



**United Nations Medical Directors (UNMD)**

**Influenza Pandemic Guideline**

March 2019

## TABLE OF CONTENTS

<b>PREFACE .....</b>	<b>3</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>4</b>
<b>INTRODUCTION .....</b>	<b>6</b>
BACKGROUND .....	6
PANDEMIC PREPAREDNESS PLANNING .....	7
Table 1. Planning Assumptions .....	7
OBJECTIVES OF MEDICAL PLANNING .....	8
ELEMENTS OF A PREPAREDNESS PLAN .....	8
PLANNING AND COORDINATION .....	9
PUBLIC AND OCCUPATIONAL HEALTH MEASURES .....	9
<i>Hand Hygiene / Respiratory Etiquette</i> .....	9
<i>Social Distancing</i> .....	9
<i>Infection Control Measures</i> .....	9
<i>Use of Personal Protective Equipment (PPE)</i> .....	10
Table 2. Risk Categories for PPE .....	12
<i>Use of Surgical Masks</i> .....	12
<i>Use of Particulate Respirators (e.g. NIOSH-certified N95, EU FFP2 or equivalent masks)</i> .....	13
<i>Guidance for Safe Travel</i> .....	13
MEDICAL INTERVENTIONS .....	14
<i>Medical Consultation and Advice</i> .....	14
<i>Medications</i> .....	15
Antiviral Medications .....	15
Antipyretics and Antibiotics .....	17
<i>Vaccines</i> .....	18
Vaccine Against Seasonal Influenza .....	18
Pneumococcal Vaccine .....	18
Vaccine Against Pandemic Influenza .....	18
COMMUNICATION AND TRAINING .....	19
ACTION PLAN .....	20
Table 3. Action Plans .....	21
LEVEL 1: READINESS MODE .....	21
LEVEL 2: CRISIS RESPONSE MODE .....	23
LEVEL 3: EMERGENCY MODE .....	24
 <b>ANNEX 1: ADDITIONAL INFORMATION RESOURCES .....</b>	 <b>26</b>
<b>ANNEX 2: ALGORITHM FOR CLINICAL MANAGEMENT OF PATIENTS WITH MILD TO MODERATE PANDEMIC INFLUENZA .....</b>	<b>27</b>
<b>ANNEX 3: RECOMMENDATIONS ON PERSONAL PROTECTIVE EQUIPMENT .....</b>	<b>28</b>
PUTTING ON AND REMOVING PPE .....	29
PARTICULATE RESPIRATOR USER SEAL CHECK .....	31
HAND HYGIENE TECHNIQUE .....	32
 <b>ANNEX 4: MEDICAL SUPPLIES FOR A PANDEMIC .....</b>	 <b>32</b>
Table 4. Medical Supplies To Be Made Available for a Pandemic .....	33
Table 5. PPE Items To be Made Available for Staff in Risk Category 1 .....	35
Table 6. PPE Items To Be Made Available for Staff in Risk Category 2 .....	36
STORAGE OF MEDICAL SUPPLIES .....	37

## PREFACE

The United Nations (UN) Medical Directors developed this document to provide guidance to UN organizations when preparing and responding to an influenza pandemic. Technical input was provided by the World Health Organization (WHO) and other public health and infectious disease experts.

This Guideline provides a foundation for planning to ensure a timely, consistent and coordinated medical response across the UN system to a possible global threat. This new version replaces the “*United Nations Medical Directors Influenza Pandemic Guideline*” (October 2011 and May 2008), as well as the previous editions of the “*United Nations Medical Services Staff Contingency Plan Guideline For An Influenza Pandemic*” (March 2006 and October 2005).

This revision continues to be informed by the experiences of the 2009 influenza A (H1N1) pandemic. It also extends the concept of mainstreaming many crucial non-medical aspects of planning (especially business continuity) into the responsibilities of management and administration, allowing UN medical services to focus more on their primary areas of expertise and responsibility of health, from the previous version.

This Guideline remains a “living” document that will be updated as new research and information emerge.

## EXECUTIVE SUMMARY

1. This current “*United Nations Medical Directors (UNMD) Influenza Pandemic Guideline*” was prepared to assist those responsible for public health and medical preparedness in UN offices in responding to threats and occurrences of pandemic influenza. It replaces the May 2008 and October 2011 “*United Nations Medical Directors Influenza Pandemic Guideline*” as well as the October 2005 and March 2006 editions of the “*United Nations Medical Services Staff Contingency Plan Guideline for An Influenza Pandemic*”. This revised version draws on lessons learned from previous preparedness efforts as well as the influenza 2009 A(H1N1) pandemic and incorporates new scientific and technical information which have evolved since October 2011.
2. While this guideline is mainly intended for use by persons responsible for the development and implementation of health services in UN offices (particularly those in field duty stations), partners in areas outside of the health sector (e.g. human resources, finance, security, communications) should also have knowledge of the health-related strategies used to mitigate the consequences of a pandemic. Additionally, all offices’ pandemic plans should be tailored taking into account the local situation and the pandemic plans of local and/or national authorities. Recommendations that are superseded by the actions of local and/or national health authorities should be adapted accordingly.
3. While this guideline focuses on the medical aspects of pandemic planning and less on administration and business continuity, it does not diminish the importance of business continuity planning, which remains a cornerstone of organizational preparedness.
4. The following provides a summary for each of the Sections.

### Sections I-III

#### **I: Introduction**

Section I describes the purpose of the Guideline and provides the background and context for medical services pandemic planning within the wider UN organization, with emphasis on the importance of business continuity planning as part of overall pandemic preparedness. The five objectives for medical services pandemic planning are also outlined and remain unchanged from the previous 2011 edition .

#### **II. Elements of a Preparedness Plan**

Section II details the four key areas that offices need to consider when planning for an influenza pandemic. These are:

##### **1. Planning and Coordination**

The UN Medical Directors have developed a 3-level action plan for duty stations to serve as a platform for coordinating their actions. The action plan consists of three levels of response, taking into consideration progressively increasing levels of risk. While this can mirror the changing of the WHO global pandemic phases, decisions on which of the three modes is appropriate for a particular duty station will be made according to local circumstances.

The WHO currently uses the following four-phase approach for classifying pandemic periods.

- **Interpandemic phase:** This is the period between influenza pandemics
- **Alert phase:** This is the phase when influenza caused by a new subtype has been identified in humans. Increased vigilance and careful risk assessment at local, national, and global levels are characteristic of

this phase. If the risk assessments indicate that the new virus is not developing into a pandemic strain, a de-escalation of activities towards those in the interpandemic phase may occur.

- **Pandemic phase:** This is the period of global spread of human influenza caused by a new subtype. Movement between the interpandemic, alert, and pandemic phases may occur quickly or gradually, as indicated by the global risk assessment based primarily on virological, epidemiological, and clinical data.
- **Transition phase:** As the assessed global risk decreases, de-escalation of global actions may occur and reduction in response activities or movement towards recovery actions by countries may be appropriate according to their own risk assessments.

## 2. *Public and Occupational Health Measures*

This section details the non-pharmaceutical measures (e.g. hand hygiene, respiratory etiquette, social distancing, infection control measures, use of personal protective equipment, and travel restrictions) that UN personnel need to adhere to during a flu pandemic. UN personnel have been categorized into five risk categories depending on their risk of exposure to the virus in an occupational context. Specific types of personal protective equipment (PPE) should be made available to personnel depending on the risk category they fall under.

## 3. *Medical Interventions*

This section gives guidance to medical staff on providing medical consultation and advice, as well as information on the use and procurement of medications (antiviral drugs, antipyretics, antibiotics and vaccines). It also includes a recommendation to ensure access to antivirals<sup>1</sup> for 20% of UN personnel and dependents, with stockpiling only if local supply possibilities are assessed to be inadequate or unreliable. For children, pediatric strength oseltamivir capsules are available or alternatively, there are also instructions for [extemporaneous compounding of suspensions using adult capsules](#)<sup>2</sup> available. Details regarding replenishment of supplies can be found in paragraph 54.

## 4. *Communication and Training*

This section emphasizes the importance of education and communication with UN personnel to effect behavior change.

## III: Action Plan

Section III outlines a series of recommended measures to be taken by duty stations in accordance with three pandemic response modes: Level 1 “Readiness Mode”, Level 2 “Crisis Response Mode”, and Level 3 “Emergency Mode”. The recommended actions focus primarily on the medical aspects.

Please note that these three modes are not directly linked the WHO’s global pandemic phases and movement from one mode to another is dependent on local circumstances. All offices should update their current pandemic preparedness plans or business continuity plans with information from the action plan in Section III.

This guideline is a living document intended to promote a consistent and harmonized approach to medical services pandemic planning in the UN System. Robust preparedness for the next pandemic requires coordination with partners outside of the with health area and active engagement of all stakeholders to refine and better coordinate planning is strongly recommended.

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<sup>1</sup> Antivirals stockpiles, if necessary, could comprise of all oseltamivir, or a mixture of oseltamivir and zanamavir in an 80:20 ratio.

<sup>2</sup> Instructions for extemporaneous compounding of suspension using adult dosage:

[https://www.pphsn.net/Outbreak/InfluenzaA\\_H1N1/Preparation\\_of\\_TAMIFLU\\_for\\_Oral\\_Suspension.pdf](https://www.pphsn.net/Outbreak/InfluenzaA_H1N1/Preparation_of_TAMIFLU_for_Oral_Suspension.pdf)

## INTRODUCTION

1. The purpose of this document is to provide guidance for protecting the health of UN personnel and their dependents during an influenza pandemic. A timely and effective medical response across the UN system will be an important part of the UN's overall response to a pandemic and will contribute to the enabling of Organizations to fulfill their mandates.
2. As this guideline focuses on the medical aspects of planning and coordination, they should be seen in the context of organization-wide plans. Differences between Organizations from location to location will require local adaptation or modification of this guideline. Each UN Headquarters and duty station should develop its own plan within its customary Emergency Management structures and functional groups.

### Background

3. Influenza is a viral respiratory disease affecting humans and certain animals. Normally, people are infected by human influenza viruses and rarely by animal influenza viruses. Clinical disease ranges from infection with no symptoms to mild nonspecific illness (e.g. fever, headaches, fatigue. etc.) to a variety of life-threatening complications, including pneumonia and encephalitis/encephalopathy.
4. On occasion, influenza virus from one species can trade genetic material with influenza viruses from another species in a process known as "re-assortment". When viruses re-assort, a new hybrid is produced. This is known as antigenic "shift"<sup>3</sup>. If this new subtype has genes from human influenza viruses that make it readily transmissible from human to human, the virus can spread worldwide within months (or even weeks), leading to higher than usual levels of severe illness and mortality. In this situation, all age groups are vulnerable to infection, and there could be disruption in all sectors of society. Such a situation is called an influenza "pandemic". Pandemics are different from the usual influenza seasons and happen relatively infrequently.
5. Recent history has shown that, given the high level of global travel in modern times, pandemic viruses can spread across much of the world within weeks, leaving little time for preparations.
6. In all three 20<sup>th</sup> century pandemics, substantially more young people died from pandemic influenza than during regular influenza seasons. In the 1918 pandemic, the highest death rates and the largest total number of deaths occurred in previously healthy young adults. Despite advances in medical technology, these patterns suggest that the next pandemic could have a substantial impact on the workforce. More recently, figures regarding influenza A (H1N1) 2009 shows that there have been more deaths among those under the age of 65 years, with the most severe illness being reported in persons with underlying medical conditions, including chronic lung disease, diabetes, cardiovascular disease, neurologic disease, and pregnancy. Further advice regarding pregnant women and influenza can be found at [WHO](#)<sup>4</sup>.
7. Depending on widely varying local medical infrastructures, vaccines and antiviral agents for pandemic influenza as well as antibiotics for treating secondary infections could be in short supply during the initial phases of a pandemic. New advances in vaccine development such as cell-based manufacturing technology have the potential of cutting weeks off the time required to begin vaccine production. However, until this

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<sup>3</sup> Note that there is also another type of change called antigenic "drift" i.e. small changes in the influenza virus's genes that happen continually over time as the virus replicates. An antigenic "drift" is the reason why influenza vaccine composition must be reviewed each year and updated as needed to keep up with evolving viruses.

