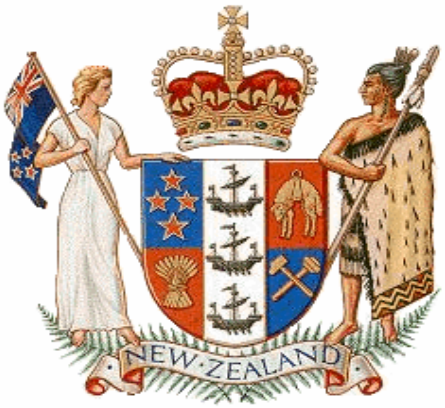
INFLUENZA PANDEMIC PLANNING

BUSINESS CONTINUITY PLANNING GUIDE

October 2005



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The material in this document has been assembled for the purpose of promoting good practice in New Zealand businesses in planning for a possible influenza pandemic. The information is current as at the date of publication. However, further work is being undertaken in this area, and consequently changes, deletions, additions, or other amendments may be made to this information without notice. Users should check for more up-to-date information on the government's web portal (www.govt.nz) and other websites listed in the document before relying on this information.

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ISBN: 0-478-28454-3

Influenza Pandemic Planning: Business Continuity Planning Guide

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1. Introduction

The World Health Organisation (WHO) has warned that the current risk from avian influenza ("bird flu") becoming the next human influenza pandemic is high. The Ministry of Health (MoH) is currently updating its pandemic influenza plan and is leading government-wide work to prepare for a possible pandemic in New Zealand. More information about the characteristics of pandemic influenza is contained in Appendix 1.

Table 1 outlines the five stages of MoH's pandemic influenza management strategy as well as the "alert codes" that will signal a shift from one stage to the next. In October 2005, New Zealand is in Alert Code White. Moves from Code White to Yellow, and Yellow to Red (i.e. the escalation steps) will originate with MoH.

Table 1 New Zealand Ministry of Health Strategy for Pandemic Management

STAGE	NEW ZEALAND STRATEGY	MoH / DHB[1] ALERT CODE
1	**Plan for it** (Planning)	WHITE (Information / advisory)
		YELLOW (Standby)
2	**Keep it out** (Border Management)	RED (Activation)
3	**Stamp it out** (Cluster Control)	
4	**Manage it** (Pandemic Management)	
5	**Recover from it** (Recovery)	GREEN (Stand down)

This Planning Guide sets out a range of information, aimed at New Zealand businesses and other organisations, that may be helpful in planning for the impact of a possible influenza pandemic on their employees and their business. This Planning Guide:

- Briefly describes the New Zealand Government's actions to manage any future pandemic;
- Contains some strategies for businesses to manage these impacts, including ideas about how to:
  - maintain essential activities;
  - contain / minimise the spread of infection in the workplace;

[1] DHB = District Health Board.

- Appendix 1: sets out background information on pandemic influenza;
- Appendix 2: describes some possible scenarios for a pandemic in New Zealand;
- Appendix 3: contains more detail on the potential impact of a large, severe influenza pandemic on the workforce; and
- Appendix 4: sets out key elements of an organisation-specific business continuity plan for an influenza pandemic.

The information on business continuity planning for a pandemic is necessarily generic, and will need to be adapted to meet the circumstances of each business.

Primary sources of information include MoH[2], WHO[3], Vancouver Coastal Health's Regional Pandemic Influenza Response Plan[4], Singapore's Influenza Pandemic Plan[5], and the Australian Management Plan for Pandemic Influenza[6].

This Planning Guide also contains material drawn from a pandemic management plan recently prepared by The Shell Company of Australia Limited ("Shell") for use in their installations in Oceania. The support that Shell has provided is acknowleged. Shell's material is provided on the basis that it is drawn from a specific internal planning document created to address circumstances that arise within its specific business. Shell shall not be liable for loss suffered by any person resulting in any way from the use of, or reliance on, this material.

The most recent version of MoH's *National Health Emergency Plan: Infectious Diseases*[7] and appendices are available from the MoH's website. The Plan is currently under revision. It contains specific planning information on influenza pandemic management for New Zealand. New Zealand's response may be different from other countries due to our unique geographical position. Therefore businesses operating here need to be aware that New Zealand's proposed actions will vary from those of the WHO from time to time, particularly with respect to border management issues.

This Planning Guide was assembled in October 2005 to promote good workplace practices in planning for a possible influenza pandemic. It draws on the best information available at that point in time. Health advice will change over time as new information becomes available. Reasonable steps will be taken to ensure that the version of the Planning Guide on the government's web portal (www.govt.nz) is updated as new information comes to light. Please also check MoH's website for updated information on influenza pandemics.

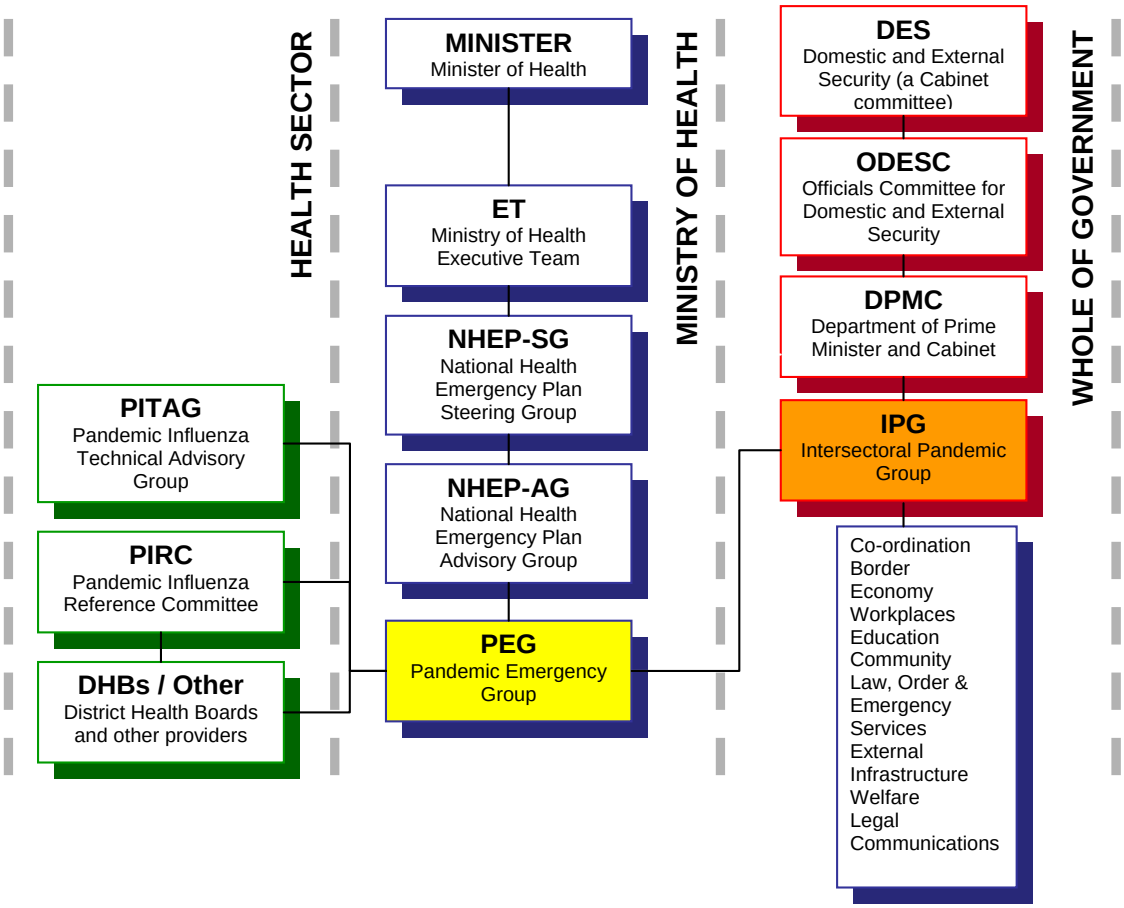
2 http://www.moh.govt.nz/pandemicinfluenza
3 http://www.who.int/csr/disease/avian_influenza/en/index.html
4 http://www.vch.ca/public/communicable/pandemic.htm
5 http://www.moh.gov.sg/corp/hottopics/influenza/detail.do
6 http://www.health.gov.au/internet/wcms/publishing.nsf/Content/phd-pandemic-plan.htm
7 http://www.moh.govt.nz/nhep

2. Context

2.1 How is the New Zealand Government Preparing for an Influenza Pandemic?

New Zealand has been planning for an influenza pandemic for some time. MoH is working with the health sector and a wide range of other government agencies to ensure New Zealand is as prepared as possible for a potential pandemic.

As shown in the following diagram, MoH has set up a government-wide Intersectoral Pandemic Group (IPG). A number of workstreams have been formed under the IPG to plan for and minimise the impact of associated risks.



MoH's *National Health Emergency Plan (NHEP): Infectious Diseases* describes the way MoH and New Zealand's health services will function following declaration of a national health-related emergency.[8] District Health Boards, along with Police, Fire and "lifeline utilities" are part of regionally-focused Civil Defence Emergency Management (CDEM) Groups. CDEM Group plans may be accessed through Regional Council / Unitary Authority websites.

The pandemic influenza section of NHEP is currently being updated, and will be available on the MoH website (www.moh.govt.nz/nhep). This section will be based around "alert codes" which define the planning escalation steps for action in the event of a pandemic. Changes in alert codes will be widely publicised. Apart from alerting government agencies to action, the alert codes may provide businesses with triggers to activate their own pandemic plans.

MoH advises that the potential impacts of an influenza pandemic in New Zealand include:

- Morbidity and mortality are unknown, but may be very high;
- Full community mobilisation needed – all government and many community agencies are likely to be involved in whole-of-society response;
- Health services may be unable to provide direct care (the orientation of health care may be to co-ordinate and support community mobilisation); and
- Very high staff absence rates may be likely, for some periods during the pandemic.

2.1.1 What are the Strategic Aims of New Zealand's Pandemic Plan?

Once the epidemiology of the pandemic strain virus is known, MoH will customise policies and programmes in its strategy to address the particular virus. As at October 2005, the MoH's five-stage strategy is:

- *Plan for it* (planning);
- *Keep it out* (border management);
- *Stamp it out* (cluster control);
- *Manage it* (pandemic management); and
- *Recover from it* (recovery).

[8] New Zealand's response may be different from other countries due to our unique geographical position, particularly with respect to border management issues.

Table 2 Overall Influenza Pandemic Management Strategy and Associated Actions

STAGE	NZ STRATEGY	MoH / DHB ALERT CODE	OBJECTIVE AND ACTION
1	**Plan for it** (Planning)	**WHITE** (Information / advisory)	o Objective: devise a plan to reduce the health, social and economic impact of a pandemic on New Zealand o Full engagement of whole of government o Consultation with and input from many agencies
		YELLOW (Standby)	o Prepare to implement pandemic response action plans
2	**Keep it out** (Border Management)	**RED**[9] (Activation)	o Objective: keep pandemic out of New Zealand o Wide range of border management options, up to: » Closure of New Zealand's border to all non-nationals » Quarantine of all returning New Zealand citizens o Enhance internal disease surveillance and notification o Investigate and follow up any suspect cases
3	**Stamp it out** (Cluster Control)		o Objective: control and/or eliminate any clusters that might be found in New Zealand o Isolate and treat patients and households o Contact trace and treat all contacts o Restrict movement into/out of affected area(s) o Close schools and other places where people congregate, and prohibit mass gatherings o Maintain border management
4	**Manage it** (Pandemic Management)		o Objective: to reduce the impact of pandemic influenza on New Zealand's population o Health service reconfiguration to support community response in affected areas o Social distancing measures o Support for people cared for at home, and their families
5	**Recover from it** (Recovery)	**GREEN** (Stand down)	o Objective: expedite the recovery of population health where impacted by pandemic, pandemic management measures, or disruption to normal services o Phase starts when the population is protected by vaccination, or the pandemic abates in New Zealand

Moves from Code White (which is the stage in October 2005) to Yellow, and Yellow to Red (i.e. the escalation steps), and subsequently from Red to Green, will originate with MoH. MoH will put the notification on their website and notify their media contacts.

[9] The transition from Code White to Red could be quite quick (i.e. the Code Yellow phase could be short).

2.1.2 What are the Medical Officer of Health's Powers in a Pandemic Emergency?

Activation of the NHEP begins when MoH learns of a potential national health-related emergency, such as an influenza pandemic.

