衞生防護中心
Centre for Health Protection

防備流感大流行

醫護人員 資訊錦囊

Influenza Pandemic Preparedness

Information Kit for Health Care Workers

衞生署
Department of Health

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1. Background information

1.1 Information about Influenza Pandemic

1.1.1 An influenza pandemic is a global outbreak of disease that occurs when a new influenza virus appears or "re-emerges" in the human population against which the human has no immunity, spreads and causes disease worldwide.

1.1.2 Contrast to seasonal outbreaks which are caused by subtypes of influenza viruses that are already in existence among people, pandemic outbreaks are caused by new subtypes or by subtypes that have not circulated among people for a long time, to which the majority of the human population therefore lacks immunity.

1.1.3 Past influenza pandemics have led to high levels of illness, death, social disruption and economic loss. There were three pandemics during the 20th century:

1.1.4 *The 1918 Pandemic "Spanish Flu" [A(H1N1)]*

- The overall clinical attack rate for the 1918 pandemic was estimated to be as high as 40%;
- The estimated number of deaths was 40 million;
- The attack rate and mortality were generally highest among adults (20 to 50 years old).

1.1.5 *The 1957 Pandemic "Asian Flu" [A (H2N2)]*

- The infection rate for the 1957 pandemic was reported to range from 20 to 70%;
- Total excess mortality (globally) was estimated at more than 2 million;
- All age groups were susceptible and the disease was most severe for those aged above 65 years and with underlying medical risks.

1.1.6 *The 1968 Pandemic "Hong Kong Flu" [A (H3N2)]*

- Clinical symptoms were generally mild with low mortality;
- The global excess mortality was estimated to be about 1 million;
- According to (local) information available (*Bulletin World Health Organization 1969. 41, 349 – 351*), the attack rate in Hong Kong for the 1968 flu epidemic was reported to be 15%;
- It was reported that the disease affected all age groups and the clinical symptoms were mild (lasting 3 to 5 days).

1.2 Lessons from past pandemics

1.2.1 Pandemics spread to all parts of the world very quickly, usually within less than a year.

1.2.2 Pandemics tend to recur in second and sometimes third waves, and may cause more severe diseases in subsequent waves.

1.2.3 The behaviour of pandemics was unpredictable. Great variations were seen in mortality, severity of disease and patterns of spread in the previous pandemics.

1.2.4 The novel virus has the capacity to cause severe disease in non-traditional age groups (namely young adults).

1.2.5 The epidemiological potential of a virus tends to unfold in waves – age groups and geographical areas not affected initially are likely to become vulnerable during the second wave.

1.2.6 Over the centuries, most pandemics have originated in parts of Asia where dense populations of humans live in close proximity to ducks and pigs. Surveillance for both animal influenza and clusters of unusual

respiratory diseases in humans therefore serves as important early warning function.

1.2.7 One consistent feature observed in previous pandemics was the rapid surge in the number of cases over a very brief time resulting in a sudden sharp increase in the need for medical care. Planning to maintain health care systems will be especially crucial.

1.2.8 Having fewer people ill at a given time increases the likelihood that medical and other essential services can be maintained and improves capacity to cope with a sharp increase in demand for care. It is desirable to delay spread, to flatten the epidemiological peak and distribute cases over a longer period of time.

1.2.9 Influenza pandemics are different from other threats in that:

- The pandemic will last much longer than most other emergency events and it may include "waves" of influenza activities separated by months;
- The number of health care workers and first responders available to work can be expected to be reduced due to illness;
- Resources in many locations could be limited depending on how widespread an influenza pandemic would be.

1.3 Emergence of pandemic influenza virus

1.3.1 According to the World Health Organization, the pre-requisites for the start of a pandemic include:

- A novel virus subtype emerge to which the general population has no or little immunity;
- The new virus must be able to replicate in humans and cause serious illness; and
- The new virus must be efficiently transmitted from one human to

another.

1.3.2 Pandemic viruses can emerge through two principal mechanisms:

- *Re-assortment* – when two different viruses co-infect the same host and exchange some of their genetic materials

- *Adaptive mutation* – when stepwise changes occur in the virus during sequential infection of humans or other mammals, whereby an avian influenza virus gradually acquires the changes needed to improve its transmissibility among humans

1.4 Influenza A viruses

1.4.1 Influenza viruses are grouped into three types: Influenza A, B and C. Type C viruses are stable while types A and B viruses are prone to mutation. Influenza A viruses mutate much more rapidly than type B viruses.

1.4.2 Influenza A viruses have a large number of subtypes. The subtypes differ based on the haemagglutinin (HA) protein and the neuraminidase (NA) protein on the surface of the virus.

- *Haemagglutinin (HA)*
  - Governs virus binding and entry into cells. There are at least 15 HA subtypes (H1 to H15). Immunity to an HA subtype protects against infection for that subtype to a certain degree.
- *Neuraminidase (NA)*
  - Governs the release of newly formed virus from infected cells into the host's body. There are 9 NA subtypes (N1 to N9).

An individual strain is identified by the subtypes of HA and NA surface proteins.

1.4.3 There are only three known subtypes of human influenza viruses that are currently circulating (H1N1, H1N2 and H3N2).

1.4.4 All subtypes of Influenza A viruses can be found in birds which provide a huge pool of genetic diversity.

1.4.5 *Antigenic drifts*

- Relatively minor antigenic changes of Influenza A and Influenza B viruses occur constantly (*antigenic drift*) which allows the virus to evade the immunity humans have developed because of previous infection or vaccination.
- A new influenza vaccine therefore needs to be produced for each season to protect against the most prevalent influenza strains likely to be circulating.
- Antigenic drifts are responsible for the frequent epidemics and regional outbreaks.

1.4.6 *Antigenic shift*

- "*Antigenic shift*" occurs when there is a major change in the proteins creating a new virus subtype unfamiliar to the human immune system.
- This occurs at irregular intervals and only for Type A influenza viruses.
- There will be a very large population of susceptible hosts and may lead to pandemics.

1.4.7 Fact Sheet on Influenza can be downloaded at (*http://www.chp.gov.hk/content.asp?lang=en&id=24&info_id=29&pid=9*) *Appendix 1*

1.5 What is avian influenza (bird flu)?

1.5.1 Avian influenza is an infectious disease of birds caused by type A strains of the influenza virus. All birds are susceptible to infection with avian influenza.

1.5.2 In poultry, avian influenza infection causes two different forms of disease:

(a) *mild form* - signs of illness ranges from ruffled feathers and reduced egg production to respiratory symptoms;

(b) *"highly pathogenic avian influenza"* - characterized by sudden onset of severe disease, rapid death and a high mortality that can approach 100% within 48 hours.

1.5.3 Viruses that can cause highly pathogenic avian influenza are currently restricted to H5 and H7 subtypes.

1.5.4 Avian influenza H5 and H7 viruses can be distinguished as "low pathogenic" and "high pathogenic". Viruses of the H5 and H7 subtypes can rapidly mutate from a mild to a highly pathogenic form. Therefore their detection in poultry is always of great concern.

1.6 Avian influenza infection in humans

1.6.1 Avian influenza viruses do not normally infect species other than birds. The first documented infection of humans with an avian influenza virus occurred in Hong Kong in 1997 when the H5N1 strain infected 18 humans, resulting in 6 deaths. The infection of humans coincided with an epidemic of highly pathogenic avian influenza caused by the same strain in Hong Kong's poultry population.

1.6.2 Apart from H5N1, two other avian influenza viruses have caused illness

in humans but the diseases were not as severe as those caused by the H5N1 strain, for example:

- *H9N2 strain*
  - Caused mild cases of illness in two children in 1999; and in one child in 2003 in Hong Kong.
  - H9N2 is not highly pathogenic in birds.

- *H7N7 strain*
  - An outbreak of highly pathogenic H7N7 avian influenza which began in the Netherlands in February 2003 caused the death of one veterinarian two months later and mild illness in over 80 other humans.

- *H7N2 strain*
  - One person was found to have serologic evidence of infection with H7N2 following an outbreak of H7N2 among poultry in Virginia in 2002; and in 2003 a patient with serious underlying medical conditions who was admitted to a hospital in New York was subsequently found to have been infected with an H7N2 avian influenza virus.

- *H7N3*
  - Human infections of H7N3 among poultry workers associated with an H7N3 outbreak among poultry were reported in Canada in 2004. The illnesses consisted of eye infections.

1.6.3 Fact Sheet on Avian Influenza can be downloaded at *(http://www.chp.gov.hk/content.asp?lang=en&id=24&info_id=13&pid=9)* *Appendix 2*

1.7 Why is H5N1 of particular concern?

1.7.1 H5N1 is of particular concern for several reasons:

- Although H5N1 is an avian pathogen, it has a documented ability to pass directly from birds to humans.

- Once in humans, H5N1 may cause severe disease with very high mortality.

- Prior to the occurrence of human cases of avian influenza (in HKSAR in 1997), pigs were thought to be the obligatory "mixing vessel" for re-assortment of viruses. The findings that humans could be directly infected with purely avian influenza virus (H5N1) and thus also may serve as the "mixing vessel" for the exchange of virus genes added significance to the pandemic potential of H5N1.

2. Clinical features and diagnosis

2.1 What are the symptoms of avian influenza?

2.1.1 Reported symptoms of avian influenza in humans have ranged from typical influenza-like symptoms (of fever, headache, muscle pain, running nose, cough and sore throat) to eye infections, pneumonia, acute respiratory distress, diarrhea, encephalitis, multi-organ failure and other severe complications.

2.1.2 In the 1997 Hong Kong outbreak of human infection with H5N1 avian influenza, patients developed symptoms of fever, sore throat and cough, and in several of the fatal cases, severe respiratory distress secondary to viral pneumonia.

2.1.3 Sub-clinical infections were reported in recent avian influenza cases in Vietnam.

2.2 Laboratory diagnosis

Laboratory diagnosis depends upon the demonstration of the virus or its components or a rising antibody titre. The following tests are available:

- Direct antigen detection
- RT-PCR for viral RNA
- Virus culture
- Serological tests for detection of specific antibody

2.3 Requests for Testing for Novel Influenza Virus at the Public Health Laboratory Centre

Indications for testing

2.3.1 Specimens should be sent to the Virology Division for testing for patients with: *Appendix 3a*

- Clinical features of severe influenza infection, and
- Epidemiological suspicion of infection with a novel influenza virus, e.g. exposure to infected poultry or infected human;
- With or without a positive test for direct influenza A antigen detection.

Specimen collection

2.3.2 Specimens for viral culture and direct detection tests should be obtained in the acute phase, preferably within 3 days of onset of the illness:

- Nasopharyngeal aspirate (NPA) (or throat & nasal swab in a single container if NPA is not obtainable) should be collected
- Testing of other specimens, such as stool and rectal swabs, may be considered
- Specimens should be placed in viral transport medium

2.3.3 Acute and convalescent antibody titre: -

- Acute clotted blood/serum should be collected as soon as possible, preferably within 7 days, after onset of illness
- Convalescent clotted blood/serum should be collected at least 2 weeks after onset of illness
- Specimens should be placed in plain bottles without anticoagulants

Labeling and documentation

2.3.4 The specimen container should be labeled with patient identifiers matching those on the request form.

2.3.5 A laboratory request form together with the form "Request for Novel Influenza Virus testing" should be completed and accompany each specimen. *Appendix 3b*

Transport of specimen

2.3.6 The following should be noted:

- Ensure the container is properly capped without leakage
- Place the specimen container in a zip-locked plastic bag with the request form outside the bag
- For transport, place specimens in a rigid container at 4°C, and keep specimens upright to minimize the possibility of spillage
- Specimens should arrive at the Virology Division within 24 hours of collection

Enquiries

2.3.7 For enquiries on laboratory testing, please contact:

- Medical staff : 2319 8574/2319 8252
- Culture & Serology Laboratory : 2319 8237/9
- Facsimile: 2319 5989
- Address: Virology Division
  9/F Public Health Laboratory Centre
  382 Nam Cheong Street,
  Shek Kip Mei, Kowloon

2.3.8 Request forms are obtainable from the Virology Division, Public Health Services Branch, Centre for Health Protection. Guide to Request for Testing for Novel Influenza Virus and the Request form could also be downloaded at

(*http://www.chp.gov.hk/guidelinehp.asp?lang=en&id=30&pid=13*)

(*http://www.chp.gov.hk/files/pdf/Novel_flu_testing_form_Nov_%202004.pdf*)

2.3.9 Safety guidelines for Transport of Clinical Specimens and Infectious Substances for Courier Team *Appendix 4*

http://www.chp.gov.hk/files/pdf/GL_Transport_of_%20specimens_EN_20041103.pdf

3. Hong Kong's Preparedness Plans for Influenza Pandemic

3.1 The Government's overall contingency mechanism for major infectious diseases outbreaks

3.1.1 The Government has established an overall contingency response mechanism for handling major infectious disease outbreaks. It consists of a three-level response system (Alert Response Level, the Serious Response Level and the Emergency Response Level).