<sup>4</sup> [http://www.who.int/csr/resources/publications/swineflu/h1n1\\_guidance\\_pregnancy/en/index.html](http://www.who.int/csr/resources/publications/swineflu/h1n1_guidance_pregnancy/en/index.html)

technology is widely adopted, it will still take several months or longer, using egg-based approaches, for a new pandemic specific vaccine to become widely available.

8. Depending on the severity of the viral strain, medical facilities could be overwhelmed by patients. Moreover, the health care workforce is likely to be reduced since health care workers will also become ill or need to stay at home to care for sick family members. Significant shortages of personnel may occur for weeks at a time disrupting essential community services.

9. Offices in the United Nations need to continue planning for the possibility of a pandemic, taking into consideration how they will reduce the risk to UN personnel, and continue to function under such conditions.

10. For more background information on influenza, see: [WHO's Influenza Page](#)

### Pandemic Preparedness Planning

11. In the organizational context, effective business continuity planning is the cornerstone of preparedness. Active reduction of the number of UN personnel on site is the most effective strategy the UN can implement to lower the risk of personnel exposure to sources of infection. The capability of an organization to function with only a minimal number of personnel available will ensure its ability to continue with critical functions when a pandemic, or any crisis, causes fewer personnel to be able to come to work. It is crucial for effective business continuity planning to involve all functional units of an organization and be coordinated and led from the highest levels of management.

12. Organizations that will be most resilient under pandemic conditions are those whose personnel are knowledgeable in methods to reduce their risk of exposure and infection, and are prepared to adapt their activities and processes to maintain critical functions with significantly reduced personnel presence. Again, this can only be achieved through organization-wide planning coordinated from the highest level, whilst taking into consideration the local situation.

13. As a guide to planning, particularly in health service provision to personnel, the following assumptions on infection rates and impact of the illness should continue to be utilized by duty stations.

***Table 1. Planning Assumptions***

<b><u>Parameter</u></b>	<b><u>Estimates</u></b>		<b><u>Cases per 1000 persons</u></b>
	<b><u>Range</u></b>	<b><u>Likely Estimate</u></b>	
<b>Illness rate (% total population)</b>	15-50%	20%	200
<b>Outpatient visit (% of ill cases)</b>	5-50%	10%	20
<b>Hospitalizations</b>	0.5-10%	2%	4

<b>(% of ill cases)</b>			
<b>Deaths (% of ill cases)</b>	0.25-10%	0.5%	1.0

### Objectives of Medical Planning

14. In the case of a pandemic, there are specific areas of medical planning that are the responsibility of the Medical Services.

15. The overall objectives of medical planning are that:

- UN personnel are aware of the most effective methods that they and their dependants can personally use to avoid infection, namely through strict adherence to hand hygiene, respiratory etiquette (covering coughs and sneezes), and social distancing;
- UN personnel know when, where, and how they and their dependants should seek medical advice and treatment in the case of suspected infection, and are able to receive advice and treatment when required;
- UN personnel who are expected to perform critical functions with high risk of occupational exposure have the knowledge and are appropriately equipped to minimize their risk of infection;
- Travelers are aware of the risks of contracting avian or pandemic influenza, and methods to minimize the risk of infection;
- UN personnel are vaccinated against seasonal influenza and, when available, pandemic influenza.

16. Methods and activities required to achieve these objectives will vary according to local circumstances, and especially according to the capabilities of local medical services to provide for the needs of UN personnel. Medical staff at country level should therefore select and adapt recommendations from these Guideline those which are relevant to their individual circumstances.

### Elements of a Preparedness Plan

17. In order to achieve the above objectives, the following elements will need to be considered:

- Planning and Coordination
- Public and Occupational Health Measures
  - Hand Hygiene / Respiratory Etiquette Social Distancing
  - Infection Control Measures
  - Appropriate use of Personal Protective Equipment (PPE)
  - Guidance for Safe Travel
- Medical Interventions
  - Medical Consultation and Advice
  - Medications
- Communication and Training

## Planning and Coordination

18. The UN Medical Directors Working Group recommends a 3-level pandemic response framework for coordination of medical actions at duty stations: a Level 1 Readiness Mode, a Level 2 Crisis Response Mode, and a Level 3 Emergency Mode. Changes from one mode to another will be triggered by several factors, including the epidemiological behaviour of the disease and its geographical distribution. It is possible for duty stations at different regions to be designated different modes depending on the need. The Action Plan in Section III utilizes this 3-level framework and outlines the specific actions to be taken by duty stations for each of the three modes.

## Public and Occupational Health Measures

### Hand Hygiene / Respiratory Etiquette

19. Respiratory illnesses such as influenza are predominantly spread by coughing, sneezing or touching contaminated surfaces (fomites). One of the most effective ways to reduce the risk of infection in any setting is to practice strict adherence to hand hygiene and respiratory etiquette (covering coughs and sneezes)<sup>5</sup>.

### Social Distancing

20. As influenza is predominantly spread through close contact with others, a cornerstone of avoiding infection under pandemic conditions is to reduce contact with potentially infected persons. As a general guideline, UN personnel should attempt to ensure that they do not come into close contact (< 1 meter or 3 feet) with any individual who is not known to be free of respiratory symptoms.

21. Through the implementation of business continuity plans, UN offices should ensure that only the minimum number of personnel necessary is at the workplace and that activity planning will minimize their contact with others. During times of restricted personnel at work, strict attention to commuting procedures will be required.

22. All UN personnel and their dependants must also follow the public health measures as advised by their local and/or national authorities (e.g. restrictions regarding public gatherings, schools, cinemas, public transportation etc.).

### Infection Control Measures

23. Planning for a pandemic necessitates the appropriate and thorough application of infection control measures, particularly in health care settings and in-home health care. [WHO's infection control recommendations in health care settings](#)<sup>6</sup> includes advice on the use of personal protective equipment for health care workers, design of isolation rooms, family member/visitor recommendations, transport outside of health care facilities, and recommendations on environmental cleaning and disinfection. Further advice regarding caring for the ill at home can also be found at CDC's "[Caring for Someone Sick](#)"<sup>7</sup>. All UN health care workers should employ standard precautions for all patients encountered. These are the basic level of infection control precautions which are to be used, as a minimum, in the care of all patients. Hand hygiene is a major component of standard precautions and one of the most effective methods of preventing transmission of pathogens

<sup>5</sup> CDC, Guideline for the key aspects of hand hygiene and respiratory etiquette relevant to the spread to influenza: <http://www.cdc.gov/flu/protect/habits.htm>

<sup>6</sup> [https://www.who.int/csr/disease/swineflu/guidance/healthcare\\_management/en/](https://www.who.int/csr/disease/swineflu/guidance/healthcare_management/en/)

<sup>7</sup> CDC, Caring for Someone Sick: <https://www.cdc.gov/flu/consumer/caring-for-someone.htm>

associated with health care. More information on WHO's standard precautions for infection control can be found at [https://www.who.int/csr/resources/publications/EPR\\_AM2\\_E7.pdf](https://www.who.int/csr/resources/publications/EPR_AM2_E7.pdf)

24. Given the uncertainty of the exact characteristics of a new pandemic strain, all aspects of preparedness planning for pandemic influenza must allow for flexibility and real-time decision-making that take new information into account as the situation unfolds. If the new virus is unusual in transmissibility, virulence, or in any other way, the UN Medical Directors, in alignment with the WHO, will provide updated infection control guidance.

### **Use of Personal Protective Equipment (PPE)**

25. Personal protective equipment (PPE) refers to specialized clothing or equipment used to prevent direct contact with the pandemic influenza virus and provide protection against direct contact with bodily fluids when providing care for patients. Examples of PPE include surgical masks (as recommended for droplet precaution) and gloves and gown (as recommended for standard and contact precaution). Recommendations for the selection and use of PPE by personnel depends on the characteristics and circumstances of their potential exposure to the virus, bodily fluids, and [contaminated environments](#)<sup>8</sup>.

26. An employer who requires certain personnel to conduct activities which may constitute a risk to health and safety (especially when other personnel are being advised to avoid those activities) is obligated to undertake all reasonable measures to reduce the risk to acceptable levels. While the first option to be explored should always be avoidance of high-risk areas, if exposure cannot be avoided, appropriate PPE should be used.

27. During times of minimized personnel presence, the non-medical workplace is not necessarily a high-risk area. It can, in fact, be considered as an environment of reduced risk provided that:

- The number of personnel is substantially reduced;
- UN personnel who come to work only do so if they are symptom free and have no known recent contact with infected persons;
- UN personnel coming to work ensure avoidance of close contact with others at all times, including during commuting. Commuting should not involve public transport or any other close contact (< 1 meter or 3 feet) with the general public;
- Working procedures are adapted to ensure that there is no close contact with personnel performing critical functions with high risk of occupational exposure, and if there is any sharing of equipment (e.g. telephones / keyboards etc.), that they are cleaned between uses.

28. UN personnel are considered to be in a higher risk occupational group if they are expected to perform activities bringing them into contact with known potentially infectious hazards which others are being advised to avoid.

29. Table 2 details the five basic Risk Categories that personnel can be classified into depending on the nature of their exposure to the virus. These are:

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<sup>8</sup> WHO, Infection prevention and control in health care for confirmed or suspected cases of pandemic H1N1 2009 and influenza –like illnesses: <http://www.who.int/csr/resources/publications/swineflu/swineinflcont/en/index.html>

**Risk Category 1:**

Medical staff who manage patients clinically and have direct or close contact (<1 meter or 3 feet) with known/suspected pandemic influenza patients or their infectious material.

**Risk Category 2:**

Other personnel with supportive duties in an area where close contact (<1 meter or 3 feet) with known/suspected pandemic influenza patients or their infectious material occurs (e.g. fever clinic). Examples of such personnel include:

- Medical administrative personnel;
- Security personnel in that area;
- Cleaning personnel required to clean potential contact surfaces in such areas.

**Risk Category 3:**

UN personnel who have close contact (<1 meter or 3 feet) with persons of unknown pandemic status. An example of this are “essential travelers” who will come into close contact with the general public in closed spaces, e.g. trains and airplanes.

**Risk Category 4:**

UN personnel who are symptomatic or infected with pandemic influenza (e.g. staff seeking consultation at the fever clinic).

