change. However, accumulation of these point mutations under the selective pressure of antibodies formed in innumerable human hosts will eventually produce meaningful antigenic change resulting in a virus, which can then spread throughout the human population, causing widespread epidemic activity. This more gradual but
progressive change is thus called **antigenic drift** and it gives rise to new antigenic strains of influenza approximately every 3-5 years.

2.2 Definition
An influenza pandemic or global epidemic occurs when a new influenza virus subtype appears, against which no one is immune. This may result in several simultaneous epidemics worldwide with high numbers of cases and deaths. Improved transport systems, rapid urbanization and increased travel are more likely to facilitate the spread of new viruses worldwide.

Influenza virus causes outbreaks of influenza every winter season. This is seasonal influenza. These outbreaks are of variable intensity but usually affect between 5-30% of the population resulting in a highly variable degree of morbidity and some mortality, which is virtually confined to elderly individuals, especially those with underlying medical conditions.

When significant antigenic variation occurs in the virus so that the population is largely susceptible, significantly greater epidemic activity occurs which is often global in extent, with varying intensity in different countries often depending on population immunity. The widespread epidemics of influenza that affect almost all the continents, are sometimes referred to as pandemics.

What is very important to understand that there is a difference between seasonal, Avian and human pandemic influenza. The human pandemic influenza involves a new influenza virus subtype, which is rapidly transmitted between people and Avian flu is a type of flu diagnosed in birds. This is an animal disease.
3. PANDEMIC PREPAREDNESS PLAN

3.1 Elements of Preparedness

A complete pandemic preparedness plan should comprise of all the essential minimum elements aimed at guiding those involved in the prevention and control of infectious diseases. The WHO and its Member States recommend that countries use a checklist in order to ensure smooth implementation of the plans.

The plans should be prepared in consultation with all government departments, including the public sectors and community representatives. Advocacy and commitment from heads of states and department is crucial. Preparedness teams must ensure that the following seven essential elements of the checklist are sufficiently planed and implemented:

1. Preparing for an Emergency
2. Surveillance
3. Case Investigation and Treatment
4. Prevention of Spread of Disease
5. Maintaining Essential Services
6. Research and Evaluation
7. Implementation, Testing and Revision of National Plans

3.1 Preparation for an Emergency

It is of vital importance for both political and bureaucratic processes to work in harmony with the technical team in case of an emergency. Government must recognise the potential human, social and economic impacts of pandemics at its highest levels of management and governance. The following enablers should be readily available at various levels of government, particularly within the health care system:

- Recognition and acknowledgement of preparedness plans
- Committed funding
- Responsible organizations, committees and technical expertise
- Realistic timelines for completion of preparedness plans
- Roles and responsibilities should be clearly documented
- Periodic meetings should be held and proceedings be documented
- Political, government and professional groups should be informed of the plans
3.1.1 Command and Control
In order to make clear and timely decision and implementation of uniform policies endorsed by all role players, it is essential to know who is responsible for various activities within communicable disease control. Who and when to enforce key elements of response like travel or trade bans and quarantine should be clearly stipulated, e.g. President, Ministers, Director Generals, etc. These should be instituted in all organisations participating in the development of the plans.

In addition to high level command and control plans, technical experts from various sectors and disciplines should know their roles and responsibilities in order to avoid confusion. Wherever necessary, standard operating procedures like outbreak investigation, laboratory confirmation, case management, political decision-making, information to be disseminated and any other relevant guidelines need to be developed and implemented.

3.1.2 Risk Assessment
South Africa is classified by WHO, UN and IOE as a low risk country. The risk of a pandemic is great and will persist, but the timing and severity are unknown. Risks need to be defined immediately. Various sectors that are more likely to be affected are encouraged to conduct studies on expected impact of the pandemic. Modelling studies on the impact of the pandemic on varying attack rates should be done as well as systems for early detection, testing and reporting. Impact measures should include health facility attendance, admissions, and deaths. The social and economic impact should also be assessed. An estimation of the effects of potential interventions with antiviral medication and/or vaccines in various groups should be computed.

3.1.3 Communication
Communication strategies are an important component in the management of any infectious disease outbreak risk and especially management communication. Communications that address various target groups, e.g. community, press, politicians, health workers, should be developed. Dissemination strategies, e.g. website, leaflets, newspapers, radio, television and languages to be used should be well planned and executed. Communication also involves regular meetings between various stakeholders, countries, including reporting to the WHO. Socio-cultural aspects of the
country should be well understood, e.g. religion and language. South Africa endorses and will use the “WHO Communication During Outbreaks” document. Communication should be clear and objective to prevent confusion. Messages should be consistent within the country, but also in across boarder countries.

3.1.4 Legal and Ethical Issues
During pandemics it may be necessary for government to overrule existing legislations and rights, e.g. school, sporting and port closure, quarantine or travel ban. Any decisions should comply with the International Health Regulations.

3.1.5 Response Plan
The WHO recommends that different stages of responding to the epidemic be instituted. This includes various triggers that will be activated at various levels of the response.

The applicable sections are equally important for animal flu outbreaks, e.g. Avain flu.
4. SURVEILLANCE

4.1 National Surveillance Programmes
Within the Department of Health, both clinical and laboratory surveillance systems should be sensitive enough to detect any suspected human cases. The Department of Agriculture is responsible for surveillance in poultry and other animals. The surveillance systems should:
- Be comprehensive and cover the whole country
- Facilitate rapid response
- Allow that laboratory and epidemiological data be integrated
- Ensure national security
- Contribute to capacity and improvement of the system
- Fit in with the global information network system

NB: What is said here for human flu viruses and surveillance is equally important for animal viruses and surveillance.

4.1.1 Laboratory Surveillance
The influenza laboratory of the National Institute for Communicable Diseases [NICD] is the major surveillance site for influenza in South Africa. There are smaller sites situated in the Department of Microbiology, University of Cape Town and Department of Virology, University of Natal.

Both active and passive surveillance is carried out at the NICD. The active surveillance programme consists of a network of sentinel sampling sites; at present some 80 general practitioners, clinics and staff health centers, which provide routine upper respiratory tract specimens from patients with acute respiratory disease for virus isolation. On average between 50 and 100 virus isolates are made annually. These isolates are antigenically typed at the NICD using reagents supplied by the WHO.

