Cover page

Avian Influenza Deskguide for District Health Workers

Deskguide on

Identifying suspects of Avian Flu

And

Rapid response and containment

For district level public health staff

in areas known to have infected birds:

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Based on materials available from the World Health Organisation

Preliminary draft for comments of 29 April 2006

NOT FOR DISTRIBUTION

Contents

Where to use this deskguide – areas affected by bird flu

This guide is for use in areas affected by bird flu (avian influenza H5N1). Follow the definitions given by your own country public health authority or those of the World Health Organisation (WHO). Bird flu is a developing problem and definitions are under review, however, in this stage an “area” affected by bird flu can be considered when a case has been confirmed, or there is a cluster of a number of severe respiratory illness cases of unknown origin. This applies to the whole country, if is geographically small, or to the administrative areas around the case(s) comprising around a million population.

Objective

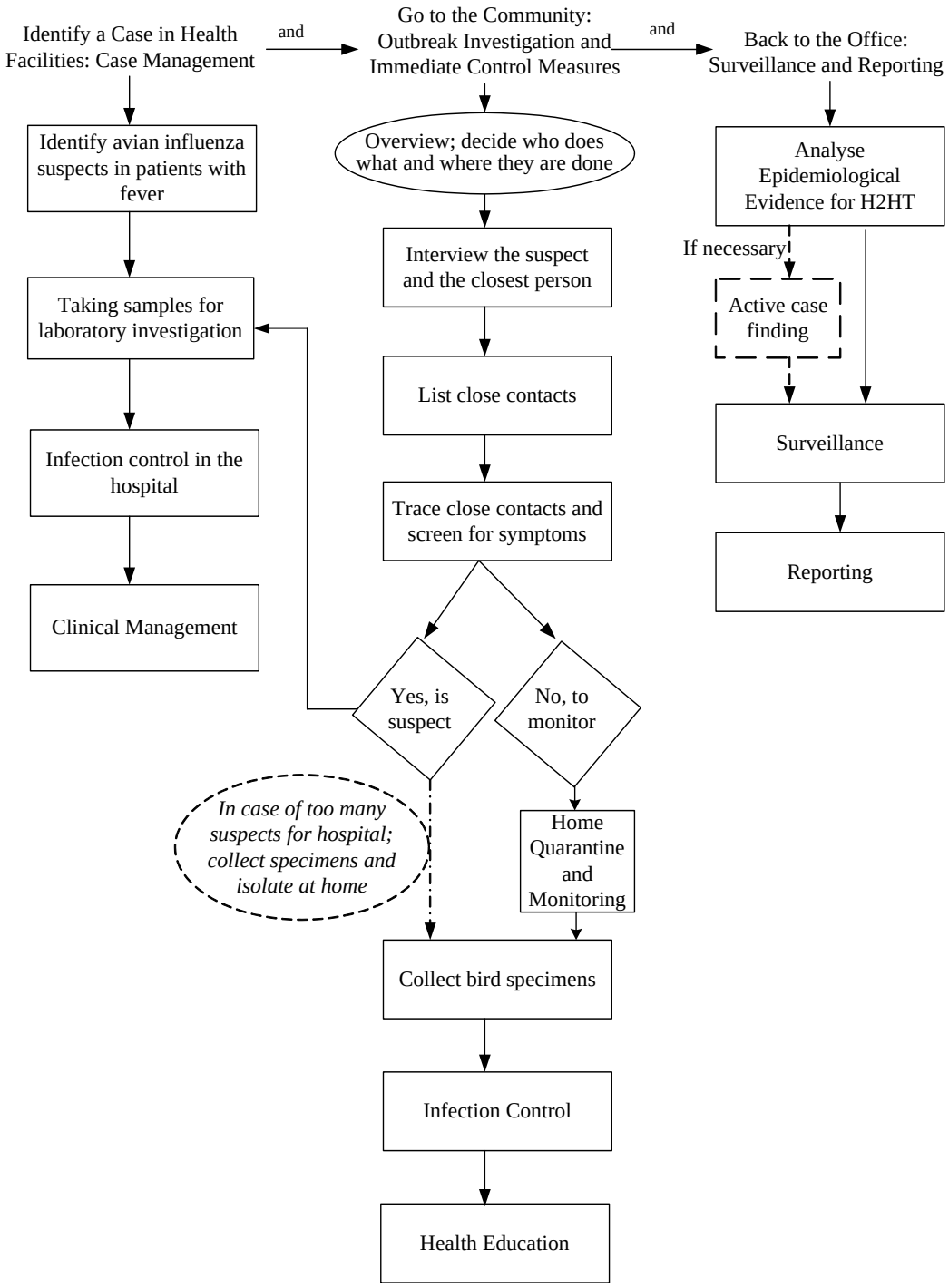
To identify human avian influenza, especially a cluster of suspect cases.

Style of the guide

This deskguide is written in simple and clear English for district level staff.
Bird flu is the common term used for Avian Influenza H5N1.

John Walley and Xiaolin Wei, Nuffield Centre for International Health and Development, Leeds, UK
Draft of April 30, 2006

Logical Flow Chart of the Avian Influenza Guideline for District Health Workers



John Walley and Xiaolin Wei, Nuffield Centre for International Health and Development, Leeds, UK
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Summary - Possible Bird Flu Patients and action to take

Progression and spectrum of human bird flu
Bird flu is an acute respiratory illness starting with fever, then cough and/or sore throat. Some improve, while others develop pneumonia or severe pneumonia 4 - 5 days from the start of fever. The pneumonia may rapidly become severe and if untreated may be fatal. Some also have diarrhoea and other symptoms.

Consider possible bird flu in areas in areas affected by bird flu (definition p 3):
A. People with pneumonia OR
B. An outbreak in birds (an exceptionally high number, according to local knowledge, of wild birds or chickens are found to become ill and die).

Clinically manage the patient and interview the patient or family member carefully to identify any other cases or co-exposed to sick/dead birds or products.
ADD for summary

Consider at the initial consultation and at the review appointment(s) whether the person meets the definition of a possible bird flu case, if so take appropriate action (p 5).

BELOW to edit with the "detail" pages p 6&7 below

Initial investigation and management

Is pneumonia if has a fever of 38^{o} C or more, cough and shortness of breath (details p 6).