3.1.2 A clear command and control coordination structure is in place to cater for the different response levels:

- When the Alert Response Level is activated, the Food and Health Bureau, the Department of Health, the Hospital Authority, the Food & Environmental Hygiene Department and the Agriculture, Fisheries & Conservation Department will be the major parties to assess the nature and level of risks, take appropriate actions in anticipation of problems and monitor development.

- The Serious / Emergency Response Level will entail the establishment of a Steering Committee, to be chaired by the Secretary for Food and Health and the Chief Executive respectively, to steer government actions. The Committee will:
    - Formulate overall disease control strategy and decide on the measures to prevent the spread of the disease;
    - Monitor developments of the situation and evaluate effectiveness of measures taken;
    - Direct mobilization of resources and urgent legislative amendments where necessary;
    - Direct the overall communication strategy.

3.2 The HKSARG Preparedness Plan for Influenza Pandemic

3.2.1 The Preparedness Plan for Influenza Pandemic includes a three-level response system based on the different risk-graded epidemiological scenarios relevant to Hong Kong, and each of them prescribes a given set of public health actions required.

Alert Response Level

3.2.2 The Alert Response Level would be activated under scenarios where there are:

- confirmation of HPAI outbreaks in poultry populations *outside* Hong Kong; *or*
- confirmed human case(s) of avian influenza *outside* Hong Kong; *or*
- confirmation of HPAI detected in imported birds in quarantine, in wild birds, in recreational parks, in pet bird shops or in the natural environment *in* Hong Kong.

3.2.3 The main objectives of response measures at this response level would be to obtain timely and accurate information from other places with a view to prevent introduction of the disease into Hong Kong and to detect local cases as early as possible.

Serious Response Level

3.2.4 The Serious Response Level would be activated under scenarios where there is

- confirmation of HPAI outbreaks in the environment of or among poultry population in retail markets, wholesale markets or farms *in* Hong Kong due to a strain with known human health impact ; *or*
- confirmation of human case of novel influenza *in* Hong Kong without evidence of efficient human-to-human transmission.

3.2.5 The main objective of response measures at this response level is to contain the disease as soon as possible, identify foci of infection, prevent local transmission and exportation of disease to other places.

Emergency Response Level

3.2.6 The Emergency Response Level would be activated under scenarios where there is:

- evidence confirming efficient human-to-human transmission of novel influenza occurring overseas or in Hong Kong; *or*
- pandemic influenza.

3.2.7 The main objective of response measures would be to contain the disease as soon as possible, identify foci of infection, prevent large outbreak from occurring, interrupt and stop chain of local transmission & prevent exportation of disease to other places.

3.2.8 If there is efficient human-to-human transmission locally resulting in high attack rates and significant burden of disease, the response strategies would need to be reviewed. The main objective of response would be to slow down progression of epidemic and minimize loss of human lives in order to buy time for production of an effective vaccine against the novel pandemic influenza strain

4. Public health measures

4.1 The essential components to control an outbreak in human beings include:

- Early identification
- Isolation of suspect/probable cases
- Tracing and monitoring close contacts of all suspect/probable cases identified

4.1.1 Timely surveillance information will be key to early identification of a novel virus and to enable early intervention to contain the infection or to delay the spread. Early detection of a new virus requires laboratory staff as well as clinicians to be alert to the "unusual".

4.1.2 Influenza A (H5) was included as a notifiable disease in Hong Kong since 30 January 2004. Besides influenza A (H5), human infections with influenza A (H7) and influenza A (H9) have also occurred in recent years. Influenza A (H7) and influenza A (H9) were included as statutorily notifiable infectious diseases in Hong Kong since 31 December 2004.

4.1.3 Medical practitioners are requested to report all suspected and confirmed cases of avian influenza to the Central Notification Office for further investigation.

4.2 Reporting Criteria

(a) Person with acute respiratory illness, characterized by fever (temperature>38°C) and cough and/or sore throat,

AND EITHER

- contact with a case of Influenza A (H5), Influenza A (H7) or Influenza A (H9) during the infectious period, *OR*

- recent (less than 1 week) visit to poultry farm in an area known to have outbreaks of highly pathogenic avian influenza (HPAI), *OR*
- worked in a laboratory that is processing samples from persons or animals that are suspected from HPAI infection

OR

(b) Person with severe pneumonia caused by Influenza A (e.g. Directigen test positive for Influenza A) **AND** had contact with live birds/poultry within 1 week before onset of illness

OR

(c) Death from an unexplained acute respiratory illness **AND EITHER**

- residing in area where HPAI is suspected or confirmed, **OR**
- contact with a case of Influenza A (H5), Influenza A (H7) or Influenza A (H9) during the infectious period.

4.3 Notification of Infectious Diseases

4.3.1 Notification can be sent through any one of the following channels:

- **Fax:** 2477 2770
- **Phone:** 2477 2772
- **Email:** diseases@dh.gov.hk
- **Address:** Central Notification Office
  Centre for Health Protection,
  2/F., 147C Argyle Street, Kowloon

4.3.2 The notification forms and contact details are also accessible at (*http://www.chp.gov.hk/notification.asp?lang=en&id=33&pid=13&ppid=*) *Appendix 5*

4.3.3 Alternatively medical practitioners may choose to report through the web-based notification system available in the CENO On-line website (*http://www.chp.gov.hk/ceno*) *Appendix 6*

4.4 Investigation & Control Measures

The following measures will be taken if there is a local case of human avian/novel influenza infection:

4.4.1 The patient will be isolated for clinical treatment.

4.4.2 The Department of Health (DH) will carry out field investigation to identify the source of infection, to trace the contacts, to ascertain the mode of spread and to advise on disinfection of places where the patients stayed at during the infectious period.

4.4.3 Collaterals exposed to the same avian source will be advised to leave the suspected source. They will be put under quarantine, prescribed with antiviral and put under medical surveillance for 7 days* after the last contact with the case.

4.4.4 Close contacts may be put under quarantine, prescribed with antiviral and put under medical surveillance for 7 days* after the last contact with the infected person. In addition, if the close contacts are health care workers, they will be advised to receive vaccination against ordinary influenza.

4.4.5 Social contacts will also be put under medical surveillance for 7 days* after the last contact with the infected person and advised to contact DH if symptoms appear.

4.4.6 If the source of infection of the case is suspected to be related to local poultry, the culling plan may be activated.

4.4.7 If the case is imported, the country of import will be informed.

**Remark: The surveillance period depends much on the latest knowledge of incubation period of avian/novel influenza virus*

4.5 Other Public Health Measures

According to the recommendations made during the WHO expert consultation (held in December 2004), it is recommended to consider measures to increase social distance when human-to-human transmission is confirmed. Measures such as closure of schools and public places, stopping public gathering and curtailing non-essential activities and services will need to be considered. The measures to be taken will depend on the epidemiological context and the extent to which different settings contribute to transmission.

5. Infection Control Measures

5.1 How can the avian influenza virus be killed?

5.1.1 Avian influenza viruses are becoming more stable in environment and can survive at 37^{o}C for 6 days. Good environmental hygiene and infection control measures should be observed to contain the spread of infection.

5.1.2 Generally, avian influenza viruses can be inactivated by alcohol, chlorine. Commonly used disinfectants include 70% alchol and household bleach.

5.1.3 Choice of disinfectant depends on source of contaminated materials and characteristic of environment to be disinfected. Commonly used disinfectants are as follows:

- Use 1 part of household bleach mixed to 4 parts of water to disinfect materials contaminated with blood and body fluid.

- Use 1 part of household bleach mixed to 49 parts of water to disinfect contaminated areas.

- Use 1 part of household bleach mixed to 99 parts of water for general cleansing.

- 70% alcohol can be used to disinfect metal surface on which bleach cannot be used.

5.2 Infection control practice at the clinic setting (to be adopted at scenario of ***Serious Response Level*** or ***Emergency Response Level***)

5.2.1 The virus disseminates largely by droplet spread. Aerosolized respiratory secretions, patients' secretion and fomites are potentially

infectious.

5.2.2 It can be contracted through close contacts with or unprotected exposure to someone infected with the virus.

5.3 Incorporation of droplet and contact precautions in standard practice

5.3.1 *Droplet precautions*

(a) Exclusion from duties should be arranged for health care workers who had unprotected exposure during close contacts of patients with novel influenza

(b) Surgical mask must be worn in clinic areas. The following should be noted in the use of mask, that

(i) the mask should be discarded after procedures that might have resulted in potential droplet contamination;

(ii) the same mask should not be worn in non-clinic boundary.

(c) Hand-washing is mandated after each patient contact, change of gloves/masks, and gown/uniform/white coat.

(d) Protective clothing, for example white coat or gown, should be worn in clinic areas. Protective clothing should not be worn outside clinic area.

5.3.2 *Precautions focusing on patients/clients*

(a) Advise all patients/clients to wear surgical mask in the public area and clinic area and specifically requiring those with respiratory signs/symptoms of fever to wear surgical mask.

(b) Patient/client triage

(i) Patient/client is asked to self-identify him/herself if he/she

might have contracted infection as a result of being a close contact of patient with novel influenza, or he/she has symptoms suggesting of the infection;

(ii) Client at higher risk of infection must wear a surgical mask and the consultation should be held in a designated room with additional precaution;

(iii) N95 mask, gloves, goggles and protective clothing should be worn during high risk procedures.

5.3.3 *Precautions for environmental control*

(a) A room should be designated for consultation of patients at higher risk of novel influenza. There should be good ventilation and preferably separate hand washing facility in the designated room.

(b) Aerosol-generating procedure should be avoided unless it's essential. If required, the procedure should be carried out in negative pressure room or the designated room above. Staff should put on goggles, N95 masks, gowns and gloves on entry to the room. Such materials should be properly disposed or disinfected after procedure.

(c) Wastes should be placed in waste bags, which are tied and put in covered containers for disposal in the normal channels.

(d) Contaminated PPE and other items should not be brought into non-clinic areas.

5.4 Infection control procedures following the detection of a suspected/known case of novel influenza

5.4.1 Following the care of a patient/client suspected with or known to have novel influenza:

(a) The area should be closed for disinfection as soon as possible.

(b) The area and objects that have been used during the consultation should be disinfected with 1:49 household bleach (or 70% alcohol for metallic surfaces).

5.4.2 Medical practitioners should notify the Department of Health. The staff who has been in close and unprotected contact with a case of novel influenza should be alerted to the need for quarantine, and follow self-health management including checking temperature twice daily, limiting interactions and exclusion from public areas.

Guidelines on Infection Control Practice are available at the CHP Website:

5.4.3 Guidelines on Infection Control Practice in the Clinic Setting (http://www.chp.gov.hk/files/pdf/grp_IC_practice_in_clinic2005011101.pdf)

5.4.4 Guidelines on Infection Control Practice during Flu Pandemic (Jan 2005) *Appendix 7* (http://www.chp.gov.hk/files/pdf/grp_IC_practice_during_flu_pandemic2005021201.pdf)

5.3.5 Flow chart of recommended consultation procedure concerning influenza A (H5) in private clinic setting *Appendix 8* (http://www.chp.gov.hk/files/pdf/grp-h5n1app34-bi-2004052100.pdf)

5.3.6 Recommendations on Integrating Gloves and Hand-washing Practices *Appendix 9* (http://www.chp.gov.hk/files/pdf/grp_recommend_integrating_gloves_20050128.pdf)

6. Vaccines

6.1 Vaccine is regarded as the most important line of defense during influenza pandemic. However, vaccines are unlikely to be available during early stages of pandemic.

6.2 Vaccination of human being with currently available “seasonal” vaccines might limit the risk of re-assortment and emergence of an influenza virus with pandemic potential. (For example, vaccines may be administered to cullers involved in destruction of poultry, people living or working on poultry farms where H5N1 infection is reported). However, inter-pandemic vaccine (current “seasonal” vaccines) will not protect humans from infection with novel influenza virus.

6.3 Health care workers are encouraged to receive “seasonal vaccination” against ordinary influenza virus in order to minimize diagnostic confusion (when health care workers are infected by ordinary human influenza viruses) and to reduce the chance of re-assortment (when there is co-infection by human influenza virus and novel influenza virus).

6.4 The vaccine against the novel virus causing the pandemic must closely match the actual strain of the pandemic virus and therefore cannot be produced until the virus has emerged and the virus strain is known.