Once special powers available in the Health Act 1956 are unlocked by the Minister of Health, local Medical Officers of Health have wide ranging powers designed to prevent the outbreak or spread of any infectious disease. These powers include the ability to:

- Require people to submit themselves for medical examination;
- Require people, places, buildings, ships, animals, and things to be isolated, quarantined, or disinfected;
- Forbid persons, ships, animals, or things to be brought to any (air or sea) port or place in the health district from any port or place which is or is supposed to be infected;
- Forbid persons to leave a place or area until they have been medically examined and found to be free from infectious disease;
- Require theatres and other places of public amusement (such as racecourses and recreation grounds), bars, billiard rooms, churches, reading rooms, and public halls, and all other premises where people are accustomed to assemble for any purpose within the district, to be closed for admission to the public;
- Prohibit the attendance of children under the age of 16 years in schools, Sunday schools, theatres, or places of public amusement within the district; and
- Have infected animals destroyed.

Why Prevent Public Gatherings and Close Schools?

During the 1957-1958 pandemic, a WHO expert panel found that spread of the pandemic influenza within some countries followed public gatherings, such as conferences and festivals. This panel also observed that in many countries, the pandemic broke out first in camps, army units and schools.

Closure of schools may be particularly effective in an influenza pandemic because of the role children play in spreading influenza. Also, during the first wave of the Asian influenza pandemic of 1957-1958, the highest attack rates were in school-aged children. A recently published study found that during an influenza outbreak, school closures were associated with significant decreases in the incidence of viral respiratory diseases and health care utilisation among children aged 6-12 years.

2.2 Pandemic Characteristics and Impact

A pandemic will not be like a physical disaster. A pandemic has unique characteristics when compared with a more "typical" disaster. For example:

- ***Widespread impact:***

  The impact of a pandemic would likely be widespread, even nation-wide, not localised to a single area; therefore there may be little outside assistance. Many business continuity plans (BCPs) assume some part of an organisation is unaffected and can take up the required capacity.

- ***Not a physical disaster:***

  A pandemic is not a physical disaster. It has some unique characteristics that require implementation of activities to limit contact such as restriction of movement, quarantine, and closure of public gatherings.

- ***Duration:***

  A pandemic would not be a short, sharp event leading immediately to commencement of a recovery phase. Many BCPs assume the event is short/sharp and that recovery can start immediately.

- ***Notice:***

  It is quite likely that there will be some advance warning from the development of the pandemic overseas, but it is always possible that any warning period may be very short. Should pandemic influenza spread within New Zealand it will probably be some weeks before the full impact on workforce will be felt, although there may be some early impacts resulting from closures of schools and similar containment measures.

- ***Primary effect is on staffing levels:***

  Unlike natural disasters, where any disruption to business service provision is likely to be hardware-related, disruption to business operation in the event of a pandemic is anticipated to be mainly human-resource oriented. **MoH advises that businesses should plan for up to 50% staff absences for periods of about two weeks at the height of a severe pandemic wave, and lower levels of staff absence for a few weeks either side of the peak. Overall a pandemic wave may last about 8 weeks.** Note that the pandemic may come in waves of varying severity over time.[10]

Staff absences can be expected for many reasons:

- illness / incapacity (suspected / actual / post-infectious);
- some employees may need to stay at home to care for the ill;
- people may feel safer at home (e.g. to keep out of crowded places such as public transport);
- some people may be fulfilling other voluntary roles in the community; and
- others may need to stay at home to look after school-aged children (as schools are likely to be closed).

[10] A pandemic could last many months and may contain peaks followed by periods of reduced illness. The 50% is an estimate of staff absences at peaks of a significant pandemic.

A pandemic may have other impacts on businesses, for example:

- supplies of materials needed for ongoing activity may be disrupted, e.g. if they are imported as air freight;
- similarly, availability of services from sub-contractors may be impacted (this may affect maintenance of key equipment, and is an area that merits close planning attention); and
- demand for services may be impacted – demand for some services may increase (internet access is a possible example); while demand for others may fall (e.g. certain types of travel activity may reduce).

Business continuity plans may need to be reviewed to ensure that they are robust to significant staff absences and other pandemic-related risks. The remainder of this Planning Guide is designed to assist with such planning.

2.3 Human Resource Issues

The extent of your planning in this area will depend on the nature of your business / workplace.

Larger enterprises, or those providing essential services or infrastructure, should maintain a reasonably high level of preparedness. These organisations may be able to include the likelihood of a pandemic into existing business continuity plans.

Smaller workplaces, and those providing "non-essential" services will benefit significantly from some degree of preparedness. Planning will reduce the human cost and improve business viability during and after a pandemic.

Any workplace planning or preparation that you do should be consistent with the phases outlined in Table 2.

2.3.1 Deciding Whether a Workplace Should Stay Open or Close

A workplace may close through lack of staff, lack of customers, or because it presents an unacceptable level of risk to employees or others.

Different industries will involve varying degrees of risk in a pandemic, and there will be varying scope for staying in operation while reducing the hazard.

Primary industries for example, should be able to manage hazards with relatively few restrictions. On the other hand, the challenges in the service sector – including health, education, entertainment, hospitality and other industries – will be far greater. In the health sector, for example, the inherent risks will be compounded by a need to stay open to provide treatment and care.

2.3.2 Any Risks to Employees and Others Must be Reasonable

Any employer or other person who controls the workplace has responsibility for the health and safety of employees and others there, and to ensure that employees' actions or inactions do not cause harm to others.

Independent contractors and volunteer workers have the right to withdraw their labour or services at any time, including when they feel the work environment presents an unsatisfactory level of risk.

2.3.3 Health and Safety in Employment Act 1992

Continuity planning should include your business's obligations under the Health and Safety in Employment Act 1992.

Employers must take all practicable steps to mitigate the risk and protect employees, especially those at high risk, such as health care personnel, support staff and first responders (fire / police / ambulance / other emergency workers) from pandemic influenza. Employers need to actively plan to cover their risks and the risks to their workers and the public.

The most relevant sections of the Health and Safety in Employment Act 1992 are:

Section 6: "All practicable steps"

> "Every employer shall take all practicable steps to ensure the safety of employees while at work; and in particular shall take all practicable steps to:
>
> - provide and maintain for employees a safe working environment;
> - provide and maintain for employees while they are at work facilities for their safety and health..."

Sections 7-10 describe a hierarchy of action for the management of hazards

Where a significant hazard, including the likelihood of avian influenza, is identified, the Act sets out the steps an employer must take:

1. *Where practicable*, the significant hazard must be **eliminated** (section 8);

   This may involve removing the hazard or hazardous work practice from the workplace.

2. *If elimination is not practicable*, the significant hazard must be **isolated** (section 9);

   This may involve isolating or separating the hazard or hazardous work practice from people not involved in the work or the general work areas. It could mean reducing the potential for contamination through changing work practices to achieve a greater degree of social distancing, or installing screens or barriers.

3. *If it is impracticable to eliminate or isolate the hazard completely, then the employer must minimise the likelihood that the hazard will harm employees (section 10). In addition, the employer must, where appropriate:*

   - Provide, make available to, and ensure the use of suitable clothing and equipment to protect the employees from any harm arising from the hazard;
   - Monitor employees' exposure to the hazard;
   - Seek the consent of employees to monitor their health; and
   - With their informed consent, monitor employees' health.

   This includes introducing work practices that reduce the risk. It could limit the amount of time a person is exposed to the potential hazard, or the use of protective clothing and/or equipment. Employers should refer to MoH's website for detailed guidance on appropriate personal protective equipment (PPE) for workplaces, especially where work must continue for humane reasons or the maintenance of civil order.

Section 28A: Employees may refuse to perform work likely to cause serious harm

Employees have the right to refuse to perform work if they believe it is likely to lead to their suffering serious harm. However, their belief must be on reasonable grounds, and they must have attempted to resolve the matter with their employer before they can continue to refuse. The right to refuse unsafe work does not apply unless the understood risks of the work have materially increased. The right of an ambulance worker or nurse to refuse is therefore different to that of, say, a carpenter. It is also different to that of a sworn staff-member of the police, fire service or armed forces.

Note that independent contractors and volunteer workers have the right to withdraw their labour or services at any time, including when they feel the work environment presents an unsatisfactory level of risk.

2.3.4 Other Human Resource Legislation

The following employment relations legislation will continue to apply. Obligations under this legislation should be factored into business continuity planning processes.

- Employment Relations Act 2000;
- Holidays Act 2003 (sick, bereavement and annual leave, and public holidays); and
- Wages Protection Act 1983.

2.3.5 Preparing for the Possibility of a Workplace or Business Closing

It is strongly recommended that employers should discuss this possibility with their staff, staff representatives and contractors as part of their preparedness planning. This discussion should include identifying whether services can be delivered outside of the workplace in a way that does not pose any health and safety risk, and implementing methods of communicating workplace closure to employees.

Statutory requirements relating to the employment relationship (e.g. the Employment Relations Act, Holidays Act, and Wages Protection Act) and any specific requirements of employment agreements will not be affected by workplace closure in a pandemic.

In the event that the employer decides, or is required to, suspend business during a pandemic, it is important that the employment conditions during the business suspension are discussed with, and made clear to, employees. Those discussions may include, for example, the use of annual leave.

Contractors for services will be subject to their contracts, and contract law generally.

2.3.6 If a Workplace or Business Stays Open

If a workplace or business stays open during a pandemic, employment relations legislation will continue to apply according to the circumstances.

2.3.7 Keep Communication Open and Frequent

In all cases, it will be useful to discuss any likely impacts with employees, unions and others that may be affected beforehand. Whatever agreement and clarification can be achieved before a pandemic will prove a valuable investment should the emergency occur.

The Department of Labour's website (www.dol.govt.nz) provides further information regarding human resource issues in a pandemic.

3. Business Continuity Planning for a Pandemic

The following information is necessarily generic, and will need to be adapted to meet the circumstances and needs of different businesses and other organisations.

3.1 Short, Medium and Long-Term Planning

It is not possible to predict how long a pandemic may last. There could be more than one wave of infection during a pandemic period. Each wave could typically last about eight weeks, building to a peak in week four before abating again. **MoH advises that businesses should plan for up to 50% staff absences for periods of about two weeks at the height of a pandemic wave and lower levels of staff absence for a few weeks either side of the peak.**[11]. It may be helpful to consider the planning scenarios developed by MoH (Appendix 2) when preparing your plan.

To ensure business continuity in a pandemic, short term planning, with a health focus, is paramount. Succession planning (in the event of staff deaths or long-term disability during the pandemic) and back up planning is also essential. Emergency management and overall national recovery is greatly facilitated if essential services are available without significant interruption.

Continuity planning for a pandemic should include:

- Identification of essential business activities (and the core people and skills to keep them running), and ensuring that these are backed-up with alternative arrangements;
- Mitigation of business / economic disruptions, including possible shortages of supplies; and
- Minimising illness in workers and customers.

Each of these items are addressed in a separate section in the following pages.

3.1.1 Influenza Manager

When planning for a pandemic, it is a good idea to identify one or more people in your organisation who will be responsible for workplace health and safety. Some of the tasks the "Influenza Manager(s)" may perform include:

- Setting up a system to monitor staff who are ill or suspected to be ill in the event of a pandemic, including contacting staff who are unexpectedly absent from work – has their GP been notified of their illness? Have "contact" issues been addressed? Is someone able to care for them?
- Setting up a process to facilitate / encourage the return of staff to work once they are better or at the end of a quarantine period; and
- Ensuring that your workplace has adequate supplies of tissues, medical and hand hygiene products, cleaning supplies and masks for people who become ill at work. It may be difficult to purchase such products once a pandemic begins.

[11] A pandemic could last many months and may contain peaks followed by periods of reduced illness. The 50% is an estimate of staff absences at peaks of a significant pandemic.

3.1.2 Medical Advisor

If your business does not already have one, it may be prudent to ensure that you have access to a medical practitioner for assistance and advice in the event of a pandemic. The Department of Labour has a medical practitioner assigned to each of their regional offices (www.osh.dol.govt.nz/about/region-office/index.shtml). Most of these practitioners operate on a part-time basis. If the practitioner is unable to fulfil the desired role for your organisation, they should be able to recommend another medical practitioner who could.

3.1.3 Activation of Pandemic Continuity Plan

MoH will widely publicise any changes to the "alert codes" which are designed to alert government agencies to action, and may signify the need to activate business continuity plans.

Table 3 below provides summary guidance as to how a business might proceed as different stages of a pandemic are reached.