Ask the usual clinical history and ask the patient or accompanying family member about the patient's contacts during the last 7 days since the start of the fever, with:

- ✓ ill or dead birds, uncooked bird products or
- ✓ other people with pneumonia

Manage as for pneumonia (and if is severely ill pneumonia urgently transfer to hospital) including:

- ✓ white cell count (and chest X-ray etc. according to the setting/ available) and give
- ✓ a broad spectrum antibiotic, and
- ✓ advice about cough and hand hygiene (p..), and give
- ✓ an appointment for 2 days, and say to inform you urgently if breathing gets worse.

NB. XW to add somewhere re when to do a community visit…if say birds dying…

Next consultation - review
1. Are they clinically (fever, cough and breathing) improved since starting antibiotics - as expected for typical pneumonia, or is no change or worse?
2. Are the white cells (lymphocyte and/or leucocyte count) raised ? - as for typical pneumonia, or not raised or lower ?
3. Are other tests done have results as for typical pneumonia (or not)?

NB. XW to add if Then do a community visit…if WCC etc. are …or now say birds dying…

Does it fit the definition of possible bird flu (next page) ?
– If so, do not hesitate, report !
Also:
1. Continue medical care and the broad spectrum antibiotic for a further 5 days.
2. Further advice patient and family on basic infection control measures; washing hands, cough hygiene… (p…).
3. Give another appointment, or admit to hospital if still breathless or has other signs of severe pneumonia.

Summary - Possible Bird Flu Patients and action to take

Report as "Possible bird flu" is a person with:

A. Pneumonia of unknown origin:
EITHER:

- Pneumonia - fever / temperature of 38° C, cough and raised respiratory rate AND
- the white cell count is not raised, AND/OR no response to antibiotics AND
- contact within 7 days from the start of the illness with one or more of the following:
  - ✓ Contact with a *confirmed* case of bird or human bird flu or
  - ✓ Contact with dead birds-chickens or
  - ✓ Worked in hospital or laboratory with people or birds suspected to have bird flu

NB XW how add re pneumonia case and one or more other pneumonia cases ie, cluster ?

OR severe pneumonia (p6), whether or not is known to have contact (as above) but living in an area affected by bird flu (p 2).

OR Is a an unexplained death from an acute respiratory illness
and is living in an area where confirmed or has more than one bird flu suspect, or has had contact with a confirmed case of bird flue during the 7 days prior to the start of the illness.

B. An outbreak in birds

The alert is hearing about an exceptional number of wild or domestic birds such as chickens have become sick or died, and a person(s) found to be ill with pneumonia or influenza-like illness (fever, cough, sore throat, body aches).

Action

Immediately anyone is found to fit the definition of a possible human bird flu case:

1. Alert seniors and report through the country surveillance system as a possible bird flu case (p..)
2. Send samples for laboratory confirmation of bird flu (p..)
3. Commence community control measures (p..)
4. Continue Isolation, infection control and care in hospital (p..)

NB.
The decision is "possible bird flu" depends on a combination of more or less clinical illness and more or less bird illness/ contact.

Pneumonia – more severe illness
Is bird contact

OR
Outbreak in birds
Is some human influenza-like illness or pneumonia

Identifying Possible Bird Flu - details

Clinical Interview and examination (if patient too ill, interview the family member/ friend).

Consider bird flu as part of assessment of any case of acute respiratory illness in areas affected by the disease in birds or previous human case (p..).

Ask about symptoms:
Allow the patient to explain their symptoms in their own words, and then as well as questions related to other possible causes, also ask about specific symptoms including:

- When did the fever start?
- Do they have cough, and for how long?
- Do you have diarrhoea or abdominal pain, and for how long?
- Have you been in contact with ill or dead chicken, ducks or uncooked bird products ?
- Have you been in contact with people who have a bad respiratory infection?

Examination:
- Check the temperature, is it 38^{o} C or more ?
- Count the breaths in one minute (watch the abdomen), is it fast?
- Other examination as appropriate

Possible bird flu ?

The possibility of bird flu depends on an assessment of the severity of the illness and degree of contact with ill birds or human suspects. the possible bird flu if they have:

1. Severe pneumonia, even if no *known* contact (see next page) with ill birds or people with possible bird flu,
2. Pneumonia are possible bird flu if in contact with dead birds or a person with possible or confirmed bird flu (see next page),
3. Influenza-like illness, if close contact with a confirmed case, or one of a cluster of possible bird flu cases, or close contact with an outbreak (exceptional number) of ill/ dead birds.

- If present, in a person living/visited an area with previous bird flu in the last (?) 12 months, further investigate with a white cell count and trial of antibiotics etc., (p 4 and ..)

Severe pneumonia (severe respiratory illness)– if fever and cough and any one of:
- Difficulty in breathing at rest
- Very fast breathing - over 30/ minute adult, or over 40/min children under 13 yrs
- Impaired consciousness, agitation or lethargy
- Blue lips or tongue (cyanosis)

Refer urgently for hospital care, and investigate for bird flu, even if no known contact with birds or ill people (ref p4, WHO March 17 2006)

Pneumonia (moderate respiratory illness) – fever (38^{o}+ C) and cough and rapid breathing (fast breathing is over 20/ min adult, over 30/min child 5-13 yrs, over 40/ min child < 5 yrs)

- If contact with ill-dead birds/ chickens or people with possible or confirmed bird flu
- Isolate and refer for laboratory tests (p6)
- If no known contact, then:

1. Give broad spectrum antibiotics
2. Ask to see patient urgently if the breathing or general condition gets worse
3. Arrange review after 2 days, then

- if fever and breathing not improved refer for hospital isolation and investigation (p6).

Influenza (mild respiratory illness) – history of fever but not rapid breathing or other significant symptoms, then:
Isolate and investigate for bird flu only if they have had
- ✓ Has had direct contact with an exceptional number of dead chickens or ducks or has eaten raw bird meat, blood or eggs in the last 10 days, or
- ✓ Is a close contact of a confirmed human case or one of a cluster (p..) of suspects in the last 10 days.

! Investigate to see if fits the definition of a "possible bird flu" case (p 6)

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Further investigate if is a "possible bird flu" case

Continued from previous page, with further details

Further investigate a person with respiratory illness (or fever and diarrhoea or encephalitis) to find out if fits the definition of possible bird flu any patient with acute respiratory illness (fever >38^{o} C and either cough, sore throat or is breathless):

1. Ask:
   - ✓ Does the patient live in or visited an area that recently has avian flu outbreaks in birds or humans
   - ✓ Has the patient been in contact with any ill or dead birds, including chickens, ducks, geese or wild birds recently?
   - ✓ Is the patient's occupation related with birds, including animal culling, slaughtering, processing with raw bird meat, and veterinarian?
   - ✓ Has the patient taken care of any possible bird flu cases or samples at home, hospital or laboratory?
2. Take blood for a white cell count, and other tests to identify the cause of the infection/ pneumonia [??blood culture etc. as possible……].
3. Give medical care and a broad spectrum antibiotic for 7 (?) days.
4. Advice patient and family on basic infection control measures; washing hands, cough hygiene… (p…).
5. Give appointment and review in 2 days, however,
   - admit to hospital if is breathless or has other signs of pneumonia, for chest X-ray and other investigations and care as appropriate.