**Risk Category 5:**

UN personnel with no known close contact (<1 meter or 3 feet) with known/suspected pandemic influenza patients or their infectious material.

30. Even within these risk groups, the risk is variable, and protective strategies should be graded and selected according to the specific circumstances of each group.

31. Once the need for PPE has been established, the type of equipment should be tailored according to the nature of the risk experienced by each particular group and the type of activities performed.

32. Table 2 below details the type of PPE that should be made available to UN personnel depending on their Risk Category for PPE<sup>9 10</sup>

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<sup>9</sup> WHO, Guidance Health Care Management:

[http://www.who.int/csr/disease/swineflu/guidance/healthcare\\_management/en/index.html](http://www.who.int/csr/disease/swineflu/guidance/healthcare_management/en/index.html)

<sup>10</sup> CDC, Prevention Strategies for Seasonal Influenza in Health Care Settings:

<http://www.cdc.gov/flu/professionals/infectioncontrol/healthcaresettings.htm>

**Table 2. Risk Categories for PPE**

Risk Cat.	Exposure Characteristics	Examples of Personnel	Surgical Masks	Gloves	Gown	Particulate Respirators (e.g. N95 masks)	Eye Protection (e.g. Goggles/ Face Shield)
1	Health care workers who manage patients clinically and have close contact (<1 meter) with known/suspected pandemic patients or their infectious material	E.g. Doctors, nurses who work in the fever clinic	✓	✓	✓	✓*	✓
2	Non-health care worker personnel who have close contact (<1 meter) with known/suspected pandemic patients or their infectious material	E.g. Security personnel, receptionist, cleaning staff who work in the fever clinic	✓	✓	✓	✗	✗
3	Personnel with close contact (<1 meter) with persons of "unknown" pandemic status	E.g. Essential duty travelers	✓	✗	✗	✗	✗
4	Personnel infected with pandemic influenza	E.g. Patients in the fever clinic	✓	✗	✗	✗	✗
5	Personnel with no known close contact (<1 meter) with known/suspected pandemic patients or their infectious material	E.g. Critical staff "quarantined" in work space, and not working in the fever clinic	✗	✗	✗	✗	✗

(\* See paragraph 41 on the use of particulate respirators)

33. Given the above guidance, UN personnel should be made aware that simply being at the workplace does not constitute an indication to use PPE, and that specific types of PPE will be made available to personnel depending on their risk of exposure to the virus.

34. Additionally, the use of any PPE in occupational context must be accompanied by training which includes procedures for donning on and off, handling and disposal of potentially contaminated items as well as effective hand washing.

### **Use of Surgical Masks**

35. There is very limited information on the use of surgical masks for the control of pandemic influenza in community settings (or at work). Thus, it is difficult to assess their potential effectiveness in controlling influenza in these settings. What is clear, however, is that the use of surgical masks is only one part of a combination of interventions that can be used to help reduce the spread of virus from an infectious to non-infected persons. As new information becomes available on the effectiveness of surgical masks in controlling influenza in community settings, this guidance document will be revised accordingly.

36. Instead of relying on the use of surgical masks, close contact (<1 meter or 3 feet) and crowded conditions should be avoided, whenever possible, during an influenza pandemic.
37. Surgical masks may be considered for use by individuals who enter crowded settings, both to protect their nose and mouth from other people's coughs and to reduce the wearer's likelihood of coughing on others. The time spent in crowded settings should be kept as short as possible.
38. Surgical masks should be worn by infected individuals when in contact with others to reduce the spread of infective droplets when coughing and sneezing. For this reason, surgical masks may be recommended for use by infected individuals during their time of contact with medical staff (Table 2).
39. Depending on availability, surgical masks may be provided to personnel caring for ill household members.<sup>11</sup> Results from studies assessing the use of masks at home to decrease the spread of infection, or the use of surgical masks by the caregiver during interaction with ill household members are not conclusive. However, some trials indicate that wearing masks may have some effect on the reduction of transmission<sup>12</sup>. This advice may change depending on the mode of transmission of the pandemic virus once it has emerged and the guidance on the use of masks will be updated accordingly. Use of surgical masks in other circumstances will be guided by the most recent evidence-based recommendations from infectious disease control authorities.
40. Any recommendation on the use of surgical masks must be accompanied by instruction on its proper use and disposal. (Annex 3)

### **Use of Particulate Respirators (e.g. NIOSH-certified N95, EU FFP2 or equivalent masks)**

41. Particulate respirators (e.g. NIOSH-certified N95, EU FFP2 or equivalent masks) provide a high degree of protection against infection if fitted properly and are appropriate for persons who are at unusually high risk of infection, particularly medical staff in close contact with infected patients when performing high risk procedures such as some aerosol generating procedures. Of note, WHO has updated its infection control Guideline<sup>13</sup> and recommended that particulate respirators (e.g. NIOSH-certified N95, EU FFP2 or equivalent masks) be used by health care workers only when aerosol-generating procedures are performed and not during routine care of pandemic influenza patients.<sup>14</sup> Particulate respirators must be specially fitted for the wearers ("fit-tested")<sup>15</sup> and wearers should be provided with a health assessment and training on the use of the device. A particulate respirator that has not been fitted properly may leave unprotected gaps between the respirator and the wearer's face which impairs its effectiveness.

### **Guidance for Safe Travel**

42. UN Offices should strictly follow WHO travel recommendations at the time of a pandemic. However, UN personnel should keep updated<sup>16</sup> for any travel restrictions and advisories.

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<sup>11</sup> <http://www.who.int/csr/resources/publications/Adviceusemaskscommunityrevised.pdf>

<sup>12</sup> Cambridge Core, "Face masks to prevent transmission of influenza virus: a systematic review", April 2010. Available at [http://journals.cambridge.org/download.php?file=%2FHYG%2FHYG138\\_04%2FS0950268809991658a.pdf&code=64c73edec223dbc75d1724b76fbc7feb](http://journals.cambridge.org/download.php?file=%2FHYG%2FHYG138_04%2FS0950268809991658a.pdf&code=64c73edec223dbc75d1724b76fbc7feb)

<sup>13</sup> WHO, "Infection prevention and control in health care for confirmed or suspected cases of pandemic (H1N1) 2009 and influenza-like illnesses", 16 December 2009. Available at <http://www.who.int/csr/resources/publications/swineflu/swineinflcont/en/>

<sup>14</sup> [https://www.who.int/csr/resources/publications/cp150\\_2009\\_1612\\_ipc\\_interim\\_guidance\\_h1n1.pdf?ua=1](https://www.who.int/csr/resources/publications/cp150_2009_1612_ipc_interim_guidance_h1n1.pdf?ua=1)

<sup>15</sup> [https://www.cdc.gov/niosh/npptl/topics/respirators/disp\\_part/respsource3fittest.html](https://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/respsource3fittest.html)

<sup>16</sup> WHO Travel Advisories are available at <https://www.who.int/ith/en/>

43. If an organization feels that a particular travel is essential at times when Level 2 Crisis Response Mode or Level 3 State of Emergency Mode has been declared in the duty station/country, and if travel is possible, these “essential duty travelers” may be exposed to increased risk of infection through increased contact with other individuals. In such cases, strict adherence to hand hygiene, respiratory etiquette (covering coughs and sneezes) measures and the provision of appropriate PPE is recommended. The provision of post exposure prophylactic medication to travelers may be considered based on the individual’s medical history and their risk of complications from influenza (those in high risk categories), their degree of exposure, and the medical recommendations at that time (depending on the severity of the illness).

44. Due to the risks of infection during travel, and potential problems of travel availability during the time of a pandemic, it is possible that UN personnel may be required and advised to stay put at their duty station. UN personnel should ensure that they have sufficient emergency food supplies, water, prescribed medication, medical kits and other essentials to last 6 weeks until a pandemic wave has passed.

## Medical Interventions

### **Medical Consultation and Advice**

45. If possible, the preferred option for UN personnel to obtain medical consultation and advice is through the standard local medical infrastructure. Each duty station needs to provide clear guidance to their personnel on how to do that. Each country team, in consultation with the appropriate government offices, should have already identified the most appropriate local health care facilities to treat UN personnel and dependents in case of an influenza pandemic. Information including what to do if they or their family members have flu-like symptoms, which healthcare facilities to go to, whom to notify, etc. should be clearly communicated to all UN personnel. As influenza pandemics can continue for more than a year, it is important that this information is reiterated during the course of the pandemic and whenever new personnel join the office.

46. If the local medical infrastructure is inadequate or proves unable to cope with demand in a pandemic circumstance, the local UN medical service should prepare to provide support to the extent feasible. Again, clear guidance should be available for personnel on how to access such services. Requests for medical evacuation of severe cases that cannot be dealt with locally will be dealt with according to the established practice, rules and regulations. It should be noted, however, that medical evacuation in the event of a pandemic may not be possible due to public health regulations and the extraordinary logistic difficulties of transporting infectious persons safely, especially across borders.

47. Depending on circumstances, it may be appropriate to establish a consultation area (fever clinic) on UN premises. This should be in an area that allows separation of personnel coming to the building for consultation, and healthy personnel coming to work to perform essential activities. Medical staff at fever clinics would, for example, give advice on infection control, dispense antiviral therapy, and organize referrals to designated local hospitals as appropriate.

48. Guidance for medical staff on the assessment and treatment of pandemic influenza cases is available from WHO at [https://www.who.int/csr/resources/publications/swineflu/clinical\\_management/en/](https://www.who.int/csr/resources/publications/swineflu/clinical_management/en/)

49. From the time that pandemic influenza cases appear in the country/region of a duty station and until the pandemic alert has been officially ended, all UN personnel in the affected area should check their body temperature at least once daily. If they note a temperature of 38°C or higher, or are experiencing other symptoms of influenza, they should seek medical assessment through the channels identified in the Country Team plan. The management of UN personnel recently exposed to infected cases (i.e. “contacts”) will be

provided to duty stations as the situation changes. However, the general principles of managing contacts are based upon tracing and monitoring the contacts. Identified contacts should take their temperature twice a day, and if they develop a fever or other flu like symptoms, they should notify their healthcare provider.

## **Medications**

### ***Antiviral Medications***

50. Neuraminidase inhibitors, a group of antiviral medications, are widely considered to be the best available option for the pharmacological mitigation of the morbidity and mortality of an influenza pandemic. It is important to note that the susceptibility of a viral strain that has not yet emerged cannot be assessed with any certainty. At this time, the evidence that is available suggests that oseltamivir, when administered promptly especially within 48 hours from the time of symptom onset, can reduce the duration of viral replication and improve the prospects of survival. Information regarding the safety and efficacy of treating children and pregnant women is now available<sup>17 18</sup>. In general, during a pandemic situation, the use of antiviral medicines provides benefits which significantly outweigh any theoretical risks in these patient groups, and antiviral medicines could be given, in appropriate doses, to treat pregnant women and children under the age of one year with clinically diagnosed influenza.<sup>19</sup>

51. In an occupational health context, an employer requiring a particular group of personnel to be exposed to risk has a duty to take measures to reduce that risk to the extent feasible. The use of antivirals should never be considered as an “activity enabling” strategy (i.e. the activity is considered acceptable due to the protective effect of medication). As has been described above, the primary and most effective measure is behavioral avoidance of exposure followed by use of Personal Protective Equipment (PPE).