Table 3 Suggested Summary Actions for Businesses during each Alert Code

STAGE	NZ STRATEGY	MoH / DHB ALERT CODE	SUGGESTED ACTIONS FOR BUSINESSES
1	**Plan for it** (Planning)	**WHITE** (Information / advisory)	Review business continuity plans: o Identify essential services (including contractors), facilities/plants, other production inputs o Plan for up to 50% staff absences for periods of 2-3 weeks at the height of the pandemic, and lower levels of staff absences for a few weeks on either side of the pandemic o Assess core staff and skill requirement needs, and ensure essential positions are backed-up by an alternative staff member o Identify ways to increase "social distancing" in the workplace, reduce movement etc. o Consider organisational policies to encourage the sick to stay at home; and enable staff to work from home o Identify ways to minimise illness amongst staff and customers, and consider how essential messages (e.g. basic hygiene) can be communicated to staff o Identify needs for PPE[12] and cleaning equipment, and check air conditioning. Purchase additional contingency supplies.
		YELLOW (Standby)	
2	**Keep it out** (Border Management)	**RED**[13] (Activation)	o Alert staff to change in pandemic status o Activate staff overseas travel restrictions o Review/test essential business continuity measures
3	**Stamp it out** (Cluster Control)		o Alert staff to change in pandemic status o Activate essential business continuity measures o Activate measures to minimise introduction and/or spread of influenza in work place (post notices; social distancing, managing ill staff members, workplace cleaning, etc.) o Communicate with staff to promote confidence in the workplace o Activate contact tracing where staff become ill at work during Cluster Control phase o Activate process for recovered / well staff members to return to work
4	**Manage it** (Pandemic Management)		
5	**Recover from it** (Recovery)	**GREEN** (Stand down)	o Manage return to business as normal

[12] PPE = personal protective equipment.

[13] The transition from Code White to Red could be quite quick (i.e. the Code Yellow phase could be short).

3.1.4 Communication with Staff

It is likely there will be anxiety regarding a pandemic and this is likely to contribute to increased work absence and/or increased distress to staff. The suggested ways to manage this include:

- Communicate the possibility of a pandemic – and your organisation's preparedness to manage it – very early to staff. Helpful to this purpose is the influenza fact sheet, available from MoH's website (www.moh.govt.nz/pandemicinfluenza);
- Discuss with staff possible health and safety issues, potential for stand down, and leave arrangements if they are ill or need to look after those who are or who have been "shut out" of childcare and school, etc;
- Have a comprehensive management plan in place which is clearly communicated to staff. Ensure that communications management during the pandemic is part of the plan. It will be important to have systems in place to allow your agency to communicate in a pandemic;
- In activating your plan, provide clear, timely and pro-active communications to staff, including how your organisation is handling the situation; and
- You may wish to establish a "communications tree" so that people can keep in touch.

3.2 How will Essential Business Activities be Maintained?

In the event of a pandemic, it is important that core people and core skills are available to keep essential parts of your business operating. The following points are designed to help you to plan for this.

3.2.1 Identification of Core People and Core Skills

Issues you may wish to consider include:

- What are the “essential” parts of the business?
- Who are the core people required to keep the essential parts of the business running?
- What are the core skills required to keep business running?
- Are there sufficient back ups for people and skills if there is a high level of absence? Are there other resources (e.g. volunteers, retirees) that could be drawn on if necessary? Is it possible to co-ordinate / operate your business through a “virtual war-room” – that is, remotely, using telephone and email?
- Who are the core people required to manage the pandemic contingency plan?
- Do you have any systems which rely on periodic physical intervention by key individuals, to keep them going? How long would the system last without attention?

Once the core people and skills are identified, ensure that they are aware of their position and how they will be managed in the event of a pandemic. Consider strategies for minimising the possibility that they become ill with influenza: e.g. working from home even in very early stages of a pandemic, or other social distancing measures.

If working from home is not a well-established practice in your organisation, you may wish to encourage staff to “give it a go”, say once a fortnight, to aid familiarity and to “iron out” any computer connection / technological issues.

You may wish to have non-essential staff “stand down” (with appropriate pay arrangements) in the Code Red phase to help minimise the number of staff who may be exposed to the influenza virus.

In the event of a pandemic, employees have the option of leaving their jobs. They also have the right to refuse to perform work if they believe it is likely to lead to their suffering serious harm. However, their belief must be on reasonable grounds, and they must have attempted to resolve the matter with their employer before they can continue to refuse. The right to refuse unsafe work does not apply unless the understood risks of the work have materially increased. To avoid such situations, it is best to have had discussions with staff prior to any pandemic occurring.

3.2.2 Business Planning for Absence

Issues you may wish to consider include:

- What are critical staff numbers and skills required to keep essential sectors of the business running – at what level does business stop? What arrangements need to be made to minimise risk to staff?
- Who should make the decision to shut activity down when absence rates threaten safe business continuity?
- Could some, or all, of your business operations shift to having most staff work from home with little warning?

An influenza pandemic may affect regions of New Zealand and the world differently in terms of timing, severity and duration. Some regions may be hit earlier, longer or harder. Businesses with regional offices may need to consider rotating service delivery from hard hit areas to influenza-free areas, or areas that have been declared to be in a post-pandemic period. Restrictions on movement of people from region to region may be imposed, and rotation of staff may therefore be difficult.

Businesses with overseas offices, or which use services outsourced from overseas (e.g. call centres), may be disproportionately affected. Not all countries have the means to cope with a pandemic. Employees and staff contracted outside of New Zealand may have increased rates of illness and absence.

3.2.3 Knowledge Management

Key operating and emergency management information will need to be stored in known, accessible and shared locations.

3.2.4 Communications

Consider communication needs and how they might be maintained with:

- other business units in your organisation;
- government;
- key suppliers;
- key customers; and
- key contractors.

3.3 How Might Shortages of Supplies Affect Business Operations?

Shortages of supplies may occur because of increased demand during the pandemic (i.e. cleaning supplies, home-based services). Pandemic planning should consider the need for ensuring adequate availability of essential supplies.

Shortages may also occur because of disruptions in transportation systems or inability of suppliers to meet demands because of their own staff shortages. Some New Zealand supplies travel considerable distances by truck, train, ship or aircraft, and are vulnerable to any disruption. Absences of workers/drivers and other transportation staff may affect both the production and delivery of needed supplies. Supply lines may also be affected by mandated or self-imposed travel restrictions (e.g. transporters unwilling to travel through or to infected areas). Discuss with key suppliers a plan for regular shipments in the event of shortages or disruptions in transportation systems.

International air movements may be disrupted in a pandemic, and this may impact on imported goods, especially if they normally arrive in freight-holds of passenger aircraft.

3.4 How Can We Protect Staff and Visitors From Getting Sick?

After identifying the core people and skills to keep the essential parts of your business operating, your pandemic plan should consider how to minimise illness among staff and visitors. The main strategies include:

- Restrict workplace entry of people with influenza symptoms;
- Practice good personal hygiene and workplace cleaning habits;
- Increase social distancing (e.g. enable tele-working, avoid face-to-face contact);
- Manage staff who become ill at work; and
- Manage staff who travel overseas.

This section identifies some issues you may want to take into account in your plan as well as offering guidance as to how to address them. In addition, examples of notices, fact sheets, etc. are provided for your convenience – these are marked in the text with the symbol (‡).

Adopting the advice included in this section, with particular attention to protection measures summarised in Table 4, should assist employers with compliance with the Health and Safety in Employment Act 1992.

Table 4 Summary of Influenza Protection Measures

Protection measure	Where applicable
Hand hygiene, cough etiquette, ventilation	Everyone, all the time
Organisational policies	Every organisation, all the time
Social distancing	Everyone, whenever practical
Protective barriers	In situations where regular work practice requires unavoidable, relatively close contact with the public
Disposable surgical mask	Workers in any community or health care setting who are caring for the sick (this includes first responders) Also as a possible adjunct to protective barriers
Disposable particulate respirator masks, eye protection, gloves, gowns / aprons	Health care workers participating directly in close contact patient care when there is a high risk of contact with respiratory secretions, particularly via aerosols (mostly inpatient settings).

3.4.1 Restrict Workplace Entry of People with Influenza Symptoms

On declaration of Code Red, your business should consider putting up notices (‡) at all workplace / facility entry points, advising staff and visitors not to enter if they have influenza symptoms.

Employees should be advised not to come to work when they are feeling unwell, particularly if they are exhibiting any influenza symptoms. It may be helpful to inform staff of the differences in symptoms between influenza and a common cold (‡). Unwell employees should also be advised to see a doctor. Workers who are ill should stay at home until symptoms resolve.

Use normal communication methods to ensure that all staff receives the notice. At the same time, you may wish to provide them with further information about how to stay well during an influenza pandemic, e.g. by distributing the MoH fact sheet (available from http://www.moh.govt.nz/pandemicinfluenza).

In your pandemic planning, set up a process for ensuring that ill employees have completed any required quarantine period and *are healthy* before allowing them to return to work.

Note that staff who have recovered from the pandemic influenza are unlikely to be re-infected (they will have natural immunity) and should be encouraged to return to work as soon as they are well.

INFLUENZA NOTIFICATION

Influenza is a contagious disease. There is currently an increase in the numbers of people in New Zealand with influenza. In order to reduce the spread of influenza in this workplace, the following is required of everybody:

DO NOT COME TO WORK if you have:

- chills, shivering and a fever (temperature >38^{o}C)
- onset of muscle aches and pains
- sore throat
- dry cough
- trouble breathing
- sneezing
- stuffy or runny nose
- tiredness.

If some of the above apply to you, please go home and wait until you have recovered before returning to work.

If you have recently arrived from overseas or returned from overseas, please ask to speak to the Influenza Manager (see below)

If you start to feel ill at work, **DO NOT** leave your work area

Call your Influenza Manager …… Ext…….

What is the Difference Between Influenza and a Common Cold?

SYMPTOM	INFLUENZA	COMMON COLD
Fever	Usual, sudden onset 38^{o}-40^{o} and lasts 3-4 days.	Rare
Headache	Usual and can be severe	Rare
Aches and pains	Usual and can be severe	Rare
Fatigue and weakness	Usual and can last 2-3 weeks or more after the acute illness	Sometimes, but mild
Debilitating fatigue	Usual, early onset can be severe	Rare
Nausea, vomiting, diarrhoea	In children < 5 years old	Rare
Watering of the eyes	Rare	Usual
Runny, stuffy nose	Rare	Usual
Sneezing	Rare in early stages	Usual
Sore throat	Usual	Usual
Chest discomfort	Usual and can be severe	Sometimes, but mild to moderate
Complications	Respiratory failure; can worsen a current chronic condition; can be life threatening	Congestion or ear-ache
Fatalities	Well recognised	Not reported
Prevention	Influenza vaccine; frequent hand-washing; cover your cough	Frequent hand-washing, cover your cough

3.4.2 Personal Hygiene

Basic personal hygiene measures should be reinforced and people should be encouraged to practice them to minimise potential influenza transmission:

- Cover nose and mouth when sneezing and coughing (preferably with a disposable single use tissue);
- Immediately dispose of used tissues;
- Adopt good handwashing / hand hygiene practices, particularly after coughing, sneezing or using tissues; and
- Keep hands away from the mucous membranes of the eyes, mouth, and nose.

Ensure that adequate supplies of hand hygiene products are available. This is a high planning priority as there may be interruption to the supply or shortages of soap and hand towels.

Communicate hand and personal hygiene information to staff and visitors:

- Hygiene notices (‡) should be posted in all workplace entrances, washrooms, hand washing stations and public areas; and
- Use brochures, newsletters, global emails, employee notice boards, and information included with payslips, to inform your employees of the importance of hand hygiene and environmental cleaning during a pandemic.

Examples of notices can be found on the following pages. Another good source of notices and brochures is http://dhfs.wisconsin.gov/communicable/influenza/Employer.htm.

HAND HYGIENE

The most important thing you can do to keep from getting sick is to wash your hands!

Handwashing is the single most important measure to reduce the risks of transmitting infection from one person to another.

Hand washing with soap and water, alcohol-based hand rub, or antiseptic handwash should be performed regularly. Hands should be thoroughly dried, preferably using disposable tissues or towels. Use the disposable towel to open the door.

Hand washing and drying should always be done after coughing, sneezing or handling used tissues or after touching objects, materials or hard surfaces that may have been contaminated by someone else with the infectious illness.