If they improve, and otherwise do not meet the definition of possible bird flu,

- ➢ advice to return if they (or their contacts) get again ill with respiratory symptoms.

Possible human bird flu is defined as a person with:

1. Fever / temperature of 38^{o} C

AND has a cough or sore throat or is breathless
AND one or more of the following:

a. Contact with a *confirmed* case of bird or human bird flu
b. Contact with dead birds-chickens during the 7 days prior to the start of the illness
c. Worked in hospital or laboratory with people or birds suspected to have bird flu.

OR

2. Death from a unexplained acute respiratory illness AND:
   a. Living in an area where bird flu is suspected or confirmed
   b. Contact with a confirmed case of bird flue during the 7 days prior to the start of the illness.

Action, immediately anyone is found to be a possible human bird flu case:

5. Alert (report) as a possible bird flu case (p..)
6. Send samples for laboratory confirmation of bird flu (p..)
7. Commence community control measures (p..)
8. Continue Isolation, infection control and care in hospital (p..)

! Do not hesitate to report possible bird flu !

In a country with <u>no</u> known bird flu, a case of severe acute respiratory illness of unknown cause (e.g. severe pneumonia not responding to antibiotics) should be isolated with infection control measures until laboratory investigations identify another cause or bird flu tests are negative. If the patient dies continue investigation of samples.

Ask thoroughly about:

- ✓ Travel by the patient: has she/he visited any place with bird flu (H5) outbreaks either in birds or in human in last 14 days?
- ✓ Is the person frequently in contact with birds? Such as farmers, slaughters, hunters. Are the birds wild or likely to be imported? Does this person work in a laboratory processing special specimens?

Laboratory Investigation of Possible Bird Flu

Possible bird flu – according to the definition on page 4, then:

Collect samples
Laboratory tests provide the key information, together with epidemiological information, to confirm if it is a case of human bird flu (avian influenza H5N1).

Take the samples as soon as possible, e.g. soon after arrive at the hospital.

National/ WHO **Biosafety** measures must be followed when taking, transporting, preparing and testing specimens (refer to p…), including full personal protective equipment; gloves, over cuffed gown and mask.

Ask senior public health and laboratory officers to advise which samples to collect, which containers to use and where to send them.

Initially collect 2 sets of respiratory samples and 1 blood sample.
After recovery, 2 – 3 weeks later, collect another blood sample.

The samples and tests are likely to be routinely required are:

Respiratory specimens:
- ✓ **Nose-throat** (naso-pharyngeal) swabs and throat swabs, are best, but also
- ✓ **Sputum** – explain how. When no-one else is in the room, they take a deep breath and deep cough the sputum into the container, or
- ✓ **Aspirate** through the breathing tube if the patient is being ventilated,

Send for:
- ✓ **Real-time PCR** test for the RNA of the virus:
  - o if subtypes H1 and H3 negative and H5 positive, confirms a case of avian influenza,
  - o if subtypes H1 and H3 negative and H5 negative, but clinical and epidemiological evidence, this strongly suggests H5 (avian influenza), to be later confirmed by culture.
- ✓ **Culture** and virus isolation if possible:
  - o Haemaglutine inhibition test positive for H5 confirms a case

Blood for:
- ✓ Whole blood - for a full blood count and differential white cell count
  - o Low leucocytes, lymphocytes and platelets is suggestive, but not to confirm a case
- ✓ Liver function tests; creatinine/ urea and electrolytes; haematology etc. as clinically indicated
- ✓ Blood plasma for antibodies to the virus (for microneutralization test on serum for antibodies), repeat, in 2 or 3 weeks time (when they have recovered from illness):
  - o A rise of 4 times in the level of antibody confirms as a case,
  - o If no rise then may be a false positive,
  - o If only the specimen after recovery from illness is available, then a positive result is enough to confirm a case of avian influenza and also if there is epidemiological evidence (was contact with a human or bird case).

Urine for protein, microscopic blood, and possibly creatinine clearance test.

Chest X-ray – if clinical and/or X-ray signs of pneumonia, give antibiotics.

Other specimens
If these signs are present, do PCR and viral isolation if:
- ➢ **Diarrhea:** swab the stools or take rectal swabs
- ➢ **Red eyes** (conjunctivitis), swab the conjunctival secretions (for PCR)
- ➢ **Neurological signs** collect cerebro-spinal fluid (CSF) (for PCR)

Request autopsy if patients die:
- ➢ collect body organs, lung biopsy, nose and throat secretions, faeces, urine, blood and CSF.

Infection Control in Health Facilities

It is the responsibility of all health workers to:

- Prevent getting infected
- Prevent others from getting infected
- Prevent contamination of the environment.

Continue infection control measures:

- from detection to 7 days after the temperature has gone back to normal in adults, and
- until 21 days after onset of fever in children under 12 years:

To prevent getting infected, staff and visitors should use:

1. **Biosafety** measures which must be followed when taking, transporting, preparing and testing (p…) specimens,
2. **Personal protective equipment**; gloves, over cuffed gown, mask and goggles (p…) when attending suspects and confirmed cases.

To prevent infecting others:

1. **Isolate** confirmed cases and suspects in a single room as soon as possible
    - If patients have to go home earlier than this, (e.g. if hospitals are overloaded), then families must agree to continued isolation for the patient and carry out infection control measures until this time.
- If the hospital does not have enough single rooms,
    - Prioritize these for severe illness, especially confirmed cases and
2. Keep similar patients "cohorted" together in one room/ special area, so that:
    - Suspects are separate from non bird flu patients
    - Severe patients are separate from moderate-mildly ill bird flu suspects
    - Confirmed cases are separate from suspects
3. The isolation rooms with negative pressure ventilation are best, if available,
4. A named **nurse,** on each work shift, cares for those in each particular room, and
5. Limit **visitors** to the closest relative or friend. All visitors should wear personal protective equipment during the time of visit.