In addition, molecular studies are carried out at the NICD to determine the polypeptide sequence of the surface proteins of new isolates in order to determine subtle sequence changes. Supplanting this acute surveillance programme is the resource of clinical material sent to the NICD for routine diagnostic purposes. Virus isolation data is coupled
with investigation of school and work absenteeism, which is used as a rough determinant of the extent and impact of influenza.

The NICD influenza laboratory is part of the international global network of some 116 reference centers throughout the world. Close ties are maintained with these centers as well as with the four WHO Collaborating Centers for Reference and Research on Influenza:
  - The Commonwealth Serum Laboratories, Melbourne, Australia
  - National Institute for Medical Research, Mill Hill, London
  - National Institute of Infectious Diseases, Tokyo, Japan
  - Influenza Branch, National Center for Infectious Diseases, CDC, Atlanta, Georgia.

Links are maintained through the internet via a programme called FluNet. All participating laboratories supply information regarding influenza activity and characteristics of virus isolates. Three influenza collaborating laboratories have been established in China to act as international early warning sentinel laboratories to warn of the appearance of new strains of influenza virus.

**4.1.2 Monitoring Antigen Drifts**

The regular monitoring of human influenza virus isolates for the more regular antigenic drifts is carried out by some 125 national influenza centers throughout the world. These laboratories obtain influenza virus isolates either from routine patient diagnostic material sent into clinical virology laboratories or, alternately, specimens are actively recruited from sentinel medical practitioners or clinics who purpose-fully take throat swabs from patients with upper respiratory tract infections.

A successful viral watch programme with a network of sentinel practitioners has been operating successfully on the Witwatersrand since 1982. Preliminary characterization of influenza isolates is carried out by the NICD and a representative number of virus isolates are then sent to the WHO Collaborative Centres for Reference and Research on Influenza, in London and Melbourne, Australia; for detailed antigen and genetic characterisation.
5. **Potential Control Measures for Human Infection**

To reduce the opportunity or risk of transmission, the following should be done:

- Use the best available information to act and to inform countries
- Control the flu in animals and contain the source of infection
- Contain seasonal flu outbreaks through an effective flu immunisation programme to surge capacity for pandemics
- Avoid high risk behaviour, e.g. eating of raw poultry, big gatherings, wet slaughtering, co-habitation
- Improve personal hygiene, e.g. washing hands with soap, covering mouth and nose if coughing or sneezing
- Voluntary quarantine/isolation
- Improve infection control
- Immediate investigation in suspected subtype cases
- Improve diagnosis, treatment and overall service provision
- Improve human and animal surveillance systems
6. CASE INVESTIGATION AND TREATMENT

Good diagnostic capacity is possible where the clinical staff is well supported by laboratory confirmation of causative agents. It is therefore very critical that health facilities and laboratory services maintain good communication. Moreover, outbreak response teams should have necessary skills and knowledge on case investigation. Laboratory and case investigation should inform case management in terms of procurement and use of vaccines, prophylaxis and other drugs.

6.1 Case Management
To ensure effective and safe treatment of cases, clinical guidelines should be readily available and if not, WHO guidelines should be adapted and implemented. All provinces in South Africa are expected to identify designated health facilities where treatment protocols will be well implemented. In case of large epidemics, additional facilities should be identified after assessment, and support should be provided to such facilities. The choice of intervention depends on the virus, severity, age group, etc.

6.2 Vaccine Formulation
Twice a year, towards the end of the northern and southern hemisphere influenza season, a meeting is convened by the WHO consisting of representatives of the Influenza Collaboration Centers and other influenza experts, to review the past influenza season and to examine laboratory data on the antigenicity of new isolates. On this basis an estimate is made as to which strains in each of the subtype viruses are likely to circulate in the population the following influenza season.

Prototype influenza strains are then selected and used for preparing seed virus strains for vaccine manufacturers to process into vaccines. Influenza vaccines are inactivated (killed) vaccines made by inoculating fertilized chicken eggs with influenza virus, harvesting the fluid and then extensively purifying out the virus which is then chemically inactivated, usually with formaldehyde.

The formulation of the vaccine is announced biannually in February and October in the WHO publication, the Weekly Epidemiological Record. This then allows for
approximately 4-5 months for manufacturers to produce and package vaccine in time to vaccinate the northern hemisphere population before the onset of their winter.

6.3 Antiviral Chemoprophylaxis
Influenza vaccines are, by far, the most important means of preventing influenza. On occasion, however, it may be necessary to supplement vaccine prophylaxis with chemoprophylaxis using oseltamivir [Tamiflu], or zanamavir [Relenza], which inhibits influenza virus replication. Chemoprophylaxis should be administered under the following circumstances:

a. In very high-risk situations to subjects who may already have been vaccinated or, if not, together with influenza vaccine, for example to frail, elderly inmates of an institution before a threatening outbreak.

b. In an emergency situation where vaccine has been omitted in a high-risk patient. As the protective effects of vaccination only commence after 14 days.

c. Where vaccine is contraindicated - in persons who have a history of severe hypersensitivity to egg protein.

d. Where vaccine is not available or vaccines containing the correct strains are not procurable, e.g. travellers going from summer to winter season.

6.4 Antiviral Chemotherapy
Oseltamivir or zanamavir may also be used as a therapy for influenza provided it is administered early in the course of the illness, i.e. within 48 hours after onset of influenza. Therapeutic responses have been demonstrated in the treatment of influenza pneumonia.

NB: Oseltamivir is the drug of choice but zanamavir [relenza] is also available.
7. ROLES AND RESPONSIBILITIES

Department of Health
The Deputy-Director General should provide leadership to the multidisciplinary teams involved in developing preparedness strategies. The National, Provincial and Local Departments of Health together with the National Institute for Communicable Diseases and health partners from the private sector need to establish and sustain a well-constituted and well-functioning outbreak response team. The overall aim of the outbreak response team is to:

- Provide leadership and identify infectious disease outbreaks by ensuring the existence of a functional surveillance system
- Investigate outbreaks, prepare adequately and timeously for emergencies
- Ensure rapid response and systematic management of outbreaks, in order to reduce morbidity, and mortality
- Enhance coordination at each level, e.g. establish a Joint Operations Center [JOC]

General Responsibilities of the Outbreak Response Team at ALL Levels
The activities of the outbreak response team should be underscored by the common understanding of reducing morbidity and mortality due to infectious diseases. However, this objective can be realised by the following general responsibilities of the team:

