

# Responding to New Influenza A(H1N1): Options for interventions at international points of entry

(WHO Regional Office for the Western Pacific interim option paper, 20 May 2009)

## Introduction

This document is part of a series of option papers that are being produced by the Western Pacific Regional Office (WPRO) of the World Health Organization (WHO) in response to this “**public health emergency of international concern**” related to the evolving influenza A(H1N1) declared on 25 April 2009.

The target audience mainly includes competent national public health authorities and other stakeholders involved in deciding and implementing public health measures at international points of entry in Member States.

This document elaborates further on the public health interventions listed in the document “Pandemic Influenza Preparedness and Response”<sup>1</sup> and should be used in conjunction with it. Other existing interim guidance or guidelines are now available from the websites of WHO, the International Civil Aviation Organization (ICAO) and International Air Transport Association (IATA)<sup>2-5</sup>

## Objective

This document was developed in response to request from WPRO Member States for further guidance on public health interventions relating to international points of entry (especially international airports) and travel to prevent or delay the entry or exit of the new influenza A(H1N1) virus. While WHO does not recommend any travel restrictions and border screening at this point in time, this document summarizes a wide range of options on international border health and travel measures available to Member States. It discusses the benefits, limitations and key considerations of each option in order to assist Member States in making rational decisions on implementing or not implementing certain options.

The interim guidance is drafted for use in a WHO Pandemic phase 5 or 6 context. It should be adapted to national and local situations, as well as each Member State's national and international obligations. It is based on existing epidemiological and clinical information about the new influenza A(H1N1) virus and may change with new knowledge about the characteristics of this virus.

The number of countries experiencing community-level transmission may be increasing in the coming weeks or months. National efforts may be shifted from international border measures to focus on national and community public health intervention based on assessed situation. The interim guidance with focus on international border measures may eventually become less relevant or less important. Countries will need to adjust border health measures based on their changing national strategy, policy and/or new guidance available.

## Key considerations

Public health interventions may be costly, resource intensive and disrupt the normal functioning of society and international travel and trade. The potential benefit of such measures should be carefully balanced against their potential social and economic costs. As such, health authorities should be clear about the public health objective in implementing such interventions, as well as how each intervention contributes towards this overall objective. The key considerations on public health interventions addressing international borders and travel are listed below.

- Public health measures related to international border and travel should be implemented under the framework of the International Health Regulations (2005)<sup>6</sup>.
- Public health interventions should be commensurate with the threat that the outbreak poses to the Member State. A short suggested guide to assessing the risk of an outbreak is in Annex 1.
- Public health interventions should be adapted to suit national and local epidemiological and socio-cultural context.
- Public health interventions should ideally be evidence-based. Where no evidence exists, mechanisms to assess the effectiveness of such interventions or review new evidence when it becomes available should be established.
- There is the desire to harmonize interventions at international points of entry. Whenever possible, public health interventions should be consistent with generic recommendations from WHO, ICAO and other international organizations.
- Other factors to consider include the following: expected public health benefits, cost and resources required, feasibility of interventions and ethical issues.

## Summary of public health measures

Theoretically, a wide range of measures related to international border and travel are available for countries to make balanced decisions. However, the biggest common challenge is the lack of data in general to demonstrate the effectiveness of international border related measures such as border screening. The knowledge base used in developing guidance for international border and travel measures for influenza has been limited and consists primarily of historical and contemporary observations, and mathematical modelling studies, rather than controlled studies evaluating interventions<sup>7-9</sup>. Based on the review of available data, the WHO writing group in 2006 concluded that screening and quarantining entering travelers at international borders did not substantially delay virus introduction in past pandemics, except in some island countries, and would likely be even less effective in the modern era. Instead, providing information to international travelers and possibly screening travelers departing countries with transmissible human infection is recommended. The principal focus of interventions against pandemic influenza spread should be at national and community levels rather than international borders.<sup>8</sup>

In brief, while some measures such as up-to-date health information and advice to international travelers have clear public health benefits and should be in place without causing much concern, others should be carefully examined before a decision is made to implement them given little public health benefits and potentially significant consequence of the interventions. Two groups of intervention are discussed in this document: (1) travel measures and screening at international points of entry; and (2) management of symptomatic and exposed travellers as a result of the first group of interventions.

### **1. *Travel measures and screening at international Points of Entry (POE)***

- Health advice and alerts for travellers
- Health declaration form/card
- Visual screening
- Temperature screening
- On-board identification of suspect travellers
- International travel advisory, restriction and border closure

### **2. *Management of symptomatic and exposed travellers***

- Managing symptomatic travellers
  - Medical assessment
  - Rapid laboratory investigations
  - Isolation
  - Treatment
  - Contact tracing
- Managing exposed travellers
  - Self health monitoring and illness reporting
  - Home quarantine
  - Institutional quarantine

## **Options for interventions and decision matrix**

Annex 2 and 3 provide options for public health interventions at international points of entry such as international airports. Possible benefits and limitations (including consequences) for each intervention area have been summarized to facilitate decision-making by relevant authorities in Member States. They should be based on the assessed risk of the outbreak and the situation in individual Member States. A Member State may decide to implement or avoid one or more of these public health measures.

Meanwhile, WHO Member States should implement the temporary recommendations issued under the IHR (2005). In response to the new influenza A(H1N1), based on the advice of the IHR Emergency Committee, ***WHO's Director-General recommended not to close borders and not to restrict international travel. It was considered prudent for people who are ill to delay international travel and for people developing symptoms following international travel to seek medical attention***<sup>10</sup>.