To prevent contaminating the environment

- Dispose of all contaminated material (e.g. gloves, towels) in a suitable bag or container
- All waste from the room/ area containing bird flu suspects or cases is treated as infectious waste

Clinical Management – an Outline

Deleted: <sp>

Clinical management of suspects or confirmed bird flu in the hospital is covered in detail in ……REF WHO docs, and NEMJ 2005; 353: 1374-85 [to discuss the best reference(s) to include]

Here is an outline for the public health staff and others to understand and support clinical care.

The progression of the illness

Suspects, see p4, start with fever, develop cough and/or sore throat, and some also diarrhoea. Some improve, others develop the signs of pneumonia or severe pneumonia after 4 -5 days from the start of fever. Some of the clinical management is the same for all patients, plus additional care if pneumonia or severe pneumonia develops.

Give all suspects:

- Oseltamivir ("Tamiflu") or similar (neuraminidase inhibitor) drug
- Paracetamol (not aspirin) for fever and aches-pain (2 tablets, 4 times a day for adults)
- The pulse, breathing rate and temperature should be monitored 4 hourly:
  - A pulse over 120 is a sign of severe pneumonia
  - The breathing rate (see p4) is a sign of pneumonia or severe pneumonia
  - The temperature; if no fever for 7 days in an adult (or 21 days have passed since the start of illness in a child under 12), the patient can go home.
- Sufficient fluids and food are given
- Education on bird flu, isolation, investigation of contacts etc. (see p17)

- Counselling - a two-way conversation with the patient, encouraging them to say their concerns, and answering their questions.

- Monitoring of patients, see p13

If pneumonia also give:

- Antibiotics (Although pneumonia is viral (not sure if this is what you wanted to say here or not?), there may be secondary bacterial infection involved; or in any patient if evidence of bacterial infection)

For severe pneumonia/ respiratory distress also give:

- Oxygen
- Intravenous fluids, and
- Ventilate - if indicated by clinical signs and blood gas results.

Possibly include here as well as on the identification page:

The signs of severe pneumonia include:

- Very fast breathing (see p4)
- High fever (39^{o} C or more)
- Pulse over 120
- Lethargy

Blue lips (cyanosis)

Outbreak Investigation & Immediate Control Measures

Outbreak investigation includes visiting the suspect's home and community, asking questions about the contact with birds and ill people, etc. This is essential to understand the pattern of transmission of the bird flu in animals and humans. At the same visit the immediate control measures will be done, such as home quarantine and infection control, so as to reduce transmission of bird flu.

Do not wait for the results from the laboratory tests, but start outbreak investigation and immediate control measures **within 24-48 hours** from the onset of any of the following (1):

- ✓ Suspicion of a single case or a cluster of suspects for avian influenza (severe pneumonia, or moderate respiratory infection- influenza if have been in contact with sick chickens, ducks etc. see p1)
- ✓ Laboratory confirmation of a human H5N1 case
- ✓ Detection of a possible or confirmed animal H5 outbreak, with abnormal deaths of domestic fowls (chickens or ducks).

Once there is any bird or human cases of avian influenza reported in the country, the crisis committee in the district should set up a rapid response team, which will include at least *(3):

- ✓ One public health officer at the district level
- ✓ Two public health assistants
- ✓ One clinician at the district level
- ✓ One veterinarian or agricultural officer at the district level

In advance, the rapid response team should (1):

- ✓ Be ready to answer questions regarding avian influenza control at the community level.
- ✓ Be equipped with personal protection equipment and use adequate material for specimen collection.
- ✓ Take along antiviral drugs (such as oseltamivir) in case of unprotected exposure during the investigation, if available.
- ✓ Use official WHO or country tools for investigation and reporting, such as, case definitions, patient/ contact investigation and reporting forms etc.

The rapid response team will do the following tasks (with the responsibilities):

Outbreak investigation (and who may do this task)**:**

- ✓ Interviewing the suspect and his/her closest person (public health staff)
- ✓ Listing close contacts (public health staff)
- ✓ Tracing close contacts (public health staff)
- ✓ Collecting specimen (public health staff and veterinarians)
- ✓ Cluster investigation (public health staff)

Immediate control measures (2):

- ✓ Symptom screening and managing suspects (clinical doctor)
- ✓ Home isolation for suspects (public health staff)
- ✓ Voluntary home quarantine and monitoring asymptomatic (public health staff)
- ✓ Infection control (public health staff and veterinarians)
- ✓ Health education and promotion (public health staff)

Interviewing the Suspect & the Closest Person

The public health staff use the patient/ suspect interview form (Form XXX)

As well as interviewing the suspect (if well enough), **it is also important to interview the closest person of the suspect (maybe a family member caregiver).** The closest person will know about exposure of the suspect to bird flu before getting ill and who had close contact with the suspect during his/her illness.

Interview the suspect and the closest person who took care of him/ her during the illness at home. Record the following information **of the suspect** (4):

- ✓ Age, date of birth and sex
- ✓ Full address and a telephone number to reach the family or their neighbour
- ✓ How many days ago did the fever start? What were the symptoms? And how they were developed?

Check the household if there are any backyard chickens or ducks.

- ☞ **If so, refer to the veterinarian (or agriculture officer) for investigation and animal specimen collection**

Ask the suspect's if their exposure to the possible infection source was within the last 2 weeks, such as:

- ✓ Contact with domestic birds such as chickens, fighting cocks, ducks and geese
- ✓ Catching or butchering wild birds such as wild ducks, geese, swans etc.
- ✓ Preparing or eating raw or undercooked bird products including their meat, blood, feathers and eggs.
- ✓ Touching bird faeces, drinking or washing with water contaminated by birds faeces (5)
- ✓ Close contact with any ill person with fever and cough

Ask where the suspect has travelled during the last two weeks

- ✓ Record any place visited, the date and duration of the visit.
  - o Pay attention to the risky places the suspect visited, such as farms, wet markets, slaughter houses, and health care facilities.
- ✓ Record if the suspect has been in any social gathering such as a school, a wedding party or funeral (7)

☞ **Add information recorded from the closest person to that of the suspect on Form XXX.**

Listing Close Contacts

The public health staff use the close contact listing form (Form XXX) for interview

Identify who are the close contacts of the suspect with bird flu (6)?

- People who have also been in contact with the same potential source of infection, which includes domestic or wild birds, bird products, faeces and contaminated water.
- People in contact with the same suspect 10 days before the onset of illness*, such as through:
  - Close physical contact, that is, stayed repeatedly within 1 meter (or 3 feet), e.g., spouse/ partner, siblings, best friends;
  - Providing bed-side care (medical, nursing and cleaning), or handling body fluids, secretions or excreta - without wearing adequate personal protection equipment;
  - Sharing the same room with the suspect patient without any proper infection control

Who are non-close (occasional) contacts?