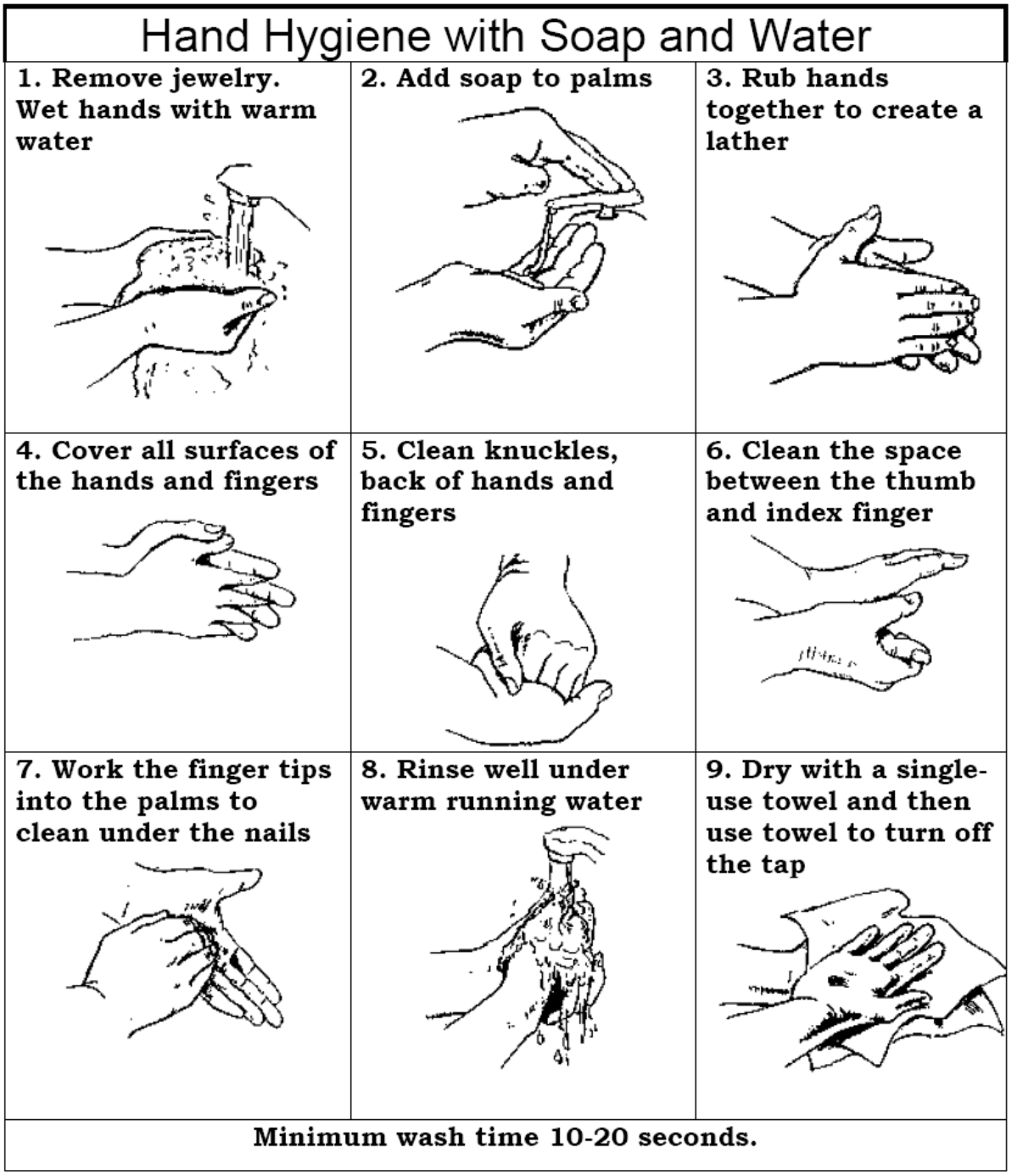
Hand-to-face contact such as can occur during eating, normal grooming, or smoking presents significant risks because of the potential for transmission of influenza from surfaces contaminated with wet respiratory droplets. Handwashing should always be carried out before and after eating, grooming, smoking or any other activity that involves hand-to-face contact.

BASIC HYGIENE NOTICE

PROTECTING YOURSELF AND OTHERS AGAINST RESPIRATORY ILLNESS

- **HANDWASHING** IS THE MOST IMPORTANT THING YOU CAN DO TO PROTECT YOURSELF
- Cover your nose and mouth when coughing or sneezing
    - Use a tissue and dispose of this once used in the waste
    - Always wash hands after coughing and sneezing or disposing of tissues.
- Keep your hands away from your mouth, nose and eyes.
- Avoid contact with individuals at risk (e.g. small children or those with underlying or chronic illnesses such as immune suppression or lung disease) until influenza-like symptoms have resolved.
- Avoid contact with people who have influenza-like symptoms.
- Ask people to use a tissue and cover their nose and mouth when coughing or sneezing and to wash their hands afterwards.

HAND HYGIENE NOTICES



Source: Vancouver Coastal Health's Regional Pandemic Influenza Response Plan

Hand Hygiene with Alcohol-based Hand Sanitizer

1. Remove jewelry. Apply enough product to open palms.** 	**2. Rub hands together palms to palms** 	**3. Rub in between and around fingers** 
4. Cover all surfaces of the hands and fingers 	**5. Rub backs of hands and fingers. Rub each thumb.** 	**6. Rub fingertips of each hand in opposite palm** 
7. Keep rubbing until hands are dry. ****The volume required to be effective varies from product to product. Enough product to keep hands moist for <u>15 seconds</u> should be applied.** Do not use these products with water. Do not use paper towels to dry hands.		
Note: Wash hands with soap and water if hands are visibly dirty or contaminated with blood or other body fluids. Certain manufacturers recommend washing hands with soap and water after 5-10 applications of gel.		

Source: Vancouver Coastal Health's Regional Pandemic Influenza Response Plan

3.4.3 Workplace Cleaning

During a pandemic, you will need to implement additional measures to minimise the transmission of the virus through environmental sources, particularly hard surfaces (e.g. sinks, handles, railings, objects and counters). Transmission from contaminated hard surfaces is unlikely but influenza viruses may live up to two days on such surfaces.

Influenza viruses are inactivated by alcohol and by chlorine. Cleaning of environmental surfaces with a neutral detergent followed by a disinfectant solution is recommended. Surfaces that are frequently touched with hands should be cleaned often, preferably daily. Table 5 suggests the appropriate choice and concentration of disinfectants:

Table 5 Workplace Cleaning Products

Disinfectants	Recommended use	Precautions
Sodium hypochlorite: 1000 parts per million of available chlorine, usually achieved by a 1 in 5 dilution of hospital grade bleach.	Disinfection of material contaminated with blood and body fluids.	Should be used in well-ventilated areas. Protective clothing required while handling and using undiluted bleach. Do not mix with strong acids to avoid release of chlorine gas. Corrosive to metals.
Granular chlorine: e.g. Det-Sol 5000 or Diversol, to be diluted as per manufacturer's instructions.	May be used in place of liquid bleach, if it is unavailable.	Same as above.
Alcohol: e.g. Isopropyl 70%, ethyl alcohol 60%.	Smooth metal surfaces, tabletops and other surfaces on which bleach cannot be used.	Flammable and toxic. To be used in well-ventilated areas. Avoid inhalation. Keep away from heat sources, electrical equipment, flames, and hot surfaces. Allow it to dry completely, particularly when using diathermy, as this can cause diathermy burns.

Staff should be reminded not to share cups, dishes, and cutlery and ensure they are thoroughly washed with soap and hot water after use.

Remove all magazines / papers from waiting rooms and common areas (such as tea rooms, kitchens).

When a person with suspected influenza is identified and has left the workplace, it is important that their work area / office, along with any other known places they have been, are thoroughly cleaned and disinfected.

Among other things, planning should identify the basic hygiene practices (including hand hygiene) to be followed by cleaners, protocols for the use personal protection equipment (if recommended by MoH); and methods for waste disposal.

3.4.4 Air Conditioning

(*Source:* www.moh.govt.nz/pandemicinfluenza, 23 August 2005)

There is scientific and medical evidence that influenza can spread in inadequately ventilated internal spaces. MoH and the Department of Labour recommend all internal spaces should be well ventilated, preferably by fresh air via opening windows, or otherwise by properly designed and maintained air-conditioning systems.

As part of their workplace health and safety monitoring, employers should gain assurance from the owner of any air conditioned building they occupy that air conditioning systems are maintained regularly and to the appropriate standard, as per the New Zealand Building Code, Clause G4, Ventilation.

3.4.5 Increase Social Distancing

Another strategy to protect staff is minimising their contact with others. Crowded places and large gatherings of people should be avoided, whether in internal or external spaces.

A distance of at least one metre should be maintained between persons wherever practical. Larger distances are more effective.

Visiting of, or other contact with, unwell people should be avoided wherever practicable.

Suggestions on how to minimise contact include:

- Avoid meeting people face to face – use the telephone, video conferencing and the internet to conduct business as much as possible – even when participants are in the same building;
- Avoid any unnecessary travel and cancel or postpone non-essential meetings / gatherings / workshops / training sessions;
- If possible, arrange for employees to work from home or work variable hours to avoid crowding at the workplace;
- Practice “ghost” shift changes wherever possible, with the shift going off duty leaving the workplace before the new shift enters. If possible, leave an interval before re-occupation of the workplace. If possible, thoroughly ventilate the workplace between shifts by opening doors and windows or turning up the air-conditioning;
- Avoid public transport: walk, cycle, drive a car or go early or late to avoid rush hour crowding on public transport;
- Bring lunch and eat at desk or away from others (avoid the cafeteria and crowded restaurants). Introduce staggered lunchtimes so numbers of people in the lunch room are reduced;
- Do not congregate in tearooms or other areas where people socialise. Do what needs to be done and then leave the area;
- If a face-to-face meeting with people is unavoidable, minimise the meeting time, choose a large meeting room and sit at least one meter away from each other if possible; avoid shaking hands or hugging. Consider holding meetings in the open air;
- Set up systems where clients / customers can pre-order / request information via phone / email / fax and have order / information ready for fast pick-up or delivery; and
- Encourage staff to avoid recreational or other leisure classes / meetings etc. where they might come into contact with infectious people.

3.5 Managing Staff Who Become Ill at Work

Your pandemic plan should indicate how your business will manage staff that become ill at work. One possible process is outlined below: you may wish to modify it to suit your business situation. A screening flowchart (‡) is also presented. Note that this advice is current as at October 2005. In the event of a pandemic, it is recommended that employers check MoH's website (www.moh.govt.nz/pandemicinfluenza) for the latest advice.

If a person feels ill, or if someone observes that another person is exhibiting symptoms of influenza at work, they are to contact the "Influenza Manager" **by telephone** if at all possible.

Using a screening flowchart (‡), the Influenza Manager:

1. Should avoid visiting this person if it can be avoided – manage the process over the phone;

2. Check if the employee has any of the symptoms outlined in the first section of the flowchart;

3. If the employee does not have any symptoms like those listed, they are very unlikely to have influenza, and should be reassured but advised to call the Influenza Manager again later or to see their GP if they are still concerned;

4. If the employee does have symptoms that match some of those listed, they should be treated as a "suspect case." It may be helpful to have a staff influenza notification form (‡) completed, including details of any staff and/or visitors they have been in contact with. This information will permit the Influenza Manager to identify recent movements and monitor well-being during the pandemic;

5. The employee should be informed where they can find a surgical mask and instructed to wear it immediately. This is to help protect other staff;

6. The employee should leave work and immediately contact a health professional in the manner advised by MoH on its website at that time. This may involve phoning the person's normal doctor or nurse, or a specially designated centre to seek further advice. The employee's manager should be informed that they have left work;

7. The employee, should, if at all possible, avoid public transport when leaving work;

8. Contact management (see section 3.6 below for further information) – it is helpful for employers to:

    - identify contacts (once an employee is suspected to be infected);
    - advise contacts in person that they have been in contact with a person suspected of having influenza;
    - Ask contacts to go home, and stay at home until advised otherwise;

9. The employee's work station should be cleaned and disinfected, as indicated in section 3.4.3 (Workplace Cleaning);

10. Your business / Influenza Manager will need to set up a system to manage the absence and return to work of the employee and their contacts. Some issues to consider include:

    - Advice to the employee on how long to stay away from work (the MoH website will have advice on this once the characteristics of a pandemic are known);
    - Decisions on the leave and cover arrangements;
    - Checking on the staff member during his/her absence from work. This will facilitate treatment, contact tracing, etc., if they become ill;
    - Set up a process in your plan for ensuring both that:
        (1) the employee is healthy before allowing them to return to work; and
        (2) that they are encouraged to return to work once they are well.

3.6 Contact Management

3.6.1 Contact Definition

MoH currently defines pandemic influenza contacts as people who have had close physical (less than one metre) or confined airspace contact with an infected person, within four days of that person developing symptoms. These are likely to include family members and/or other living companions, workmates (if in close contact situations or confined airspace environments), and some recreational companions.

People who have not been in close proximity nor have shared a confined airspace with a sick person within four days of that person developing symptoms, are not considered to be a contact.