6.5 It would take at least four to six months to produce the vaccine after the pandemic virus is identified. The precise formulation, dose and dose schedule would not be known until nearer the time.

6.6 WHO network laboratories developed a prototype virus, for use as the “seed” for vaccine production, and made it available to manufacturers in April 2004. Small investigational batches of an H5N1 vaccine have been produced in Japan and the USA for use in clinical trials.

6.7 While several different vaccines have been produced for clinical testing, whether these will be suitable for use against a pandemic influenza flu strain depends on how much the pandemic strain has “drifted” from the Influenza A/H5N1 virus currently in circulation in poultry.

7. Use of Anti-viral agents

7.1 Antiviral drugs play two principal roles in the management of influenza:

(1) *prophylaxis*, aimed at decreasing the likelihood of developing influenza; and

(2) *treatment*, aimed at reducing the severity and duration of influenza.

7.2 Antiviral drugs have important roles to play, both now and at the start of a pandemic. Public health priorities will change as the situation moves from the present situation, through the phase when human-to-human transmission becomes more efficient, to the onset of full-fledged pandemic:

(a) At present

- To treat H5N1-infected patients and prevent infection in close contacts, including family members and health care workers.

(b) Start of efficient human-to-human transmission

- Drug administration to patients and contacts where clusters of cases are occurring might stop the virus from further improving its transmissibility or delay international spread.

(c) When a pandemic has been declared

- Pending the availability of vaccines, anti-virals will be the only influenza-specific medical intervention for reducing morbidity and mortality.

8. General advice to the public

8.1 What can the general public do to prevent avian influenza?

The public can take the following measures to prevent avian influenza:

- Avoid touching live poultry or their droppings, because they may carry the avian influenza virus.

- Wash hands thoroughly with liquid soap and water immediately after contact with live poultry, birds or their droppings.

- Cook poultry and eggs thoroughly before eating.

- Develop good body resistance and have a healthy lifestyle. This can be achieved through a balanced diet, regular exercise, adequate rest, reducing stress and no smoking.

- Observe good personal and environmental hygiene:
  - Keep hands clean and wash hands properly;
  - Cover nose and mouth while sneezing or coughing. Dispose sputum or secretions wrapped in tissue paper into rubbish bins. Wash hands afterwards.

- Maintain good indoor ventilation.

- Avoid crowded places with poor ventilation if feeling unwell.

- If you have flu symptoms, consult a doctor and wear a mask to prevent spread of disease. Tell your doctor your travel history if you have been to a country with avian influenza outbreak reports.

8.2 What can be done for environmental hygiene?

The public is advised to note the following points for environmental hygiene:

8.2.1 *Ensure good ventilation*

- Keep windows open to maintain good indoor ventilation.
- Wash dust filters of air-conditioners frequently and check for drips from air conditioners.
- Create a smoke-free environment for work, rest and play.

8.2.2 *Keep your home clean*

- Wipe furniture and household facilities with a diluted household bleach solution in the ratio of 1:99 (1 part of household bleach mixed with 99 parts of water) once a day. Then rinse with clean water and wipe dry. If any objects or facilities become soiled, they must be cleaned again.
- Keep floor/carpets clean. Vacuum-clean floor/carpets every day and wash/shampoo them regularly.

8.2.3 *Do not litter*

- Wrap up rubbish properly before putting it in a bin with a well-fitting lid. Empty the bin once a day.
- Do not litter or spit.
- Wash hands after handling refuse.

8.3 Disposal of dead birds

8.3.1 In view of the possibility of being infected while handling carcasses of dead birds, members of the public are advised not to handle or dispose of the carcasses by themselves. They should:

- inform the Food and Environmental Hygiene Department by telephoning 2868 0000, if the dead birds are found in public areas;

or

- inform the property management personnel if dead birds are found within private premises.

8.3.2 Staff who need to handle the carcasses of dead birds should wear adequate personal protective equipment and observe the handling procedures stated in the document "Safety guidelines for the protection of personnel in handling and disposal of dead birds", available on the website of Centre for Health Protection: *http://www.chp.gov.hk/files/pdf/grl_precautionsfordeadbodies_en20041201.pdf*

8.4 Is it safe to eat chicken?

8.4.1 There is no evidence that avian influenza is a food-borne disease. However it is important to be sure that frozen chicken, chicken organs or the by-products of the poultry that you eat are properly cooked in a hygienic way. This would also help to prevent other food-borne infections.

8.4.2 *When buying and handling live chicken and eggs*

- When buying or handling live chickens, try not to touch them or their droppings. Do not blow at their anuses.
- Egg shells may have been contaminated with bird faeces. Wash the outside of eggs and wipe them dry before putting into the refrigerator for storage.
- Observe food hygiene when cooking live chickens and eggs.
- Always wash your hands thoroughly with liquid soap and water after handling live chickens and eggs.

8.4.3 *Cooking of poultry and eggs*

- Poultry and eggs should be thoroughly cooked before eating. Eggs should be cooked until the white and yolk become firm.

- Do not eat raw eggs or dip cooked food into any sauce containing raw eggs.
- Make sure poultry is fully done before consumption. The centre of the poultry should reach 70^{o}C continuously for at least two minutes during cooking.
- If there are pinkish juices running from the cooked poultry or the middle part of its bone is still red, the poultry should be cooked again until fully done.

8.5 Travel tips

If there is an outbreak of avian influenza outside Hong Kong, is it safe to go to the infected areas?

8.5.1 Travelers should pay attention to the outbreak situation of the affected area and decide whether they should continue the journey after considering the risk involved.

8.5.2 If travelers still decide to go to the affected area, they should observe the necessary precautions. On return, they should seek medical attention promptly if they feel sick, and inform the doctor their recent travel history.

8.5.3 If there is an outbreak of avian influenza outside Hong Kong, travelers should observe the following measures to prevent avian influenza:

8.5.3.1 *Before departure*

- If travelers are running a temperature, or having a sore throat or cough, or feeling unwell, they are advised not to travel and to postpone the trip until recovery.

8.5.3.2 *While overseas*

- If travelers are feeling unwell, such as having a fever or

coughing, they should put on a mask and inform hotel staff or their tour leader, and seek for medical attention immediately.

- They should avoid touching any birds and poultry or their droppings. Do not visit farms or parks with wild birds. Refrain from feeding pigeons in public open areas.
- They should wash their hands with liquid soap immediately if in contact with birds or poultry.
- Observe food hygiene. Poultry and eggs should be thoroughly cooked before eating.

8.5.3.3 *After returning home*

- If they have fever and cough, they should put on a mask and seek medical attention immediately and let their doctor know their travel history.

8.5.3.4 *At all times*

- They should observe good personal and environmental hygiene. Keep hands clean, wash hands frequently with liquid soap, especially before eating and touching nose, mouth and eyes.

9. Related links/websites:

http://www.chp.gov.hk/view_content.asp?lang=en&info_id=590

http://www.who.int/csr/disease/avian_influenza/en/

http://www.who.int/csr/disease/influenza/pandemic/en/

http://www.cdc.gov/flu/avian/index.htm

http://www.oie.int/eng/AVIAN_INFLUENZA/

Factsheet on Influenza

Influenza

Causative agent

Influenza is a highly infectious viral disease. It is caused by various types of influenza viral strains. Three types of influenza viruses are recognized: A, B and C. Type A is more common. In Hong Kong, the two subtypes of influenza A (H1N1 and H3N2) are most commonly seen. Emergence of new subtypes occurs from time to time at irregular intervals. They are responsible for widespread outbreaks and necessitate periodic reformulation of influenza vaccine. In Hong Kong, the disease is more prevalent in January-March and July-August.

Clinical features

Influenza is an acute illness of the respiratory tract, characterized by fever, headache, muscle ache, runny nose, cough and sore throat. It is generally a mild illness.

Mode of transmission

Airborne spread predominates among crowded populations in enclosed spaces. The infection may also be spread from person to person by direct contact with infected secretions.

Incubation period

The incubation period is short, usually around 1-3 days.

Management

The disease is usually self-limiting with recovery in 2-7 days. Anti-fever medicine and cough syrup are useful in relieving symptoms. Aspirin should not be used in

children because it may cause Reye's Syndrome which is a rare complication involving the central nervous system and the liver. Antibiotics need not be used unless the illness is complicated by bacterial infection. Patients should also observe personal hygiene to prevent spreading the virus.

For patients with lower resistance or when there are signs of deterioration e.g. persistent fever or shortness of breath, they should seek early medical advice. Antiviral agents like amantadine is effective for strains of influenza A, but it must be used with care as it can cause serious side effects, like loss of appetite, vomiting, insomnia, dizziness and hallucination.

Prevention

1. Maintain good personal and environmental hygiene.
2. Keep hands clean and wash hands properly.
3. Wash hands when they are dirtied by respiratory secretions e.g. after sneezing.
4. Cover nose and mouth while sneezing or coughing and dispose of nasal and mouth discharge properly.
5. Good body resistance helps to prevent influenza infection. This can be achieved through a balanced diet, regular exercise, adequate rest, avoid too much stress and smoking.
6. During the "flu" season, it is better to avoid crowded public places where the ventilation is not good.
7. Influenza vaccine is prepared according to the prevalence of strains in the community each year, as recommended by the World Health Organisation. It is now offered to elderly home residents in Hong Kong, as the vaccine may reduce the severity of the disease and the likelihood of complications and death among elderlies.

(Information adapted from CHP website http://www.chp.gov.hk*)*

流行性感冒概覽

流行性感冒

病原體

流行性感冒(流感)是一種由病毒引致的疾病，傳染性極高。流感由不同類型的病毒引起，已知的流感有三種類型：甲型、乙型及丙型，其中以甲型較爲常見。在香港最常見的是兩種甲型流感(H1N1 及 H3N2)。流感會不時變種(基因改變)而衍生新品種，導致流感廣泛傳播，因此當局須定期重新研製流感疫苗。在香港，流感肆虐而病例最多的月份是一至三月和七、八月。

病徵

流感是呼吸道的急性疾病，症狀包括發燒、頭痛、肌肉疼痛、流鼻水、咳嗽及喉嚨痛，通常病情較輕微。

傳播途徑

流感主要在人多擠迫的密閉環境中經空氣或飛沫傳播，亦可透過直接接觸患者的分泌物而傳播。

潛伏期

潛伏期短，通常約一至三日。

治理方法

大部份人都能在 2 至 7 日內自行痊癒。退燒藥及咳藥水均有助紓緩症狀。兒童忌用亞士匹靈，以免產生雷爾氏綜合徵(Reye's Syndrome)。雷爾氏綜合徵是一種罕見的併發症，影響中樞神經系統及肝臟。除非患者已出現細菌性感染併發症，否則無需服用抗生素。患者亦應注意個人衞生，防止病毒散播。

如患者抵抗力較弱或出現病情惡化的徵象，例如持續發燒或氣促，應盡早求診。

抗病毒劑如金剛胺能有效對付甲型流感，但必須小心使用，因金剛胺可引起嚴重副作用，如胃口欠佳、嘔吐、失眠、頭暈及幻覺等。

預防方法

1.維持良好的個人及環境衞生。
2.保持雙手清潔，並用正確方法洗手。
3.雙手被呼吸系統分泌物弄污後(如打噴嚏後)應立即洗手。
4.打噴嚏或咳嗽時應掩着口鼻，並妥善清理口鼻排出的分泌物。
5.增強抵抗力有助預防感染流感。均衡飲食、適量運動、充足休息，避免過度緊張和避免吸煙，都是增強抵抗力的方法。
6.在流感高峯期，最好避免前往人多擠迫、空氣流通情況欠佳的公眾地方。
7.流感疫苗是根據世界衞生組織的建議，按照每年社會上流行的流感類型而製備的。現時在香港，有關方面會爲安老院的長者注射疫苗，從而減輕長者發病時的病情，並減低長者出現併發症和因而致命的可能。

(資料來源: 衞生防護中心網頁http://www.chp.gov.hk)

衞生防護中心
Centre for Health Protection
保障市民健康
Protecting Hong Kong's health

Factsheet on Avian Influenza

Avian influenza

Causative agent

Avian Flu (H5N1) is one type of Influenza A. It is known previously to infect birds only, but 18 and 2 human cases were documented in Hong Kong in 1997 and 2003 respectively.

Clinical features

Avian Flu (H5N1) has similar clinical presentation as other influenza viruses. However, it is more likely to result in high fever, chest infection, respiratory failure, multi-organ failure, even death.

Mode of transmission

Avian Flu (H5N1) is transmitted from infected live birds to man. Transmission between humans is very inefficient.