- Occasional contacts people who had social activities with the suspect but without close contact during his period of infection. These occasional contacts are not considered at risk of infection (though this may change when in the future human to human transmission of avian influenza becomes more efficient.)

Interview the suspect and his/her close caretaker in the household for all close contacts of the suspect.

List on the listing form the information of all close contacts of the suspect:

- ✓ Give each close contact a unique identifier.
  - ❑ If the code is not assigned by the national public health unit,
  - ☞ Use a local code (refer to XXX for code meanings) (13)
- ✓ Age, date of birth and sex
- ✓ Full address and telephone number, or the number of a neighbour or friend through whom they can be reached
- ✓ When the contact began and how long did the contact last?
- ✓ Symptoms if any, since last contact with the suspect

☞ **If the contact has any fever, cough or difficult breathing, record the symptom and refer to the hospital or home isolation (p13).**

☞ **If the contact has no symptoms, add them to the list of people for monitoring.**

* However if on tracing the person in contact, you find they have not been ill and it is now more than 10 days (the maximum incubation time) then you do not need to do the rest of the procedure for contacts.

Tracing Close Contacts and Screening Symptoms

After identifying the contacts from interviews of the suspect and the close person, the **Public health staff and clinician,** should immediately follow every clue to reach every close contact listed in Form XXX.

How to reach them? Information can be obtained through:

- The full address and telephone number recorded in the Form XXX.
- Ask the suspect, his/her family members and friends for information
- Ask the neighbours or the village/ community leader for help

- **If there are a large number of suspects and their close contacts need to be traced, then:**
  - Check if non-close (occasional) contacts are included. If yes, exclude them.
  - First trace the suspects and close contacts who fits in the following criteria:

Criteria of suspects and their close contacts who need a high priority of treatment (7).

1. Those who have moderate to severe symptoms (p1)
2. Those with a potential to accelerate the spread of bird flu, such as teachers, students, participants of a large gathering
3. Those with a laboratory confirmed bird flu case
4. Contacts made through a high risk of exposure, such as unprotected patient care at home or in hospital
5. The contact with suspects was of a long duration

Screening Symptoms

The clinical doctor screens the symptoms of the close contacts for influenza like illness:

- fever of 38^{o} C or more and cough or difficulty breathing – with a raised breathing rate (p1)

Treatment and Isolation of Suspects

- If any symptoms present, the person is a bird flu suspect
  - Refer the suspect to an official fever clinic or hospital for treatment and isolation.
  - Refer to p6-8 for case management and isolation in the hospital setting

- If a large number of close contacts have symptoms and admission for all is not possible,
  - First admit suspects who fit the above criteria for a priority treatment
  - Isolate the rest of suspects at home, refer to the page of household isolation and monitoring

Voluntary Home Quarantine

- If none of the symptoms present,
  - Recommend voluntary home quarantine and monitoring, see p14.

Home Isolation of Suspects and Monitoring

Home isolation is recommended ONLY IF it is not possible to admit all the suspects in hospitals or fever clinics. Only suspects with mild symptoms can be isolated at home.

This should be done by the public health staff and the clinician (18)

Explain that:
- Now you are a suspect of bird flu.
- Because the hospital is too crowded with other bird flu patients, you have to be treated and monitored at a single room in your home. It is called isolation. And you **cannot go outside** the house/ room during the isolation period.
- Isolation begins from now and will last until at least 7 days* after your symptoms, especially fever, have gone away.
- Home isolation is very important to prevent further spread of bird flu in your family and the community.
- We will help you been safely treated and monitored at home. We will call you everyday.
- You will be taken to the hospital if your symptoms become more severe.

Provide the following essentials to the caregiver at home:
- Enough antiviral drugs (oseltamivir) and other medicines such as Paracetamol for fever, aches and pains.
- A thermometer, and explain how to use it.
- Enough personal protection equipment
- Other essential care materials, such as containers for disposing of contaminated tissues, gloves, towels etc.

Educate the caregiver in the family that she/he should:
- Give the correct dose of drugs at the right time according to the prescription
- Wear personal protection equipment when taking care of suspects
- Avoid direct physical contact with suspect, and keep a metre or more distance from the patient's face.
- Wash your hands thoroughly with soap (see health education page XXX) after touching the suspect's face, nose secretions and after the toilet
- Dispose all waste generated from the isolation room in a proper container - burn, bury or disinfect them.
- Keep the room ventilated to outside fresh air.
- Provide enough food, drink and other necessities for the suspect during isolation.
- Ensure that nobody except the caregiver can enter the isolation room.

Monitor treatment for home isolation:
- Give your telephone number and the location of the public health unit.
- Show and explain how to use the self-check monitoring form (Annex 11)
- Explain that the symptoms have to be recorded each day on the form.
- Ask the family to inform the public health unit everyday by telephone or other means on the condition of the suspect (if they do not call you, you call them).

- **If the suspect does not agree on isolation,**

☞ Ask help from the family member, their friends and the village leader for help. Ask the help of the local authority if necessary.

Voluntary Home Quarantine and Monitoring

Voluntary Home Quarantine of Close Contacts

Explain that all close contacts should quarantine themselves at home for at least 7 days from the most recent contact with the suspect (9). Voluntary home quarantine is important because (10):

- Though you do not have symptoms now, you may develop them within the next 7 days.
- Quarantine will cut the transmission of bird flu, so it is good for your family and the whole community.
- We will teach you how to monitor your health. So you can identify any symptoms early and report them to us.
- By doing this, the quarantine also protects your health.

❑ If the person does not agree,

☞ Ask help from the family member, their friends and village leaders for help. Explain that home quarantine is important to prevent the spread of bird flu.

❑ If the person agrees, explain that

- You have to remain in your house for at least 7 days after the last time you were in contact with the suspect. During this time, you can go to every part of your house, but not out of the house. (11)
- It is OK to talk and eat with other family members during the quarantine time, but you should avoid close face-to-face contact with anybody, such as hugs or kisses.
- You should not share utensils with them, such as plates, bowls and washing basins (12)
- Wash your hands properly with soap
- During the time of your quarantine, you should monitor any symptoms that arise, such as fever or cough.