- To prepare plans of action for epidemic preparedness and response
- To mobilise human, material and financial resources for epidemic prevention and control locally
- To provide information and education to the public before, during and after outbreaks/epidemics
- To monitor the implementation of outbreak/epidemic control actions
- To coordinate assistance for epidemic prevention and control from various partners
- To monitor resource utilisation (drugs, vaccines, supplies, disinfectants, logistics and financial resources)
- To verify any rumour of disease outbreak and carry out outbreak investigation
- To recommend appropriate strategies and measures for the rapid containment of epidemics to the local outbreak response teams
- To coordinate the implementation of the plan of action and participate actively in the implementation of epidemic prevention and control strategies
- To provide technical support to the health facilities during outbreaks/epidemics
- To monitor and evaluate overall preparedness, investigation and response to ensure documentation of all outbreaks
- To coordinate communication and activities
Directorate: Communicable Disease Control (CDC) [National and Provincial]

- Coordinate Epidemic Preparedness and Response (EPR) and epidemiological investigation at appropriate level[s] of the health care systems
- Develop guidelines on control, prevention and management of influenza
- Coordinate activities e.g. rumour verification, early detection, outbreak investigation, case management and epidemic preparedness and response
- Provide technical support to appropriate level[s] on the control, prevention and treatment of epidemic-prone infectious diseases
- Facilitate and support laboratory surveillance activities for early detection of outbreaks and monitoring of circulating pathogenic strains
- Develop mechanisms for systematic monitoring and evaluation of strategic plans of EPR on influenza at appropriate level[s] and feedback
- Liaise with other programmes, government departments and other partners
- Participate in inter-country epidemic preparedness and response activities, e.g. SADC EPR Initiatives
- Facilitate resource mobilisation (human, financial, infrastructure, etc) for rapid response and timely preparedness
- Facilitate cooperation with international agencies at appropriate levels
- Develop and disseminate information of disease outbreaks to the public, managers, and appropriate level[s]
- Prepare and submit reports/information to strategic managers and political heads and structures such as the Directors General, Minister, parliament, cabinet, etc.

Directorate: Epidemiology with NICD

- Surveillance (data collection, capturing, cleaning, analysis and presentation) for rapid response and systematic investigation and management of the pandemic.
- Ensure that an Early Warning System for potential outbreaks is established and functional for early detection of potential epidemics.
- Disseminate data for prompt and appropriate response, to all levels of the health system and international organisations, in the form of reports, website, etc. timeously
- Collect and disseminate data, on a daily basis during an outbreak, for prevention and control purposes
- Conduct epidemiological investigations, and develop reports on the epidemiology of the disease outbreak
- Develop mechanisms for systematic monitoring and evaluation of strategic surveillance plans for influenza in the region and provide feedback
- Provide technical support to provincial and district health information managers
Support in epidemic intelligence (rumour verification, clinical surveillance of suspected cases, laboratory surveillance for confirmed cases, investigation, control and prevention)

**Directorate: Health Promotion [National and Province]**
- Coordinate health promotion messages at national level
- Develop and distribute information, education and communication [IEC] materials, e.g. poster, pamphlets and audio-visuals, for public awareness in all relevant settings including bordering communities.
- Increase public awareness on risk of influenza and pandemic through electronic media, television, radio, and internet
- Develop active community participation strategies [excluding large gatherings], and ensure community involvement during outbreaks
- Train health promotion practitioners on the various techniques useful for attitude and behavioural change, healthy life styles and disease prevention
- Involve community-based organisations [CBOs], non-governmental organisations [NGOs] and community health workers in outbreak response
- Promote voluntary isolation
- Inform workers at ports of entry

**Directorate: Environmental Health [National and Province]**
- Conduct environmental assessment and management of risk factors predisposing individuals to influenza
- Coordinate port health activities, e.g. isolate suspected cases and inform masters of vessels, pilots and other relevant persons at ground crosses on prevention and best management practices of suspected cases

**Directorate: Food Control [National and Provincial]**
- Play a central role in the implementation of Food Control Regulations to prevent foodborne diseases and provide technical and legal support in case of food borne or related outbreaks
- Coordinate food recall activities during food-borne outbreaks
- Collaborate with the Department of Agriculture on food-related issues

**Cluster: Communication [National and Provincial]**
- Work together with the Department of Communications as media liaison between Departments [especially the Department of Tourism], health partners and the public in a coordinated way
o Develop communication protocols and routines: patients confidentiality, press releases and briefings and clear misconceptions
o Manage foreign and international communications in order to protect and maintain diplomatic ties with other countries
o Develop strategies in case of an outbreak, epidemic or pandemic
o Develop a communication strategy for both government and private sector

**Directorate: Human Resources [All Levels and Sectors]**
o Facilitate capacity development of members of the team and relevant employees
o Facilitate technical support and training on epidemic preparedness and response to outbreak response teams
o Motivate for availability of human resources [contingency plan] during an outbreak

**Directorate: Health Information Systems [National and Provincial]**
o Ensure that health information systems for information flow, during and in the absence of epidemics, are implemented
o Publish information on disease outbreaks daily on the Departmental Website and Intranet
o Health information should be transparent and accessible to allow rapid response

**Directorate: Pharmaceutical Policy and Planning [National Provincial]**
o Ensure the provision of medical supplies before and during outbreaks, e.g. drugs, vaccines,
o Ensure that influenza vaccine is on the primary level Essential Drug List [EDL] and available at that level
o Encourage seasonal influenza vaccination
o Develop strategies for securing of drugs and deployment of antivirals and vaccines as part of preparedness, if so required
o Implement, monitor and evaluate drug levels and deployment of antivirals, vaccines and other related resources
o Negotiate with industry on capacity, availability and equity issues

**Directorate: Emergency Medical Services and Disaster Management [All Levels]**
o Coordinate transportation of patients and coordination of designated facilities
o Coordination of all EMS activities, both private and public
o Play a role in incident management
o Assist other disciplines with planning and implementation of preventive, operational and contingency plans
o Audit of health facilities, both private and public
**Directorate: Hospital Management [National and Province]**
- Prepare a list of designated hospitals with isolation facilities, and determine capacity per facility
- Prepare contingency plans and ensure capacity for ventilators and other tertiary requirements for severe acute respiratory patients
- Ensure infection control in designated facilities together with Quality Assurance Directorate
- Prepare a list of mortuary [not forensic] capacity per province