52. Pharmacological prophylaxis, either pre- or post-exposure, could provide additional protection for personnel at high risk of complications from influenza. Decisions to use (or not) under such circumstances will depend on information available at the time of a pandemic regarding virulence of the prevailing viral strain, its sensitivity to the medication as well as public health recommendations that may be released by WHO. Other factors that will influence the decision may include evaluating the risk of exposure related to undertaking activities that could produce infective aerosols.

53. Guidance for medical practitioners on the use of medications such as oseltamivir and zanamavir as treatment and prophylaxis can be found at WHO<sup>20</sup>.

54. When a pandemic emerges, supplies of medications useful against influenza, particularly antivirals, will be in high demand. Depending on local medical infrastructure and resources, supplies could be exhausted rapidly. UN offices should assess local supply possibilities now before a pandemic onset and ensure that their personnel will have access to sufficient supplies if needed. If local supplies are uncertain, stockpiling at country level could be considered. For planning purposes, it is estimated that a likely overall attack rate (i.e., the number of new symptomatic illnesses over one year) is 20% (Table 1). However, in assessing the adequacy of local supplies or the location of a potential UN stockpile, the following also need to be considered:

- Some people who will develop symptoms will not have pandemic influenza but may have colds or other respiratory infections. Some of the available supply are likely to be used to treat non-pandemic illnesses;

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<sup>17</sup> <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6001a1.htm>

<sup>18</sup> [http://www.who.int/csr/resources/publications/swineflu/h1n1\\_guidance\\_pregnancy.pdf](http://www.who.int/csr/resources/publications/swineflu/h1n1_guidance_pregnancy.pdf)

<sup>19</sup> [http://www.who.int/csr/resources/publications/swineflu/clinical\\_management/en/](http://www.who.int/csr/resources/publications/swineflu/clinical_management/en/) page 6

<sup>20</sup> [http://www.who.int/entity/csr/resources/publications/swineflu/h1n1\\_use\\_antivirals\\_20090820/en/index.html](http://www.who.int/entity/csr/resources/publications/swineflu/h1n1_use_antivirals_20090820/en/index.html)

- Some people develop uncomplicated influenza and may not require antiviral therapy
- Ease of distribution, and ways in which it can be ensured that medications will reach those who need it, will vary between duty stations.

55. Currently, it is recommended that Country Team plans **ensure a supply of antivirals to cover one treatment course for 20% of UN personnel and their recognized dependants**. This may be achieved simply through access to local supplies, or by stockpiling if local supply is considered inadequate or unreliable. In addition, the use of antivirals for prevention (pre- or post-exposure prophylaxis) is no longer recommended to avoid the development of antiviral resistance. Therefore, the UN Medical Directors do not consider that there is sufficient indication to warrant procurement and/or stockpiling of antivirals for prophylactic purposes.

56. The UN Medical Directors have previously authorized the extension of oseltamivir shelf-life, provided that the storage conditions meet manufacturer's specifications. Current indications are that oseltamivir is an extremely stable compound and might still be effective for 10 years or longer. The UN Medical Directors recommend that current stockpiles should not be discarded even after reaching the 7-year date. Such oseltamivir stocks (kept for longer than 7 years) should not be used without specific authorization from the UN Medical Directors. As further data becomes available from the drug manufacturers, UN organizations will be advised accordingly.

57. The UN Medical Directors also recommend that all duty stations/organizations who have existing stockpiles of oseltamivir that are "expired" according to the manufacturer's labelled expiration date on the packaging or have passed the 7-year (post production) date should consider conducting a one-time laboratory testing of these lots to determine the safety and effectiveness of their stockpile. Such testing can be performed through the manufacturer.

58. The adult formulation of oseltamivir is not directly suitable for use in children who weigh less than 40 kg. Until recently, the only approved formulation for children was the pediatric syrup, stockpiling of which was hindered by the short shelf life<sup>21</sup>. This situation has been alleviated by the availability of oseltamivir in pediatric strength capsules, which have the same manufacturer's shelf life (7 years<sup>22</sup>). At the time of replenishment of current stockpiles, it is suggested that consideration be given to substituting a portion of the new stock with pediatric capsules in a quantity commensurate with the dependant profile at particular duty stations.

59. Oseltamivir and zanamivir are prescription medications that should be taken according to medical advice and not by self-medication. If deemed necessary to stockpile, the stocks of medications should ideally be under the responsibility of the UN Medical Service physician at the duty station. In duty stations where UN medical staff are not available, the organizations' representatives should hold the stockpile if necessary and make the medication available to pre-identified physicians who will make prescription decisions.

60. Depending on the situation, certain duty stations may have substantial security concerns in maintaining their stockpile (if necessary). For such stations, adequate security measures should be put in place to address this.

61. For current stockpiles of oseltamivir, the storage area should be dry, and have a temperature that does not exceed 25°C. For more information, refer to the manufacturer's instructions and recommendations on

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<sup>21</sup> Usually only 18 months from the time of acquisition.

<sup>22</sup> Assuming storage under proper conditions as outlined in manufacturer's instructions.

storage and disposal. Please follow [WHO Guideline<sup>23</sup>](#) on disposal of medications. If storage conditions have not met the above conditions, the medication's manufacturer may be able to perform tests to determine the efficacy of the medication. And if results are satisfactory, shelf life could be extended with approval from the UN Medical Directors.

62. In cases where it has not been possible to donate antiviral supplies prior to expiry<sup>24</sup>, and where an extension of shelf life has not been made, [WHO's Guideline<sup>25</sup>](#) on the safe disposal of unusable pharmaceuticals should be strictly followed.

### ***Antipyretics and Antibiotics***

63. In most febrile diseases, supportive care using antipyretics, such as paracetamol or acetaminophen, can be done for symptom relief of pain and to control fever. Salicylates (such as aspirin or aspirin containing products) should not be used in children and young adults (aged <18) due to the risk of Reyes syndrome. Antipyretics are widely available and no particular stockpile is recommended.

64. Previous pandemics of 1918, 1957, and 1968 were associated with high rates of secondary bacterial infections, particularly pneumonia, which was a major cause of death. In the 2009 H1N1 influenza pandemic, bacterial pneumonia, usually caused by *Staphylococcus aureus* (including both methicillin-susceptible and methicillin-resistant strains), *Streptococcus pneumoniae*, *S. Pyogenes* and sometimes other bacteria, was suspected or diagnosed in 20-24% of ICU patients and found in 26-38 % of patients who died, often in association with a short clinical course. In some cases, death from the 2009 H1N1 influenza virus and bacterial co-infection occurred within 2-3 days. The antibiotics treatment should be targeted to cover the above-mentioned pathogens, which are often common pathogens of community acquired pneumonia (including *Haemophilus influenzae*). The choice of antibiotics should consider the local profile of antimicrobial resistance of these pathogens and could include penicillin G, macrolides, erythromycin, 1<sup>st</sup> & 2<sup>nd</sup> generation cephalosporins, ampicillin, amoxicillin, and if MRSA is suspected, vancomycin or linezolid, for example. As the antibiotics recommended for these bacterial infections are utilized for many other medical conditions and are generally in good supply, it is anticipated that availability under pandemic conditions will be better than for antivirals and, therefore, are not generally recommended to be stockpiled. Should agencies be concerned about access to local supplies, this should be addressed through the usual medical procurement channels for that location.

65. For agencies/organizations that have previously stockpiled antibiotics, please note that unused antibiotics should be donated, in accordance with [WHO Guideline<sup>37</sup>](#), prior to their expiry dates to UN Dispensaries, UN Examining Physicians, or local healthcare facilities whenever possible. As previously stated, agencies/organizations should only replace these as part of a specific pandemic stockpile if advised by their medical services to do so.

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<sup>23</sup> WHO "Guideline for Safe Disposal of Unwanted Pharmaceuticals in and After Emergencies" 1999:

[http://www.who.int/water\\_sanitation\\_health/medicalwaste/unwantpharm.pdf](http://www.who.int/water_sanitation_health/medicalwaste/unwantpharm.pdf)

<sup>24</sup> WHO and UNDP, "Guideline for Medicine Donations" 2011. Available at

[http://www.who.int/medicines/publications/med\\_donationsguide2011/en/index.html](http://www.who.int/medicines/publications/med_donationsguide2011/en/index.html)

<sup>25</sup> WHO, "Guideline for Safe Disposal of Unwanted Pharmaceuticals In and After Emergencies", 1999. Available at

[http://www.who.int/water\\_sanitation\\_health/medicalwaste/unwantpharm.pdf](http://www.who.int/water_sanitation_health/medicalwaste/unwantpharm.pdf)

## **Vaccines**

### ***Vaccine Against Seasonal Influenza***

66. While seasonal influenza vaccine will not protect against a pandemic strain and does not provide protection against other viruses that can cause respiratory illnesses, yearly immunization against seasonal influenza is an important part of pandemic influenza preparedness. As a public health measure, it reduces the statistical chance of seasonal and avian influenza virus' co-existence in one host – a condition conducive to recombination and emergence of a pandemic influenza strain. As a practical aid, it could reduce the number of individuals seeking treatment at the time of a pandemic (when seasonal influenza may also be circulating), thus sparing resources for pandemic influenza victims.

67. There is a vaccine available every year to protect against seasonal human influenza. This vaccine is recommended yearly before the start of the influenza season since the vaccine takes 14 days to confer protection. The vaccine is particularly important for personnel and dependants who are at high risk of complications from influenza or who will be traveling internationally. If supply allows, it should also be made available to all other UN personnel and their dependents. Influenza vaccination is a highly cost-effective countermeasure against seasonal influenza. Recommendations for seasonal influenza vaccines are made annually by the WHO<sup>26</sup>.

68. In most years, the northern and southern hemisphere vaccines are identical or very similar. Persons living in the northern hemisphere should be vaccinated with the northern hemisphere vaccine while those living in the southern hemisphere should be vaccinated with the southern hemisphere vaccine. For those living in equatorial regions, vaccinations will be with the vaccine locally available at that time. Vaccination programs should be commenced once the vaccine for the appropriate hemisphere becomes available. In the northern hemisphere, this will generally be in October and November, and in the southern hemisphere, from March to May. Travelers are advised to have the vaccine for the hemisphere where they are based.

### ***Pneumococcal Vaccine***

69. Pneumococcal vaccine should be considered for people at particular risk for the bacterial pneumonia complication of influenza, including those 65 years of age or older, those with heart failure, emphysema, diabetes mellitus, alcoholism, or chronic liver disease, and those who are otherwise immune compromised<sup>27</sup>. Persons who meet these criteria are advised to contact their usual health care providers for the vaccine. No UN stockpile is recommended.

### ***Vaccine Against Pandemic Influenza***

70. When a new pandemic virus strain emerges, there will be a focused effort by public health authorities and manufacturers worldwide to develop, distribute and administer an effective and specific pandemic vaccine. However, recent experience has demonstrated that the process is complicated and it takes a number of months before a vaccine becomes available.