Monitoring contacts for signs of illness (6):

The public health staff should

- Give your telephone number and the location of the district public health unit to the household.
- Give the family a thermometer and explain how to use it.
- Explain that if any symptom arises, such as fever or cough, the family should inform the public health unit immediately by telephone or other means. Fever or cough is a more significant warning if it starts within 7 days following your last contact with the suspect
- Explain that the close contacts should measure their temperature and report the results to the district public health unit every day via telephone or other means (8).

❑ If there is human-to-human transmission is highly possible,

☞ **Administrate prophylaxis antiviral drugs to the close contacts (??)**

Collecting Specimens on Site

Public health staff should collect human specimens for laboratory tests, if there is a large number of suspects that can not be admitted in the hospital.

Biosafety measures must be followed when taking, transporting, preparing and testing, including full personal protective equipment; gloves, over cuffed gown and mask.

Ask the help of the clinical doctor and the senior public health doctor on the method to be used for collection and containers to be used.

☞ Check there are enough swabs, containers and personal protection equipment.

A set of two specimens should be collected initially, and one blood specimen is to be collected.

Close contacts with symptoms **(suspects)** should be referred to the hospital as soon as detected. Generally specimens will be collected in the hospital (refer to page XXX), however:

❑ **If there are a large number of close contacts with symptoms (13),**

☞ Collect the following specimens on site (also refers to p6)
- ➢ Nose-throat swabs or throat swabs
- ➢ Sputum, ask for a deep breath and deep cough
- ➢ A whole blood specimen (at this initial investigation time, and remember to collect again after recovery, 2-3 weeks later).

☞ Collect a specimen of whole blood from all close contacts (including without symptoms) if resources are sufficient and numbers not too many (ask the senior public health staff).

Ensure that each specimen is correctly **labelled** with the person's name, code, the kind of specimen and time collected.

Specimens should be placed in a viral transport medium and kept cold (in 4°C) in the same way as in the vaccine cold chain (The specimens should reach the official lab as soon as possible, latest is within 4 hours of collection. (14)

❑ If the specimen cannot reach the official lab within 48 hours,

☞ Specimens need to be sent to a local hospital/ public health unit for deep freeze under -70°C immediately.

Check that the veterinarian or agriculture workers have collected specimens from live and dead chicken and duck, and their products. However, if not, the public health staff should do this (13).

Infection Control in the Community

Infection control will be done by public health assistants, the veterinarian, or trained laypersons. The public health officer will oversee the process (16).

Exclude any poultry food product in the household, including cooked or raw meats, blood, eggs and etc. These should be burned or buried deeply far away from any water sources (17).

Sanitise the room and house where the suspects lived, using appropriate disinfectant, such as 0.1% acetic oxide or 500mg/L chlorine sprayer.

Boil the food utensils for more than 30 minutes.

Wash the **clothes, bed linens and clothes** used by the suspects, using hot water and detergents, or 0.1% acetic oxide.

- If tap (free running) water is not available,

Disinfect the drinking water at household using chlorine(15) by chlorination or boiling:

- Chlorinate. The amount of chlorine required depends on the quantity and on the quality of water (colour and PH). Usually, 4-5 drops of chlorine are needed to treat 1L or clear water. Wait for 30 minutes of cleaning (to kill the micro-organisms)
- Boil the water for 10 minutes and cool it before drinking.

Note. If the water is turbid, leave it to settle, and then pour the clear water into another storage container for usage.

Infection control in animals by the veterinarian or trained laypersons:

- Kill the backyard birds, including sick and well chickens, ducks and geese.
- Expending the culling of any flocks to a radius of 3 kilometres (1.9 miles) or according to national/ FAO recommendations
- Disinfecting the areas where birds lived, such as cages, yards, and shelters using disinfectant such as 0.1% acetic oxide or 500mg/L chlorine sprayer.

Ensure using proper personal protection equipment and safe domestic bird killing procedures are followed.

Health Education

Educate persons living in the community where the suspect(s) live; including the close contacts, the family members of the suspects, neighbours and etc, during the team's visit. Use the following information:

Explain what bird flu is and how it is transmitted

- ✓ Bird flu, also known as avian influenza, is a contagious disease of birds that caused by a new influenza virus. Some type of the virus is very contagious that it infects people and causes severe fever, cough and difficult breathing.
- ✓ Evidence suggests that bird flu can be transmitted through (12):
  - o From the mouth of a patient or ill birds at a distance of 1 meter or 3 feet
  - o From dirty hands touching someone's eye or nose
  - o Close contact with a patient
  - o Water contaminated by faeces or other parts of ill birds

Good practice to prevent contact with animals (17):

- ✓ Wear personal protection equipment (PPE, masks, goggles, gloves and boots) for any care of animals, including feeding, waste cleaning and killing,
- ✓ Do not do any of above activities when you do not have enough PPE.
- ✓ Do not let children play near birds or places contaminated with bird faeces or other part of birds
- ✓ Never collect sick/ dead birds except for disinfection purpose (when PPE must be used)
- ✓ Wash your hands with soap (or alcohol based handrub) before and after feeding and handling any animals, or after cleaning the environment of the animals
- ✓ Do not make or handle fertilizer made of poultry or duck stools
- ✓ Avoid creating dust during household and environment cleaning
- ✓ Avoid bathing or collecting water in ponds, canals and rivers where waterbirds live
- ✓ Report to the agriculture/ public health unit for any suspected ill birds in your household as soon as possible.

Safe food preparation and consumption practice (17):

- ✓ Do not defeather, prepare or eat raw birds, or birds found sick or dead, or taken from infected flocks
- ✓ Do not eat raw meet, blood or eggs from any birds. Only eat well cooked meat and eggs cooked
- ✓ Wash hands, utensils and chopping boards thoroughly before and after processing meat
- ✓ Keep raw bird meat away from other foods
- ✓ Store food behind closed doors, away from any animal access
- ✓ Collect water from safe protected point (such as tap). If not available, use chlorine (bleach) to disinfect water before use (p16).

Continue in the next page

Health Education

Continue the previous page

- **If you have an influenza like illness (i.e., fever, cough and diarrhoea),**

✓ Stay at home and rest (17, 19)
✓ Go to doctors in the official fever clinics or hospitals for diagnosis
✓ Do not seek treatment from traditional practitioners or laypersons
✓ Cover your mouth or nose when coughing or sneezing, using a tissue when possible.
✓ Dispose dirty tissues promptly and carefully - bag or bin them.
✓ If you have been in contact with dead or sick chickens, ducks or other birds, report to the local public health unit immediately through telephone or other means.