**Directorate: Financial Management [National]**
- Provide additional and emergency financial support

**South African Military Health Services**
- Provide technical assistance, infrastructure and human resources during and in the absence of outbreaks on request

**Department of Finance [National Treasury]**
- Make available emergency funding in case of an epidemic or a pandemic

**Department of Provincial and Local Government**
- Finalise Disaster Management Plan and oversee implementation
- Participate in outbreak control
- Provide a list of all private burial services per local government and their capacity
- Provide safe drinking water together the Department of Water Affairs and Forestry

**Department of Agriculture**
- Provide legal framework for notification of animal diseases
- Provide surveillance and information sharing on zoonotic diseases
- Coordinate the investigation and control of outbreaks related to animals
- Investigate compensation possibilities for loss of infected stock by culling
- Develop risk communication strategy
- Ensure stock movement and control

**Department of Social Development**
- Ensure the availability of basic social needs during outbreaks
- Community mobilisation and support

**Department of Safety and Security**
- Ensure safety and order in the case of unrest due to outbreaks
Department of Home Affairs
- Manage movements across the borders

Department of Education
- Social mobilisation and involvement in health promotion activities
- Manage closure of educational facilities, if required

Department of Foreign Affairs
- Ensure diplomatic relations
- Mobilisation of international assistance
- Dissemination of information to embassies /missions abroad and foreign missions in South Africa
- Assist with cross-border communication and control
- Establish call center for South Africans abroad and foreign nationals

Department of Correctional Services
- Inform prisoners and visitors regarding the risk of the pandemic
- Improve health promotion activities
- Arrange for case management, and hospital admissions and isolation

Private Health Sector
- Provide a plan for relevant support (laboratories, specialists, infrastructure, etc) to the Department of Health to ensure Public Private Partnership and multisectoral initiatives are well implemented and coordinated

International Organisations [WHO, CDC, etc]
- Provide support (laboratories, specialists, infrastructure, funds, etc) to South Africa

Southern African Development Community (SADC)
- Participate in SADC EPR activities to strengthen cross-border and inter-country epidemic preparedness and response strategies.
- Strengthen mechanisms for increasing social mobilisation and ensure active country participation in the region

ALL DEPARTMENTS SHOULD HAVE THEIR OWN CONTINGENCY PLAN

These terms of reference are expected to be dynamic in nature and should be continuously reviewed, given the nature of the disease and methods to manage it. The
involvement of various stakeholders will also be determined by the nature of the outbreak, epidemic or pandemic.
8.1 Pandemic Periods
For international planning purposes, the WHO has defined phases in the progression of an influenza pandemic from the first emergence of a novel influenza virus, to wide international spread. These phases allow a step-wise escalating approach to preparedness planning and response. They are global classifications based on the overall international situation and are used internationally for planning purposes.

A. Interpandemic period
Phase 1
No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human infection or disease is considered to be low.
- Strengthen influenza pandemic preparedness at the global, regional, national and sub-national levels.

Phase 2
No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.
- Minimize the risk of transmission to humans; detect and report such transmission rapidly if it occurs.

B. Pandemic Alert Period
Phase 3
Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.
- Ensure rapid characterization of the new virus subtype and early detection, notification and response to additional cases.

Phase 4
Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.
o Contain the new virus within limited foci or delay spread to gain time to implement preparedness measures, including vaccine development

Phase 5
Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).

o Maximize efforts to contain or delay spread, to possibly avert a pandemic, and to gain time to implement pandemic response measures.

C. Pandemic Period
Phase 6
Pandemic: increased and sustained transmission in general population

o Minimize the impact of the pandemic.

a. The distinction between phase 1 and phase 2 is based on the risk of human infection or disease resulting from circulating strains in animals. The distinction is based on various factors and their relative importance according to current scientific knowledge. Factors may include pathogenicity in animals and humans, occurrence in domesticated animals and livestock or only in wildlife, whether the virus is enzootic or epizootic, geographically localized or widespread, and/or other scientific parameters.

b. The distinction between phase 3, phase 4 and phase 5 is based on an assessment of the risk of a pandemic. Various factors and their relative importance according to current scientific knowledge may be considered. Factors may include rate of transmission, geographical location and spread, severity of illness, presence of genes from human strains (if derived from an animal strain), and/or other scientific parameters.

NB: Annexure A gives detailed objectives and activities during the different phases of the pandemic.
**ANNEXURE A: OVERARCHING GOALS, OBJECTIVES AND ACTIVITIES BY PHASES**

**Interpandemic Period: Phase 1**

**Overarching Goal:** Strengthen Influenza Pandemic Preparedness

### Planning and Coordination

<table>
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<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
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<tbody>
<tr>
<td>o Develop and maintain national pandemic contingency plans</td>
<td>o Establish and strengthen multisectoral influenza pandemic committees at all levels of care</td>
<td>o NORT and Provinces</td>
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<tr>
<td>o Promote early reporting of new influenza viruses, mobilise, and develop effective resource mobilisation mechanisms for early response</td>
<td>o Advocate preparedness plans to top decision-makers in government and with relevant partners in and outside the health sector</td>
<td>o NORT</td>
<td></td>
</tr>
<tr>
<td>o Develop mechanisms for decision-making for rapid response through intersectoral and multidisciplinary collaboration</td>
<td>o Identify and train key personnel to be mobilised in case of emergency</td>
<td>o NORT, EMS and Provinces and Local Government</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Ensure good laboratory and clinical surveillance of novel strains of influenza</td>
<td>o NICD</td>
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<tr>
<td></td>
<td>o Consider the development of domestic stockpile (antivirals, vaccines, protective clothing, laboratory diagnostics and other technical support) for rapid deployment, including a management and distribution plan</td>
<td>o Pharm Policy Planning, NHLS and EMS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Consider providing support to resource-poor countries with foci of influenza activity</td>
<td>o Cabinet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Develop a risk communication plan</td>
<td>o GCIS and Communications</td>
<td></td>
</tr>
</tbody>
</table>