71. WHO will closely follow the development, protective effect, and safety of any new pandemic vaccine, and will make recommendations on its use as appropriate. Under the best of circumstances, given the global population size and limited production capacity for influenza vaccine, any pandemic vaccine will initially be in short supply. Demand is likely to far exceed availability, and priorities for administration will need to be

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<sup>26</sup> Available at <http://www.who.int/influenza/vaccines/virus/recommendations/en/>

<sup>27</sup> For more information, please refer to the latest "WHO International Travel and Health Publication, available at <http://www.who.int/ith/en/>

applied. Additionally, countries may differ in their vaccination strategies and policies, and duty stations should take into account their individual situation during the planning process.

72. It is presumed that priority recipients will include those involved with direct clinical contact with infected patients, personnel required to maintain critical functions with high risk of exposure, and those at particularly high risk of serious complications, such as the elderly and those with chronic diseases. However, there may be modifications to the list of “at-risk” groups as information is gathered on the nature of the pandemic virus and the groups most at risk of severe illness and death. Based on current WHO recommendations, guidance on the priority for administration of a pandemic vaccine is as follows:

a. Persons with Close Contact with Known/Suspect Patients:

- i. Medical personnel who, as part of their duties, manage infected patients clinically and have close contact (<1 meter or 3 feet) with known/suspected patients or their infectious material (Risk Category 1 - Table 2);
- ii. Other personnel who, as part of their duties of performing critical functions, have close contact (<1 meter or 3 feet) with known/suspected patients or their infectious material (Risk Category 2 - Table 2);

b. Other Persons at Risk

- i. Remaining personnel performing critical functions;
- ii. Persons at high risk of severe or fatal outcomes following influenza infection.

73. In terms of prioritization of vaccine administration, WHO’s Strategic Advisory Group of Experts<sup>28</sup> during the last influenza A (H1N1) 2009 pandemic made the following recommendations:

- i. All countries should immunize their health-care workers as a first priority to protect the essential health infrastructure.
- ii. As vaccines available initially will not be sufficient, a step-wise approach to vaccinate particular groups may be considered. SAGE suggested the following groups for consideration, noting that countries need to determine their order of priority based on country-specific conditions: pregnant women; those aged above 6 months with one of several chronic medical conditions; healthy young adults of 15 to 49 years of age; healthy children; healthy adults of 50 to 64 years of age; and healthy adults of 65 years of age and above.

### **Communication and Training**

74. The importance of effective communication for pandemic preparedness cannot be overstated. The most effective strategies that both individuals and organizations can implement to reduce the impact of a pandemic are those aimed at changing behavior and exposure to risk. Behavior can only be changed through education and communication. The importance of strict adherence to hand hygiene, respiratory etiquette (covering coughs and sneezes), social distancing and methods to achieve it in individual and organizational context should be key components of pandemic preparedness and its associated communication plan.

<sup>28</sup> [http://www.who.int/csr/disease/swineflu/notes/h1n1\\_vaccine\\_20090713/en/](http://www.who.int/csr/disease/swineflu/notes/h1n1_vaccine_20090713/en/)

75. The threat of an influenza pandemic will create a high demand for information both within the UN and from external partners. Clear internal and external communication will be essential to deal rapidly with rumors and anxieties. It will be vital to coordinate the information that is circulated by headquarters, regional and country offices. A country communication plan, in association with headquarters and the regional offices, needs to be prepared to provide appropriate information rapidly to all UN personnel. This should identify who is responsible for coordinating UN information and communications. All UN medical services should be ready to contribute the medical information that will be part of such communication.

76. All UN medical personnel providing health care to UN personnel should be knowledgeable regarding the contingency plan for an influenza pandemic and be provided with all available and current medical guidelines.

### **Action Plan**

77. Table 3 outlines the series of actions to be taken by duty stations according to three modes of response, taking account of progressively increasing levels of risk.

78. In conjunction with the UNSIC, the UN Medical Director will advise the medical staff and/or Country Team at each duty station which mode is appropriate to their local circumstances, in light of the unfolding pandemic situation in their region/country:

#### **LEVEL 1: READINESS MODE**

At the time of writing, all duty stations are in this “Readiness” mode. It is necessary to prepare, review and continuously update medical response plans and strategies. During this mode, duty stations should have a pandemic contingency plan in place for the duty station and test it regularly.

#### **LEVEL 2: CRISIS RESPONSE MODE**

In this mode, time to ensure preparedness is limited, and an urgent scaling up of all preparedness actions is indicated, including testing of medical response procedures. Duty stations in the area of outbreaks need to be ready to ramp up quickly to the next level of preparedness.

#### **LEVEL 3: EMERGENCY MODE**

In this mode, full implementation of medical response measures is required due to the fact that there are cases of pandemic flu in the vicinity of the duty station.

79. UN Offices should develop or update their medical pandemic preparedness plans to address the recommendations made here. Plans should also be tailored to take into account of and be consistent with preparedness activities and plans of local and/or national authorities.

**Table 3. Action Plans****LEVEL 1: READINESS MODE**

<b>ACTIONS FOR ALL DUTY STATIONS</b>	
<b>Preparedness Planning and Coordination</b>	<input type="checkbox"/> Senior officials of duty station should be aware of the importance of preparing for a flu pandemic, its possible outcomes and related resource requirements for preparedness.
	<input type="checkbox"/> Each duty station should assess its preparedness status for a pandemic and identify any actions needed to fill gaps.
	<input type="checkbox"/> Collaborate in advance with relevant stakeholders and partners (e.g. national government, health authorities) for pandemic preparedness.
	<input type="checkbox"/> If present, UN medical personnel at duty station should develop a business continuity plan for its own health services, allowing performance of critical functions with reduced number of personnel.
	<input type="checkbox"/> Duty stations should develop a pandemic contingency plan for the duty station and ensure regular testing and updating of the plan.
	<input type="checkbox"/> UN personnel in the duty station should be familiar with the duty station's pandemic plan, procedures and protocols, and all UN personnel should be prepared to perform assigned duties and responsibilities in the event of a flu pandemic.
<b>Hand Hygiene, Respiratory Etiquette &amp; Social Distancing</b>	<input type="checkbox"/> UN personnel should have knowledge of prevention strategies for dealing with a flu pandemic, including hand hygiene, respiratory etiquette (covering coughs and sneezes), and social distancing.
<b>PPE</b>	<input type="checkbox"/> The number of UN personnel in each Risk Category (Table 2) should be quantified. If necessary, and local supply is unavailable to meet needs, procure and stockpile sufficient stocks of the required PPE for these personnel.
	<input type="checkbox"/> Ensure UN personnel who will need to use it are trained on the proper use and disposal of PPE.
	<input type="checkbox"/> Where local healthcare conditions indicate the need, develop plans for PPE distribution.
<b>Travel</b>	<input type="checkbox"/> Be ready to provide flu pandemic education to travelers and issue travel advisories, precautions, or restrictions as necessary.
<b>Medical Consultation and Advice</b>	<input type="checkbox"/> Assess capability of local medical systems to meet expected needs during a pandemic and pre-identify and source supporting resources required.
	<input type="checkbox"/> For pre-identified supporting outpatient and hospital-based healthcare facilities or providers, prepare contractual agreements and develop specific protocols for UN personnel to use these facilities.
	<input type="checkbox"/> If relevant, UN medical personnel at duty station should be updated and trained on identification of suspect cases, clinical management and infection control.

	<input type="checkbox"/> Where local health care conditions indicate the need, develop plans for creating local auxiliary outpatient “fever clinics” for UN personnel and their recognized dependents designed to reduce the risk of transmission of a flu pandemic.
	<input type="checkbox"/> If relevant, UN health facility in the duty station should develop procedures to consult, examine, and prescribe and dispense medications in a flu pandemic situation when support to local medical services is required
	<input type="checkbox"/> In coordination with local health authorities, ensure surveillance mechanism to identify suspect cases among staff is in place.
<b>Seasonal Influenza Vaccine</b>	<input type="checkbox"/> Promote and facilitate an annual seasonal influenza vaccination programme for UN personnel and their dependants.
<b>Pandemic Vaccine</b>	<input type="checkbox"/> Prioritize and identify the groups who will receive the flu pandemic vaccine once it becomes available (Para 70).
<b>Antivirals</b>	<input type="checkbox"/> Monitor any updated guidance on strategies, effectiveness, and priorities for use of antivirals for flu pandemic treatment.
	<input type="checkbox"/> Consider local supply conditions and ensure availability and accessibility of a stockpile of antivirals to treat 20% of UN personnel and recognized dependants
	<input type="checkbox"/> Ensure stockpiled antivirals (if necessary) are stored appropriately and securely.
	<input type="checkbox"/> If necessary, have plans for distribution and administration of antivirals to UN personnel for treatment.
<b>Antipyretics</b>	<input type="checkbox"/> Antipyretics, such as paracetamol are usually readily available. However, UN personnel should be encouraged to stock enough for their own needs.
<b>Antibiotics</b>	<input type="checkbox"/> Identify sources of antibiotics for outpatient treatment of secondary bacterial infections. Agencies should advise their medical services should access to or availability be identified as unreliable.
<b>Communication and Training</b>	<input type="checkbox"/> Update all staff on status of pandemic and preparedness activities as necessary.
	<input type="checkbox"/> Develop in advance pandemic prevention presentation materials that can be used in briefings or during other communication initiatives.
	<input type="checkbox"/> Disseminate to all UN personnel relevant materials to support a pandemic response. Such materials may include: <ul style="list-style-type: none"> <li>• The UN Medical Directors Influenza Pandemic Guideline</li> <li>• Duty Station's Pandemic Plan</li> <li>• General Information for all Staff (Annex 1)</li> <li>• Local Healthcare Arrangements</li> <li>• Location of Fever Clinics</li> <li>• Distribution of Medical Supplies...etc.</li> </ul>

<b>LEVEL 2: CRISIS RESPONSE MODE</b>
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<b>ACTIONS FOR ALL DUTY STATIONS</b>
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<b>Preparedness, Planning and Coordination</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Senior officials of duty stations should be reminded of importance of preparing for a flu pandemic, its possible outcomes and related resource requirements for response.</li> <li><input type="checkbox"/> Each duty station should assess its general and medical preparedness status for a pandemic and identify immediate actions needed to fill gaps.</li> <li><input type="checkbox"/> Ensure coordination and information sharing among all relevant local stakeholders and partners (e.g. national government, health authorities)</li> <li><input type="checkbox"/> If present, UN medical personnel at duty station should ensure its business continuity plan for its own health services is updated and ready to be operationalized at short notice.</li> <li><input type="checkbox"/> The duty station's pandemic contingency plan should be quickly reviewed and updated and tested.</li> <li><input type="checkbox"/> All UN personnel should be re-familiarized with your duty station's pandemic contingency plan, procedures, and protocols, and be ready to perform assigned duties and responsibilities when called for.</li> </ul>
<b>Hand Hygiene, Respiratory Etiquette &amp; Social Distancing</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Urgently raise awareness amongst all UN personnel of flu prevention strategies and implement actions related to improving hand hygiene, respiratory etiquette (covering coughs and sneezes) and social distancing amongst personnel.</li> </ul>
<b>PPE</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Verify again the number of UN personnel in each Risk Category (Table 2) and ensure access and availability of sufficient PPE for these personnel.</li> <li><input type="checkbox"/> Ensure PPE are available and accessible at short notice and stored appropriately and securely.</li> <li><input type="checkbox"/> Provide refresher training to UN personnel on the proper use and disposal of PPE.</li> <li><input type="checkbox"/> If necessary, distribute PPE to UN personnel according to risk categories and distribution plan.</li> </ul>
<b>Travel</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Defer all non-critical travel in accordance with WHO travel advisories.</li> <li><input type="checkbox"/> Defer all travel of UN personnel presenting with influenza-like symptoms</li> <li><input type="checkbox"/> Provide education to travelers who are identified to conduct critical travel, and issue travel advisories, precautions, or restrictions if warranted by disease epidemiology.</li> </ul>
<b>Medical Consultation and Advice</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Assess capacity of medical systems to meet expected needs during a pandemic and ensure availability of supporting resources required.</li> <li><input type="checkbox"/> Confirm with pre-identified supporting healthcare providers that contractual agreements and protocols for use of their facilities by staff are still valid. Identify new providers/facilities if necessary.</li> <li><input type="checkbox"/> Where planned for, conduct exercises of fever clinics to ensure operational readiness.</li> <li><input type="checkbox"/> If present, UN medical personnel should remain updated and be trained on the latest guidance on identification of flu cases, clinical management and infection control.</li> </ul>