> Epidemiological evidence from a developing pandemic may change the definition of a "contact". Employers should check the MoH website for updated definitions and advice should a pandemic occur.

3.6.2 Contact Management Mandated by Law

Under the Health Act 1956, both highly pathogenic avian influenza (HPAI) and influenza are classed as infectious diseases. Additionally, HPAI is also a notifiable disease, meaning that some *additional* provisions of the Health Act apply to it, over and above the provisions that apply to influenza. In order to reduce the risk of further infection, contacts will be expected to stay at home and avoid contact with others for a recommended period. This period will be determined by health officials, and is not at the discretion of the employer (the material in this section is, however, in the interests of employers and employees, as well as the community at large).

The role of contact tracing may vary according to the phase of the pandemic. At an early phase, when efforts are directed at keeping the pandemic out or in managing small clusters, contact tracing and associated quarantine of cases and contacts will be vigorous. However if the pandemic affects larger numbers of people across the country, it will not be effective as a strategy to contain the pandemic, and may therefore be dropped.

In any circumstances, employers should urge sick staff members with influenza-like symptoms to return home immediately and contact a health professional in the manner advised by MoH on its website at that time. This may involve phoning the person's normal doctor or nurse, or a specially designated centre to seek further advice, rather than the patient calling in without prior notification. If the health professional identifies the patient as being a suspect or confirmed case, then the health professional will commence contact tracing in accordance with the protocols set by MoH at that time. This is likely to involve making contact with the patient's workplace.

As indicated in the previous section, it is helpful for employers to:

- identify contacts (once an employee is suspected to be infected);
- advise contacts in person that they have been in contact with a person suspected of having influenza; and
- ask contacts to go home, and stay at home until advised otherwise.

3.7 Staff Travel

The Ministry of Foreign Affairs and Trade, in conjunction with MoH, will publish appropriate travel advisories for New Zealanders traveling to other countries infected by the pandemic (www.mfat.govt.nz). They will also provide advice for New Zealand government staff and other New Zealanders in infected areas.

Once a pandemic is recognised, the border may immediately be closed to all incoming passengers and aircrew, possibly for several days.

It is likely that quarantine measures will be instituted before passenger movements resume. It is possible that all incoming people will be required to complete at least 8 days quarantine in specially designated places before being allowed landside of the New Zealand border.

If your staff travel overseas for business reasons, your plan will need to include consideration of their management in the event of a pandemic. For example, on declaration of a pandemic, if any staff had recently (within the last 4-5 days) travelled to countries known to be affected by the disease, your business should:

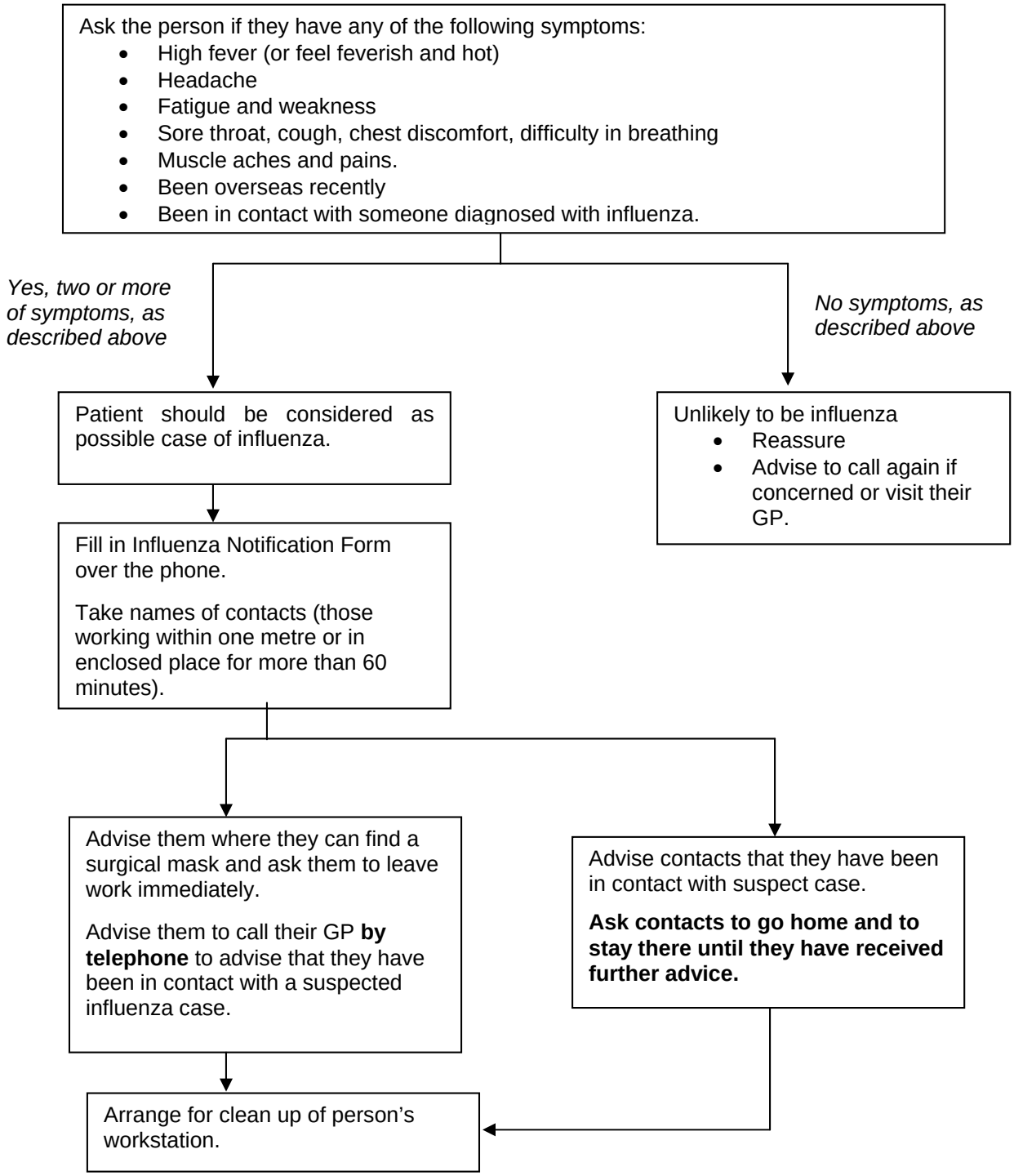
- Advise the employee not to report for work for the duration specified by MoH for the disease (as at October 2005, this was 8 days). Ask them to follow instructions on MoH's website for self-checking for influenza symptoms, which may include advice to telephone (rather than visit) their medical centre to seek advice immediately if symptoms occur. They should report their travel history to the treating doctor. Ask them to document all the people they have been in contact with since returning to New Zealand;
- Check on the staff member during his/her absence from work; and
- Set up a process for ensuring that the employee has completed the time duration and is healthy before allowing them to return to work.

Border closures overseas may also cause disruption to travel.

Screening Checklist
for Detection and Management of Suspected Pandemic Influenza Cases

Process

1) The Influenza Manager receives a call from a person suspecting they may have influenza
2) Do not visit the person if this can be avoided – manage the process over the telephone
3) Follow the flowchart below



NOTIFICATION FORM: SUSPECTED INFLUENZA CASE AT WORK

Details of Affected Staff

Name:	Worksite:	Location of Isolation:
Job title:	Nationality if Visitor to Site:	Date of birth:
Address:		
Telephone no: _____ (W) _____ (H) _____(M)		
Symptoms noticed: Fever ☐ Body aches ☐ Headache ☐ Fatigue ☐ Dry cough ☐ Others ☐ Details: _____ Cold ☐ Time of fever on-set: _____ Time of isolation: _____		
Travel history over the past 8 days: Countries visited _____ Flights taken: _____		
Where referred:		
Contact List (See separate page)		

Details of Reporter

Name:
Job title:
Telephone no: _____ (W) _____ (H) _____ (M)

CONTACT LIST

MoH currently defines pandemic influenza contacts as people who have had close physical (less than one metre) or confined airspace contact with an infected person, within four days of that person developing symptoms. These are likely to include family members and/or other living companions, workmates (if in close contact situations or confined airspace environments), and some recreational companions.

Epidemiological evidence from a developing pandemic may change the definition of a "contact". Employers should check the MoH website for updated definitions and advice should a pandemic occur.

Retain this list and provide to the Medical Officer of Health or his/her designated officer on request.

Persons whom the affected staff has interacted with since displaying symptoms.			
Name	**Email**	**Telephone no.**	**Address**
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

3.8 Personal Protection Equipment

The following information provides the best guidance available as at October 2005. In the event of a pandemic, refer to MoH's website for latest information.

Using masks

People with respiratory infection symptoms should use a disposable surgical mask to help prevent exposing others to their respiratory secretions.

Any mask must be disposed of as soon as it becomes moist or after any cough or sneeze, in an appropriate waste receptacle, and hands must be thoroughly washed and dried after the used mask has been discarded.

Protective Barriers

Protective barriers in the form of perspex or glass may provide useful protection for people such as front-counter staff or public transport drivers, whose duties require them to have frequent face-to-face contact with members of the public where social distancing is either not possible or not practical.

3.9 Where Can We Find More Information?

The following websites provide further information about pandemic influenza:

- ***Ministry of Health*** (www.moh.govt.nz/pandemicinfluenza) – background information about influenza, National Health Emergency Plan, pandemic preparedness, planning, etc.
- ***World Health Organisation*** (www.who.int/csr/disease/avian_influenza/en/index.html) – updates of global situation, pandemic phases, fact sheets
- ***Vancouver Coastal Health*** (www.vch.ca/public/communicable/pandemic.htm) – includes PDF chapters for private sector organisation planning, local government planning and self-care, as well as other topics. User-friendly “hand-outs”.
- ***Centres for Disease Control and Prevention*** (www.cdc.gov/flu/avian/) – background information about avian influenza, how it is spread, vaccines, outbreak information, travel advice and professional guidance.

Appendix 1: Background Information on Influenza Pandemic

WHY PLAN FOR INFLUENZA PANDEMIC?

What is an "Influenza Pandemic"?

Influenza pandemics are characterised by the spread of a novel type of influenza virus to many parts of the world, causing unusually high morbidity (illness) and mortality for perhaps two to three years. Most people do not have immunity to the virus and therefore are susceptible to influenza infection. A pandemic can overwhelm the resources of a society due to the exceptional number of those affected.

A pandemic may occur as a result of the emergence of a new viral sub-type with the capacity to spread efficiently from human to human.

What does an Influenza Pandemic Look Like?

Past pandemics over the centuries have swept quickly through populations, and left considerable damage in their wake. Recovery was impeded by the tendency of pandemics to recur in second and third waves. Age groups and geographical areas not affected initially may prove vulnerable during subsequent waves.

For example, in the 1918-1919 "Spanish flu" pandemic[14], there were three waves. For whatever reason, the virus in the first wave, in June – July, caused illness that appeared to be indistinguishable from seasonal influenza. In November, a far more virulent illness appeared. (The first wave provided some protection from the second – those who became ill in the first wave were less likely to get sick in the second wave.) The third wave, in 1919, was much smaller and less intensive than the previous two.

By contrast, the 1957-1958 "Asian flu" pandemic was essentially one long wave, lasting about 3 months, with a very high total attack rate (possibly 70% - 80% of the NZ population) and no significant following waves. The mortality rate was very low.

It is not possible to predict pandemic wave activity or other features before a pandemic. It is probably safe to say that if there is a very large wave with a very high total attack rate (as in 1957) there won't be another of any size resulting from the same virus (or a slightly mutated form) because a high proportion of the population will have developed natural immunity. However a 20% wave wouldn't preclude another larger one at a later stage (as in 1918).

[14] Globally, the Spanish flu pandemic is estimated to have killed 20 to 50 million people. This pandemic disproportionately affected young people aged 20 to 40. Death was sudden, often within 24 hours. In New Zealand, over 8,000 people died. In Western Samoa, 20 to 25 percent of the population died. By contrast American Samoa, which closed its borders, had no deaths.

Current national planning aims to keep influenza out of New Zealand or substantially delay its entry, and if it arrives, control clusters within New Zealand until a vaccination campaign could be run. Vaccination will protect the general population against pandemic influenza. However, given the time lapse (several months at least) between virus recognition and production of a vaccine, planning must take into account the possibility that the pandemic may reach New Zealand, and that there may be more than one "wave" of illnesses.

MoH has also prepared a number of possible scenarios to assist with planning for pandemic influenza – these are in Appendix 2. In addition, the international weekly journal of science, *Nature*, illustrates how a pandemic might play out with a future scenario in the form of a blog (www.nature.com/nature/journal/v435/n7041/full/435400a.html).