Management

People with influenza should have adequate rest and sleep and drink plenty of fluid. Anti-fever medicine and cough syrup are useful to reduce symptoms. Unless there is bacterial infection, antibiotics should not be used. Patients should also observe personal hygiene and wash hands frequently to prevent spreading the virus from the hands which can get the virus from contact with the nose or mouth. Aspirin should not be used in children because it can induce Reye's Syndrome. For patients with lower resistance or when there are signs of deterioration, e.g. persistent high fever or shortness of breath, they should seek early medical advice.

衞生署
Department of Health

Avian Flu H5N1 is generally more severe than an ordinary "flu", and many patients require hospital care. Some anti-viral drugs may be effective in treating the condition. However, drugs should be used carefully following doctor's instructions as they may cause adverse side effects.

Prevention

The best protection against influenza is by building good body resistance. This can be achieved through a balanced diet, regular exercise, adequate rest, reducing stress and no smoking. If you have a 'flu', better avoid crowded public places where the ventilation is not good.

Droppings of infected live birds and poultry may carry the Avian Flu virus. One should avoid touching live birds and poultry and their droppings. If you have been in contact with live birds and poultry, wash hands thoroughly with liquid soap and water immediately. If you keep live bird at home, avoid close contact with the pet and wash hands thoroughly with liquid soap each time after touching it or after cleaning its droppings. Schools and nurseries should take measures to prevent children from coming into contact with live birds. When traveling outside Hong Kong, avoid touching live birds and poultry. Poultry and eggs should be thoroughly cooked before eating.

If you have symptoms of influenza, consult a doctor and wear a mask to prevent spread of the disease.

(*Information adapted from CHP website* http://www.chp.gov.hk*)*

衞生防護中心
Centre for Health Protection
保障市民健康
Protecting Hong Kong's health

禽流感概覽

禽流感

病原體

H5N1 禽流感病毒是甲型流感的一種，本來只影響禽類，如雞、鴨等，而香港在 1997 及 2003 年分別發現有 18 宗及 2 宗人類感染的個案。

病徵

H5N1 禽流感的徵狀與普通流感差不多，但較易導致高燒、肺炎、呼吸衰竭、多種器官衰竭，以致死亡。

傳播途徑

H5N1 禽流感是透過與活家禽近距離接觸而傳播，而人類之間的傳播能力十分之低。

治理方法

感染流感人士應有充足的休息和多飲水。病人應注意衞生，經常洗手，避免將病毒從口鼻經雙手通過接觸而散播。同時，可利用退燒藥，止咳水等以減輕病狀；除非已有細菌性感染，否則毋須服食抗生素。兒童忌用含有阿士匹靈（Aspirin）成份的藥物，以避免產生雷爾氏綜合徵（Reye's Syndrome）。倘若本身抵抗力弱或病情變得嚴重，例如高燒不退、氣促等，就要及早求診，以免耽誤病情。

H5N1 禽流感病毒所引起的流感病情比一般流感嚴重，很多病者須留院醫治。某些抗病毒藥物對病情可能有效，但此類藥物亦有不良副作用，所以必須聽從醫生指示，並小心使用。

預防方法

預防流行性感冒的最好方法，是增強自己的抵抗力，要有充足的睡眠和休息，

衞生署
Department of Health

飲食均衡、適量運動、注意空氣流通，和切勿吸煙。如果患有感冒徵狀，宜留在家中休息，避免前往擠迫和空氣不流通的公共場所。

染病的活鳥和家禽的糞便中可能會帶有病毒，故應盡量避免接觸活鳥和家禽及其糞便。如曾接觸活鳥或家禽，要立刻用梘液和清水洗手。如家中飼養雀鳥，應避免和牠有親密接觸，並每次在接觸牠或替牠處理糞便後用梘液和清水洗手。學校及幼兒院舍亦應採取措施防止兒童接觸活鳥及家禽。出外旅遊時應避免接觸活鳥及家禽。進食家禽肉類和蛋時應徹底煮熟。

如有流感徵狀便要看醫生，並要戴上口罩，以防傳染他人。

(資料來源: 衞生防護中心網頁http://www.chp.gov.hk)

Guide to Request for Testing for Novel Influenza Virus

1. Contact information

1. For notification of suspected cases:

During office hours	Central Notification Office	2477 2772
Outside office hours	Medical Control Officer	7116 3300 - 9179

2. For enquiries on laboratory testing:

Medical Staff	2319 8574/252
Culture and Serology Laboratory	2319 8237/9
Facsimile	2319 5989
Address	Virology Division 9/F Public Health Laboratory Centre 382 Nam Cheong Street, Shek Kip Mei, Kowloon

2. Indications for testing

Specimens should be sent to the Virology Division for testing for patients with:
- Clinical features of severe influenza infection, and
- Epidemiological suspicion of infection with a novel influenza virus, e.g. exposure to infected poultry or infected human,
- With or without a positive result for direct influenza A antigen detection*

3. Specimen collection

1. Specimens for viral culture and direct detection tests should be obtained in the acute phase, preferably within 3 days of onset, of the illness:
   - Nasopharyngeal aspirate (NPA) (or throat & nasal swab in a single container if NPA is not obtainable)
   - Testing of other specimens, such as stool and rectal swabs, may be considered
   - Place specimen in viral transport medium
2. Acute and convalescent antibody titre:
   - Acute clotted blood/serum should be collected as soon as possible, preferably within 7 days, after onset of illness
   - Convalescent clotted blood/serum should be collected at least 2 weeks after onset of illness
   - Place specimen in plain bottle without anticoagulants

4. Laboratory request form

1. A laboratory request form, together with the "Request for Novel Influenza Virus Testing" form, obtainable from the Virology Division, must be completed legibly in full and accompany each specimen, in order to ensure expedient specimen processing.
2. The specimen container must be labeled with patient identifiers matching those on the request form. Incompletely labeled specimens will be rejected.

5. Transport of specimen

1. Ensure container is properly capped without leakage.
2. Place the specimen container in a zip-locked plastic bag with the request form outside the bag.
3. For transport, place specimens in a rigid container at 4°C, and keep specimens upright to minimize the possibility of spillage.
4. Specimens should arrive at the Virology Division within 24 hours of collection.

*In case direct influenza A testing is undertaken, all procedures must be performed in a laboratory with Biosafety Level 2 standards and inside a biological safety cabinet.

Request for novel influenza virus testing

(Please complete this form to accompany the laboratory request form DH1293a.)

Test requested by: Dr. _____

Contact information of doctor (telephone/mobile/pager number): _____

Patient's name: _____

Patient's Hong Kong identity card number: _____

Clinical features (please circle and complete as appropriate):

Date of onset of illness _____

Fever No/Yes - Temperature: _____ ^{o}C

Dyspnoea No/Yes

Other significant symptoms _____

Response to antibiotic treatment No/Yes
(Please specify antibiotics used) _____

_____

Exposure to infected poultry/human No/Yes - Dates: _____

Occupation _____

Investigation findings (please circle and complete as appropriate):

Chest x-ray abnormal No/Yes - Please specify changes: _____

_____

_____

Haematology: White cell count _____ x 10^{6}/ml
Lymphocyte count _____ x 10^{6}/ml

Rapid test for influenza A virus Negative/Positive

Other relevant information:

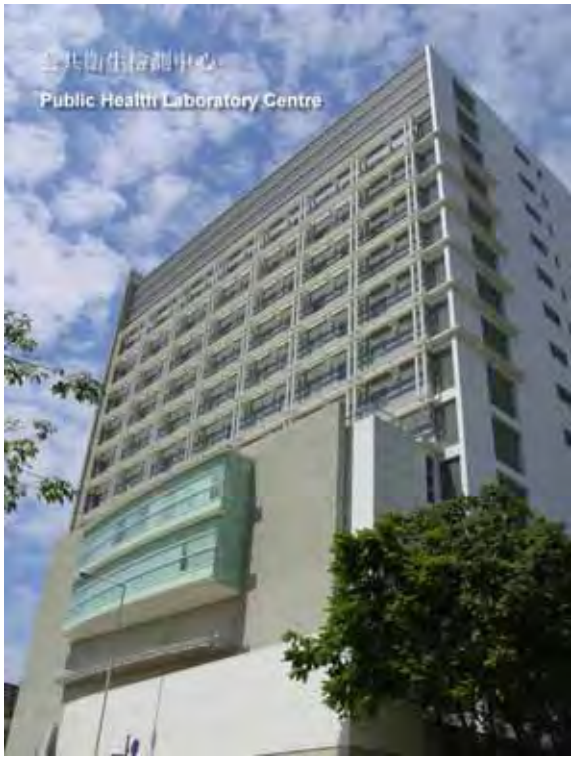
_____

_____

_____

- The End -

Safety Guidelines on Transport of Clinical Specimens and Infectious Substances for Courier Team



Infection Control Committee

Department of Health

August 2004

Potential risk

Personnel handling clinical specimens and infectious substances may be at risk of exposure to blood and body fluids in case of spillage and breakage of specimen containers

Safety Precautions

Personal Hygiene

1. Maintain good personal hygiene.
2. Wash hands after each session of work, when contaminated, soiled or after removal of gloves.
3. Do not touch mouth, eyes, nose and mucosal membranes with gloved hands or prior to hand washing.

Proper Specimen Handling during Transport

1. Working uniforms or protective gowns, and gloves are adequate for handling properly packed transferred specimens and materials.
2. The outer container (transport box) must be handled gently with care. Throwing, dropping, or pulling over the floor of the transport box is prohibited.

Handling of Specimen Leakage and Spillage during Transportation

1. Leaking specimens are hazardous to persons involved in their handling.

2. A biological spill kit should be located at easily reachable place and the inventory regularly checked.

3. The biological spill kit should contain latex gloves, disposable gown, face / eye protections, mask, red waste disposal bags, disposable absorbent material, sodium hypochlorite tablets, water and alcohol hand rub. The sodium hypochlorite tablets and alcohol hand rub need to be replaced before expiry date.

4. When leakage of fluid content to the outside of the outer container is encountered during transport, people in the vicinity should be alerted to stay away from the affected site.
5. Report to the laboratory immediately [Public Health Laboratory Centre (PHLC), Shek Kip Mei, Tel: 2139 8623 or Clinical Pathology Laboratory Centre (CPLC), Shatin, Tel: 2687 4920].
6. Decontaminate the spill immediately.

Spill Clean-up Procedure

1. Wear gloves and the appropriate personal protective equipment (PPE), including disposable gown, mask, face or eye protection.

2. Cover the spill with absorbent material to contain it.

3. Pour freshly diluted sodium hypochlorite over absorbent material gently; from periphery to centre (follow instruction for dilution as stated on the container). Allow approximately 30 minutes contact time.

4. Place waste materials into red waste disposal bag and seal for disposal. Rinse disinfected area with water and wipe dry.

Training Methods and Documentation

All courier team members should read this guideline on induction and at least once a year, and sign the training record. Updated training record should be kept by the supervisor.

Audit

There should be a periodic check to ensure that the safety precautions are fully implemented.

Notification of infectious diseases (http://www.chp.gov.hk/notification.asp)

How to notify infectious diseases?

In accordance with the Quarantine and Prevention of Diseases Ordinance (Cap.141), there are 30 notifiable infectious diseases. All registered medical practitioners are required to notify the Centre for Health Protection all suspected or confirmed notifiable diseases. Medical practitioners are also advised to report other diseases and conditions that are of public health concern. The Centre for Health Protection will conduct surveillance and control of these diseases.

The notification forms and contact details are shown in the table below. Alternatively, registered medical practitioners may choose to report through the secure and convenient web-based notification system available in the CENO On-line website (http://www.chp.gov.hk/ceno).