**ACTIONS FOR ALL DUTY STATIONS**

	<input type="checkbox"/> In coordination with local health authorities, ensure surveillance mechanism to identify suspect cases among staff in place.
<b>Seasonal Influenza Vaccine</b>	<input type="checkbox"/> Monitor and implement updated guidance on seasonal influenza vaccine usage.
<b>“Pandemic” Vaccine</b>	<input type="checkbox"/> Update priority groups who will receive the Pandemic vaccine when it becomes available.
	<input type="checkbox"/> If available, acquire pandemic vaccine and vaccinate staff according to priority groups, as necessary.
<b>Antivirals</b>	<input type="checkbox"/> Monitor and disseminate updated guidance on strategies, effectiveness and priorities for use of antivirals.
	<input type="checkbox"/> If necessary, ensure stockpiled antivirals are available at short notice, accessible and stored appropriately and securely.
	<input type="checkbox"/> Depending on prevailing guidance and situation of local duty station, it may be necessary to distribute/administer antiviral medications to UN personnel for treatment.
<b>Antipyretics</b>	<input type="checkbox"/> Remind UN personnel to procure their own supplies of antipyretics.
<b>Antibiotics</b>	<input type="checkbox"/> Ensure antibiotics are accessible locally. Agencies should advise their medical services should access or availability be identified as unreliable.
<b>Communication and Training</b>	<input type="checkbox"/> Update all UN personnel on status of pandemic and preparedness and response activities in the duty station.
	<input type="checkbox"/> Review, update and disseminate to all UN personnel relevant materials to support a pandemic response. Such materials may include: <ul style="list-style-type: none"> <li>• The UN Medical Directors Influenza Pandemic Guideline</li> <li>• Duty Station's Pandemic Plan</li> <li>• General Information for all Staff (Annex 1)</li> <li>• Local Healthcare Arrangements</li> <li>• Location of Fever Clinics</li> <li>• Distribution of Medical Supplies...etc.</li> </ul>

**LEVEL 3: EMERGENCY MODE****ACTIONS FOR ALL DUTY STATIONS**

<b>Planning and Coordination</b>	<input type="checkbox"/> Senior officials of duty stations should be reminded of importance of preparing for a flu pandemic, its possible outcomes and related resource requirements for response, and implement any actions needed to fill identified gaps in preparedness/response.
	<input type="checkbox"/> Ensure coordination and information sharing among all relevant local stakeholders and partners (e.g. national government, health authorities).
	<input type="checkbox"/> Implement business continuity plans for the duty station.

<b>Hand Hygiene, Respiratory Etiquette &amp; Social Distancing</b>	<input type="checkbox"/> Urgently ensure awareness among UN personnel of pandemic prevention strategies of hand hygiene, respiratory etiquette (covering coughs and sneezes) and social distancing and implement as needed in the workplace.
<b>PPE</b>	<input type="checkbox"/> Ensure adequate PPE are available, accessible and stored appropriately and securely, and issued to identified risk groups, if necessary.
	<input type="checkbox"/> Provide refresher training to UN personnel on the proper use (donning and doffing) and disposal of PPE
<b>Travel</b>	<input type="checkbox"/> Defer all non- critical travel
	<input type="checkbox"/> Defer all travel of UN personnel presenting with influenza-like symptoms
	<input type="checkbox"/> Provide education to travelers who are identified to conduct critical travel, and issue travel advisories, precautions, or restrictions if warranted by disease epidemiology.
<b>Medical Consultation and Advice</b>	<input type="checkbox"/> Review and revise, as needed, plans for healthcare support to staff.
	<input type="checkbox"/> Confirm with pre-identified supporting healthcare providers that contractual agreements and protocols for use of these facilities by staff are still valid and can be immediately implemented. Identify new providers/facilities as needed.
	<input type="checkbox"/> Where planned for, operate the fever clinics as required.
	<input type="checkbox"/> If relevant, UN medical personnel in duty station should be updated and trained on latest guidance on flu clinical diagnosis and management, and infection control in healthcare and home settings.
	<input type="checkbox"/> Initiate surveillance for mortality and severe morbidity among UN personnel.
<b>Pandemic Vaccines</b>	<input type="checkbox"/> Review and revise, as needed, priority groups and strategies for vaccination.
	<input type="checkbox"/> If available, acquire pandemic vaccine, and vaccinate according to priority groups.
<b>Antivirals</b>	<input type="checkbox"/> If necessary, ensure stockpiled antivirals are immediately available, accessible and stored appropriately and securely.
	<input type="checkbox"/> Monitor and disseminate updated guidance on strategies, effectiveness and priorities for use of antivirals.
	<input type="checkbox"/> Ensure antivirals are distributed / administered to indicated for treatment.
	<input type="checkbox"/> Track antiviral distribution to UN personnel and any adverse events.
<b>Communication and Training</b>	<input type="checkbox"/> Update all UN personnel on status of pandemic and response activities through regular briefings.
	<input type="checkbox"/> Continue public education activities, reinforcing education on care seeking and home care.
	<input type="checkbox"/> Review, update and disseminate to all UN personnel relevant materials to support a pandemic response. Such materials may include: <ul style="list-style-type: none"> <li>• The UN Medical Directors Influenza Pandemic Guideline</li> <li>• Duty Station's Pandemic Plan</li> <li>• General Information for all Staff (Annex 1)</li> <li>• Local Healthcare Arrangements</li> <li>• Location of Fever Clinics</li> <li>• Distribution of Medical Supplies...etc.</li> </ul>

## **Annex 1: Additional Information Resources**

### **Hand Hygiene and Respiratory Etiquette**

- <http://www.who.int/gpsc/tools/GPSC-HandRub-Wash.pdf>
- <http://www.cdc.gov/cleanhands/>
- <http://www.cdc.gov/flu/protect/habits.htm>

### **Infection Control Guidance**

Given some uncertainties about the characteristics of a new pandemic strain, all aspects of preparedness planning for pandemic influenza must allow for flexibility and real-time decision-making that takes new information into account as the situation unfolds. The specific characteristics of a new pandemic virus - virulence, transmissibility, initial geographic distribution, clinical manifestation, risk to different age groups and subpopulations, and drug susceptibility—will remain unknown until a pandemic is underway. If the new virus is unusual in any of these respects, the UN Medical Service will provide updated infection control guidance. Available evidence suggests that transmission of human influenza viruses occurs through multiple routes including large droplets, direct and indirect contact, and droplet nuclei. However, observational studies conducted in health-care facilities suggest that droplet transmission is the major mode of transmission in that setting. Please refer to WHO guidance in the links below.

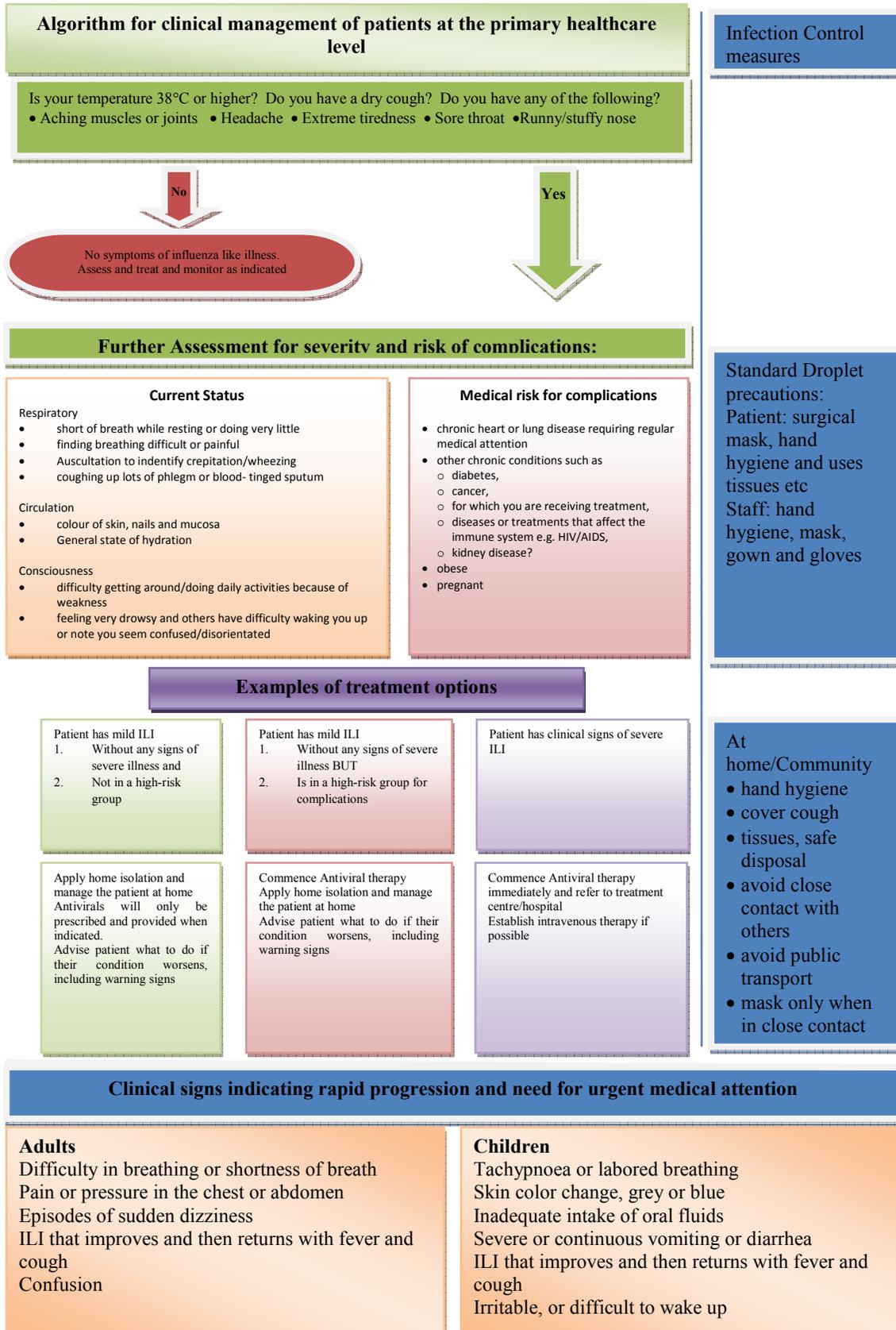
- [http://www.who.int/csr/resources/publications/cp150\\_2009\\_1612\\_ipc\\_interim\\_guidance\\_h1n1.pdf](http://www.who.int/csr/resources/publications/cp150_2009_1612_ipc_interim_guidance_h1n1.pdf)
- [http://www.who.int/csr/bioriskreduction/infection\\_control/publication/en/](http://www.who.int/csr/bioriskreduction/infection_control/publication/en/)