Prevent infection when taking care of persons who have influenza-like illness:

✓ Do not attempt to treat at home a patient with influenza like illness, if he/she has handled dead or sick chickens, ducks or other birds. Report to the public health unit immediately.
✓ Wear a mask or scarf when taking care of the patient
✓ Wash your hands with soap, thoroughly before and after taking care of the patient
✓ Wash clothes and bed linen of the patients with hot water and detergent.

Hand hygiene (20):

Each individual must wash his or her hands thoroughly:

✓ Before or after contact with ill people, especially bird flu suspects or contacts
✓ After removing gloves
✓ After leaving the isolation room or quarantine house

Wash your hands with any of the following:

✓ alcoholic handrub solution
✓ water and soap
✓ a towel only to be used by one person

Analysing Epidemiological Evidence for H2HT*

Detecting any signal of possible **human to human transmission (H2HT)** in an early stage is very important, that is to find out the relationships among a cluster of suspects.

Where there are two or more suspects in one outbreak, or where the suspects in two or more outbreaks are linked together, then the analysis must start and be reported immediately.

Describe the outbreak(s):

- Where is the origin of the outbreak? - Did it start from ill birds or a human suspect?
- When and where did each suspect get ill? - Record the specific date and place of where each suspect became ill.
- Are the suspects connected?
    - Do they all belong to one household?
    - Are they friends or neighbours? When did they visit each other?
    - Were all the suspects in contact with birds (chickens, ducks, etc)? Is there any exception?
    - Who took care of the first suspect? Did the caregiver get ill?
- How many days were there between the time of exposure (when the suspect was first in contact with ill birds or another suspect) and the time she/he got ill?

Record all the information using Form XXX

Knowledge: Incubation period refers to the number of days from the time of exposure to the time of the onset of illness. The incubation period for bird flu is suggested as:

- Between ill birds to human, 2-4 days (up to 8 days) (6)
- Between ill people to other people (H2HT of bird flu) is not known, but it may be similar to normal influenza which is 1-3 days. (21)

The transmission is **unlikely** H2HT if:

- The time lag between exposure and onset of illness is less than 2 days;
- The time lag is more than 8 days

However, H2HT is **VERY likely** in an area where a confirmed human case is found but no bird infection found, that is, a human case:

- Was known to be in contact with confirmed human case
- Was not in contact with any bird, food or environmental source of bird flu infection
- And have not been exposed in the laboratory with H5 virus

An increase in H2HT of bird flu is suspected when observing (22):

- An increase of clusters frequency, size, duration and spread
- Several generations of suspects linked with one primary case
- New suspects are reported where the patient is moved in (e.g., when a patient was moved from home to hospital, new suspects in the hospital are reported).

Active Case Finding

Active case finding includes getting the community involved to identify any persons with influenza like illness (ILIs) either from their homes or from local health facilities. Because this work is intensive, active case finding **should ONLY start** when a very likely H2HT is identified (25).

Ask the veterinarian or agriculture persons about surveillance and active case finding in the **animal outbreaks**.

Involve the community:

1. Meet the community leaders and government officials
   - ✓ Arrange a meeting with community leaders (head of the village) and officials in the infected area. Brief them about the seriousness of the bird flu situation in their communities.
   - ✓ Explain the need of forming a community health volunteer group in each village/ community that bird flu affects.
   - ✓ Ensure the government, community or other organisations provide adequate funds for all activities.

2. Form a community health volunteer group
   - ✓ The group should be formed based on any existing community groups (such as women's group, health group, etc.)
   - ✓ The purpose of the community health volunteer group are:
     - o Health education and promotion
     - o Door to door survey on people who have influenza symptoms
     - o Help on surveillance of "influenza" or pneumonia in local private clinics

3. Train the community health volunteers, including on how to ask about influenza symptoms and where to take them to the fever clinic / clinician for examination, note:
   - ✓ Volunteers should be trained by the public health staff before conducting their work

Health education and promotion

- ✓ See page XX and XX for information
- ✓ A variety of health education approaches should be used; such as posters, radio broadcasting, pamphlets and etc.

Door to door survey (to be completed by volunteers and led by a public health staff)

- ✓ Advice for a senior public health officer or the upper level of public health unit for the need to conduct the survey.
- ✓ Ask at each house if anyone has influenza symptoms, such as fever and/or cough.
- ✓ Identify any ill birds in the household.
- ✓ Use standard form (national or WHO forms) to record all information.
- ✓ They should not go within 1 metre of an ill or dead bird or a person ill with influenza symptoms or use masks and other personal protection if going into a suspect's home.
  - o Report bird flu suspects immediately when they fit with the definition.

Report from the health facilities

- ✓ Use the active surveillance form (XX) to report patients with influenza-like illness or pneumonia in every health facility, including private clinics and traditional healer's offices
- ✓ Each clinic should report the form to the district public health unit every day.
- ✓ Collate the information for ILI regarding numbers, frequency, severity and areas
- ✓ Report the information to upper level public health unit

Surveillance

To be done by the public health staff

Surveillance is collecting a) from agriculture the information of bird outbreak and b) from health facilities (and/or homes) the number of people with the illness that fits with the case definition of suspects (or confirmed cases) of bird flu. Then analysing the pattern of transmission, and using this to plan control measures.

As soon as the following **conditions** apply, surveillance for bird flu must start (23):
- Outbreaks of bird have been identified;
- There is any suspect or confirmed human case of bird flu;
- Outbreaks of birds or human are identified in a region bordering with your district(24).

The bird flu surveillance system should be **designed** to fit within:
- The existing national surveillance system, such as the influenza surveillance system or integrated disease surveillance system etc.,
- To increase the sensitivity of the system to identify new respiratory cases, using case definition for bird flu suspects and confirmed cases (see WHO file in coming…)
- Where no surveillance system exists, this should be developed.

Define the area of surveillance (24):
- If it is a bird outbreak, with the agriculture department 1) define the epidemic site and then based on this, 2) the epidemic region and hence 3) the districts requiring surveillance, as follows:
    1. The epidemic site: which is the farm or the slaughter site of ill birds; but if the birds are free ranging then the whole village is the epidemic site;
    2. Then 3 km radius around the site is the epidemic region, and
    3. All districts within this epidemic region should be the surveillance area
- If there is any human suspect or case in a district, then the whole district will be included in the surveillance area, also
    - A district bordering another with a human suspect or case identified, is also a surveillance area
- If a H2HT is highly suspected, then all districts that the suspects have been to (including homes, schools, work places, clinics and travel places) should be the area for surveillance

Duration of surveillance:
- ✓ In case of a bird outbreak, the surveillance should continue for at least 10 days after the time when monitoring of close contacts has shown no new cases.
- ✓ In case of human suspects or confirmed cases, the surveillance should continue until 10 days after the treatment of cases or the quarantine of contacts are finished, or until 10 days after the infection control of the epidemic region is completed.
- ✓ If a bordering region has outbreaks, the surveillance should continue for a month after the epidemic in the bordering region has been stopped.