Notification forms and contact details

Diseases	Notification forms	Contact details			
		Fax	Tel	Address	E-mail
Tuberculosis		2574 2439; 2834 6627	2572 3487	Wanchai Chest Clinic 1/F, 99 Kennedy Road, Hong Kong	
Statutorily notifiable infectious diseases other than Tuberculosis		2477 2770	2477 2772	Centre for Health Protection 2/F., 147C Argyle Street, Kowloon	
Diseases and conditions of public health concern		2477 2770	2477 2772	Centre for Health Protection 2/F., 147C Argyle Street, Kowloon	

Purpose of Collecting Data

(http://www.chp.gov.hk/files/html/StatementofPurposes_en.htm)

FORM 1

QUARANTINE AND PREVENTION OF DISEASE ORDINANCE

(Cap. 141)

TUBERCULOSIS NOTIFICATION

Particulars of Infected Person

<table>
<tr><td colspan="3">Name in English</td><td colspan="2">Name in Chinese</td><td colspan="2">Age/Sex:</td><td>I.D. Card/Passport No.</td></tr>
<tr><td colspan="7">Address:</td><td>Telephone Number:</td></tr>
<tr><td colspan="7">Place of Work/
School Attended:</td><td>Telephone Number:</td></tr>
<tr><td colspan="2">Site of TB</td><td colspan="3">Sputum</td><td colspan="2">Disposal</td><td rowspan="5">Hospital/Clinic sent to (if any):</td></tr>
<tr><td>Resp. System</td><td></td><td></td><td>Smear</td><td>Culture</td><td>On Treatment</td><td></td></tr>
<tr><td>Meninges</td><td></td><td>Positive</td><td></td><td></td><td>On Observation</td><td></td></tr>
<tr><td>Bone & Joint</td><td></td><td>Negative</td><td></td><td></td><td>Referred</td><td></td><td rowspan="3">Hospital No.:</td></tr>
<tr><td>Other(s)</td><td></td><td>Unknown</td><td></td><td></td><td>Died</td><td></td></tr>
<tr><td colspan="8">Duration of stay in Hong Kong: _____ Years
Does patient have a history of past treatment for tuberculosis? __Yes __No
If yes, please state the YEAR in which he first received treatment: _____</td></tr>
</table>

Notified under the Prevention of the Spread of Infectious Diseases Regulations by

Dr. _____ on _____ / _____ / _____
(Full Name in BLOCK Letters) (Date)

Telephone Number: _____ _____
(Signature)

(Please DELETE whichever is not applicable)

"I will arrange for examination of contacts myself."

"Please arrange for examination of contacts to be done by the Government Chest Service."

Further Remarks:

DH 1A(s)(Rev.99)

FORM 2
QUARANTINE AND PREVENTION OF DISEASE ORDINANCE
(Cap. 141)

Notification of Infectious Diseases other than Tuberculosis
Particulars of Infected Person

Name in English:	Name in Chinese:	Age/Sex:	I.D. Card/Passport No.:
Address:			Telephone Number:
Place of Work/ School Attended:			Telephone Number:
Hospital(s) attended:			Hospital/A&E Number:

Disease ["✓"] below Suspected/Confirmed on _____ / _____ / _____

☐	Acute Poliomyelitis	☐	Japanese Encephalitis	☐	Relapsing Fever
☐	Amoebic Dysentery	☐	Legionnaires' Disease	☐	Rubella
☐	Bacillary Dysentery	☐	Leprosy	☐	Scarlet Fever
☐	Chickenpox	☐	Malaria	☐	Severe Acute Respiratory Syndrome
☐	Cholera	☐	Measles	☐	Tetanus
☐	Dengue Fever	☐	Meningococcal Infections	☐	Typhoid Fever
☐	Diphtheria	☐	Mumps	☐	Typhus
☐	Food Poisoning	☐	Paratyphoid Fever	☐	Viral Hepatitis
☐	Influenza A(H5), Influenza A(H7)	☐	Plague	☐	Whooping Cough
☐	or Influenza A(H9)	☐	Rabies	☐	Yellow Fever

Notified under the Prevention of the Spread of Infectious Diseases Regulations by

Dr. ……..… on …… / …… / ……
(Full Name in BLOCK Letters) (Date)

Telephone Number: …… ……..…….…….
(Signature)

Remarks:

DH 1(s)(Rev. Dec2004)

REPORT TO DEPARTMENT OF HEALTH ON POISONING OR COMMUNICABLE DISEASES

OTHER THAN THOSE SPECIFIED IN THE QUARANTINE AND PREVENTION OF DISEASE ORDINANCE
(CENTRAL NOTIFICATION OFFICE, CENTRE FOR HEALTH PROTECTION)
(FAX: 2477 2770; TEL : 2477 2772)

PARTICULARS OF AFFECTED PERSON

Name in English:	Name in Chinese:	Age/Sex:	I.D. Card/Passport No.:
Address:			Telephone Number:
Place of Work/ School Attended:			Telephone Number:
Hospital(s) attended:			Hospital/A&E Number:

Disease ["✓"] below Suspected/Confirmed on _____ / _____ / _____ .

□ **Suspected Outbreak**

Please specify the nature of outbreak: _____

Number of persons affected: _____

□ **Infectious Disease** that is rare, severe or important (e.g. *Haemophilus influenzae* type B meningitis, hantavirus infection, Creutzfeldt-Jakob disease, anthrax etc.)

Please specify: _____

□ **Heavy Metal Poisoning**

Please specify: _____

□ **Chinese medicine-related Adverse Event**

Please specify: _____

(Please attach supplementary form for reporting Chinese medicine-related adverse events)

Reported by

Dr. _____ on _____ / _____ / _____
(Full Name in BLOCK Letters) (Date)

Telephone Number: _____ _____
(Signature)

Remarks:

DH 1B (September 2004)

Supplementary Form for Reporting Chinese medicine-related Adverse Events

From: _____ Tel no.: _____

To: Central Notification Office, Centre for Health Protection, Department of Health

Fax: 2477 2770 (Tel: 2477 2772)

Part I Clinical history of patient

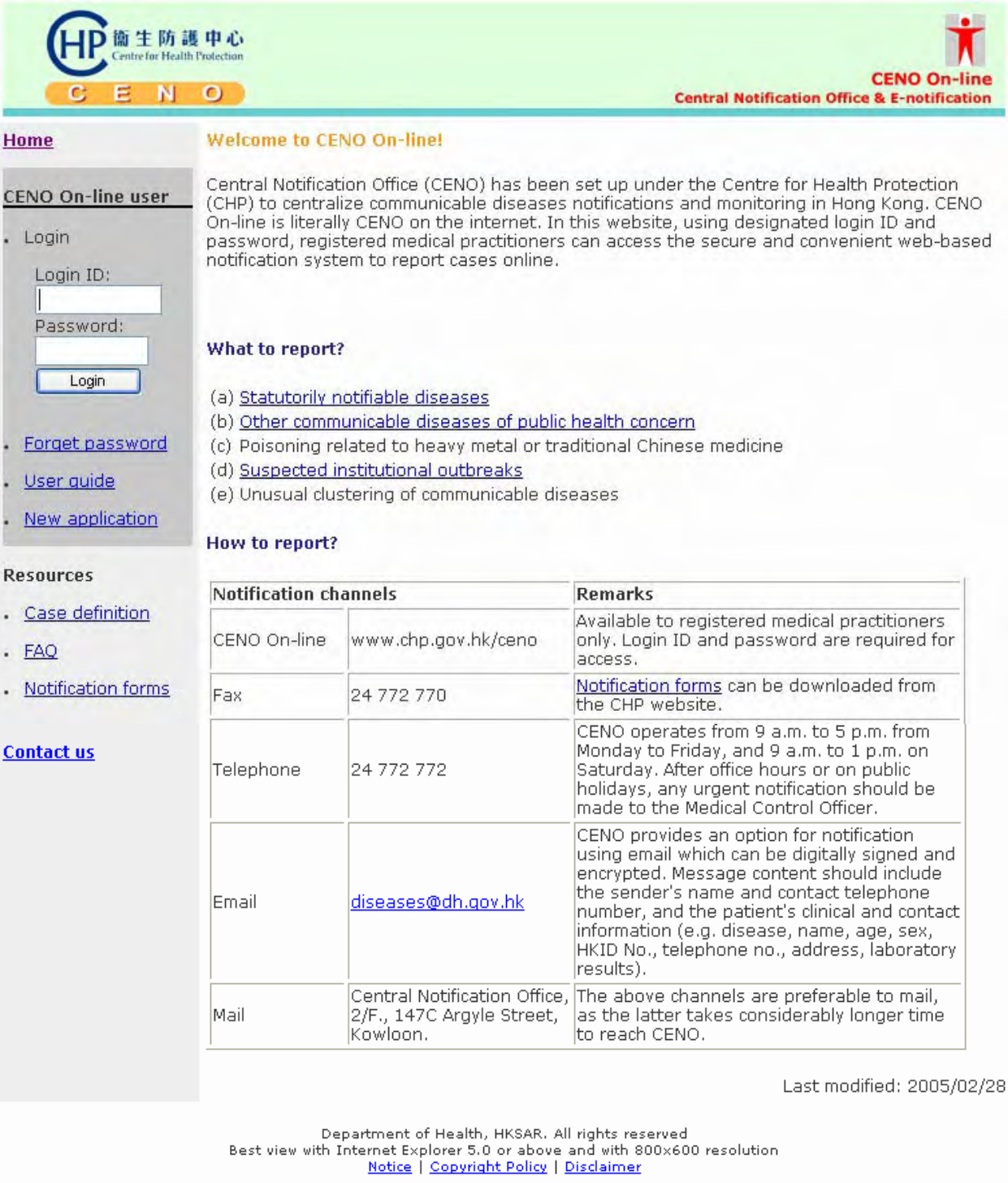
Presenting symptoms with date of onset:
Relevant medical history:
Relevant drug history:
Investigation(s) done and results (please provide a copy of relevant laboratory results):
Treatment given and current condition:
Follow up plan:

Part II Details of Incriminated Chinese Medicine (CM)

<table>
<tr><td>Name of CM in English:</td><td>Name of CM in Chinese:</td></tr>
<tr><td colspan="2">Active ingredients of the CM (if known):</td></tr>
<tr><td>Supposed indication for use:</td><td>Any people with same exposure: Y/N
If yes, please provide name(s) and tel. nos.:</td></tr>
<tr><td colspan="2">Dosage, preparation method and duration of consumption (please fax the prescription sheet and details of preparation together with this form if available):</td></tr>
<tr><td colspan="2">Any remnants or raw herbs collected from the patient? Y/N
(Please note that DH will analyse the contents of the remnants and raw herbs if available.)</td></tr>
<tr><td colspan="2">Laboratory tests done on the herbs (if any) and results (please provide a copy of relevant laboratory results):</td></tr>
<tr><td colspan="2">Is the CM prescribed by a listed / registered CM practitioner? Y / N
Name and address of CM practitioner whom the patient consulted:</td></tr>
<tr><td>Name of herbal shop (if not dispensed by CM practitioner):</td><td>Address of herbal shop:</td></tr>
</table>

Welcome to CENO On-line!

https://ceno.chp.gov.hk/



衞生防護中心 Centre for Health Protection
C E N O
CENO On-line
Central Notification Office & E-notification

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Password:

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Welcome to CENO On-line!

Central Notification Office (CENO) has been set up under the Centre for Health Protection (CHP) to centralize communicable diseases notifications and monitoring in Hong Kong. CENO On-line is literally CENO on the internet. In this website, using designated login ID and password, registered medical practitioners can access the secure and convenient web-based notification system to report cases online.

What to report?

(a) Statutorily notifiable diseases
(b) Other communicable diseases of public health concern
(c) Poisoning related to heavy metal or traditional Chinese medicine
(d) Suspected institutional outbreaks
(e) Unusual clustering of communicable diseases

How to report?

Notification channels		Remarks
CENO On-line	www.chp.gov.hk/ceno	Available to registered medical practitioners only. Login ID and password are required for access.
Fax	24 772 770	Notification forms can be downloaded from the CHP website.
Telephone	24 772 772	CENO operates from 9 a.m. to 5 p.m. from Monday to Friday, and 9 a.m. to 1 p.m. on Saturday. After office hours or on public holidays, any urgent notification should be made to the Medical Control Officer.
Email	diseases@dh.gov.hk	CENO provides an option for notification using email which can be digitally signed and encrypted. Message content should include the sender's name and contact telephone number, and the patient's clinical and contact information (e.g. disease, name, age, sex, HKID No., telephone no., address, laboratory results).
Mail	Central Notification Office, 2/F., 147C Argyle Street, Kowloon.	The above channels are preferable to mail, as the latter takes considerably longer time to reach CENO.

Last modified: 2005/02/28

GUIDELINES ON INFECTION CONTROL PRACTICE

(To be adopted at scenario (b) of Serious Response Level or Emergency Response Level in the Government Pandemic Influenza Preparedness Plan) – updated at Jan 2005

Introduction

1. Sixteen subtypes of influenza A virus are known to infect birds, thus providing an extensive reservoir of influenza viruses. To date, outbreaks of highly contagious and rapidly fatal disease resulting in severe epizootics have been caused by the influenza A viruses of subtypes H5 and H7, and human infection have been documented with H5 and H7 subtypes. The virus disseminates largely by droplet spread. Aerosolized respiratory secretions, patients' secretion and fomites are potentially infectious. It can be contracted through close contacts with or unprotected exposure to someone infected with the virus.