## **Document development process and acknowledgement**

This *interim* option paper was developed through a collaborative process that gathered inputs from relevant specialists, experts and officers in selected WHO country offices, the WHO Regional Office for the Western Pacific and the WHO Headquarters, the International Civil Aviation Organization (ICAO), as well as temporary advisers from Australia and Singapore. A number of technical documents related to pandemic influenza preparedness and response, border and travel measures, guideline for airlines, interim advice on influenza A(H1N1) and research papers were reviewed. They provided the background information and basis for the development of this interim option paper. There is a desire to collaborate regionally and internationally to develop harmonized guidelines related to POE measures. Such harmonized guidelines may be developed or updated when new information and experience becomes available, such as through ongoing or future collaborative efforts in preventing international spread of disease through air travel and ships.

The Communicable Disease Surveillance and Response unit in the WHO Regional Office for the Western Pacific would like to express its sincere thanks to those individual experts and colleagues who contributed to the development of this interim option paper.

## **Annexes**

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|---------|--|
| Annex 1 | Suggested framework for assessment and decision                      |
| Annex 2 | Travel measures and screening at international Points of Entry (POE) |
| Annex 3 | Management of symptomatic and exposed travellers                     |

## References

1. WHO. *Pandemic influenza preparedness and response: WHO guidance document*. Geneva, WHO. April 2009 (<http://www.who.int/csr/disease/influenza/pipguidance2009/en/index.html>).
2. WHO. *Case management of influenza A(H1N1) in air transport*. Geneva. WHO, May 2009 (<http://www.who.int/ihr/en/>).
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8. World Health Organization Writing Group. *Nonpharmaceutical Interventions for pandemic influenza, international measures*. *Emerging Infectious Diseases*, 2006.12(1).
9. European Centre for Disease Prevention and Control. *ECDC Pandemic Public Health Measures*. Stockholm, ECDC, October 2007 ([http://ecdc.europa.eu/en/Health\\_Topics/Pandemic\\_Influenza/phm.aspx](http://ecdc.europa.eu/en/Health_Topics/Pandemic_Influenza/phm.aspx)).
10. WHO. *Second Meeting of the IHR Emergency Committee*. 27 April 2009. (<http://www.who.int/ihr/en/>).
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## Suggested framework for assessment and decision-making

### 1. Conducting a risk assessment

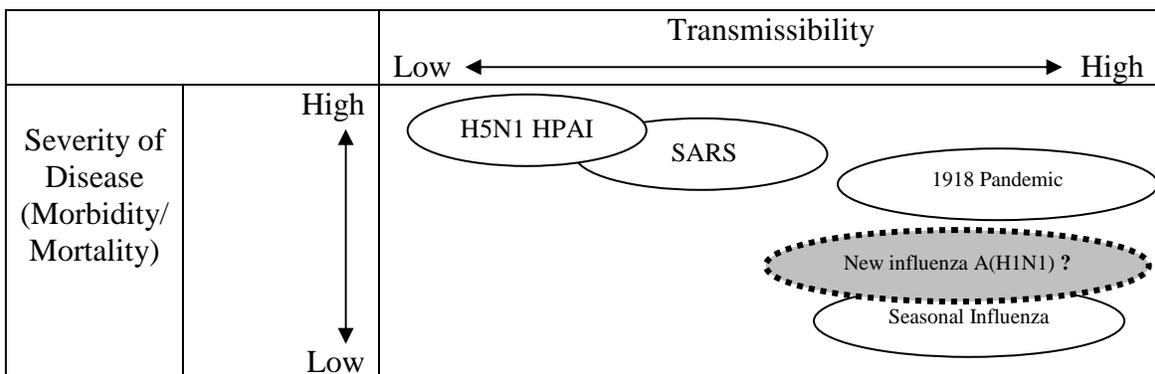
Risk assessments help inform decision-making regarding appropriate use of public health measures. A risk assessment process can be undertaken to address a specific context or question. Appropriate domains (such as transmissibility and severity of disease) can be used to measure the risk, depending on the scenario. Risk assessments are a **dynamic** process and need to be conducted based on a rapidly changing situation. Decisions for interventions based on the risk assessment approach help avoid overreaction or underreaction.

Countries may implement pandemic response measures based on assessed pandemic severity. Pandemic severity has many dimensions, including economic and social consequences. Ideally, countries will need to anticipate impacts of the virus on their population. Based on effects on human health dimensions, the impact of a pandemic on a population is a function of three determinants:<sup>11</sup>

- (1) **Virus characteristics:** Includes virological characteristics such as inherent virulence of the virus; epidemiological features such as estimated incubation period, clinical attack rate and case fatality ratio; and clinical manifestations such as clinical course and proportion of hospitalized cases.
- (2) **Vulnerability of populations:** Includes preexisting immunity, people at increased risk and nutritional status of the population.
- (3) **Capacity for response:** Includes availability and quality of health care services, availability of national and local resources, level of advance planning and preparedness.

The following example addresses the risk of an outbreak following the introduction of a novel respiratory pathogen into a community. In this scenario, we measure according to its transmissibility and severity. Figure 1 show **an example** of how respiratory viruses could be assessed based on these two domains and how the new influenza A(H1N1) virus compares with other respiratory viruses.

**Figure 1: Comparative risk of outbreaks involving respiratory pathogens**



Annex 1

**2. Risk assessment to guide decision-making**

It is important that the measures taken to mitigate risk be proportional to the level of risk posed, and take into account the impact of the decision, both within the health sector and more broadly, on the social and economic front.

A risk assessment can be used to guide the development of public health mitigation strategies. For example, for a disease with high mortality but low transmissibility, the emphasis in a country without the disease might be to prevent the introduction of the disease in the first place. Figure 2 suggests some possible strategies for implementation of public health measures among different levels of risk.