### **Clinical Management of Infected Persons**

- [https://www.who.int/influenza/patient\\_care/en/](https://www.who.int/influenza/patient_care/en/)

## Annex 2: Algorithm for Clinical Management of Patients with mild to moderate pandemic influenza

(based on the East Mediterr Health J. 2011;17(4):342-8. "Clinical management Guideline for pandemic (H1N1) 2009 virus infection in the Eastern Mediterranean Region: technical basis and overview" available at [http://applications.emro.who.int/emhj/V17/04/17\\_4\\_2011\\_0342\\_0348.pdf](http://applications.emro.who.int/emhj/V17/04/17_4_2011_0342_0348.pdf))



Infection Control measures

Standard Droplet precautions:  
 Patient: surgical mask, hand hygiene and uses tissues etc  
 Staff: hand hygiene, mask, gown and gloves

At home/Community

- hand hygiene
- cover cough
- tissues, safe disposal
- avoid close contact with others
- avoid public transport
- mask only when in close contact

### Clinical signs indicating rapid progression and need for urgent medical attention

**Adults**

Difficulty in breathing or shortness of breath  
 Pain or pressure in the chest or abdomen  
 Episodes of sudden dizziness  
 ILI that improves and then returns with fever and cough  
 Confusion

**Children**

Tachypnoea or labored breathing  
 Skin color change, grey or blue  
 Inadequate intake of oral fluids  
 Severe or continuous vomiting or diarrhea  
 ILI that improves and then returns with fever and cough  
 Irritable, or difficult to wake up

### ANNEX 3: RECOMMENDATIONS ON PERSONAL PROTECTIVE EQUIPMENT<sup>29 30</sup>

The following types of PPE are recommended for health care workers providing care to avian or pandemic influenza-infected patients

- The use of PPE is mandatory if direct close contact with the patient is anticipated and when entering the room where aerosol-producing procedures in avian or pandemic influenza-infected patients are being performed.
- The PPE recommended when providing care to avian influenza-infected patients are:
  - Surgical mask
  - Particulate respirators that are at least as protective as NIOSH-certified N95, EU FFP2, or equivalent should be used when performing aerosol-generating procedures.
    - Appropriate procedures should be used to select a particulate respirator that fits well and a “user seal check” (see page 31) should be performed each time a disposable particulate respirator is worn.
    - Surgical masks do not provide protection against small-particle aerosols (droplet nuclei) and aerosol-generating procedures should be avoided as much as possible if a particulate respirator is not available.
  - Eye protection (face shield, visor, or goggles) if sprays/splashes of secretions are anticipated and for all aerosol-generating procedures. When providing care in close contact with a patient with respiratory symptoms (e.g. coughing/sneezing), sprays of secretions may occur, and eye protection should be used.
  - Clean, non-sterile ambidextrous gloves, which should cover the cuffs of the gown.
  - If cloth gowns are used, a waterproof apron should also be used if splashing of blood, bodily fluids, excretions, or secretions is anticipated.

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<sup>29</sup> WHO, “Infection Prevention and Control of Epidemic- and Pandemic-Prone Acute Respiratory Diseases in Health Care”, April 2014. Available at [http://www.who.int/csr/bioriskreduction/infection\\_control/publication/en/](http://www.who.int/csr/bioriskreduction/infection_control/publication/en/)

<sup>30</sup> WHO, “Avian Influenza, Including Influenza A (H5N1), in Humans: WHO Interim Infection Control Guideline for Health Care Facilities”, 10 May 2007. Available at [https://www.who.int/csr/resources/publications/cp150\\_2009\\_1612\\_ipc\\_interim\\_guidance\\_h1n1.pdf?ua=1](https://www.who.int/csr/resources/publications/cp150_2009_1612_ipc_interim_guidance_h1n1.pdf?ua=1)

## Putting On and Removing PPE

### Suggested Sequence for Putting on PPE (when all PPE items are needed)

#### How to put on PPE (when all PPE items are needed)



##### Step 1

- Identify hazards & manage risk. Gather the necessary PPE.
- Plan where to put on & take off PPE.
- Do you have a buddy? Mirror?
- Do you know how you will deal with waste?



##### Step 2

- Put on a gown.



##### Step 3a

- Put on face shield.

OR

##### Step 3b

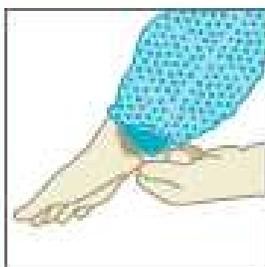
- Put on medical mask and eye protection (e.g. eye visor/goggles)



+



**Note:** If performing an aerosol-generating procedure (e.g. aspiration of respiratory tract, intubation, resuscitation, bronchoscopy, autopsy), a particulate respirator (e.g. US NIOSH-certified N95, EU FFP2, or equivalent respirator) should be used in combination with a face shield or an eye protection. Do user seal check if using a particulate respirator.



##### Step 4

- Put on gloves (over cuff).

## Suggested Sequence for Removal of PPE

### How to take off PPE

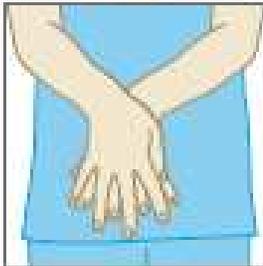


#### Step 1

- Avoid contamination of self, others & the environment
- Remove the most heavily contaminated items first

#### Remove gloves & gown

- Peel off gown & gloves and roll inside, out
- Dispose gloves and gown safely



#### Step 2

- Perform hand hygiene



#### Step 3a

##### If wearing face shield:

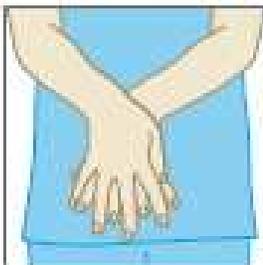
- Remove face shield from behind
- Dispose of face shield safely



#### Step 3b

##### If wearing eye protection and mask:

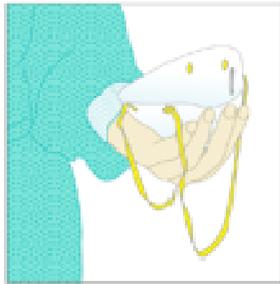
- Remove goggles from behind
- Put goggles in a separate container for reprocessing
- Remove mask from behind and dispose of safely



#### Step 4

- Perform hand hygiene

## Particulate Respirator User Seal Check



- 1** Cup the respirator in your hand with the nosepiece at your fingertips allowing the headbands to hang freely below your hand



- 2** Position the respirator under your chin with the nosepiece up



- 3** Pull the top strap over your head resting it high at the back of your head. Pull the bottom strap over your head and position it around the neck below the ears



- 4** Place fingertips of both hands at the top of the metal nosepiece. Mould the nosepiece (USING TWO FINGERS OF EACH HAND) to the shape of your nose. Pinching the nosepiece using one hand may result in less effective respirator performance



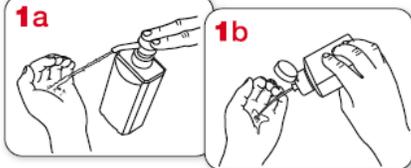
- 5** Cover the front of the respirator with both hands, being careful not to disturb the position of respirator

**5A Positive seal check**  
 • Exhale sharply. A positive pressure inside the respirator = no leakage. If leakage, adjust position and/or tension straps. Retest the seal.  
 • Repeat the steps until respirator is sealed properly

**5B Negative seal check**  
 • Inhale deeply. If no leakage, negative pressure will make respirator cling to your face.  
 • Leakage will result in loss of negative pressure in the respirator due to air entering through gaps in the seal

# Hand Hygiene Technique

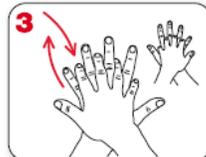
## How to handrub? WITH ALCOHOL-BASED FORMULATION



Apply a palmful of the product in a cupped hand and cover all surfaces.



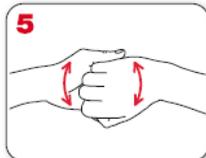
Rub hands palm to palm



right palm over left dorsum with interlaced fingers and vice versa



palm to palm with fingers interlaced



backs of fingers to opposing palms with fingers interlocked



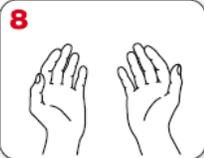
rotational rubbing of left thumb clasped in right palm and vice versa



rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa

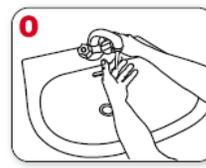


20-30 sec

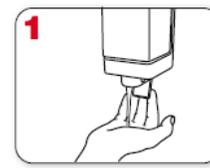


...once dry, your hands are safe.

## How to handwash? WITH SOAP AND WATER



Wet hands with water



apply enough soap to cover all hand surfaces.



rinse hands with water



dry thoroughly with a single use towel



use towel to turn off faucet



40-60 sec



...and your hands are safe.

## ANNEX 4: MEDICAL SUPPLIES FOR A PANDEMIC

Depending on local supply possibilities, duty stations may need to procure supplies in preparation for an influenza pandemic. This should be assessed as part of each UNCT's pandemic preparedness plan, with a designated organization taking the lead to ensure accessibility of supplies and proper storage of the stockpiles, as necessary. If deemed necessary to procure, the cost of procurement should be apportioned accordingly among the participating organizations.

If an agency is unable to participate in the joint procurement process, it is still envisaged, where possible, that their supplies will be stored and placed under the same responsibility as the rest of the UNCT supplies.

Stock control procedures should be put in place and carried out on a regular basis, for example, each month. Any loss due to damage etc. needs to be accounted for on the stock control form and be witnessed by two persons. This process will also assist in identifying in good time supplies that are due to expire within the coming months and allow for them to be donated prior to expiration date. Replacement of supplies should be carried out as part of the UNCT process and, if deemed necessary, the costs of doing so apportioned among the agencies accordingly.

In cases where it has not been possible to donate supplies prior to expiry, and where an extension of shelf life has not been implemented, WHO's guideline<sup>31</sup> on the safe disposal of unusable pharmaceuticals should be strictly followed.