### Situation Monitoring and Assessment

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Maintain updated information on trends in human infection with seasonal strains of influenza</td>
<td>o Develop generic surveillance systems for detection, characterisation and assessment of influenza-like illnesses or respiratory deaths</td>
<td>o Epidemiology, NICD, Agric (Animal Health)</td>
<td></td>
</tr>
<tr>
<td>o Identify potential human and animal sources of infection and assess risk</td>
<td>o Report routine and unusual surveillance findings to relevant national and international authorities</td>
<td>o Epidemiology, NICD and Agric</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Develop contingency plans for monitoring information, assessment of impact and resource needs, e.g. morbidity, mortality, human resources, facilities, admissions, number of beds, alternative facilities, mortuary capacity, etc</td>
<td>o Epidemiology, NICD and Provinces</td>
<td></td>
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<tr>
<td></td>
<td>o Assess burden of seasonal influenza to help estimate additional needs during a pandemic</td>
<td>o NICDI</td>
<td></td>
</tr>
<tr>
<td>Objectives</td>
<td>Activities</td>
<td>Responsible</td>
<td>Cost [Rand]</td>
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<tr>
<td>Agree in advance on a range of strategies based on non-pharmaceutical public health actions</td>
<td>Develop national guidelines for public health interventions, and discuss them with authorities/decision-makers in and outside the health sectors</td>
<td>NORT, CDC</td>
<td></td>
</tr>
<tr>
<td>Develop strategies for stockpiling of antivirals and vaccines, deployment strategies/criteria</td>
<td>Develop table-top exercises and use plans to improve strategies/plans, e.g. stockpiling</td>
<td>Pharm Planning Policy</td>
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<tr>
<td></td>
<td>Set priorities and criteria for deployment and use of antivirals and vaccines during pandemic alert and pandemic periods</td>
<td>Pharm Planning Policy</td>
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<tr>
<td></td>
<td>Consider participating in research for antiviral resistance and vaccine production</td>
<td>Pharm Planning Policy</td>
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<td></td>
<td>Explore strategies for vaccine access from producing countries, through bilateral agreements</td>
<td>Pharm Plan Policy</td>
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<td></td>
<td>Negotiate with industry to increase capacity</td>
<td>Pharm Plan Policy</td>
<td></td>
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</tbody>
</table>

### Health System response

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure up-to-date contingency plans and strategies are in place for pandemic response in the health-care sector</td>
<td>Involve the WHO in development of preparedness strategies and address deficiencies</td>
<td>NORT and Foreign Affairs</td>
<td></td>
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<tr>
<td></td>
<td>Ensure that authorities, responsibilities and pathways are clearly identified for command and control of health systems</td>
<td>Province, Private Sector</td>
<td></td>
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<tr>
<td></td>
<td>Identify priorities and response strategies for each stage, e.g. triage system, human and material resources</td>
<td>Province, Private Sector</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Produce interim case finding, treatment and management protocols and algorithms, infection control guidelines, capacity management and staffing strategies</td>
<td>NORT, CDC</td>
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<tr>
<td></td>
<td>Ensure laboratory safety, specimen testing and characterisation protocols</td>
<td>NHLS</td>
<td></td>
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<tr>
<td></td>
<td>Increase awareness and strengthen training of health-care workers on pandemic influenza</td>
<td>ORT’s</td>
<td></td>
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<tr>
<td></td>
<td>Dedicated facilities list made available</td>
<td>Facilities Plan, Province, Private Sector</td>
<td></td>
</tr>
<tr>
<td>Objectives</td>
<td>Activities</td>
<td>Responsible</td>
<td>Cost [Rand]</td>
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<tr>
<td>---------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>o Develop communication strategies between health authorities, partners and public</td>
<td>o Establish communication strategy and infrastructure</td>
<td>o NORT, Communications</td>
<td></td>
</tr>
<tr>
<td>o Ensure collaboration between government, partners and public and develop clear roles and responsibility</td>
<td>o Establish communication networks among stakeholders</td>
<td>o ORT’s, Communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Familiarise media with preparedness and response measures</td>
<td>o Communications</td>
<td></td>
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<td></td>
<td>o Develop feedback mechanisms for public, address rumours and correct misinformation</td>
<td>o NORT, Communications</td>
<td></td>
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</tbody>
</table>

## Interpandemic Period: Phase 2

### Overarching Goal: Minimise Risk of Transmission to Humans, Early Detection and Reporting

<table>
<thead>
<tr>
<th>Planning and Coordination</th>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>o Ensure a heightened response capacity to address possible human cases</td>
<td>o Activate joint mechanisms of action with animal health authorities and other relevant stakeholders</td>
<td>NORT, CDC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Coordinate implementation of measures in close collaboration with animal health authorities to minimise risk of human infection</td>
<td>o Assess preparedness status and identify immediate actions to address gaps [use WHO checklist]</td>
<td>NORT, CDC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Ensure ability to mobilise and rapidly deploy multisectoral expert response team</td>
<td>o Ensure ability to rapidly deploy stockpile resources from national or international sources, according to risk assessment</td>
<td>NORT, CDC</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Situation Monitoring and Assessment</th>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Identify interspecies transmission at an early stage and report to WHO and other authorities</td>
<td>o Implement human and animal health surveillance and report to national and international authorities</td>
<td>Health [All Facilities], NICD, Agric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Provide ongoing risk assessment for transmission of viruses with pandemic potential to humans</td>
<td>o Transmit representative isolates to national and international reference laboratories for confirmation, characterisation, reagent and vaccine development</td>
<td>Health [All Levels], Agric</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Conduct laboratory/epidemiological field investigation in the affected areas</td>
<td>NICD, Epid and Agric</td>
<td></td>
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<tr>
<td></td>
<td>o Participate actively in assessment of risk of transmission</td>
<td>Epid, NICD, CDC, agric</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Ensure expertise and virological surveillance in national laboratories according to international standards [WHO standards]</td>
<td>NICD, Epid and Agric</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>o Continue to collect and exchange virus isolates and other scientific information with partner organisation</td>
<td>NICD, Epid and Agric</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>o Conduct serological surveillance of farmers and their families, animal workers and selected family members involved in animal influenza outbreak</td>
<td>NICD, Epid and Agric</td>
<td></td>
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</tr>
</tbody>
</table>
## Prevention and Containment