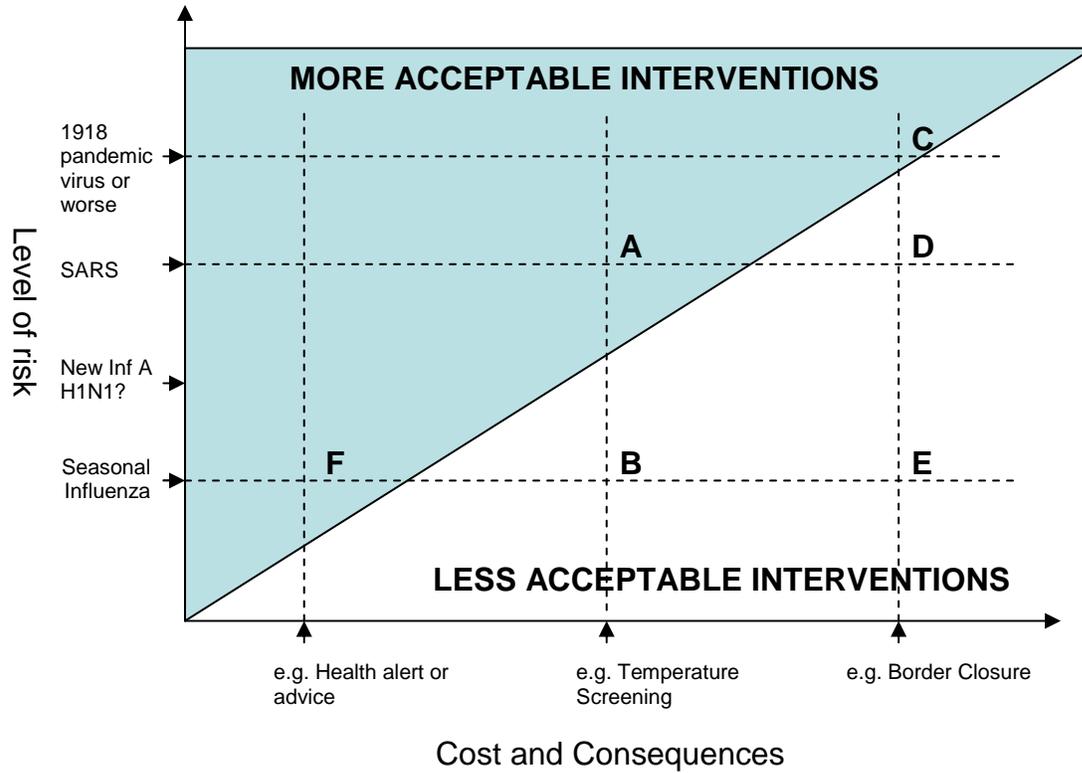
**Figure 2: Possible strategies to adopt in each risk category (example only)**

		Transmissibility	
		Low ←	→ High
Severity of Disease (Morbidity/Mortality)	High ↑	Public health measures may focus on preventing importation and rapid containment of cases	Public health measures may focus on containment at early stage, and mitigating the impact of the disease
	↓ Low	Routine public health measures (no additional intervention needed)	Public health measures may focus on preventing clusters or incidence in high-risk groups and reducing severe cases and deaths among vulnerable population

Risk assessment can also be used to guide decision-making on the acceptability of public health measures. Figure 3 shows **an example** to illustrate how the cost and consequences of public health interventions may be matched with the level of risk. In general, it may be more socially and economically acceptable to implement interventions with higher cost and consequences as the level of risk to the population increases (shaded area).

For example, temperature screening *may* be acceptable if deployed to meet the threat of a SARS outbreak (Point A) but not for seasonal influenza (Point B). Closing international borders to prevent importation *may* be acceptable in an outbreak of an agent with the characteristics of the 1918 pandemic virus or worse (Point C). A similar measure *may* not be as appropriate for outbreaks of SARS (Point D) or seasonal influenza (Point E). Using this matrix, distributing health advisories to travellers (Point F) *may* be the only acceptable intervention in outbreaks of seasonal influenza.

**Figure 3: Matching Cost and Consequences of Interventions with Level of Risk**



*Please note that the above examples serve only to illustrate the process and use of risk assessment in guiding public health policy decision. It does not necessarily represent the views of the World Health Organization with regard to the level of risk for each respiratory pathogen, or the public health strategies and interventions countries should take with respect to each risk level.*

### Travel measures and screening at international Points of Entry (POE)

Option/purpose	Benefits/Advantages	Limitations/Disadvantages	Decision (Yes/No/Wait)
<p><b>1. Health advisories and alerts for travellers</b></p> <p><i>To increase awareness and promote personal hygiene and appropriate health seeking behaviour</i></p>	<ul style="list-style-type: none"> <li>• Increase public awareness</li> <li>• Promote good hygiene behaviour</li> <li>• Increase compliance with local public health advice</li> <li>• Show governmental efforts and political visibility</li> <li>• Inform travellers where to seek medical care and where to report if they develop symptoms</li> </ul>	<ul style="list-style-type: none"> <li>• Language barriers need to be addressed</li> <li>• No or little negative consequence</li> </ul>	
<p>Comments and guidance:</p> <p>Options for use of health advisories and alerts include the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> health advisories or alerts distributed to all arriving and/or departure travellers</li> <li><input type="checkbox"/> health advisories or alerts distributed to travellers arriving from and/or departure to selected areas</li> <li><input type="checkbox"/> optional advisories or alerts for travellers placed at strategic locations</li> </ul> <p>Countries are strongly encouraged to develop and disseminate updated health information and advisories or alerts to both incoming and outgoing international travellers. Up-to-date health advisories or alerts could include information and advice on the following:</p> <ul style="list-style-type: none"> <li>• travellers who are ill should postpone international travel</li> <li>• nature of the disease</li> <li>• precautionary measures travellers could take</li> <li>• importance of self-monitoring of health, symptom identification and appropriate health seeking behaviour</li> <li>• reporting procedure to local health authorities if symptoms of ILI or acute respiratory illness develop. Hotline or contact details of local hospitals and public health authorities should be provided to guide where to report illness and to obtain medical care</li> </ul> <p>Health information and alerts in different languages may be required. Materials may need to be updated when new information becomes available. Multiple means of communications (such as health alerts on board vessels, banners, pamphlets and radio announcement at international points of entry can also be used to reach different kinds of travellers. It would be useful for health authorities to publicize health measures generally, so that potential travellers can consider their options, before going to the airport.</p>			