**Table 4. Medical Supplies To Be Made Available for a Pandemic**

(As far as possible, sources should be pre-identified to supply each duty station's needs)

Description	Quantity	Notes
<b>Vaccines</b>		
Seasonal human flu vaccines <sup>32</sup>	For staff and dependants who are at high risk for complications from influenza or who will be traveling internationally. If supplies allow, it can also be made available to all other UN personnel and their recognized dependants.	Single dose pre-filled syringes should be procured instead of multi-dose vials
Pandemic strain vaccines	For Proposed Priority Groups for Pandemic Vaccine (Para. 72)	Not expected to be available for at least 6 months after the pandemic virus has been isolated

<sup>31</sup> WHO, "Guideline for Safe Disposal of Unwanted Pharmaceuticals In and After Emergencies", 1999. Available at [http://www.who.int/water\\_sanitation\\_health/medicalwaste/unwantpharm.pdf](http://www.who.int/water_sanitation_health/medicalwaste/unwantpharm.pdf)

<sup>32</sup> Annual recommendations made by WHO on the composition of seasonal vaccines are available at <http://www.who.int/influenza/vaccines/virus/recommendations/en/>

Description	Quantity	Notes
<b>Antivirals</b>		
Treatment course of Antivirals	A 5-day treatment for 20% of UN personnel and their recognized dependants. <sup>33</sup> Supplies could be all oseltamivir, or a mixture of oseltamivir and zanamivir at an 80:20 ratio.	For treatment purposes. Current stockpiles past the Manufacturer's expiry date should be marked as "Emergency Use Only" and continue to be stored according to the manufacturer's instructions
Prophylactic course of Antivirals	No recommendation at present to ensure the availability of this supply.	Specific recommendations on the use of antivirals as prophylaxis will be provided as the pandemic situation changes.
<b>Personal Protective Equipment</b>		
PPE (Items in Annex 4, Table 5) for Staff in Risk Category 1	Six-week supply per person in Risk Category 1.	Offices should identify and quantify the number of staff who may fall into Risk Category 1 (Table 2)
PPE (Items in Annex 4, Table 6) for Staff in Risk Category 2	Six-week supply per person in Risk Category 2.	Offices should identify and quantify the number of staff who may fall into Risk Category 2 (Table 2)
Simple Surgical masks	84 masks per UN personnel and recognized dependants (2 mask changes per day x 6 weeks)	3-ply
<b>Other Supplies</b>		
Syringes and needles	One set of syringe and needle per staff and dependant	Ensuring availability of an extra set of syringe and needle is to ensure injection safety in case injectables have to be used at the local facilities. This supply is not specific for pandemic.
Mortuary bags	3% of international staff population	For purpose of repatriation

<sup>33</sup> For purposes of treatment and prophylaxis, "UN personnel and their dependants" denotes all staff members and their recognized dependants and all other individuals who have a direct contractual relationship with the organization and their recognized dependants.

		of bodies of deceased international staff and family members. Should be procured only if local supplies unavailable or insufficient.
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**Table 5. PPE Items To be Made Available for Staff in Risk Category 1<sup>34</sup>**

This is an average supply that has been worked out for staff in Risk Category 1<sup>35</sup> (Table 2). Quantities for a 6-week supply per person in this Risk Category should be made available.

Item	Description	Unit	Quantity Per day	Quantity for 6 weeks
1	Protective goggles, polycarbonate, (reusable)	Each	3	3
2	Face mask grade P2 (or N95), disposable	BX/20	2	84
3	Surgical masks	EACH	4	168
4	Single use gloves, small, anatomically shaped, latex, non-sterile	PAIR	10	420
5	Single use gloves, medium, anatomically shaped, latex, non-sterile	PAIR	10	420
6	Single use gloves, large, anatomically shaped, latex, non-sterile,	PAIR	10	420
7	Single use plastic apron,	EACH	2	84
8	Rubber Gloves (reusable for environmental cleaning	PAIR	10	10
9	Coverall (with integrated hair and shoe covers) or gown, hair cover and shoe covers, disposable, non-sterile	EACH	2	84
10	Alcohol rub disinfectant <sup>36</sup> – Dangerous goods – UN code 1987, Class 3	bottle/1000ml	1	1
11	Disposable bag for bio-hazardous waste – 1 bag per day for 6 weeks.	EACH	1	42 bags
12	Disposal bag for bio hazardous waste, small, with “Bio-Hazard” print, polypropylene –	EACH	1	42 bags

<sup>34</sup> This PPE kit is not adequate for veterinary purposes including for culling.

<sup>35</sup> Health care workers who manage patients clinically and have close contact (<1 meter or 3 feet) with known/suspected pandemic patients or their infectious material

<sup>36</sup> If necessary, this should be procured locally to avoid problems with shipping of dangerous goods. If it cannot be supplied locally, order separately. Alternatively, chlorhexidine gluconate 4% solution in bottles of 250 ml each (that means 4 bottles per kit to equal the liter requirement per kit), could be procured.

Item	Description	Unit	Quantity Per day	Quantity for 6 weeks
	1 bag per day for 6 weeks			

**Table 6. PPE Items To Be Made Available for Staff in Risk Category 2**

This is an average supply that has been worked out for staff in Risk Category 2<sup>37</sup> (Table 2). Quantities for a 6-week supply per person in this Risk Category should be made available and a source of supply pre-identified.

Item	Description	Unit	Quantity Per day	Quantity for 6 weeks
1	Surgical masks	EACH	4	168
2	Single use gloves, small, anatomically shaped, latex, non-sterile	PAIR	10	420
3	Single use gloves, medium, anatomically shaped, latex, non-sterile	PAIR	10	420
4	Single use gloves, large, anatomically shaped, latex, non-sterile,	PAIR	10	420
5	Single use plastic apron,	EACH	2	84
6	Rubber Gloves (reusable for environmental cleaning	PAIR	10	10
7	Coverall (with integrated hair and shoe covers) or gown, hair cover and shoe covers, disposable, non-sterile	EACH	2	84
8	Alcohol rub disinfectant <sup>38</sup> – Dangerous goods – UN code 1987, Class 3	bottle/ 1000ml	1	1
9	Disposable bag for bio-hazardous waste – 1 bag per day for 6 weeks.	EACH	1	42 bags
10	Disposal bag for bio hazardous waste, small, with “Bio-Hazard” print, polypropylene – 1 bag per day for 6 weeks	EACH	1	42 bags

<sup>37</sup> Non-health care worker staff who have close contact (<1 meter) with known/suspected pandemic patients or their infectious material

<sup>38</sup> If necessary, this should be procured locally to avoid problems with shipping of dangerous goods. If it cannot be supplied locally, order separately. Alternatively, chlorhexidine gluconate 4% solution in bottles of 250 ml each (that means 4 bottles per kit to equal the liter requirement per kit), could be procured.

## Storage of Medical Supplies<sup>39</sup>

Guideline for the storage of essential medicines and other health commodities from [WHO](#).

### Maintenance of Storage Facilities

Basic points to consider:

- Monitor storage conditions.
- Ensure that aisles are clear.
- Ensure adequate ventilation and cooling.
- Ensure that products are protected from direct sunlight.
- Monitor store security and safety.
- Check the roof for leaks, especially during the rainy season and during or after a storm.
- Monitor product quality (visually inspect commodities and check expiration dates).
- Ensure that products are stacked correctly (e.g. check that lower cartons are not being crushed).
- Update stock records and maintain files.
- Separate soon to expire stocks and reallocate/donate prior to expiry.
- Check for signs of rodent and insect infestations
- Inspect the storage structure for damage, including the walls, floors, roof, windows, and doors.
- Visually inspect fire extinguishers to ensure that pressures are maintained, and extinguishers are ready for use. Inspect and test smoke alarms.

### When receiving medical supplies:

- Prior to receipt of any supplies, calculate the required storage space and ensure that there is sufficient storage space.
- Prepare and clean the areas used for receiving and storing the products.
- Record the new supplies in the inventory system and update the totals.

### Storage principles

In order to protect your supplies from moisture and to ensure their safe handling:

- Use pallets
- Keep supplies at least 10 cm off the floor
- Keep supplies at least 30 cm away from the walls and other stacks
- Read manufacturer's instructions as the stacking of equipment will depend on the item. In stacks of no more than 1.8m high in general (consider the height of your employees).

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<sup>39</sup> WHO, "Guideline for the storage of essential medicines and other health commodities" ([https://www.who.int/rhem/supplychain/guidstorese\\_pock/en/](https://www.who.int/rhem/supplychain/guidstorese_pock/en/)) and WHO, "Management of drugs at health centre level", 2004 (<http://apps.who.int/medicinedocs/en/d/Js7919e/>)

Avoid crushing products stored in bulk. Heavier or fragile items should be placed in smaller stacks. Bind sharp edges or corners in the store with tape. Most importantly, ensure that nothing in the store can fall and injure members of the staff.

- Arrange cartons so that identification labels, expiry dates, and manufacturing dates are visible. If this is not possible, write the product name and expiry date clearly on the visible side
- Place items that will expire first in front of those with a longer expiry date to assist stock rotation. Supplies should be sent to facilities prior to their expiry dates to be utilised before they expire, and then replaced accordingly.

### **Itemized Stock Lists**

Each medical storage facility should maintain a stock list which includes all the items stored within that facility along with a description of each item such as:

- Product name (including its form e.g. capsule, tablet, liquid suspension, etc. and strength)
- Expiry date
- Batch number
- Stock on hand/beginning stock balance
- Additions to stock
- Issues/losses/adjustments
- Closing balance

### **Cleaning**

Keep the storage facility clean. Sweep and mop or scrub the floors of the storeroom regularly. Wipe down the shelves and products to remove dust and dirt. Regularly inspect and clean the outside premises of the storage facility, especially areas where garbage is stored. Check for any rodent burrows and be sure that garbage and other waste are stored in covered containers.

### **Storage Conditions**

Medications such as antivirals and antibiotics tablets should be stored in a dry, cool environment as per the manufacturer's instructions (usually below 25 degrees Celsius). Keep out of direct sunlight and away from heat sources.

- Regularly monitor the temperature of the different areas within the storeroom.
- Keep thermometers in various places for monitoring.
- Keep the storeroom well ventilated. For better ventilation, store boxes on pallets and leave room between rows of stacked boxes.
- Keep direct sunlight out of the storeroom.

Some of the medications that are recommended for stockpiling in preparation for a possible pandemic may have stability problems under tropical conditions, for example: oseltamivir, amoxicillin tablets, paracetamol liquid and some reconstituted antibiotics. Therefore, it is important to read the storage instructions supplied by the manufacturers.

**The following principles will help to protect your medical supplies from loss during storage at the designated facility:**

- Limit access to designated staff only.
- Limit the number of keys made for the facility and keep a list of people who have the keys.
- Secure all locks and doors after each entry to the facility; do not leave it unlocked when no one is inside.
- Provide independent stock count/inventory control.

When medications are approaching their expiry dates and it is clear that they will not be used before that time, attempts should be made to donate the medications to facilities where they may be beneficially used before expiration. Possibilities will vary between duty stations.

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## **ACKNOWLEDGEMENTS**

This revision was conducted on behalf of the UN Medical Directors (UNMD) by the Public Health unit of the Division of Healthcare Management and Occupational Safety and Health (DHMOSH), Office of Support Operations, Department of Operational Support, United Nations, under the leadership of Dr. Esther Tan. We thank all who contributed to this revision including WHO's technical experts, (Dr. Devika Dixit, Dr Charles Penn and Dr. Weigong Zhou) and the UNMD's Public Health Working Group, as well as editorial support from Michael Almendral. We welcome any feedback on this document. Please send any and all comments directly to Dr. Tan at [tan2@un.org](mailto:tan2@un.org).