How Likely is an Influenza Pandemic?

The World Health Organisation (WHO) and MoH advise that it is certain there will be an influenza pandemic at some time in the future, but no-one can say when.

On average, influenza pandemics occur three times every century, but with no recognisable pattern in timing. In the last century, pandemics occurred in 1918-1919 (the "Spanish flu"), 1957-1958 (the "Asian flu"), and 1968-1969 (the "Hong Kong flu").

The WHO considers the risk of avian influenza morphing into the next pandemic to be very high. The H5N1 virus has recently expanded its geographical area: originally it had affected several east and southeast Asian countries, but recently has spread to Russia, Kazakhstan and parts of Eastern Europe. Even if the risk from avian influenza goes away, another influenza virus can be expected to come along months or years later.

The WHO is advising Governments worldwide to take precautionary measures and develop pandemic influenza response plans.

What is Avian Influenza ("Bird Flu")?

Bird flu or avian influenza is a contagious viral infection that can affect all species of birds. Migratory waterfowl (ducks and geese) are a natural reservoir for avian influenza virus overseas, and may carry the viruses without becoming ill. Fortunately, New Zealand is not on the regular migratory pathways of any waterfowl and only very occasionally do waterfowl reach our shores, generally originating from southern Australia.

Bird flu outbreaks among chickens and other birds occur from time to time around the world due to a variety of strains of avian influenza virus. The current outbreak of highly pathogenic avian influenza (HPAI) due to the H5N1 strain is of concern because of the size of the outbreaks, the number of countries becoming affected and the fact that humans have become infected.

The H5N1 virus is highly infectious among birds and in a number of species can be rapidly fatal. Because of their living conditions domestic poultry flocks are particularly vulnerable to the rapid spread of the disease. The disease is not normally spread to humans but some cases have been reported. Most cases to date appear to have resulted from close direct contact with infected birds. There is no suggestion yet that the virus is easily spreadable from person to person.

Clinical experts are, however, concerned at the potential for H5N1 to adapt to humans and thereby acquire the ability to spread readily from human to human. If this happens there could be a worldwide influenza pandemic. The WHO considers the current risk to be high, and is advising Governments worldwide to take precautionary measures and develop pandemic influenza response plans.

Why Should New Zealanders be Concerned?

Beginning in late July 2005, official reports to the World Animal Health Organisation from government authorities indicate that the H5N1 virus has expanded its geographical range. Both Russia and Kazakhstan reported outbreaks of avian influenza in poultry in late July, and confirmed H5N1 as the causative agent in early August. Deaths in migratory birds, infected with the virus, have also been reported. Outbreaks in both countries have been attributed to contact between domestic birds and wild waterfowl via shared water sources.

These are the first outbreaks of HPAI recorded in the two countries. Both countries were previously considered free of the virus.

Experience in south-east Asia (Viet Nam, Thailand, Cambodia, and Indonesia) indicates that human cases of infection is rare but that there is a high mortality rate (there have been 112 laboratory-confirmed human cases of avian influenza December 2003, of which 57 were fatal). Most, but not all, human cases have been linked to direct exposure to dead or diseased poultry, notably during slaughtering, de-feathering, and food preparation.

Influenza viruses are highly unstable. This means that over time, viruses change and may develop the ability to readily infect humans. Also, when animal influenza viruses are circulating at the same time as human viruses there is potential for the two to "meet" and create a new influenza virus to which humans would have little, if any, protective immunity, and which can spread easily from person to person.

H5N1 is showing signs of changing and the expanding geographical presence of the virus creates expanded opportunities for human exposure. The emergence of an HPAI strain that is readily transmitted among humans would mark the start of a pandemic.

Where Can We Find International Information Updates?

The WHO's website (www.who.int/csr/disease/avian_influenza/en) provides updates on the global occurrence of avian influenza, risks to humans, vaccine and anti-viral developments. It also provides useful background information about the nature and characteristics of avian influenza and past pandemics.

For an international perspective and updates on infection in birds, see www.oie.int/downld/avian influenza/a_ai-asia.htm.

The New Zealand Ministry of Health's website (www.moh.govt.nz/pandemicinfluenza) also provides much relevant information.

WHAT ARE THE SYMPTOMS OF INFLUENZA AND HOW IS IT SPREAD?

What are the Symptoms of Influenza?

Influenza is a highly contagious viral disease of the respiratory tract.

Influenza is characterised by rapid onset of respiratory and generalised signs and symptoms including: a high fever, headache, muscle aches and pains, fatigue, cough, sore throat, or a runny nose.

What is the Difference Between Influenza and a Common Cold?

SYMPTOM	INFLUENZA	COMMON COLD
Fever	Usual, sudden onset 38^{o}-40^{o} and lasts 3-4 days.	Rare
Headache	Usual and can be severe	Rare
Aches and pains	Usual and can be severe	Rare
Fatigue and weakness	Usual and can last 2-3 weeks or more after the acute illness	Sometimes, but mild
Debilitating fatigue	Usual, early onset can be severe	Rare
Nausea, vomiting, diarrhoea	In children < 5 years old	Rare
Watering of the eyes	Rare	Usual
Runny, stuffy nose	Rare	Usual
Sneezing	Rare in early stages	Usual
Sore throat	Usual	Usual
Chest discomfort	Usual and can be severe	Sometimes, but mild to moderate
Complications	Respiratory failure; can worsen a current chronic condition; can be life threatening	Congestion or ear-ache
Fatalities	Well recognised	Not reported
Prevention	Influenza vaccine; frequent hand-washing; cover your cough	Frequent hand-washing, cover your cough

How is Influenza Spread?

Influenza is spread from person to person in the respiratory droplets generated by coughs and sneezes. It can also be spread when a person comes into contact with the respiratory droplets of another person by touching items on which droplets are present, and then touches their own eyes, mouth or nose before washing their hands. The virus may enter through the eyes, or more commonly through the nose or mouth, and into the throat and lungs where it begins to multiply. The time from first exposure to when symptoms begin is one to four days.

The disease damages the linings of the respiratory tract. Secondary bacterial infections, such as pneumonia, meningitis, sinus and ear infections can then take hold.

How Long is the Influenza Virus Infectious?

It is not known for certain, if people with influenza are infectious before developing symptoms. An adult with influenza is infectious once they show symptoms, and for some days after. Children have been shown to remain infectious for up to 21 days, long after symptoms have disappeared. Some individuals may become infected but never show symptoms.

Influenza viruses may be able to live for up to two days on hard surfaces such as doorknobs, handrails, toys, cups, utensils, telephones. Although it can live on these surfaces it is not as infectious as these surfaces are usually dry.

IS MEDICATION AVAILABLE TO PREVENT OR TREAT PANDEMIC INFLUENZA?

Will Vaccine Against Pandemic Influenza be Available?

Vaccines are virus-specific, so pandemic vaccines cannot be produced until the specific pandemic virus has been identified. The time lapse between virus recognition and production is likely to be at least several months, largely because of technical issues around vaccine production. MoH is working to make sure New Zealand gets access as quickly as possible to a vaccine once it is developed and available.

Given that the first supplies of vaccine against a novel strain of influenza are unlikely to be available quickly, it is possible that New Zealand would have suffered at least one pandemic wave before a vaccination campaign can provide population immunity.

Will Anti-viral Medications be Available to Prevent or Cure Pandemic Influenza?

Many complications from influenza are due to secondary infection. Antibiotics are the preferred treatment for secondary infections, although they are ineffective in the treatment of the viral influenza itself.

Anti-viral medication can shorten the course of infection, if given early. They can also provide short-term protection against influenza. Several anti-virals have specific activity against the influenza virus, but only one of these (Tamiflu) is thought to be suitable for widespread general use in a pandemic situation.

It is not known if Tamiflu will be effective against a pandemic strain virus as its use in a pandemic situation is untested. The impact of Tamiflu in aiding pandemic management measures cannot be known until a pandemic occurs and epidemiological evidence is available.

MoH is stockpiling sufficient Tamiflu to treat 21% of the population, for use if a pandemic occurs. Careful prioritisation of its usage is essential, and exact priorities cannot be identified until the pandemic strain is identified and its epidemiology understood (e.g. which age groups in the population are likely to be the worst affected). Current draft policy envisages that Tamiflu will be used intensively in the early stages as part of a number of initiatives for control of small clusters of illness. If and when the pandemic affects many areas of New Zealand, its usage will be reserved for treatment, and further prioritisation may be required (e.g. for cases at higher risk of complications or death).

Further information and updates about Tamiflu may be found on MoH's website (www.moh.govt.nz/pandemicinfluenza).

Appendix 2: Pandemic Influenza Planning Scenarios

These scenarios are provided as planning tools only. Government and Health sector policies and actions in a pandemic may differ from those indicated here.

These scenarios are not to be read as predictions or expectations of actual events, policies, or actions that may take place during a pandemic.

Scenario 1 – Pandemic Disease Recognised Overseas

It is a Friday before a holiday weekend, with fine weather forecast over the whole country.

For several weeks there have been many rumours and unconfirmed reports of large clusters of person-to-person spread of H5N1 in two south-east Asian countries – Sealand and Beeland. The situation in neighbouring countries is quiet, but in some regions the situation is unknown, with a total communications blackout from some provinces. The World Health Organisation (WHO) is intensively investigating, but has not yet confirmed person-to-person spread of H5N1 in any region, although the level of suspicion is high and increasing all the time. Nothing much else is happening in the world, so there has been intense and increasing interest in these developments from the world and New Zealand media.

Intensive surveillance in New Zealand has not found any evidence of H5N1 among the influenza-like illnesses that are normally present at low levels in the general population.

The Ministry of Health (MoH) has been monitoring the situation and has informed the health sector of the domestic and overseas situations through Code White (information) messages to District Health Boards (DHBs).

At 1200 on Friday, MoH receives information from the WHO in Manila that H5N1 influenza appears to have been responsible for a number of sudden deaths among Beeland citizens in the large capital city, Beeville. The people who died had no known exposure to infected poultry, or connection with the areas where H5N1 spread is suspected.

From Southern Beeland, there are unconfirmed reports of the sudden deaths of three German tourists who recently took a bus trip to the interior, and of influenza-like illnesses among other tourists. Some tourists are thought to have flown to Singapore or other regional destinations while unwell.

At 1230, while the MoH is attempting to verify the information received, CNN reports that “pandemic influenza has broken out in Beeland, and is causing many deaths in the slums of Beeville and the villages in the interior. Tourists have died, and many are ill”. The report also says that the Beeland government has denied that pandemic influenza is present.

MoH assembles its crisis team and identifies people for Co-ordinated Incident Management System (CIMS) team roles. By 1430 a Code Yellow (standby/warning) message has gone out to the health sector informing them of the situation. Also by this time, the WHO in Manila has confirmed the information received earlier that 120 people are ill in hospital, a further 30 are thought to have died of a new form of influenza and an unknown but "large" number are thought to be affected. It adds that a pandemic declaration will be made at 1600 New Zealand time.

Advice from the Australian Health Disaster Management Committee states that Australia has closed borders to all incoming flights.

MoH issues a Code Red message (pandemic alert) to the health sector at 1615, following the WHO declaration.

At 1630 the MoH national controller issues the first pandemic advice to the government.

The advice is:

- To enable an effective response to be mounted, the Minister of Health should immediately unlock the special powers available to Medical Officers of Health, in the Health Act; and
- To immediately close the border, for an indefinite period, to all incoming flights.

At 1800, the Government's Ministerial-level Domestic and External Security Committee accepts all the Ministry of Health's recommendations and directs the appropriate agencies to action them immediately.

Outline of likely Health Sector Actions

After unlocking of powers, Medical Officers of Health (MOoHs) have a wide range of special powers available to detain, quarantine or isolate people who have, or may have, infectious diseases.

At the time the border was closed there were 7 aircraft in the air enroute to New Zealand. For safety reasons they may land in New Zealand if the Captain decides that it is inappropriate to divert or turn back. All elect to continue, with 5 to land in Auckland and 2 for Christchurch.

Using the MOoH's special powers, incoming passengers and aircrew will be held at the airports until health services carry out risk assessments and decide the most appropriate actions. Outcomes could include:

1. Encouragement of incoming foreign nationals to leave on the next available aircraft without entering New Zealand.

2. Release of some low-risk incoming New Zealanders, with medication as required and arrangements for intensive follow-up by Public Health Units.

3. Quarantine all the remaining passengers and aircrew for 8 days before allowing entry to New Zealand.

Planners should assume that it might take up to 24 hours, and possibly longer, to complete the processing of the people held at the airport, and/or make the necessary arrangements and dispositions.