## Annex 2

Option/purpose	Benefits/Advantages	Limitations/Disadvantages	Decision (Yes/No/Wait)
<p><b>2. Health declaration form and/or passenger locator card</b></p> <p><i>To identify ill travellers or those with epidemiological risk factors and collect contact information from travellers for future follow up if necessary</i></p>	<ul style="list-style-type: none"> <li>• Increase public awareness</li> <li>• Identify travellers with epidemiological risk factors</li> <li>• Promote self-reporting of illness</li> <li>• Record traveller seat number and contact details for use in contact tracing efforts</li> </ul>	<ul style="list-style-type: none"> <li>• May be difficult to ensure accuracy of information (e.g. contact details)</li> <li>• Language barriers need to be addressed</li> <li>• Need to manage travellers' personal data</li> </ul>	
<p>Comments and guidance:</p> <p>Options for use of health declaration cards, forms or questionnaires include:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> declaration by all arriving travellers</li> <li><input type="checkbox"/> declaration by travellers arriving from selected areas</li> <li><input type="checkbox"/> declaration by all departure travellers in affected countries</li> <li><input type="checkbox"/> Passenger Locator Cards (PLC) if an ill traveller (suspect infectious disease) had been identified on the vessel before arrival at the POE</li> </ul> <p>It is important that health authorities have a clear plan to collect the forms and handle the information collected (including personal data). Authorities should also ensure that the actual forms or information collected is stored in a systematic and secure manner and easily retrieved, especially if it is intended for use in future contact tracing. In addition, the presence and completeness of traveller manifests would be helpful.</p> <p>If a PLC is to be used, travellers seated in the same row, two rows in front and two rows behind the ill traveller or other close contacts should be asked to complete the PLC. PLC can also be used if complementary or additional information is requested based on the needs for traveller data such as home address. It is advised that PLC be distributed on board before arrival and that travellers receive instructions from crew members on how to fill out the card to ensure accuracy of information as much as possible. PLC is available at the WHO website <a href="http://www.who.int/csr/ihr/locator_card/en/">http://www.who.int/csr/ihr/locator_card/en/</a>. Some countries' immigration and health authorities require passengers to leave a health and travel history record. It would be useful if a country could use a combined PLC and health declaration.</p> <p>In those cases, IATA suggests the use of a card based on the Passenger Locator Card standard and providing an additional section, the Health Declaration Card:  <a href="http://www.iata.org/NR/rdonlyres/A9A648F4-011F-4DB2-A417-63DB881B3350/0/passenger_locator_health_card.pdf">http://www.iata.org/NR/rdonlyres/A9A648F4-011F-4DB2-A417-63DB881B3350/0/passenger_locator_health_card.pdf</a></p>			

Option/purpose	Benefits/Advantages	Limitations/Disadvantages	Decision (Yes/No/Wait)
<p><b>3. Visual screening at POE</b></p> <p><i>To identify ill travellers who might be visibly ill</i></p>	<ul style="list-style-type: none"> <li>• Increase public awareness</li> <li>• May detect obviously ill travellers</li> <li>• Supplement other measures (e.g. thermal scanning)</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult to implement and minimal use in identifying ill travellers</li> <li>• Low sensitivity and specificity</li> <li>• Requires trained personal</li> </ul>	
<p>Comments and guidance:</p> <p>Visual screening may assist in identifying ill travellers, but only if there are obvious signs of illness. Based on the current data available, most identified cases of new influenza A(H1N1) infection in the Asia Pacific Region are mild and it is unlikely visual screening, as with screening measures in general, would assist in detection of all ill travellers. If countries decide to implement this option, arrangement for visual screening at POE should be made, including trained personnel and further medical assessment if ill travellers are detected.</p> <p>In some countries, initial medical assessment including visual screening may be implemented as designated international points of entry such as international airports.</p>			

Annex 2

Option/purpose	Benefits/Advantages	Limitations/Disadvantages	Decision (Yes/No/Wait)
<p><b>4. Temperature screening at POE</b></p> <p><i>To detect travellers with fever</i></p> <p><i>Important note: Temperature screening alone can not prevent or stop the entry or exit of the new influenza A(H1N1) virus</i></p>	<ul style="list-style-type: none"> <li>• Increase public awareness</li> <li>• May be reassuring to the public</li> <li>• May serve as "sentinels" to detect some travelled cases (but not all infected travellers)</li> <li>• The time-consuming nature of screening and the possibility of further measures taken if a travel is found to be febrile may serve as a deterrence to travel</li> </ul>	<ul style="list-style-type: none"> <li>• Current data available suggest many limitations of effectiveness</li> <li>• Modelling suggests that, in general, temperature screening have limited impact on reducing the risk of importation of diseases such as SARS and influenza</li> <li>• Many factors influence screening sensitivity, specificity, positive predictive value and negative predictive value</li> <li>• Thermal scanning alone will not prevent entry or exit of the new influenza A(H1N1) virus, as not all infected travellers have fever and there are asymptomatic cases</li> <li>• Unlikely to be cost-effective</li> <li>• Needs equipment maintenance (calibration) to ensure adequate and accurate readings</li> <li>• May give the public a false sense of security</li> </ul>	

Comments and guidance:

Options for administration of temperature screening includes the following:

- thermometers
- electronic mass thermal screening devices

Options on target population to screen includes the following:

- all arriving travellers (entry screening)
- travellers arriving from selected destinations (entry screening)
- all departing travellers in affected countries, especially those with community-level outbreaks (exit screening)