Subjects to be monitored:
- ✓ Close contacts of human suspects or ill birds (see p12)
- ✓ Human bird flu suspects or cases (reported from hospitals)
- ✓ Patients with ILI from health facilities (hospitals and clinics) in the district
- ✓ Active casing finding of ILIs at home if H2HT is very possible (see previous page)

Reporting

Three types of reporting are to be done by the public health staff at the district level(26):

- Outbreak investigation and monitoring report, including individual report forms and summary of findings
- Daily reporting on incidence of cases (including animal and birds)
- Weekly summary report

☞ **Immediately inform the Ministry of Health for any cases or suspects found.**
☞ **After the reporting system begins, report even if no cases are found (zero reporting).**

Outbreak and monitoring report:

✓ Individual report forms

Suspect (closest person) interview form	Close contacts listing form
Monitoring form for home isolation	Monitoring form for home quarantine
Cluster investigation form (if any)	Active case finding reporting form

✓ Summary of outbreak investigation and monitoring (27) including:
  - o General background information (area, demography, climate, etc.)
  - o Activities carried out (outbreak investigation and immediate measures)
  - o Description of outbreak in animals
  - o Count of cases (suspects, close contacts, confirmed cases, death) by date, place, age and gender
  - o Cluster description
  - o Main features of clinical symptoms
  - o Description of risk behaviour
  - o Influenza-like illness in the community

✓ Using summary form of XXX (see details)

Daily report on incidence of cases: (28)

✓ Animal surveillance (done by the agriculture department)
  - o Daily count of newly affected villages with date it began
  - o Number of death/ illness and number of killed animals by time

✓ Human surveillance
  - o Cases and death count (according to the national/WHO case definitions)
  - o Cluster count and size (detected and under investigation)
  - o Cluster duration (date of first case and last suspect)
  - o Distribution of cases according to their work (hospitals, cullers, investigation team)
  - o Also report the whole population by age and sex, to calculate attack rates

Weekly Summary (same as daily report, but a summary of the week, see Form XXX(29)

Containment Measures

We do not provide detailed guideline for containment measures here, but only list the major tasks for awareness purposes.

The decision to start containment measures will come from a national public health authority, only on the condition that an effective and sustained H2HT are identified. They are (30):

- ✓ Moderate to severe respiratory illness or deaths are identified in health workers who take care of confirmed bird flu patients but without any other exposure to ill birds.
- ✓ 5-10 bird flu suspects are identified within a cluster with possible H2HT, and more than 2 of these persons are laboratory confirmed cases.
- ✓ Compelling viruological and epidemiological evidence shows an effective and sustained H2HT virus.

Phase one: Standard measures to reduce transmission

Activities of phase one are based on the assumption that the outbreak will not cause explosive transmission in a short time.

Outbreak investigation and immediate control measures will still be used and should be carried out more vigorously, plus the following activities:

- ✓ Targeted antiviral prophylaxis:
  - o Provide antiviral drugs to all suspects and their close contacts to reduce ongoing spread.
  - o Local or national authorities, with WHO, will decide who will be the priority group to protect using limited stock of antiviral prophylaxis (such as school, health facilities and etc.)

- ✓ When the number of cases exceeds the hospital capacities, ill persons should be isolated in homes, field hospitals or other designated areas defined by the authority.

Phase two: Exceptional measures

In case of a large national bird flu outbreak like SARS occur, the local authority (with the WHO) will decide:

- ✓ Ask voluntary quarantine for the infection site, such as village, hospital or school.
- ✓ Implement social distancing including:
  - o Closing of schools and workplaces
  - o Cancelling mass gatherings and public transportation
  - o Controlling boarders (in country or international)
- ✓ Request to deploy the antiviral stock at the national or international level

At this stage, public health will become a national security issue and all available social resources will be deployed for containment of bird flu. District public health staff will act as the leading persons within a local crisis action group to conduct/ coordinate activities listed above.

Justification:

(1) P23, WHO working draft on Rapid Field Investigation and Response, Version 20, March 20, 2006
(2) P7-13, WHO pandemic influenza draft protocol for rapid response and containment, 17 March, 2006
(3) refer to (1) with practical experience from Swaziland and China.
(4) P24, WHO working draft on Rapid Field Investigation and Response, Version 20, March 20, 2006
(5) New England Journal article
(6) P19, WHO working draft on Rapid Field Investigation and Response, Version 20, March 20, 2006
(7) P10, WHO pandemic influenza draft protocol for rapid response and containment, 17 March, 2006
(8) P19 Note… suggest to Alice, that if possible to give out and explain the use of a thermometer to contacts and change the report. And change the daily report for that only if fever occurs.
(9) P16 WHO Alice and P7, WHO pandemic influenza draft protocol for RR and C.
(10) P7 and P10, WHO pandemic influenza draft protocol for rapid response and containment, 17 March, 2006
(11) also (10), P1383, suggested by the NEMJ, but according to P73, the control measures to close contacts, Chinese Ministry of Health from Guangxi paper, the close contact will be fine to go within the infected community, but not outside.
(12) New England Journal Article
(13) P25, WHO working draft on Rapid Field Investigation and Response, Version 20, March 20, 2006
(14) Annex 17, Page 2, Alice. And P65 Collecting laboratory specimens, Chinese MoH said 24 h, and annex 17 WHO Alice said 2-4 days.
(15) Annex 26, Alice
(16) P83-84 Disinfection protocol, Chinese Ministry of Health;
(17) P37 Alice Draft
(18) P16- P18, Isolation, Alice Draft
(19) P10, Pandemic influenza: a guide in the UK
(20) P17, Alice Draft
(21) P283, David Heymann, 18th Edition, Control of Communicable Diseases, WHO and APHA
(22) P26-28, Alice Draft
(23) P31-32, Alice Draft
(24) P18-21, Surveillance of avian influenza, China ministry of health
(25). From author's personal experience in TB community surveys.
(26) P33-34 Alice Draft
(27) Annex 20, Alice Draft
(28) Annex 23, Alice Draft
(29) Annex 22, Alice Draft
(30) P8-14, WHO pandemic influenza draft protocol for rapid response and containment, 17 March, 2006