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
</table>
| - To minimise risk of human infection from contact with infected animals  
- Assess national availability of antiviral drugs  
- Reduce risk of co-infection in humans to minimise virus reassortment | - Ensure optimal response to animal outbreaks and ensure minimum infection of response team  
- Recommend measures to reduce human contact with potentially infected animals, and prepare use of further intervention if humans are infected  
- Update information on available supplies of antivirals, prophylaxis and vaccines  
- Ensure national stockpile strategy for deployment at provincial, district and municipal level  
- Develop contingency plans for procuring seasonal/specific vaccines for distribution  
- Establish mechanisms for exchange of epidemiological and virological data | Health Promo and Agric  
Health Promo, Agric, Local Gov  
Pharm Plan Policy  
Pharm Plan Policy, NORT  
Pharm Plan Policy  
Epid, NORT, NICD, Agric | | |

## Health System Response

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
</table>
| - Ensure that if human infections occur, they will be quickly recognised and that health systems will responded appropriately | - Alert local health care providers to consider new influenza infection in ill patients with epidemiological link to affected animals  
- Implement infection control measures, report cases immediately and provide algorithms to assist in case-finding and management  
- Verify availability and distribution procedures for personal protective equipment, antivirals and vaccines  
- Ensure rapid deployment of diagnostic tests or transportation of specimen to laboratories  
- Alert health system to review preparedness plans and prepare for small numbers of patients for isolation  
- Assess health system capacity to detect and contain outbreak of human disease in hospital setting | NORT, NICD, CDC  
NORT, Prov/District ORT  
Prov/District ORT  
NHLS  
NORT, CDC  
Prov ORT | | |
## Communication

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Ensure that appropriate information is shared rapidly among health</td>
<td>- Establish rapid communications to answer questions from health care</td>
<td>Health Promotion, Communication</td>
<td></td>
</tr>
<tr>
<td>authorities and other partners</td>
<td>providers and the public</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Ensure that messages are coordinated and standardised</td>
<td>- Communicate information on risk and prevention [risk of infection, safe</td>
<td>Health Promotion, Communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>food, animal handling] based on WHO recommendations</td>
<td></td>
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<td></td>
<td>- Address possible stigmatisation of individuals/populations in contact</td>
<td>Health Promotion, Communication, Agric</td>
<td></td>
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<tr>
<td></td>
<td>with animal strain</td>
<td></td>
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<tr>
<td></td>
<td>- Update national authorities, other partners and stakeholders,</td>
<td>Health Promotion, Communication, Agric</td>
<td></td>
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<td></td>
<td>including at-risk groups and public, with current information on virus</td>
<td></td>
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<tr>
<td></td>
<td>spread and risk to humans</td>
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</table>

Influenza Pandemic Preparedness Plan: South Africa
### Pandemic Alert Period: Phase 3
**Overarching Goal:** Ensure rapid characterisation of the New Virus Subtype and Early Detection, Notification and Rapid Response

#### Planning and Coordination

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinate timely interventions to reduce the risk of onset of pandemic</td>
<td>Activate national pandemic contingency planning arrangements</td>
<td>NORT, CDC</td>
<td></td>
</tr>
<tr>
<td>Ensure that mechanisms exist so that imminent potential human health threats can be recognised and dealt with</td>
<td>Implement interventions to reduce burden in the initial foci and contain or delay the spread of infection</td>
<td>NORT, CDC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brief appropriate officials in all relevant government departments (e.g. health, agriculture, legislative) at all levels of governance</td>
<td>NORT, Communications</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide assistance to provincial and district authorities in implementing interventions</td>
<td>NORT, CDC</td>
<td></td>
</tr>
</tbody>
</table>

#### Situation Monitoring and Assessment

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early detection and reporting of human-to-human transmission and identification of risk factors</td>
<td>Confirm and report cases promptly, excluding laboratory incidents and intentionally released cases</td>
<td>Epidemiology, NICD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Determine the epidemiology of human cases [sources, incubation periods, infection of contacts, period of communicability]</td>
<td>NICD, Epidemiology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Establish national case definition based on WHO guidelines</td>
<td>NORT, NICD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assess clinical characterisation of infections in humans and share with relevant authorities/partners</td>
<td>CDC, NICD, ORTs</td>
<td></td>
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<tr>
<td></td>
<td>Ensure rapid characterisation of viruses responsible for human infection, and share information with partners</td>
<td>NICD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enhance human/animal surveillance and collaborate with international partners in assessing the pathogenicity in humans</td>
<td>Epidemiology, Agric, NICD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Identify geographical areas and risk groups for targeting with preventive measures</td>
<td>CDC, ORTs, Agric</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assess effectiveness of treatment protocols and infection control measures and conduct sero-prevalence studies in risk groups and expand to general population [symptomatic/asymptomatic]</td>
<td>Health care Workers, QA, Hosp services</td>
<td></td>
</tr>
</tbody>
</table>
### Health Systems Response

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
</table>
| o Prevent nosocomial transmission and laboratory infection  
 o Heighten awareness among health care providers regarding isolated cases or clusters | o Activate JOC’s and ORT’s  
 o Train health workers to detect/identify cases  
 o Implement infection control and ensure laboratory biosafety  
 o Explore strategies to fast-track deployment of vaccines and prophylaxis  
 o Provide case definitions, protocols and algorithms  
 o Activate infection control committees | o JOC’s, ORT’s  
 o CDC, NICD  
 o NICD, QA, Hosp serv  
 o Pharm Plan Policy  
 o CDC, Hosp Serv  
 o Hosp Serv, QA, NICD | |

### Prevention and Containment

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
</table>
| o Contain or reduce human-to-human virus transmission  
 o Limit morbidity and mortality associated with current human infections  
 o Increase readiness for possible pandemic development | o Activate Joint Operations Committees (national, provincial and district)  
 o Explore ways to provide drugs and medical care to patients in order to encourage prompt reporting of new cases  
 o Train health care workers to detect/identify clusters of cases  
 o Ensure implementation of infection control procedures to prevent nosocomial transmission  
 o Ensure compliance with standards for biosafety in laboratories and for safe specimen handling  
 o Provide public and private health care with updated case definitions, protocols and algorithms to assist with case finding, management, infection control and surveillance  
 o Assess capacity for implementing infection control procedures | o CDC, ORTs,  
 o Pharm Plan Policy  
 o ORT’s  
 o CEOs of Hospitals  
 o NICD  
 o NORT  
 o Health Facil, QA, CEO | |
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
<tbody>
<tr>
<td>◦ Communicate transparently and coherently with the public regarding outbreak progression and management</td>
<td>◦ Provide regular updates to WHO and other international and domestic partners on the national situation</td>
<td>Epid, Comm, NICD</td>
<td></td>
</tr>
<tr>
<td>◦ Ensure rapid sharing of appropriate information among health authorities, other government departments and partners</td>
<td>◦ Identify target groups for delivery of key messages, develop appropriate materials, format and language options</td>
<td>NORT, ORT, CDC</td>
<td></td>
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<tr>
<td></td>
<td>◦ Review and update information materials for news media, general public, health workers and policy makers</td>
<td>ORTs, CDC, H Prom, Comm</td>
<td></td>
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<tr>
<td></td>
<td>◦ Review communications systems and facilities to ensure that they are functioning optimally</td>
<td>Comm</td>
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### Pandemic Alert Period: Phase 4