At the current stage, WHO has not recommended screenings at country entry and exit points to detect if ill people are travelling, as WHO does not believe entry and exit temperature screenings would work to reduce the spread of the new influenza A(H1N1) virus. Many H1N1 cases are mild and may not be febrile. It would be difficult to prevent the importation of cases using this modality. There is currently no reliable way to easily identify infected, but asymptomatic cases. See the WHO website on questions and answers [http://www.who.int/csr/disease/swineflu/frequently\\_asked\\_questions/travel/en/index.html](http://www.who.int/csr/disease/swineflu/frequently_asked_questions/travel/en/index.html)

However, country-level measures to respond to a public health risk including screening are the decision of national authorities. As temperature screening may be resource intensive and requires prior in-country capacity and system to implement, countries without a prior capability or plan to perform such screening should determine if resources should be deployed to do so. If temperature screening is to be conducted, it should be in conjunction with well-drafted-and-thought-through protocols on how to manage travellers detected with raised temperatures. Basic infection prevention and control measures should also be applied based on relevant guidelines.

Countries that adopt measures that significantly interfere with international traffic (such as refusal of entry or departure of international travelers for more than 24 hours), must provide WHO with the public health rationale and scientific information for their actions under the IHR (2005). WHO has the mandate to share such information with all Member States.

While WHO does not have official recommendations on exit screening, it is best considered by the national authority in the situation when a country has community-level outbreaks. Countries should reconsider or discontinue entry screening once the virus is transmitting widely within the country.

## Annex 2

Option/purpose	Benefits/Advantages	Limitations/Disadvantages	Decision (Yes/No/Wait)
<p><b>5. On-board identification of suspect travellers</b></p> <p><i>To identify ill travellers on board vessels before arriving at POE (such as in-flight case detection)</i></p>	<ul style="list-style-type: none"> <li>• Increase public awareness</li> <li>• Helps to identify possible cases before traveller entry</li> <li>• Facilitates management of contacts</li> <li>• Facilitates early management of cases detected</li> </ul>	<ul style="list-style-type: none"> <li>• May interfere with international travel (delay in departure)</li> <li>• Requires adequately trained personnel for health inspection on board</li> <li>• Asymptomatic or very mild cases are unlikely to be detected</li> <li>• Not feasible in countries with limited resources</li> <li>• May not be feasible in ports with a large volume of international traffic</li> <li>• Relies on illness reporting by pilot in command or designated crew member</li> </ul>	
<p>Comments and guidance:</p> <p>Options for implementation of on-board identification of suspect travellers include the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> on-board identification of suspect travellers by vessel crew</li> <li><input type="checkbox"/> on-board identification of suspect travellers by health authorities from destination before travellers are allowed to disembark</li> </ul> <p>Currently, WHO has not issued any official recommendations for inspection on board aircraft, ships or ground transportations specifically for the new influenza A(H1N1). The health part of the ICAO aircraft general declaration under IHR (2005) provides advice on identification of any case of communicable disease, which would include H1N1. Country-level interventions are the decision of national authorities. Nevertheless, if a traveller is suspected to be ill in-transit, it is good public health practice to have the incident reported by the vessel crew before or upon arrival at the POE. There is a specific procedure for flight crew to follow concerning the notification of the public health authority at declaration of an on-board suspected case of communicable disease.</p> <p>On-board identification of suspect travellers can be complemented by the use of Passenger Locator Cards. Encouraging travellers not to change their seating assignment without informing the vessel crew might facilitate subsequent contact identification. It is understood that very few countries are currently conducting on-board check to detect suspected H1N1 cases at the current stage.</p>			

Option/purpose	Benefits/Advantages	Limitations/Disadvantages	Decision (Yes/No/Wait)
<p><b>6. International travel, travel advisory, restriction and border closure</b></p> <p><i>Reduce travel to and from selected countries or areas</i></p> <p><i>Prevent or delay virus introduction to a non-affected country</i></p>	<ul style="list-style-type: none"> <li>• Potential reduction in the number of ill individuals travelling</li> <li>• May prevent or delay virus introduction if border closure is completely ensured and last for enough period</li> <li>• Complete border closure may help prevent or delay virus introduction in small island countries based on the 1918-19 pandemic experience and limited modelling.</li> </ul>	<ul style="list-style-type: none"> <li>• Limited effect on stopping the spread of the virus internationally at this stage of the outbreak</li> <li>• Cause unnecessary interference with international travel and trade</li> <li>• Potential political and economic impacts</li> <li>• Disrupts normal social function</li> <li>• Need to justify rational and address human rights issues</li> <li>• Difficult to define "affected" areas</li> <li>• Border closure and quarantining entering travellers at international border did not substantially delay virus introduction in past pandemic, except some small island countries</li> <li>• Border closure may affect provision of essential goods and medical services to countries with border closure</li> <li>• Travellers may try to circumvent any restrictions</li> </ul>	

## Annex 2

### Comments and guidance:

Options for implementing travel advisories, restrictions and border closure include the following:

- advisories discouraging ill individuals from travelling
- advisories discouraging non-essential travel to selected areas
- restrictions on travel to selected areas
- restrictions on travel from selected areas including imposition of further administrative requirements or a total ban.
- international border closure (such as refusal of international flights)

Based on the advice of the IHR Emergency Committee, WHO's Director-General recommended not to close borders and not to restrict international travel related to the outbreak of the influenza A(H1N1) virus. It was considered prudent for people who are ill to delay international travel and for people developing symptoms following international travel to seek medical attention.

Today, global travel is commonplace and large numbers of people move around the world for business and leisure. While limiting travel and imposing travel restrictions would have little effect on stopping the virus from spreading, it would be highly disruptive to the global community. The new influenza A(H1N1) has already been confirmed in many parts of the world. The global response should now focus on minimizing the impact of the virus through the rapid identification of cases, and providing infected individuals with appropriate medical care. In addition, scientific research based on mathematical modelling shows that restricting travel would be of limited or no benefit in stopping the spread of disease. Historical records of previous influenza pandemics, as well as experience with SARS, validate this.