Health services will also review the health declarations of all passengers arriving from South East Asian airports within the last 4-5 days to assess the risks to New Zealand. Passenger and contact tracing will be done if there are any grounds for suspicion.

Surveillance will be stepped up to the highest possible state, especially in communities close to airports and on the normal tourist pathways.

MoH will make supplies of anti-viral medication available to assist with border management operations. Health staff resources will be made available by the appropriate District Health Board(s).

Scenario 2 – Cluster(s) in New Zealand

It is Mid-February. H5N1 influenza is now spreading person-to-person in Western Sealand. The virus is not yet an efficient spreader so there is no widespread outbreak, although several thousand people have been infected. The case fatality rate is very high, at about 20%. Many of the fatalities collapse and die within a short time of becoming symptomatic, mostly with cyanotic mottling and/or subcutaneous haemorrhage. WHO and the Sealand government are making strenuous efforts to contain the situation, with internal travel restrictions in place and draconian penalties for non-compliance with government directives.

H5N1 is known to exist in birds in many other parts of Asia, but intensive surveillance of these regions has not provided evidence of person-to-person spread. It appears the pandemic strain is contained in Sealand. WHO has not yet issued a world pandemic alert, although it has issued a regional alert for South East Asia and Sealand.

New Zealand borders are closed to Sealand nationals except for those who demonstrate that they are from unaffected regions, pass an exit screening examination in Sealand, and undergo health assessments on arrival in New Zealand. These people are mostly students, business people, and those with family in New Zealand. The flow of people from Sealand is low, because of Sealand government restrictions.

General tourist traffic from Asia is substantially reduced from normal because of uncertainties associated with the pandemic situation. Tourists from Asian countries other than Sealand are not undergoing health assessments at the border, although all aircraft are now required to inform authorities of the health status of people on board before arrival in New Zealand.

In New Zealand there is intensive surveillance concentrated on regions surrounding airports and the normal tourist trails.

On a Saturday afternoon, a Medical Officer of Health (MOoH) of Crossville (in the North Island) contacts the MoH. Two people of Asian extraction turned up at a local GP medical centre on Friday with influenza-like illnesses. They were assessed and swabs taken. They were provided with advice and then discharged.

At about 1100 on Saturday morning, one of these people was found dead in their motel. The hotelier rang the police as part of normal process. The other person cannot be found, and the car in which they came is missing, not having been seen since the night before. The two people had been in the motel for two days since arriving in the country.

The MOoH has seen the body, and noted cyanotic mottling and the fact that the person had been dead for some hours. He is very concerned. He has directed that the unit be sealed for the time being until full infectious disease precautions can be provided for the removal of the body to the morgue.

MoH assembles a CIMS team and informs the Minister of developments. As a number of conditions could be involved, it is decided to wait until results from swabs and a post-mortem become available before making any decisions. MoH liaises

with Police about the missing person and advises that if found, the person should be treated as infectious and appropriate precautions taken. MoH also alerts all DHBs and PHUs via a Code Yellow message.

During Sunday, several people present at a nearby Emergency Department (ED) had influenza-like illnesses. Most are itinerant market garden workers and backpacking tourists, living in various hostels and similar accommodation. None require admission. ED is taking full infection control precautions on MoH recommendation.

MoH also recommends that the after-hours surgery takes full infection control precautions, but can only recommend this, as primary care is essentially private business. MoH learns that about a dozen people have turned up at the after-hours surgery with flu-like symptoms, an unusual number for this time of year.

At 2300 on Sunday, the MOoH contacts the Ministry again. After complaining of being unwell in the early evening a receptionist from a local GP medical centre collapsed and died on arrival at the ED. During an attempted resuscitation, infection control precautions were inevitably less than perfect. Another person, whom relatives state went to the after-hours surgery earlier in the day because of the 'flu', is now seriously ill in intensive care.

The Ministry re-convenes its CIMS team. In conversations with the local hospital the MoH learns that at around midnight, two more patients turned up at the ED with respiratory and circulatory collapse. At 0300 on Monday morning, the team advises the government that:

- An unknown disease causing respiratory collapse and death is present in the district;
- It may be H5N1 pandemic influenza, but this cannot yet be confirmed;
- The Ministry will put regional DHBs on full pandemic alert through Code Red messages;
- Local hospital staff and facilities, and other medical staff and facilities in the area have probably been exposed;
- The Ministry recommends that:
    - The Minister unlocks the special powers available to Medical Officers of Health under the Health Act;
    - That the Medical Officer of Health in charge establishes travel restrictions for the area;
    - Until appropriate medical screening arrangements can be made, no people or goods should be allowed to move into or out of the area without the express permission of the Medical Officer of Health in charge;
    - Public gatherings in the area should be prohibited until further notice;
    - Schools, kindergartens, crèches, play-centres, educational campuses of all kinds, public libraries, video stores, game arcades and casinos in the area should not open on the Monday morning, and may be required to remain closed for an indefinite period; and

- All possible efforts are made to find the missing Asian person, and to track anybody who is known to have left the area since Saturday.

The Government accepts all the Ministry's recommendations and expects them to be actioned immediately by the appropriate agencies.

Outline of Health Sector Actions

After a declaration of a national Health Emergency, Medical Officers of Health (MOoHs) have a wide range of powers available to detain, quarantine or isolate people who have or may have infectious diseases.

MoH will immediately issue a Code Red pandemic alert message, informing all health practitioners of the situation.

MoH, through their Regional Co-ordinators, will direct relevant DHBs to prepare for the release of PPE to identified hospitals, primary health care centres and first responders

No hospital-to-hospital transfers will be made from the Hospital to places outside the infected area. Surveillance will be stepped up to the highest possible state, both in the area and in the rest of the country.

Intensive investigations of the cases in the Hospital will be made, with rapid PCR investigations to confirm or rule out H5N1 avian influenza. Initial results are likely to be available within 12 hours.

MoH will make ready-use supplies of anti-viral medication available to assist with the management of the situation.

MoH's CIMs team will advise the government on appropriate courses of action as the situation develops.

Scenario 3 – Severe Pandemic in New Zealand

It is mid-July. About eight weeks ago, H5N1 pandemic influenza achieved an explosive breakout from South East Asia, appearing in Europe, North and South America, Africa and India within a couple of weeks. The disease is impacting heavily on all age groups, but particularly on younger adults. The case fatality rate is about 2% over all age groups but up to 8-10% for people under 30. The pandemic disease has a high reproductive rate and spreads very rapidly once the first few cases have appeared in any country or region.

International trade and travel is more or less at a standstill as all impacted countries attempt to adjust to the new situation. Very limited amounts of airfreight are still moving, but flights are arranged more or less as required, rather than to a timetable, and even so it is very difficult to find aircrew willing to fly to some countries. Very few passengers are being carried.

Merchant ships at sea on the way to New Zealand when the pandemic broke out, have either turned around and gone home, have berthed and are unable to leave, or are remaining offshore, waiting to assess the onshore situation before berthing. One of the ships that turned around was a tanker carrying a large shipment of petrol, and there has not been a petrol delivery at Marsden Point for over six weeks now.

Despite strenuous border control efforts, pandemic influenza appeared suddenly in one urban area a bit over four weeks ago. Efforts at containment were abandoned, as many other cases were reported throughout the country over the next week. Health authorities shifted efforts to attempt to ameliorate the impacts of the pandemic.

Medical Officers of Health have directed all crèches, kindergartens, schools, colleges, universities, public libraries, video stores, game arcades and casinos to close indefinitely. Public gatherings are prohibited, and people are advised to avoid crowded places as much as possible. Wherever practical, people are working from home, or have taken leave – either paid or unpaid.

So far, the epidemiology of the disease in New Zealand appears much the same as in other countries, with the heaviest impact on young adults. Over 100,000 people have become ill since the development of the pandemic in New Zealand, and nearly 3,000 have died. About 2,000 of these are under the age of 30. Case numbers are still increasing very fast. Initial forecasts indicate that this wave could involve up to 40% of the population, implying that there may be another 1.5 million people becoming ill over the next six weeks or so, with a peak in about another 2-3 weeks. Given the current epidemiology, this may result in between 30,000 – 35,000 deaths in total.

The Ministry of Health has directed DHBs to release their PPE supplies to hospitals, the primary health care sector (in previously agreed locations), and to local services to support first responders.

The Ministry of Health has released the national reserve of anti-viral medication for use. The medication is being distributed through about 80 special temporary facilities. It is strictly prioritised to people who meet clinical criteria for influenza and time since onset of symptoms. After several incidents at the distribution stations the Ministry asked for Police or Defence Force assistance with security as civilian security firms could not manage this.

Anti-viral medication has been allocated for all health services, Police and Defence Force, and staff from some other organisations providing direct pandemic responses. This guarantees treatment for any staff from these services that become ill. Despite this, there is a degree of absence in both the health sector and Police force that is not related to direct illness. Between 10%-15% of the Police force is not available for duty. The overall absence rate is still increasing, and may reach about 40%-50% in a few weeks time – around the expected peak of the current pandemic wave.

The Army has about 10% of its troops not available for duty from illness, and the Air Force about the same. The Navy has one frigate on its way back from the Persian Gulf, and doesn't have enough crew available to man the other, currently moored in Auckland. Navy volunteers are assisting health services in Auckland.

Primary health services in most districts are shifting priorities, as case numbers climb, and are mostly still functioning although increasingly in a directive and support role. Secondary hospitals and DHBs in most affected areas are moving to a co-ordination and logistic supply role for primary and volunteer groups while attempting to maintain hospital services as much as possible.

Hospitals are hampered by very high rates of sickness and absences among their staff, and are down to between 50% and 60% of their normal capacity. Hardly any influenza patients are being admitted to hospitals. It is probable that things will get worse for hospitals before they get better.

Health services in the most affected urban area and much of the surrounding region are no longer functioning in a co-ordinated manner. Here, the primary and secondary health workforce has been very heavily impacted, with only about 40% of the normal staff available for duty. The pandemic is developing very fast in some population sub-groups, and there have been a large number of deaths. A number of very young children have been orphaned by the deaths of both their parents. Several hundred bodies are in freezer storage in the district, and more containers are being brought in.

People of all ages who live alone, and solo parents with small children, are especially vulnerable, as the disease comes on suddenly and is extremely incapacitating. Sufferers can do very little for themselves for several days. People who have few supplies or resources at home, or who have no support, are quickly in dire straits. Some very young children are attempting to look after their sick parents with little or no support. A number of people have died alone in their homes, and it is feared that many more may follow.

In all affected areas people are at home looking after sick children and spouses, and in many cases friends and neighbours in their homes. Some areas have quickly organised networks to support this initiative, but in others people are working as individuals with little co-ordination or support.

Many people in the most affected urban area have moved to rural areas. Rapidly increasing case numbers are being reported from these districts. Health service capacity in these areas is very limited, and cannot manage anything remotely approaching the demand now being experienced.

Availability of supplies varies across the country, but everywhere there are shortages of fuel and some foodstuffs, partly as a result of people buying up large quantities of basic foods in the early days. Anybody with reserve food or petrol is hoarding it for an uncertain future.

Telephone, text and email communication is heavy as people try to keep in touch with each other and keep checking on their friends and relatives in New Zealand and overseas. So far, water, electricity, gas and sewerage systems are still operating, although some are becoming more vulnerable to breakdown and interruptions because of unusual demand patterns and a progressive lack of routine maintenance, as staff availability dwindles. Postal services have stopped providing daily deliveries because so many staff are absent, and courier services are severely handicapped by shortages of fuel.

Many New Zealand citizens and residents overseas are stranded, unable to return to New Zealand. People who were overseas on holiday have run out of money, and businessmen overseas are in great difficulty as their incomes have often dried up completely. They are appealing to the government for assistance.

About 150,000 tourists and other transient people are stranded in this country. Many are out of money, or their currencies now have virtually no value. International electronic banking is still mostly operating, as are telecommunications and media links. However currency fluctuations are extreme and nobody knows what their money will be worth tomorrow.

Many of the tourists and transients are living more or less on the goodwill of moteliers and accommodation suppliers, who are now vociferously demanding the government “do something” to help the critical business situation developing in the sector from both the downturn in normal business and accommodating people with no funds.

Around 100,000 overseas students are likewise stuck. Although most have enough money to last a while, they are mostly not normally eligible for publicly funded health services in New Zealand, although they are in an age group that is being heavily impacted.

Outline of Health Sector Actions

Generally, the health sector is shifting from provision of direct care to the co-ordination, direction, logistic support and assistance of care provision by volunteers, community groups and individuals caring for sick family members.