**Overarching Goal:** Contain New Virus and Delay Spread to Gain Time to Implement Preparedness and Vaccine Development

#### Planning and Coordination

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure that systems exist to early detect and characterise outbreak, and assess the risk of escalation into the pandemic</td>
<td>Ensure highest level of political commitment for ongoing and potential interventions&lt;br&gt;Activate overarching national command and control of response activities&lt;br&gt;Deploy operational response teams across all relevant sectors&lt;br&gt;Ensure cross-border collaboration with surrounding countries for information sharing and coordination of emergency response</td>
<td>ORTs, CDC&lt;br&gt;ORTs, CDC&lt;br&gt;ORTs, CDC&lt;br&gt;ORTs, CDC</td>
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<tr>
<td>Coordinate the implementation of procedures that will delay or contain the spread of human infection</td>
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#### Situation Assessment and Monitoring

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
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</thead>
<tbody>
<tr>
<td>Assess the extent of human-to-human transmission, detect, notify and characterise clusters, including risk factors&lt;br&gt;Assess the threat to human-to-human health and the impact to any control measures and identify resources required for enhance</td>
<td>Describe and re-assess epidemiological, virological and clinical features of infection, identify possible sources, and report to relevant authorities&lt;br&gt;Assessment sustainability of human-to-human transmission, and conduct clinical research&lt;br&gt;Collect and share strains and information needed to develop or adjust diagnostic reagents and prototype vaccines&lt;br&gt;Forecast likely impact of the spread of infection and assess impact of containment measures</td>
<td>NICD, Health Care Providers&lt;br&gt;NICD, Epid&lt;br&gt;NICD]</td>
<td></td>
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#### Prevention and Containment

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
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</thead>
<tbody>
<tr>
<td>Contain/delay human to human virus transmission&lt;br&gt;Deploy and use antivirals and vaccines to reduce morbidity and mortality</td>
<td>Implement prevention and containment strategies, including use of antivirals and vaccines&lt;br&gt;Provide prophylaxis for contact, and vaccinate wherever appropriate&lt;br&gt;Deploy vaccines and antivirals to at-risk and affected areas</td>
<td>ORTs, Pharm, Plan Policy&lt;br&gt;Pharm Plan Policy&lt;br&gt;Pharm Plan Policy</td>
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</table>
### Health Systems Response

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
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<tbody>
<tr>
<td>o Ensure capacity, prevent nosocomial infection and</td>
<td>o Update contingency plans and algorithms for case finding, management,</td>
<td>NORT, CDC</td>
<td></td>
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<tr>
<td>maintain biosafety</td>
<td>o Infection control and surveillance</td>
<td>ORTs, CDC</td>
<td></td>
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<tr>
<td>o Update contingency plans and algorithms for case</td>
<td>o Activate contingency plans for response and identify alternative</td>
<td>ORTs, CDC</td>
<td></td>
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<tr>
<td>finding, management, infection control and</td>
<td>strategies for case isolation and management</td>
<td>ORTs, CDC</td>
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<tr>
<td>surveillance</td>
<td>o Implement surge capacity arrangements and contingency for staff</td>
<td>ORTs, CDC</td>
<td></td>
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<tr>
<td>o Activate contingency plans for response and</td>
<td>shortage, and emphasize infection control</td>
<td>ORTs, CDC</td>
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<tr>
<td>identify alternative strategies for case isolation</td>
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<td>ORTs, CDC</td>
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<tr>
<td>and management</td>
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<td>ORTs, CDC</td>
<td></td>
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<tr>
<td>o Implement surge capacity arrangements and</td>
<td></td>
<td>ORTs, CDC</td>
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<tr>
<td>contingency for staff shortage, and emphasize</td>
<td></td>
<td>ORTs, CDC</td>
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<tr>
<td>infection control</td>
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<td>ORTs, CDC</td>
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### Communications

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<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Ensure rapid sharing of appropriate information among health authorities</td>
<td>o Reinforce and intensify key messages on prevention of human to human</td>
<td>Health Promotion,</td>
<td></td>
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<tr>
<td>and prepare public and partners for possible progression of events</td>
<td>o Update public on all aspect of the outbreak and provide instruction for</td>
<td>Communications</td>
<td></td>
</tr>
<tr>
<td>contingency measures</td>
<td>self-protection</td>
<td>Communications</td>
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<td></td>
<td>o Update national authorities, the public and partners on domestic and</td>
<td>NORT, Communications,</td>
<td></td>
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<td></td>
<td>international epidemiological situation</td>
<td>GCIS</td>
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<td></td>
<td>o Activate emergency communication plans in conjunction with partners</td>
<td>Communication, GCIS</td>
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<td></td>
<td>o Develop general health protection education materials for national</td>
<td>Health Promotion, GCIS</td>
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<td></td>
<td>application</td>
<td>Hosp Serv, QA</td>
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<td></td>
<td>o Re-emphasise infection control measures in the community and health care</td>
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<td></td>
<td>facilities</td>
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</table>
## Pandemic Alert Period: Phase 5
**Overarching Goal:** Maximise Efforts to Contain/Delay Spread or Avert Pandemic

### Planning and Coordination

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
</table>
| o Coordinate and ensure maximum efforts to delay or possibly avert a pandemic | o Designate special status to affected areas in order to facilitate interventions [e.g. state of emergency]  
  o Finalise preparation for imminent pandemic, including activation of internal organisational arrangements and staffing surge capacity  
  o Adjust and maximise efforts and resources to reduce disease burden and contain or delay the spread of infection | o NORT, CDC  
  o NORT, CDC  
  o ORTs | |