The IHR (2005) provide mechanisms for countries to implement additional measures. However, countries that adopt measures that significantly interfere with international traffic (such as refusal of entry or departure of international travelers for more than 24 hours), must provide WHO with the public health rationale and scientific information for their actions under the IHR (2005). WHO has its obligations to share such information with all Member States.

Travellers should always be treated with dignity and respect for their human rights.

### Management of symptomatic and exposed travellers

Option/purpose	Benefits/Advantages	Limitations/Disadvantages	Decision (Yes/No/Wait)
<p><b>1. Medical assessment of symptomatic travellers</b></p> <p><i>To assess the symptomatic traveller to determine the likelihood of infection with the new influenza A(H1N1) virus</i></p>	<ul style="list-style-type: none"> <li>• Rapid identification of suspected and probable cases</li> <li>• Provision of appropriate medical interventions (treatments, isolation, testing, etc)</li> <li>• Informs decision-making on further actions</li> <li>• Identification of other illnesses</li> </ul>	<ul style="list-style-type: none"> <li>• Likely that some non infected travellers will be classified as suspected or probable cases due to low specificity of assessment</li> <li>• Travellers who do not meet the criteria for a suspected or probable case may still be infected</li> <li>• Requires trained medical or public health personnel</li> <li>• Requires appropriate facility for medical examination</li> </ul>	
<p>Comments and guidance:</p> <p>Options for implementation of medical assessment include:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> assessing symptomatic travellers from selected areas/countries detected through prior screening</li> <li><input type="checkbox"/> assessing all symptomatic travellers detected through prior screening</li> </ul> <p>Options for location of medical assessment include:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> designated room or area at POE with provision for traveller privacy and comfort</li> <li><input type="checkbox"/> healthcare facility (such as local hospital) within reasonable distance of POE</li> </ul> <p>In general, medical assessment should be guided by clinical considerations. Member States should abide by the provisions of the International Health Regulations (2005) relating to medical examination of travellers. Countries are strongly encouraged to establish practical arrangements with local public health authorities and/or hospitals for such medical assessment either at POE or designated hospitals.</p> <p>General guidance is available from " <i>WHO Interim technical advice for case management of Influenza A(H1N1) in air transport</i>" (May 2009)</p>			

## Annex 3

Option/purpose	Benefits/Advantages	Limitations/Disadvantages	Decision (Yes/No/Wait)
<p><b>2. Rapid laboratory investigations</b></p> <p><i>To increase the specificity of screening and assist in determining the likelihood of infection with the new Influenza A(H1N1) virus in the symptomatic traveller</i></p>	<ul style="list-style-type: none"> <li>• If used in conjunction with medical assessment, it could provide an interim diagnosis to aid decision- making on further actions to take</li> <li>• Non infected individuals are identified and further intervention is avoided</li> </ul>	<ul style="list-style-type: none"> <li>• Accuracy and predictive values depend on the test kits used</li> <li>• Can be expensive if used inappropriately</li> </ul>	
<p>Comments and guidance:</p> <p>Options for implementation of rapid laboratory investigations include:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> symptomatic travellers fulfilling the definition for a suspect case after medical assessment</li> <li><input type="checkbox"/> symptomatic travellers from selected areas/countries detected through prior screening</li> <li><input type="checkbox"/> all symptomatic travellers detected through prior screening</li> <li><input type="checkbox"/> all travellers from selected areas/countries</li> </ul> <p>In general, laboratory investigations should be guided by clinical considerations. Member States should abide by the provisions of the International Health Regulations (2005) relating to further investigations including the use of the least invasive method to achieve the same public health objective.</p> <p>Rapid laboratory testing should take into account the predictive value of these tests and used in conjunction with a well thought through protocol. Countries are strongly encouraged to make practical arrangements with local public health authorities and laboratories for such laboratory testing. Currently available rapid tests for influenza are considerably less reliable than laboratory-based molecular tests. If such testing is to be introduced at points of entry, a protocol should be developed as to what follow-up should be conducted of cases with either positive or negative results.</p> <p>The capacity of currently available rapid tests to detect asymptomatic infections with the novel strain of influenza A(H1N1) is unknown but the sensitivity is likely to be low.</p>			

## Annex 3

Options/purpose	Benefits/Advantages	Limitations/Disadvantages	Decision (Yes/No/wait)
<b>3. Isolation</b>			
<p><b>Isolation at home or hotel</b></p> <p><i>To prevent transmission of the new influenza A(H1N1) virus from infected individuals.</i></p>	<ul style="list-style-type: none"> <li>• Least costly of isolation options</li> <li>• Effectively stops the further transmission of the disease if genuine cases are isolated while infectious</li> <li>• Relieves burden on health care system</li> <li>• Less stressful on individuals to be isolated at home than elsewhere</li> <li>• Potentially higher public acceptance than other isolation options</li> </ul>	<ul style="list-style-type: none"> <li>• Health monitoring and reporting system required</li> <li>• Difficult to monitor compliance</li> <li>• Potential risk to other household members</li> <li>• Need alternative arrangements for non residents</li> <li>• Services must be available to provide basic necessities to those who live alone or have special needs</li> </ul>	
<p><b>Isolation at health care facility</b></p> <p><i>To prevent transmission of the new influenza A(H1N1) virus from infected individuals.</i></p>	<ul style="list-style-type: none"> <li>• Effectively stops the further transmission of the disease if genuine cases are isolated while infectious</li> <li>• Facility (such as hospital) has capacity to isolate traveller/s appropriately</li> <li>• Ready access to appropriate medical care</li> </ul>	<ul style="list-style-type: none"> <li>• Increased burden on health care system</li> <li>• Safe transport to facility required for any individual who needs isolation</li> <li>• Political, ethical and possibly legal implications from confinement of individuals</li> </ul>	
<p><b>Isolation at POE</b></p> <p><i>To prevent transmission of the new influenza A(H1N1) virus from infected people.</i></p>	<ul style="list-style-type: none"> <li>• Effectively stops further transmission of the disease if genuine cases are isolated while they are infectious</li> <li>• Temporary isolation of suspect cases is feasible at well-equipped POE with good lab test capacity</li> </ul>	<ul style="list-style-type: none"> <li>• Many POE facilities have no capacity to implement appropriate isolation</li> <li>• Resource intense</li> <li>• Logistically challenging</li> <li>• Political, ethical and possibly legal implications from confinement of individuals</li> </ul>	