Nation-wide, direction of release of PPE to primary and secondary sectors occurs when Code Red alerts are issued.

The health sector will be providing direct care to only a very small proportion of all people who get sick.

Anti-virals will be released to the general population early in the wave, but there will not be sufficient to provide treatment for everybody who gets sick in a large wave. It is possible more stringent prioritisation may be adopted (in this case likely to be age-based), which may exacerbate issues around the distribution of the medication.

Appendix 3: Pandemic Management Phase – Standard Planning Assumptions

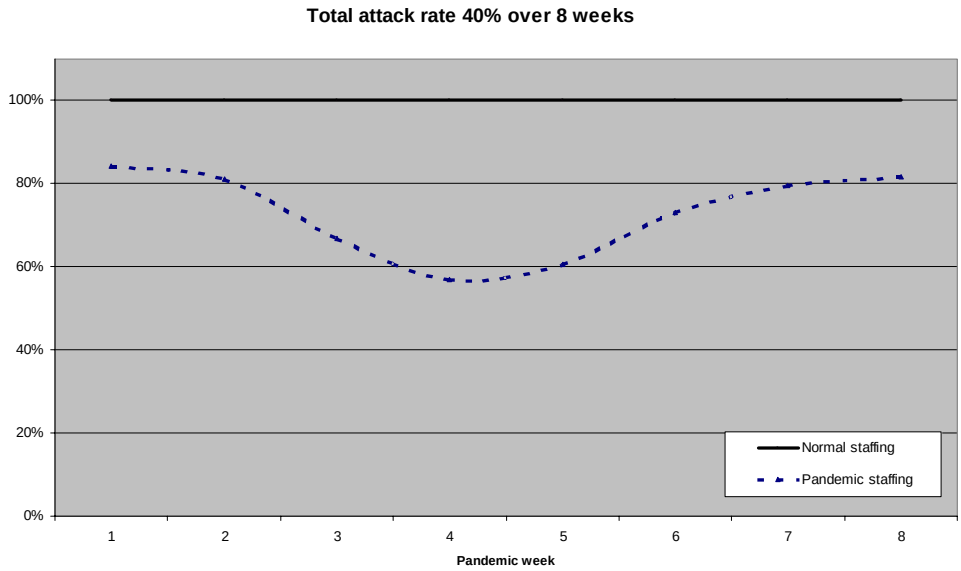
Workforce

This appendix models the potential impact of a large severe pandemic influenza wave on the workforce. The basic scenario is that of November 1918. This differs from earlier published New Zealand scenarios that were based on lower infection and death rates as observed in the 1968 pandemic.

Assumptions

- 15% of the workforce is absent for 8 weeks because school closures oblige working parents to stay home and look after children. Note that this proportion will vary according the particular workforce.
- 40% of those remaining at work become ill at some time during the 8 weeks of the pandemic wave.
- The workplace attack wave follows a pattern similar to that expected in the general population.
- Every person who becomes ill has 7 shifts off work.
- There is a 100% additional absence rate – that is, for every person in the remaining workforce who gets ill, another does not come to work because of the need to look after a spouse or children, or a disinclination to travel or work.
- The additional absences follow the workplace attack pattern.
- 2% of workers who become ill die.
- Note that no estimate is made for people doing extra shifts or longer shifts, or for any recruitment into the workforce during the pandemic.

Individual employers must consider their workforces and their particular circumstances. However, in general, employers should make contingency plans to operate for the pandemic period with at most 85% of their normal staff available, and between 50% and 65% available for the peak three weeks of the pandemic.



It is important to note that the scenario shown above will not develop suddenly. A large pandemic wave cannot develop in New Zealand without significant numbers (some hundreds to thousands) of human cases having been present in New Zealand for some time. Workforce planners should note that impacts from school closures might be felt for some time before the above scenario develops.

Population: People Becoming Ill

This table shows the approximate number of people who would become ill during a 40% attack rate pandemic wave affecting the general population.

This scenario is the New Zealand November 1918 pandemic wave applied to the current New Zealand population. Numbers have been rounded to the nearest 10 where number of illnesses are less than 1,000, and to the nearest hundred for larger numbers.

Illnesses

	Week no								
DHB	1	2	3	4	5	6	7	8	Total
Auckland	1,700	8,700	41,800	55,700	41,800	13,900	7,000	3,500	174,100
Bay of Plenty	800	4,000	19,200	25,500	19,200	6,400	3,200	1,600	79,900
Canterbury	1,900	9,300	44,600	59,500	44,600	14,900	7,400	3,700	185,900
Capital and Coast	1,100	5,400	26,000	34,600	26,000	8,700	4,300	2,200	108,300
Counties Manukau	1,700	8,700	41,700	55,600	41,700	13,900	7,000	3,500	173,800
Hawkes Bay	600	3,000	14,400	19,200	14,400	4,800	2,400	1,200	60,000
Hutt Valley	550	2,800	13,300	17,700	13,300	4,400	2,200	1,100	55,400
Lakes	410	2,100	9,900	13,200	9,900	3,300	1,600	820	41,200
Midcentral	660	3,300	15,900	21,200	15,900	5,300	2,700	1,300	66,300
Nelson Marlborough	540	2,700	12,900	17,200	12,900	4,300	2,200	1,100	53,800
Northland	590	3,000	14,200	19,000	14,200	4,700	2,400	1,200	59,300
Otago	720	3,600	17,400	23,200	17,400	5,800	2,900	1,400	72,400
South Canterbury	220	1,100	5,200	6,900	5,200	1,700	860	430	21,600
Southland	430	2,200	10,400	13,800	10,400	3,500	1,700	860	43,300
Tairawhiti	180	900	4,300	5,800	4,300	1,400	720	360	18,000
Taranaki	420	2,100	10,100	13,500	10,100	3,400	1,700	840	42,200
Waikato	1,400	6,800	32,600	43,400	32,600	10,900	5,400	2,700	135,800
Wairarapa	160	790	3,800	5,000	3,800	1,300	630	310	15,800
Waitemata	2,000	9,900	47,600	63,500	47,600	15,900	7,900	4,000	198,400
West Coast	120	610	2,900	3,900	2,900	970	490	240	12,100
Whanganui	260	1,300	6,200	8,300	6,200	2,100	1,000	520	25,900
All DHBs	**16,400**	**82,100**	**394,300**	**525,700**	**394,300**	**131,400**	**65,700**	**32,800**	**1,644,000**

Population: Deaths

This table shows the approximate number of people who would die during a 40% attack rate pandemic wave with a 2% case fatality rate.

This scenario is the New Zealand November 1918 pandemic wave applied to the current New Zealand population. Rounding has been applied.

Deaths	Week no								
DHB	1	2	3	4	5	6	7	8	Total
Auckland	35	170	840	1,120	840	280	140	70	3,500
Bay of Plenty	16	80	380	510	380	130	64	32	1,600
Canterbury	37	190	890	1,190	890	300	150	74	3,700
Capital and Coast	22	110	520	690	520	170	87	43	2,200
Counties Manukau	35	170	830	1,110	830	280	140	69	3,500
Hawkes Bay	12	60	290	380	290	96	48	24	1,200
Hutt Valley	11	55	270	350	270	88	44	22	1,100
Lakes	8	41	200	260	200	66	33	16	820
Midcentral	13	66	320	420	320	110	53	26	1,300
Nelson Marlborough	11	54	260	350	260	86	43	22	1,100
Northland	12	59	290	380	290	95	47	24	1,200
Otago	14	72	350	460	350	120	58	29	1,500
South Canterbury	4	22	100	140	100	34	17	9	430
Southland	9	43	210	280	210	69	35	17	870
Tairawhiti	4	18	87	120	87	29	14	7	370
Taranaki	8	42	200	270	200	68	34	17	840
Waikato	27	140	650	870	650	220	110	54	2,700
Wairarapa	3	16	75	100	75	25	13	6	310
Waitemata	40	200	950	1,270	950	320	160	79	4,000
West Coast	2	12	59	78	59	20	10	5	250
Whanganui	5	26	120	170	120	41	21	10	510
All DHBs	330	1,640	7,890	10,510	7,890	2,630	1,310	660	**33,000**

Note:

In practice, it is quite likely that the peaks of illnesses and deaths would be slightly staggered between districts, as a wave moves around the country. It is also possible that the movement of a wave could be stalled for a short time at major regional boundaries, or between the North and South Islands.

Appendix 4: Key Elements of an Organisation-Specific Business Continuity Plan for Pandemics

The material in this appendix draws together key points from the Planning Guide, in a form that may assist individual businesses and other organisations prepare their own business continuity plan for pandemic.

The material is necessarily generic, and will need to be adapted to meet the circumstances and needs of the businesses and organisations that may use it.

1. Overview and Context

- Pandemic overview
  - National and community perspective
  - Anticipated demands for the goods / services that you provide
  - Similarities to and differences from other emergencies
- Focus
  - The focus of this Plan is on reduction of the impact of a pandemic by:
    - *reducing the **incidence***
    - *delivering an **effective response***
  - In order to achieve this impact reduction, comprehensive planning (readiness) arrangements must be in place
  - The Plan needs to consider the appropriate audiences
    - *Internal (Boards, Management and Staff)*
    - *External agencies*
- Define the structure and key roles *(link with existing Business Continuity Plans)*
  - Leadership and direction within the organisation in the event of a pandemic
    - *who makes the strategic decisions in relation to pandemic?*
    - *who communicates to whom internally and externally?*
  - Main expectations of staff with key roles
  - Allocation of other specific responsibilities (including ownership of this plan and its maintenance)

2. Risk Identification and Analysis

- Develop summary statements of organisational risk and potential impact corresponding to each pandemic stage (with reference to the Ministry of Health scenarios)
  - Include the potential impacts on other agencies that you have close relationships with, including
    - *Suppliers of materials and services*
    - *Sub-contractors (e.g. essential maintenance)*
- Create and implement plans as per the outline in the following sections

3. Required Preparations

Develop the likely response processes and measures

(with reference to Table 3 of this *Planning Guide*)

General Planning (MoH Alert Code White – *Information / advisory*)

- Review existing business continuity plans and develop pandemic-specific procedures as appropriate
  - Identify essential services (including contractors), facilities/plants, other production inputs
  - Plan for up to 50% staff absences for periods of 2-3 weeks at the height of the pandemic, and lower levels of staff absences for a few weeks on either side of the pandemic
  - Assess core staff and skill requirement needs, and ensure essential positions are backed-up by an alternative staff member
  - Identify ways to increase "social distancing" in the workplace, reduce movement etc.
  - Consider organisational policies to encourage the sick to stay at home; and enable staff to work from home
  - Identify existing arrangements that might assist pandemic outbreaks
- Establish mechanisms for alerting staff to change in pandemic status
- Establish procedures and triggers for escalation of response

Advanced Planning (MoH Alert Code Yellow – *Standby* [15])

- Alert staff to change in pandemic status
- Identify ways to minimise illness amongst staff and customers, and consider how essential messages (e.g. basic hygiene) can be communicated to staff
- Identify needs for PPEs and cleaning equipment, and check air conditioning. Purchase additional contingency supplies

4. Response Actions

Implement the specific response processes and measures

Active Response (MoH Alert Code Red – *Activation*)

Border Management

- Alert staff to change in pandemic status
- Activate staff overseas travel restrictions
- Review / test essential business continuity measures
  - Process familiarisation, including training for those with specific roles

Cluster Control / Pandemic Management

- Alert staff to change in pandemic status
- Activate measures to minimise introduction and/or spread of influenza in work place (post notices; social distancing, managing ill staff members, workplace cleaning, etc.)
- Activate essential business continuity measures and establish a regular review process
  - Review and update risk and impact assessment
  - Set response objectives and identify specific actions required
  - Decide activities / services to be maintained/ discontinued; who needs to come to work
  - Communicate with staff to promote confidence in the workplace and externally to inform other agencies that you have close relationships with
  - Review regularly (e.g. weekly)
- Activate contact tracing where staff become ill at work during Cluster Control phase
- Activate process for recovered / well staff members to return to work

[15] The transition from alert code white to red could be quite quick (i.e. the code yellow phase could be short).

5. Recovery Processes

Recovery (MoH Alert Code Green – *Stand down*)

- Establish criteria and process for agreeing to return to business as normal
- Review and update risk and impact assessment
- Communicate internally with staff and externally with related agencies
- Manage return to business as normal
- Conduct full debrief process(es)
  - Update pandemic plan as appropriate
  - Update Business Continuity Plan as appropriate

The desired outcome of the Plan is to achieve effective preparations and response through *clarity, process familiarity* and *confidence* for staff and other stakeholders.