### Situation Monitoring and Assessment

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
</table>
| o Determine pandemic risk and monitor public health resources | o Report increased spread through appropriate means to authorities  
  o Implement real-time monitoring of essential resources (medical supplies, pharmaceutical, infrastructure, vaccines, hospital capacity and human capacity)  
  o Conduct enhanced surveillance for respiratory disease and forecast the likely impact of both infection spread and control measures | o NICD, Epidemiology  
  o Pharm Plan Policy  
  o NICD, Epidemiology | |

### Prevention and Containment

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
</table>
| o Make massive effort to contain or delay human to human virus transmission  
  o Limit morbidity and mortality and assess antivirals and vaccine use | o Implement interventions identified during contingency planning and consider use of antivirals  
  o Assess feasibility of prophylaxis and determine target populations for vaccine deployment  
  o Plan for vaccine distribution and accelerate preparation for mass vaccination | o NORT, CDC  
  o Pharm Plan Policy  
  o Pharm Plan Policy | |
### Health System Response

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Ensure that health system is ready to scale up response and implement</td>
<td>o Full mobilisation of health services and full implementation of emergency plans in affected</td>
<td>o CDC, Hosp Serv, EMS</td>
<td></td>
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<tr>
<td>triage and treatment priorities</td>
<td>areas</td>
<td>o CDC, Health Care, Hosp</td>
<td></td>
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<tr>
<td>o Prevent nosocomial transmission and maintain biosafety</td>
<td>o Commence triage arrangements and emergency procedures</td>
<td>o ORT’s</td>
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<td></td>
<td>o Fully deploy health care workers and ensure health and other needs of individuals in</td>
<td>o ORT’s</td>
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<td></td>
<td>quarantine</td>
<td>o CDC and ORT’s, Pharm, Hosp Serv</td>
<td></td>
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<td></td>
<td>o Arrange for additional human and material resources, and implement corpse management</td>
<td></td>
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<td></td>
<td>procedures</td>
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<td></td>
<td>o Prepare health care workers for possible change in treatment protocols</td>
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</tbody>
</table>

### Communication

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Prepare public and other partners for likely rapid progression of events,</td>
<td>o Re-define key messages, set reasonable public expectations, and emphasise need to comply</td>
<td>o Health Pro, CDC, Communications, GCIS</td>
<td></td>
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<tr>
<td>additional contingency plans and disruption of normal life</td>
<td></td>
<td>o CDC, NICD, Health Pro, Communications, GCIS</td>
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<tr>
<td>o Ensure rapid sharing of appropriate information among authorities and</td>
<td>o Inform public about interventions that may be modified or implemented during a pandemic</td>
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<td>partners</td>
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</table>
### Pandemic Period: Phase 6
Overarching Goal: Minimise the Impact of the Pandemic

#### Planning and Coordination

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
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<th>Cost [Rand]</th>
</tr>
</thead>
</table>
| o Provide leadership and coordination of multisectoral resources that will minimise morbidity and mortality, preserve health system effectiveness, minimise societal disruption and minimise economic impact | o Implement all relevant elements of national pandemic plan, including coordination of response and implementation of specific interventions  
   o Assess and publish current and cumulative national impact and consider applying emergency powers  
   o Address psychological, economic and social impact, and consider assistance from other countries | CDC, ORT’s |  |
| o Ensure access to pharmaceutical supplies and vaccines | | CDC, NICD, Epid, EMS |  |
| o Ensure access to pharmaceutical supplies and vaccines | | Politicians |  |

#### Surveillance Monitoring and Assessment

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
</table>
| o Monitor the epidemiological, virological and clinical features, course and impact of the pandemic  
  o Assess effectiveness of interventions to guide future actions | o Monitor geographic spread of disease from points of introduction  
   o Use enhanced surveillance and case management database to identify initial case/contacts and track initial geographical spread  
   o Monitor for possible changes in epidemiology, clinical presentation and virological features  
   o Assess and monitor national impact (morbidity, mortality, work absenteeism, areas affected, capacity, admissions, etc)  
   o Assess needs for emergency, forecast trends and impact of treatment and nonpharmaceutical interventions | NICD, Epid, ORTs |  |
| | | NICD, Epid, ORTs |  |
| | | CDC, NICD, Epid |  |
| | | CDC, NICD, Epid |  |
| | | CDC, NICD, Epid |  |

#### Prevention and Containment

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
</table>
| o Contain or delay the spread using public health interventions and limit societal disruption  
  o Minimise morbidity and mortality through use of pharmaceuticals | o Fully implement vaccine procurement plans and monitor supplies  
   o Implement and assess public health interventions at all levels of care  
   o Re-evaluate use of antivirals based on clinical studies and evidence of resistance | Pharm Plan Policy  
   DOH [All Levels], CDC  
   NORT, Pharm Plan Policy |  |
### Health System Response

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Provide guidance on ways to optimise patient care with limited resources</td>
<td>○ Keep emergency coordination arrangements and chains of command for health system fully functional</td>
<td>Facility CEOs</td>
<td></td>
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<td></td>
<td>○ Maintain health care workers vigilance for the onset of cases and clusters</td>
<td>Politicians</td>
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<tr>
<td></td>
<td>○ Fully implement pandemic plans for health systems and essential services, adjust triage, deploy workforce and provide social/psychological support</td>
<td>ORT’s, CDC</td>
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<td></td>
<td>○ Implement vaccination according to priority status and availability</td>
<td>ORT’s, Pharm Plan Policy</td>
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<td></td>
<td>○ Ensure public access to updated information and maintain accessible channels for advice and support</td>
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<td></td>
<td>○ Share information with health authorities, government and other partners</td>
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### Communication

<table>
<thead>
<tr>
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<th>Responsible</th>
<th>Cost [Rand]</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Ensure public access to updated information and maintain accessible channels for advice and support</td>
<td>○ Maintain capacity for meeting expected domestic and international information demand</td>
<td>NORTs</td>
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<td></td>
<td>○ Activate elements of communication plans and acknowledge public anxiety, grief and distress associated with the pandemic</td>
<td>Communications, GCIS, Politicians</td>
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<td></td>
<td>○ Inform public about interventions that may be modified or implemented during the pandemic</td>
<td>ORT’s</td>
<td></td>
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<td></td>
<td>○ Keep news media, public and professional partners informed about the progress of the pandemic in affected countries</td>
<td>Communications, GCIS, ORT’s</td>
<td></td>
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</tbody>
</table>
9. References