### Annex 3

#### Comments and guidance:

##### Options for implementation of isolation include:

- all cases fulfilling the case definition for a confirmed case
- all cases fulfilling the case definition for a probable case
- all cases fulfilling the case definition for a suspected case
- all symptomatic travellers with epidemiological risk factors

##### Options for location and nature of isolation

- voluntary home-based or hotel-based isolation
- voluntary temporary isolation at POE
- mandatory facility-based isolation (such as at hospital)

In general, isolation of ill travellers will reduce the onward transmission of disease and is good public health practice. The challenge is in identifying cases early enough for isolation to be meaningful from a public health perspective without unnecessarily isolating people who do not have the disease.

Isolation should be voluntary to the greatest extent possible. Mandatory measures should only be instituted as a last resort, when voluntary measures cannot reasonably be expected to succeed, and the failure to institute mandatory measures is likely to have a substantial impact on public health. Confinement of individuals will need to follow the appropriate laws in each Member State.

Infection control measures appropriate to each confinement context must be implemented to protect others from infection. Safe, habitable and humane conditions of confinement, including the provision of basic necessities and if feasible, psychological support, should be provided for confined individuals. Potential financial and employment consequences of confinement should be addressed. The interests of household members of those under home isolation should be protected, especially those at increased risk of illness (e.g immunocompromised family members). Those isolated should receive appropriate medical treatment.

Procedures must be developed to address logistical and transport issues. Isolation practice may be implemented according to updated national guidelines on case management that are consistent with WHO's guidance.

*Note: The term "isolation" in this context refers to separation of ill or symptomatic travellers from others to prevent the spread of infection.*

Option/purpose	Benefits/Advantages	Limitations/Disadvantages	Decision (Yes/No/Wait)
<p><b>4. Treatment of symptomatic travellers</b></p> <p><i>To reduce severity of illness and minimize complications in individuals infected with the new influenza A(H1N1) virus</i></p>	<ul style="list-style-type: none"> <li>• May reduce severity of disease and avoid complications if used in genuine cases</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult to accurately determine if treatment is indicated at a stage where it is most effective due to a lack of confirmatory information on infection status</li> <li>• Can be expensive if used inappropriately</li> <li>• Ethical issues</li> </ul>	
<p>Comments and guidance:</p> <p>Options for implementation of antiviral treatment include:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> all cases fulfilling the case definition for a confirmed case with further clinical risk factors for complications</li> <li><input type="checkbox"/> all cases fulfilling the case definition for a confirmed case</li> <li><input type="checkbox"/> all cases fulfilling the case definition for a probable case</li> <li><input type="checkbox"/> all cases fulfilling the case definition for a suspected case</li> <li><input type="checkbox"/> all symptomatic travellers with epidemiological risk factors</li> <li><input type="checkbox"/> all symptomatic travellers</li> </ul> <p>Recommendations on antiviral treatment may be developed and changed as more information becomes available. At this point, unless they are at risk of influenza complications, patients with influenza A(H1N1) may not require antiviral treatment. Patients at high risk of influenza complication (e.g. persons with chronic diseases or with suppressed immune systems and pregnant women) should be prioritized for the treatment.</p> <p>WHO interim guidance on clinical management of the new influenza A(H1N1) is available at the WHO website <a href="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</a></p> <p>WPRO option paper on the use of antiviral drug is also available at the WPRO website.</p>			

Annex 3

Option/purpose	Benefits/Advantages	Limitations/Disadvantages	Decision (Yes/No/Wait)
<p><b>5. Contact tracing and/or antiviral prophylaxis</b></p> <p><i>To identify other travellers who might have been in close contact with the symptomatic traveller and provide prophylaxis</i></p>	<ul style="list-style-type: none"> <li>• Aids in identifying other travellers with higher risk of contracting the new influenza A(H1N1) from the index case if it was genuine</li> <li>• Help monitor possible infection of exposed travellers</li> <li>• May prevent infection</li> </ul>	<ul style="list-style-type: none"> <li>• Extremely resource intensive when the number of contacts are big (especially contact tracing all travellers in the same vessel)</li> <li>• May not be possible to identify all possible contacts</li> <li>• Require very smooth and timely communications and coordination among countries concerned</li> <li>• May cause undue concern in contacts especially if index case is not confirmed</li> <li>• Ensuring confidentiality of personal data of exposed travellers</li> <li>• Ethical and human issues</li> <li>• Antiviral prophylaxis may not be cost effective</li> </ul>	

Comments and guidance:

Options for contact tracing include:

- requesting for self health monitoring and illness reporting
- contact tracing travellers who may have been in close contact with the symptomatic traveller, including those within two rows of the index case.
- contact tracing all travellers in the same affected vessel

Options for antiviral prophylaxis include:

- no antiviral prophylaxes for exposed passengers/crew members
- antiviral prophylaxes to close contacts only
- antiviral prophylaxes to all exposed passengers/crew members

In general, the extent of contact tracing should be based on national decisions and capabilities. Based on the current understanding about the mode of the new influenza A(H1N1) transmission, a close contact in an aeroplane may be generally defined as a traveller who is seated in the same row and in the two rows in front of or behind the traveller suspected of influenza infection. However, it is acknowledged that travellers may move about whilst in flight and the identification of close contact (including crew members) for contact tracing should be made based on all available information and a real situation. Countries are encouraged to share passenger information with relevant national authorities for possible contract tracing. Countries implementing passenger tracing are strongly encouraged to record relevant data, conduct analysis of effectiveness of passenger tracing and sharing country experience in the international community.