2. To keep up with the developments of avian influenza situation in the region, the Government is updating its pandemic influenza preparedness plan and included three-level response system, viz alert level, serious level and emergency level:

Alert level:
Confirmation of highly pathogenic avian influenza (HPAI) outbreaks in poultry population or human case outside Hong Kong; confirmation of HPAI in Hong Kong in imported birds in quarantine, in wild birds, in recreational parks, in pet bird shops or in the environment.

Serious level:
(a) Confirmation of HPAI outbreaks in the environment of or among poultry population in Hong Kong due to a strain with known human health impact.
(b) Confirmation of human case(s) of avian influenza in Hong Kong without evidence of efficient human-to-human transmission

Emergency level:
(a) Confirmation of novel influenza with efficient human-to-human transmission occurring overseas or in Hong Kong
(b) Pandemic influenza as declared by the WHO

3. While clinics of the Department of Health operate a diverse range of services for a large number of clients, there is a risk of acquiring the infection in the health care setting. It is important to uphold infection control standards to reduce this risk. This Appendix introduces additional precautions and serves to highlight existing practices demanding attention.

4. As a collection of interim measures, this Appendix should be reviewed in the course of time when more becomes known about the epidemiology and clinical course of the novel influenza virus.

Principles

5. The measures stipulated in this Appendix are introduced to reduce the chance and extent of unprotected exposure to novel influenza in staff as well as patients or clients, based on the following principles:

(a) Enhancement of standard precautions in clinic setting through the incorporation of practices for preventing droplet and contact transmission.

(b) Adoption of high index of suspicion by patient triage and self-exclusion of staff.

(c) Appropriateness in the use of PPE

(d) Standardization of disinfection procedures following potential exposure.

(e) Vaccination with the current WHO recommended influenza vaccine

Incorporation of droplet and contact precautions in standard practice

6. Droplet precautions should be strictly enforced in all clinics in the Department, which include the following measures:

(a) Exclusion from duties should be arranged for health care workers who had unprotected exposure during close contacts[1] of patients with novel influenza.

(b) Surgical mask must be worn in clinic areas. The following should be noted in the use of mask, that

(i) the mask should be discarded after procedures that might have resulted in potential droplet contamination;

(ii) new mask should be put on daily (if non-surgical mask, for example, N95, is used, the manufacturer's recommendation should be followed);

(iii) the same mask should not be worn in non-clinic boundary.

(c) Handwashing is mandated after each patient contact, change of gloves/masks, and gown/uniform/white coat.

(d) Protective clothing, for example, white coat, uniform or gown should be worn in clinic areas within the designated clinic boundary. Protective clothing should not be worn outside clinic area.

7. Precaution focusing on patients/clients should be enforced by

(a) Advising all patients/clients to wear surgical mask in the public area and clinic area, and specifically requiring those with respiratory signs/symptoms or fever to wear surgical mask

(b) Patient/client triage

(i) A patient/client is asked to self-identify him/herself if he/she might have contracted infection as a result of being a close contact of patient with novel influenza, or if he/she has symptoms suggesting of the infection.

(ii) A client at higher risk of infection [as identified in (i) above] must wear a

[1] Close contacts refer to the situation of "having cared for, lived with, or had direct contact with respiratory secretions or body fluids of a suspect or probable case of novel influenza".

surgical mask and the consultation should be held in a designated room with additional precaution.

(iii) N95 mask, gloves, goggles and protective clothing should be worn during high risk procedures.

8. Precautions for environment control (as stipulated in Section IX of the Guidelines) should be followed, with the adoption of the following enhancements:

(a) A room should be designated for consultation of patients at higher risk of novel influenza. There should be good ventilation and preferably separate hand washing facility in the designated room.

(b) Aerosol-generating procedure should be avoided unless it's essential. If required, the procedure should be carried out in negative pressure room or the designated room above. Staff should put on goggles, N95 masks, gowns and gloves on entry to the room. Such materials should be properly disposed or disinfected after procedure.

(c) Wastes should be placed in waste bags, which are tied and put in covered containers for disposal in the normal channels.

(d) Contaminated PPE and other items should not be brought into non-clinic areas.

Infection control procedures following the detection of a suspected or known case of novel influenza

9. Following the care of a patient/client suspected with or known to have novel influenza:

(a) The area should be closed for disinfection as soon as possible.

(b) The area and objects that have been used during the consultation should be disinfected with 1:49 household bleach (or 70% alcohol for metallic surfaces).

10. The staff who has been in close and unprotected contact with a case of novel influenza should be alerted to the need for quarantine as required by the Department of Health. Oseltamivir phosphate for at least 7 days should be recommended as soon after the exposure as possible. Self health management including checking temperature twice daily, limiting interactions, exclusion from public areas and immediately notifying relevant health authority should be followed.

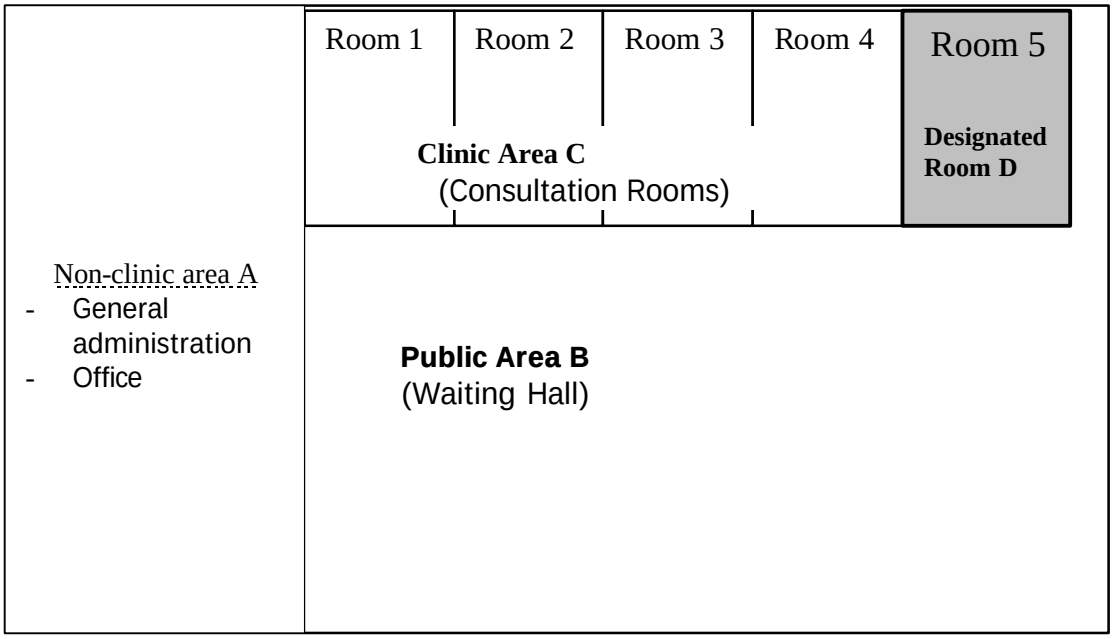
11. If a diagnosis of influenza is made in retrospect on a client/patient or staff on the second day or thereafter,

(a) normal disinfection procedures (paragraph 8) should be followed without the need for repeat cleansing or closure if such procedure is already in place on a daily basis;

(b) disinfection and closure (during disinfection) may be organized if the area has not been disinfected since the infected person's last presence.

Applicable when Serious Level (Scenario (b)) or Emergency Level is activated

Designation of Areas in a DH Clinical Unit #



Area *	Designation	Examples	Infection control precautions
A	Non-clinic area	General office	No personal protection equipment (PPE) is required
B	Public area	Waiting hall	Wearing of surgical mask is advised for all; wearing of surgical mask is required for patients with respiratory symptoms or fever
C	Clinic area	Consultation room(s) where clinical procedures are carried out regularly	Client: Wearing of surgical mask is advised for all; wearing of surgical mask is required for patients with respiratory symptoms or fever Staff: Wearing of surgical mask and gown are required; other protections as required for respective procedures
D	Designated room	Selected room for managing suspected or probable patients with novel influenza	Client: Wearing of surgical mask is required Staff: Wearing of surgical mask and gown are required; N95 mask and other appropriate protections (e.g. gown and goggles) should be put on for high risk procedures; PPE should not be worn beyond the designated area

This template is designed for DH units with clinical service only. The latter is defined as a place where personal health services are provided normally to patients but may include also those for healthy individuals. Adjustment is needed if the guidelines and template are adapted for non-clinical services.

* *Division into four areas of A, B, C and D may not be possible for all services. In some situations, A and B may be combined. D is mandatory for all clinical services.*

Appendix 3: Flow Chart of Recommended Consultation Procedure concerning influenza A (H5) in Private Clinic Setting

REGISTRATION

1. Take temperature
2. Put on face mask if fever/ respiratory signs/symptoms

IF FEVER

3. Give priority for consultation

IF THERE IS A HIGH INDEX OF SUSPICION OF INFLUENZA A (H5) i.e.

4. Fever (>38°C), **AND**
5. cough and/or sore throat **AND EITHER**
6. history of contact with a case of influenza A(H5) during the case's infectious period, OR
7. recent (less than 1 week) visit to a poultry farm in an area known to have outbreaks of highly pathogenic avian influenza (HPAI), OR

8 worked in a laboratory where there is processing of samples from persons or animals that are suspected to have HPAI infection

9. Call ambulance and transfer the patient to A&E department
10. Alert Department of Health, ambulance and A&E Department of such cases

DISINFECTION

11. Carry out thorough disinfection of the potentially contaminated area in the clinic before seeing next patient.

PROPER PATIENT LOG

12. Keep a record and contact telephone numbers of patients/accompanying persons who share the waiting area with patient. Obtain their consent for release of information to DH

Remarks:
Try to provide the followings in the waiting area:

- Facilities for hand-washing or alcohol based hand scrub
- Facial tissue
- Waste bin with foot operated cover

Last modified on 3 Feb 2004
Updates jointly promulgated by the Department of Health and The Hong Kong Medical Association

附錄三：建議診所對於H5甲型流感實施之診症流程表

登記

1. 量度體溫
2. 如發現發燒／呼吸道感染徵狀，要求病人戴上口罩

若病人出現發燒

3. 優先診症

如高度懷疑病人感染H5甲型流感，例如出現以下情況：

4. 發燒 (38ºC以上)，**及**
5. 有咳嗽及／或喉嚨痛**及以下其中一項**
6. 曾接觸感染H5甲型流感的患者，或
7. 最近（**七天內**）曾到訪有高致病性禽流感(HPAI)爆發地區的家禽養飼場，或
8. 在處理懷疑感染高致病性禽流感(HPAI)的人類或動物樣本的實驗室工作

9. 召喚救護車轉送病人至急症室
10. 知會衛生署、救護車召喚處及急症室

消毒程序

11. 在診治下一位病人前，將診所內可能受污染的地方徹底進行消毒

適當病人紀錄

12. 保留曾經與病人在候診大堂等候的病人及陪伴人士的資料及聯絡電話，並在獲得他們同意後將有關資料知會衛生署

備註：

盡量在接待處放置以下設備供病人使用：

- 洗手設備或含有酒精成份的手部消毒劑
- 紙巾
- 腳踏式垃圾箱

最後更新日期：二零零四年二月三日
由衛生署及香港醫學會聯合發放

Appendix 4: Information on Avian Flu (Rev.1)

Influenza

Influenza is an acute illness of the respiratory tract characterized by fever, headache, muscle ache, running nose, cough and sore throat. The disease is usually self-limiting with recovery in 2-7 days. In Hong Kong, the common subtypes of influenza are influenza A(H3N2), A(H1N1) and B. The usual peak season is from January to March each year.

Most patients with influenza recover in 2-7 days, and the body produces antibody to the virus. However, certain populations such as elderly persons and persons with chronic medical conditions are more likely to develop complications like bronchitis and pneumonia.

Avian Flu

H5N1 virus is one type of Influenza A virus. It is known previously to infect birds only, but 18 and 2 human cases were documented in Hong Kong in 1997 and 2003 respectively. Avian Flu (H5N1) is transmitted from infected live birds to man. Transmission between humans is very inefficient. Avian Flu (H5N1) has similar initial clinical presentation as other influenza viruses. However, it is more likely to result in high fever, chest infection, respiratory failure, multi-organ failure, even death.

Since late 2003, outbreaks of Avian Flu in chickens and ducks have been reported in several Asian countries. Cases of human infection have also been reported. The Department of Health has been closely monitoring the situation and has adopted appropriate preventive measures to prevent the import of the disease. HKSAR has an effective surveillance system for influenza in birds and humans. Since March 2003, no human case of Avian Flu H5N1 has been found in the local population.