Antiviral prophylaxis for close contacts of passengers is based on national decisions and availability of antiviral drugs. The use of antiviral prophylaxis may defer in different stages of a national outbreak. WPRO option paper provides some options for reference. If countries decide to implement antiviral prophylaxis, the relevant provisions of the International Health Regulations (2005) should be complied, including informed consent and advice on possible risk, etc.

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Options/purpose	Benefits/Advantages	Limitations/Disadvantages	Decision (Yes/No/wait)
<p><b>6. Self health monitoring &amp; illness reporting</b></p> <p><i>To identify infected individuals among exposed passengers/crew members</i></p>	<ul style="list-style-type: none"> <li>• Least costly of all options</li> <li>• No disruption to social functioning</li> <li>• Provision of appropriate medical interventions (treatments, isolation, testing, etc.) at onset of symptoms</li> <li>• Detection of new cases</li> <li>• Slowing down and possible delay of infection transmission in country</li> </ul>	<ul style="list-style-type: none"> <li>• Responsibility of individuals to monitor and report accurately</li> <li>• Some potential for transmission prior to symptom onset</li> <li>• Effectiveness limited by individual's compliance</li> </ul>	
<p><b>7. Home or hotel quarantine of exposed travellers</b></p> <p><i>To identify infected individuals and break the transmission cycle</i></p>	<ul style="list-style-type: none"> <li>• Management of potentially infectious individuals</li> <li>• Slowing down and possible delay of infection transmission in country</li> <li>• Provision of appropriate medical interventions (treatments, isolation, testing, etc.) at onset of symptoms</li> <li>• Detection of new cases</li> <li>• Less stressful on people to be quarantined at home than elsewhere</li> </ul>	<ul style="list-style-type: none"> <li>• Services must be available to provide basic necessities to those who live alone or have special needs</li> <li>• Health monitoring and reporting system required</li> <li>• Difficult to monitor compliance</li> <li>• Need alternative arrangements for non residents</li> <li>• Potential risk of transmission to household members, if exposed individual is infected</li> <li>• May cause undue concern, especially if index case is not confirmed</li> <li>• Compulsory quarantine may cause ethical and human right issues</li> </ul>	

<p><b>8. Institutional quarantine</b></p> <p><i>To identify infected individuals and break transmission cycle</i></p>	<ul style="list-style-type: none"> <li>• Management of potentially infectious individuals</li> <li>• Slowing down and possible delay of infection transmission in country</li> <li>• Compliance with containment, health monitoring and illness reporting ensured</li> <li>• Provision of appropriate medical interventions (treatments, isolation, testing, etc.) at onset of symptoms</li> <li>• Rapid detection of new cases</li> </ul>	<ul style="list-style-type: none"> <li>• Very resource intensive – human and financial</li> <li>• Logistically challenging and need to ensure provision of essential services (safe food, water, medicine and communication means, etc.)</li> <li>• Political, ethical and possibly legal implications from confinement of large number of individuals (especially foreigners)</li> <li>• Potentially extremely stressful and disruptive to individuals</li> <li>• Need to manage the direct and indirect cost and negative consequence of institutional-based compulsory quarantine of international traveller can be very serious (including human rights issues)</li> <li>• May cause concerns about financial losses of international traveller (e.g. business persons) and need to address compensation issue</li> </ul>	
<p>Comments and guidance:</p> <p>Options for implementation of quarantine:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> no quarantine (only focus on self monitoring and reporting of illness of exposed travellers)</li> <li><input type="checkbox"/> close contacts of a probable or confirmed case</li> <li><input type="checkbox"/> close contacts of a suspect case</li> <li><input type="checkbox"/> all contacts of a probable or confirmed case</li> <li><input type="checkbox"/> all contacts of a suspect case</li> </ul>			

Options for location and nature of quarantine:

- voluntary home or hotel quarantine
- mandatory institutional quarantine

Self health monitoring and illness reporting is less resource intensive and should always be encouraged, as compared with quarantine measures. There is the risk of viral shedding prior to symptom onset and, therefore, potential infection transmission remains. If this option is used, advice to exposed persons on minimizing contact with person of higher risk of infection and avoidance of gatherings and crowded areas for a period of time would mitigate this risk.

In general, quarantine of contacts may be useful in preventing disease spread. The challenge is in balancing expected public health benefits and high cost and consequence of such intervention. It is important to avoid unnecessarily quarantining large numbers of people who may only have a low risk of infection based on the assessment.

Quarantine should be voluntary to the greatest extent possible. Mandatory measures should only be instituted as a last resort, when voluntary measures cannot reasonably be expected to succeed, and the failure to institute mandatory measures is likely to have a substantial impact on public health. Confinement of individuals will need to follow appropriate national and international laws.

Infection control measures appropriate to each confinement context must be implemented to protect others from infection. Safe, habitable and humane conditions of confinement, including the provision of basic necessities and if feasible, psychological support, should be provided for confined individuals. Potential financial and employment consequences of confinement should be addressed. The interests of household members of those under home quarantine should be protected, especially those at increased risk of illness (e.g. immunocompromised family members). Those quarantined should be monitored and medical treatment offered where appropriate.

Quarantine and self-monitoring/reporting can be used concurrently according to the risk that the contacts have been infected with quarantine used for those at higher risk and self-monitoring/reporting used for those at lower risk.

*Note: The term "quarantine" in this context refers to separation from others of exposed travellers who are not ill to prevent the possible spread of infection.*