Prevention of Avian Flu and Human Flu

- Droppings of infected birds and poultry may carry the avian flu virus, so avoid touching live birds or poultry or their droppings.
- If you have been in contact with live birds or poultry, immediately wash your hands thoroughly with liquid soap and water.
- Cook poultry and eggs thoroughly before eating.
- Wash hands thoroughly before touching eyes, nose, mouth or any part of the face.
- Another effective means for protection against influenza is having good body resistance. This can be achieved through a balanced diet, regular exercise, adequate rest, reducing stress, and not smoking.
- Avoid crowded places with poor ventilation.
- If you develop fever and respiratory symptoms after returning from a country that reports an avian flu outbreak, consult your doctor and tell him/her about your travel history.
- If you have symptoms of influenza, consult a doctor and wear a mask to prevent spread of the disease

Treatment of Avian Flu

People with influenza should have adequate rest and sleep and drink plenty of fluid. Anti-fever medicine and cough syrup are useful to reduce symptoms. Unless there is bacterial infection, antibiotics should not be used. Patients should also observe personal hygiene and wash hands frequently to prevent spreading the virus from the hands which can get the virus from contact with the nose or mouth. Aspirin should not be used in children because it can induce Reye's Syndrome. For patients with lower resistance or when there are signs of deterioration, e.g. persistent high fever or shortness of breath, they should seek early medical advice.

Avian Flu H5N1 is generally more severe than an ordinary 'flu', and many patients require hospital care. Some anti-viral drugs, e.g. Tamiflu, Relenza, Amantadine may be effective in treating the condition. However, drugs should be used carefully following doctor's instructions as they may cause adverse side effects.

附錄四：認識禽流感

流感

流行性感冒，簡稱流感，是通過呼吸道傳染的疾病。病徵包括發燒、頭痛、肌肉痛、流鼻水、喉嚨痛及咳嗽，病情一般持續數天至一周不等。引起流行性感冒的病毒很多，以甲類較為普遍。在香港，最常見的是甲型H1N1型，甲型H3N2型，及乙型流感。流感的高峰期一般在每年一至三月。

大部份流行性感冒患者都能在2至7天自行痊癒，並從此產生抗體。但某類人士，如長者，兒童，或長期病患者，則有較大機會有併發症，如支氣管炎，肺炎等。

禽流感

H5N1病毒是甲型流感病毒的一種，本來只影響禽類，如雞、鴨等，但香港在1997及2003年分別發現有18宗及2宗人類感染的個案。H5N1禽流感是透過與活家禽近距離接觸而傳播，而人類之間的傳播能力十分之低。H5N1禽流感的初期徵狀與普通流感差不多，但較易導致高燒、肺炎、呼吸衰竭、多種器官衰竭，以致死亡。

自二零零三年底，多個亞洲國家報告雞鴨出現禽流感，亦有人類受感染個案。衞生署正密切注意事態發展，並已採取適當措施防止禽流感進入本港。本港有一個有效的人類及禽鳥流感監察系統，自二零零三年三月起，本港並沒有人類感染H5N1禽流感的個案。

預防禽流感及人流感

- 染病的活鳥和家禽的糞便可能帶有病毒，應盡量避免接觸活鳥、家禽和牠們的糞便。
- 接觸活禽鳥後，要立刻用梘液和清水洗手。
- 家禽肉類和蛋類要徹底煮熟方可進食。
- 在接觸眼睛、口鼻及面部前應先徹底洗淨雙手。
- 增強抵抗力：要有充足的睡眠和休息，減少壓力，要均衡飲食、適量運動、加強室內空氣流通，切勿吸煙。
- 避免前往擠迫和空氣流通欠佳的公共場所。
- 從爆發禽流感的國家回港後，若有發燒和呼吸道疾病徵狀，應找醫生診治，並告知醫生你最近到過哪些國家。
- 如有流感徵狀便要看醫生，並要戴上口罩，以防傳染他人。

治療

感染流感人士應有充足的休息和多飲水。病人應注意衞生，經常洗手，避免將病毒從口鼻經雙手通過接觸而散播。同時，可利用退燒藥，止咳水等以減輕病狀；除非已有細菌性感染，否則毋須服食抗生素。兒童忌用含有阿士匹靈(Aspirin)成份的藥物，以避免產生雷爾氏綜合徵(Reye's Syndrome)。倘若本身抵抗力弱或病情變得嚴重，例如高燒不退、氣促等，就要及早求診，以免耽誤病情。

H5N1禽流感病毒所引起的流感病情比一般流感嚴重，很多病者須留院醫治。某些抗病毒藥物如Tamiflu, Relenza及Amantadine對病情可能有效，但此類藥物亦有不良副作用，所以必須聽從醫生指示，並小心使用。

28 January 2005

Centre for Health Protection
Scientific Committee on Infection Control

Recommendations on
Integrating Gloves and Hand Washing Practices

Terms and Review of Scientific Data

Hand washing is a widely accepted and the single most important procedure for preventing institutional transmission of micro-organisms. The principles and practices of hand washing and hand hygiene have been recently reviewed at length [1-5]. Infection control practitioners (ICPs) may refer to the documents for the review of the scientific data regarding hand hygiene. In this document, the SCIC discussion on several infection control issues related to hand hygiene is presented for information by the local ICPs.

2. For purpose of discussion, the follow definitions are used:

a. *"**Hand washing**" is defined as a vigorous, brief rubbing together of all surfaces of lathered hands with plain or antimicrobial detergent, followed by rinsing under a stream of running water [2].*

b. *"**Alcohol-based hand rub**" is defined as the application of an alcohol-containing preparation (60 to 95% alcohol) to the hands for reducing the number of viable micro-organisms on the hands. After*

applying such an agent, the hands are rubbed together until the agent has dried [3-5].

c. *"**Hand hygiene**" is a general term that applies to either hand washing or alcohol hand rub[3-5] .*

Gloving Policies

3. Healthcare workers (HCWs) wear gloves to 1) reduce the risk of personnel acquiring infections from patients, 2) prevent health-care worker flora from being transmitted to patients, and 3) reduce contamination of the hands of personnel by flora that can be transmitted from one patient to another. This shouldn't be translated to mean that HCWs should wear gloves "all the time" in patient areas for the following reasons:

a. The fallacy of wearing gloves "all the time" is based on the idea that a glove offers better protection than our own skin for infectious material. This is not true, if any defects on the skin are already protected by the proper dressing. The sensation in our skin would alert us to any contact with secretions or fluids (which has the most infectious hazards) and they can then be immediately removed by a good hand wash. The gloves on the other hand would make one oblivious to such a contact and subsequently further contamination of our working environment would inevitably ensue. Consequently, the potentials for infectious transmission by indirect contact means will increase. Therefore in infection control, gloves are only worn for obnoxious

procedures or those with excessively gross contamination. Under such circumstances, gloves use is important, because hand hygiene may not remove all potential pathogens when hands are heavily contaminated [6].

b. The proper use of gloves requires some judgments. As is the case for most medical decision, the HCWs will need to take into considerations factors such as the nature of the procedures, type of activity, the duration of contact, the status of patient, the nature of the pathogens involved, and the clinical settings. In principle, gloves are strongly recommended for anticipated contacts with blood, body fluid, secretion, excretions, mucous membrane and non-intact skin. Examples of such kind include sputum suction, taking nasopharyngeal aspirate, changing napkin, handling of urinals and bedpans. Indiscriminate use of gloves (i.e. “all the time”) removes the value-added “professional judgment” which characterized the health care workers.

c. Several studies have found that misuse of gloves may expose patients to increased risk for infections [7-9]. Gloving “all the time” easily gives the worker a false sense of security. When gloves become a “second” skin, they become a vehicle for transmission of microorganisms from dirty to clean areas in the same patient and the environment, and from one to another patient. In this regard, improper and excessive gloving were found to decrease hand hygiene frequencies [7;9;10]. According to Girou et al, the improper use of

gloves was associated with personnel missing more than half of the opportunities for hand hygiene [7]. In the study by Thompson et al, gloves were appropriately changed in only 16% of instances [10].

d. Regular use of glove contributes to skin problems and latex allergies [11]. In highly exposed groups, it may even increase the occurrence of certain serious IgE-mediated reactions. This subject was recently reviewed [12].
e. Alcohol-based hand rub solutions are designed and evaluated for application on the hands and not on gloves [3, 22-23]. There is no need to apply alcohol-based solution to "disinfect" unused gloves, which are sufficiently "clean" for infection control purposes. Actually, alcohol rub solutions will harden the latex and thus loosening out the integrity and the gloves may become not protective from glove micro-leaks [27]. The same pair of used gloves should not be used between patients or move from "dirty" to "clean" body sites in the same patient. Used and dirty gloves should be removed. Worn gloves should **not** be washed or disinfect with alcohol-based solutions and reuse [14]. Failure to remove gloves after "patient contact" or between "dirty" and "clean" body-site care on the same patient is an instance of nonadherence to standard hand-hygiene recommendations [3, 26].

4. For the above reasons, the SCIC has the following recommendation:

There is evidence that the improper use of gloves is a hazard to patients. Institutions and infection control practitioners are suggested to take

measure to monitor and to promote the proper and judicious use of gloves for isolation precautions.

Gloving and Hand Washing

5. Gloving doesn't remove the need for hand washing. Following removal of gloves, alcohol-based hand rub is normally NOT a substitute for hand washing. The rationale is as follows:

a. Hands can be contaminated even when gloves are used, and are easily contaminated in the process of removing gloves [13]. Following removal of gloves, studies have shown that hands are commonly contaminated by nosocomial pathogens such as methicillin-resistant Staphylococcus aureus (MRSA) with rates of up to 50% [14]. Despite attention to how gloves were removed, occult breaks in unused latex gloves can cause substantial contamination of the hands [15]. It should be pointed out that the tests approved by the U.S. Food and Drug Administration for assessment of the barrier quality of gloves includes visual inspection and a water leak test; neither methods directly evaluate ability of gloves to prevent penetration by bacteria and virus. According to Korniewicz et al, 20% of latex gloves which had passed the watertight test allowed penetration of bacteria to the hands [16]. After use in clinical settings, studies found that glove leaks were frequent (42.6 and 8.5% and for vinyl and latex gloves respectively) and that most health care workers failed to report awareness of the presence of glove leaks which were subsequently demonstrated [13].

b. Powdered latex gloves are the most common type of gloves available for use in health care settings. On the application of alcohol hand rub, the cornstarch powder intended to facilitate donning forms agglutinates. Besides discomfort, the donning powder may compromise the antiseptic efficacy of alcohol hand rub. At present, the latter issue has not been adequately evaluated from a scientific point of view.

c. Despite gloving, soiling of the hands by organic material may occur when gloves are worn for dirty patient care procedures (e.g. sputum suction, handling excreta, changing napkin). The readers are suggested to refer to the Fulkerson's scale [17] for further information on types of contacts that are "dirty." In presence of soiling, alcohol-based hand rub is less effective. Furthermore, alcohol-based hand rub (the same is true for all hand antiseptics) is poorly active against *Clostridium difficile* spores [18] that may be present in the feces of 10% or more of hospitalized patients [19]. Under such circumstances, the physical action of washing and rinsing for removal of bacterial spores is important. As *Clostridium difficile* infections emerge [20], hand washing assumes even more important roles for their prevention.

6. For the above reasons, the SCIC has the following recommendation:

Hand washing should be practised after removal of gloves. Hand washing but not alcohol-based hand rubs is the preferred method for

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hand hygiene after removal of gloves.

Hand Washing Versus Alcohol Hand Rub

7. The indications for hand hygiene and the proper hand hygiene techniques have been recently reviewed [3-5]. In choosing between hand washing and alcohol hand rub, the following rules serve as references:

a. Hand washing and alcohol-based hand rub only gives the desired effect if each hand hygiene action is properly performed [17]. Alcohol-based hand rub requires good technique to apply the agent to all parts of hands. Recently, Widmer et al found that antimicrobial effectiveness of alcohol-based hand rub was strongly influenced by techniques and recommended that special training be provided before the alcohol-based hand rub was used as a substitute for hand washing [21].

b. If hands are visibly soiled (including visibly dirty or when you feel that it is dirty) or potentially contaminated with proteinaceous material, then hand washing should be practised. Under such circumstances, waterless alcohol-based hand rub is NOT a substitute for hand washing.

c. If hands are not dirty or visibly contaminated, an alcohol-based hand rub is an acceptable substitute for hand washing during routine patient care activities. In this regard, alcohol-based hand rub is at least as

effective as standard hand washing in two randomized clinical trials [22;23].

Contact Precautions and Routinely Wearing Gloves when Entering the Room

8. The CDC guideline on contact precautions suggests health care workers to "*wear gloves when entering the room*" as a Category IB recommendation [24]. For patients who are isolated in single rooms, this approach is practical and may have merits. The same approach, when applied indiscriminately to other settings such as when multiple patients are cohorted in the same cubicle or in the same open ward (i.e. gloving when entering ward), may be problematic.

9. Personnel will likely wear gloves continuously and use glove as their "second skin" and may not change gloves between patients. Several reports as well as local experience have underlined the risk of hand-gloved personnel moving from patient to patient without glove change and hand hygiene [7;9;10]. In a long-term care facility, Thompson reported that gloves were changed appropriately in only 16% [10]. In an observational study of glove use in a teaching hospital, the continued use of gloves without removal resulted in 64% of all contacts being performed without adequate hand hygiene [7]. The study further found that poor compliance with gloves change was the only independently significant risk factor for hand hygiene non-compliance. This leads Girou et al [7] to conclude that "*achieving the goal of a high compliance to*

hand hygiene in our (their) facility is unlikely to be reached unless a profound adjustment of gloving practices occurs."

10. As reviewed recently by Larson et al, many studies have shown a relation between improved hand-hygiene practices and reduced infection rates [25]. Hence, high compliance in hand hygiene practices has been a central issue in infection control for decades. However, the impact of gloving on hand hygiene compliance has not been firmly established, because published studies have yielded mixed results. "Wearing gloves" has been identified as a risk factor for poor adherence to recommended hand hygiene practices [26]. If hand hygiene is not monitored, "routinely wearing gloves" may have the opposite effect in isolation precautions.

11. As mentioned in the CDC 2004 DRAFT "Guideline for isolation precautions" document, no studies have directly compared standard precautions alone and standard precautions plus contact precautions for prevention of multiresistant organisms. In preventing transmission by the contact means, the efficacy of "routinely gloving" in contact precautions as compared to "gloving when indicated according to the type of anticipated exposure" plus good hand hygiene is unknown.

12. In Hong Kong, only a small number of patients who require contact precautions may be put in single rooms. Priority should be given to the patients with conditions that may facilitate transmission (e.g. tracheostomy, fecal incontinence, extensive skin lesions, and multiple draining wounds). For most patients, it is likely that a "cohort" approach

in a multi-cubicle ward will continue to be used. Under such circumstances, “gloving” routinely on entering a cubicle or a ward and wearing gloves for every patient contact (and requiring hand washing after each glove removal) may be neither practical nor beneficial.

13. Recent experience from a few local hospital outbreaks of respiratory and gastrointestinal infections indicates that inadequate hand washing facilities in some units constitutes an important barrier for good infection control practices.

14. Since alcohol-based hand rub can decontaminate the hands effectively as long as there is no soiling and can be easily accessible, this committee opt that not requiring “routine gloving” for “clean” contact (such as those defined by the Fulkerson scale [17]) with patients placed on contact precautions in multi-patient rooms or cubicle is acceptable and preferred. In a ward where multiple patients with the same diagnosis are placed together under contact precautions, this committee discourages the indiscriminate wearing of gloves “on entering the ward” and also for ward activities that do not involve direct patient contact (e.g. using telephone, typing computer keyboards, writing case notes, touching door handles). However, measures should be taken by the infection control officer to ensure that personnel comply with proper hand hygiene practices [3-5] and that alcohol-based hand rubs do not inappropriately substitute some mandatory hand washing indications [17]. Gloves should also be worn when they are indicated according to the anticipated exposures.

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15. For the above rationale, the SCIC has the following recommendation on this issue:

a. Gloves should not be worn routinely on entry to areas such as a cubicle or a ward where multiple patients with the same infection are placed together for contact precautions. Instead, gloves should only be worn for "dirty" patient care procedures and when clinically indicated. For patients who require contact precautions, ICPs should take measures to ensure a high compliance to good hand hygiene practices.

b. In areas where transmission of microorganisms by the contact means is a concern, improving hand hygiene adherence including the provision of administrative support and resources should be an institutional priority. The SCIC recommends that hand washing facilities should be sufficient (approximately 1 hand washing facility for every 5 to 6 patient beds in multi-patient areas), accessible and easily available.

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DRAFT

GENERAL GUIDE TO DOCTORS: ANTIVIRAL USE FOR NOVEL INFLUENZA TREATMENT AND PROPHYLAXIS

INTRODUCTION

Influenza pandemic may cause high morbidity, excess mortality, and social and economic disruption. The government and the medical sector are currently taking the lead in preparing for the pandemic so as to reduce its impact when it strikes. The Government's preparedness plan for influenza pandemic includes a three-level response system. These levels pitch at different degrees of public health risks to the community and each of them depicts certain scenarios and prescribes a given set of public health actions.

Novel influenza viruses, including avian and non-avian strains, may cause a pandemic. For planning purposes, avian influenza resulting in outbreaks among poultry populations in different parts of the world, particularly Asia, poses the greatest threat of causing a pandemic in Hong Kong.

1. Alert Response Level

(a) Confirmation of highly pathogenic avian influenza (HPAI) outbreaks in poultry populations outside Hong Kong, or
(b) Confirmation of HPAI in Hong Kong in imported birds in quarantine, in wild birds, in recreational parks, in pet bird shops or in the natural environment, or
(c) Confirmation of human case(s) of avian influenza outside Hong Kong.

Local human cases of avian influenza are not found. The aims of public health actions are to attain timely and accurate information from other territories in order to prevent the disease from invading Hong Kong, and to facilitate prompt surveillance for any local cases.

2. Serious Response Level

(a) Confirmation of HPAI outbreaks in the environment of or among poultry

population in Hong Kong due to a strain with known human health impact, or
(b) Confirmation of human case(s) of avian influenza in Hong Kong without evidence of efficient human-to-human transmission.

The aims of public health actions are to control the spread of the diseases, identify the source of infection and contain the spread of the virus in and out of Hong Kong at the early stage of infection.

3. Emergency Response Level

(a) Confirmation of efficient human-to-human transmission of novel influenza occurring overseas or in Hong Kong, or
(b) Declaration of pandemic influenza by the World Health Organisation

The aims of public health actions are to slow down the progression of the epidemic and minimize loss of human lives, in order to buy time for production of an effective vaccine against the pandemic influenza strain.

USE OF ANTIVIRALS

With respect to drug use, the Serious and Emergency Response Levels are most relevant to the local medical practitioners since they will be directly involved in patient management.

Antiviral drugs are useful to reduce morbidity and mortality during a pandemic. Since vaccine may not be available in the early phase of a pandemic, antiviral drug will be the only virus-specific intervention. There are two classes of antiviral drugs specific for influenza, namely M2 inhibitors (amantadine and rimantadine) and neuraminidase inhibitors (oseltamivir and zanamivir).

Studies have already demonstrated that the recent H5N1 virus is resistant to M2 inhibitors and this resistance might be retained in a pandemic virus. As a result, WHO and US CDC guidelines recommend neuraminidase inhibitors as the preferred drugs for use during an influenza pandemic.

Both oseltamivir and zanamivir are active for treatment and prophylaxis of influenza, although the latter is not approved for prophylaxis in most countries including the United States. US CDC therefore does not recommend zanamivir as

prophylaxis.

Since infection due to highly pathogenic influenza strains is a multi-organ disease, antiviral drug with high systemic level is preferred. Oseltamivir is readily absorbed from the gut and thus has high bioavailability (at least 75%). In contrast, zanamivir has low systemic bioavailability (10 - 20%). When a pandemic is caused by a highly pathogenic influenza virus which readily invades extrapulmonary tissues, effective antiviral agents with high systemic bioavailability will be more useful.

The regimen described in the following is based on the treatment experience in infections with usual human strains. Assuming that the same efficacy holds for the novel influenza strain that may emerge, the Scientific Committee of Emerging and Zoonotic Diseases of the Centre for Health Protection recommends the following for doctors' reference.

1. For Patient Treatment

At Serious and/or Emergency Response Levels, when there are confirmed local cases of human avian influenza, antiviral agents would be useful in treatment.

(a) **Oseltamivir** should be administered within 48 hours after the onset of symptoms for maximum efficacy. It should be taken with meals to reduce gastrointestinal side effects. It is available in 75 mg capsule and 12 mg/ml oral suspension. It is to be given **twice daily** for **5 days** in the following dosages:

Adults & adolescents 13 years of age or above	75mg BD x 5 days
Children between 1 and 12 years of age	2 mg/kg BD x 5 days

For ease of administration as recommended by the manufacturer:

≦15 kg	30 mg BD x 5 days
>15 - 23 kg	45 mg BD x 5 days
>23 - 40kg	60 mg BD x 5 days
> 40kg	75 mg BD x 5 days

The dispensing syringe for oral suspension is calibrated with graduations of 30, 45 and 60 mg. 75 mg may be dispensed using a 30 + 45 mg combination if the patient cannot tolerate a 75 mg capsule.

For patients with suspected/ confirmed H5N1 influenza who are in shock, immunosuppressed, or have significant diarrhea, the dosage should be doubled and the treatment duration prolonged to 10 to 14 days.

For other patients whose fever and symptoms respond to oseltamivir, the standard regimen will suffice.

Infants
The safety and efficacy of oseltamivir as a therapeutic agent for infants (<12 months of age) have not been established. However, it may be considered for treatment (off label use) in this group when the benefits are expected to outweigh the risks. Dosage should be adjusted according to patients' body weight.

(b) **Zanamivir** may be considered in patients without pre-existing airway diseases and should be taken within 48 hours after the onset of symptoms for maximum efficacy. It is administered by oral inhalation and age-related adjustment is not required. However, the device is not appropriate for use in young children or those with cognitive impairment or marked frailty. 10 mg zanamivir (each inhalation contains 5 mg zanamivir) is to be given **twice daily** for **5 days.**

Adults & children over 5 years of age	10 mg (two inhalations) BD x 5 days

2. For Pre-exposure Prophylaxis of Health Care Workers

At the Serious Response Level, health care providers and workers should enhance infection control measures including the appropriate use of PPE, as they represent the mainstay of disease prevention. At the Emergency Response Level, pre-exposure prophylaxis for health care workers should be considered.

Oseltamivir 75 mg is to be given **once daily** to this target group during pandemic influenza. It should be taken with meals to reduce gastrointestinal side effects. Duration of prophylaxis should be determined by the intensity and duration of exposure. Safety and efficacy of prophylactic administration of oseltamivir have been demonstrated for continued use of the drug for up to six weeks.

3. For Pre-exposure Prophylaxis of Essential Service Providers

Pre-exposure prophylaxis for essential service providers should be considered at the Emergency Response Level.

Oseltamivir 75 mg is to be given **once daily** to this target group during pandemic influenza. It should be taken with meals to reduce gastrointestinal side effects. Duration of prophylaxis should be determined by the intensity and duration of exposure. Safety and efficacy of prophylactic administration of oseltamivir have been demonstrated for continued use of the drug for up to six weeks.

4. For Post-exposure Prophylaxis of Contacts

At the Serious and/or Emergency Response Levels, there will be individuals with a history of contact with or exposure to confirmed human cases. Post-exposure prophylaxis of these contacts, who may include health care workers, will be provided by the public health authority for containment of the spread of the infection.

Oseltamivir is given to contacts once the patients' diagnoses are made, if the last contact with the patients falls within 7 days. It should be taken with meals to reduce gastrointestinal side effects. For contacts living in closed institutions, it is taken **once daily** for **14 days**. For other contacts, it is taken **once daily** for **7 days**. It is to be given in the following dosages:

<u>Adults & adolescents 13 years of age or above</u>	
Contacts living in closed institutions	75mg QD x 14 days
Other contacts	75mg QD x 7 days

<u>Children below 13 years of age</u>
The safety and efficacy of oseltamivir as a prophylactic agent for children under 13 years of age have not been established. However, it may be considered for prophylactic use in this group when the benefits are expected to outweigh the risks. The suggested regimen is similar to the above with adjustment of dosage according to body weight as previously noted.

5. For Prophylaxis of Workers Involved in Culling Operation

When culling operations are called for, Serious Response Level will be activated. The operation will be centrally coordinated by the Government and prophylaxis will be given by the public health authority.

Oseltamivir 75mg is to be given **once daily** to cullers throughout the operation and continued for **7 days** after the last day of exposure. It should be taken with meals to reduce gastrointestinal side effects.

It is important to note in all situations requiring administration of oseltamivir that the dosage should be adjusted according to recipients' age, body weight and pre-existing medical illness (e.g. renal impairment). Drug information provided by the manufacturer should always be referred to.

The current recommendations are based on best available information and are subject to updating in the light of scientific evidence. Updated versions will be available at http://www.chp.gov.hk/

Scientific Committee on Emerging and Zoonotic Diseases
Centre for Health Protection
Department of Health
June 2005

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