

### **III Virology**

#### **1 Contact information**

|   |                  |
|---|------------------|
| General enquiries                       | 2319 8247        |
| Culture and Serology Laboratory         | 2319 8237 / 8239 |
| Hepatitis Laboratory                    | 2319 8240        |
| Human Immunodeficiency Virus Laboratory | 2319 8221        |
| Consultant Medical Microbiologist       | 2319 8252        |
| Senior Medical and Health Officer       | 2319 8574        |
| Medical and Health Officer              | 2319 8253 / 8572 |
| Facsimile                               | 2319 5989        |

#### **2 Materials provided on request**

- (a) "T/M" (viral transport media, to be kept at 4°C and used before expiry)
- (b) "CMV T/M" (cytomegalovirus transport media, to be kept at 4°C and used before expiry)
- (c) "Chlam T/M" (*Chlamydia trachomatis* transport media, to be kept at 4°C and used before expiry)
- (d) Cotton/Dacron-tipped sterile swabs for viral/chlamydial specimens respectively
- (e) Single-welled glass slides for direct antigen detection by immunofluorescence test

#### **3 Timing of specimen collection**

- (a) Direct detection and virus isolation: As soon as possible after onset of illness
- (b) Antibody detection:
  - IgM: Usually 5-7 days after onset of illness.
  - Viral titre: Paired acute and convalescent sera preferably 10-14 days apart.
  - IgG: Any time after window period for persistent infection and immunity testing.

#### **4 Choice of specimens and tests**

- (a) In general, testing methods for either direct detection, viral isolation or antibody detection may be employed for the investigation of viral infections. The choice of tests will depend on the infection concerned, types of specimen available, timing of specimen collection, and urgency of tests.

- (b) Relevant clinical information should be clearly provided on the request form so that appropriate tests can be selected for maximal benefit to the patient.
- (c) Collection of inappropriate specimens, use of incorrect containers and specimens inappropriately handled after collection, will not only lead to delay in specimen processing or rejection of the request, but may also result in incorrect results.
- (d) Guidance for collection of specimens according to predominant clinical features is given in Table 1. Guidance for collection of public health specimens is given in Table 2. Testing methods available in this laboratory for viruses are listed in Table 3. Tests available for other microbial agents from clinical specimens are shown in Table 4.
- (e) For collection of specimens for novel influenza virus testing, please also refer to Appendix 3, *Guide to Request for Novel Influenza Virus Testing*.

## **5 Laboratory request form**

### (a) Clinical specimens

- i. A laboratory request form, DH2542 (white) (or computer generated HA laboratory request form using electronic requesting system) or DH2546 (pink) for paying cases, both obtainable from the Virology Division, must be completed and accompany each specimen. In addition, for requests for HBV DNA, HCV RNA, novel influenza virus and SARS coronavirus testing, the corresponding forms in Appendix 1, 2, 3a and 4 respectively should also be completed and submitted together with the specimen.
- ii. The following information must be available and legible on the request form. Incomplete information on the request form may result in delay in specimen processing or rejection of the request.
  - Patient particulars (name, sex, date of birth/age, HKID /identity document no. /hospital or clinic no.)
  - Requesting unit/ specialty/unit, ward)
  - Relevant symptoms, specific clinical features or provisional diagnosis with date of onset of illness
  - Date of specimen taking
  - Time of specimen taking for HIV RNA and HCV RNA
  - Nature of specimen
  - Test requested
  - Signature and name of requesting medical staff

### (b) Public health specimens

Please refer to Table 2.

## **6 Specimen labelling, packaging, transport and storage**

- (a) The specimen container must be labelled with two unique patient identifiers matching the information on the request form. Incompletely labelled specimens will be rejected.
- (b) The following triple packaging system shall be used when transporting specimens to the Virology Division.
  - i. The primary container containing the specimen must be watertight, leakproof, and properly and securely capped or screwed.
  - ii. A second leakproof container should be used to protect the primary container. Laboratory test request forms must be placed outside the secondary container, using a separate plastic bag.
  - iii. The third layer of outer packaging / container (transport box) should have adequate strength for its capacity and intended use, and that can be cleansed and disinfected.
  - iv. Specimens should be kept at 4°C and upright during transport to minimize the possibility of spillage.
- (c) The specimen transport box should bear the biohazard warning label.
- (d) Specimens should be sent to the Virology Division as soon as possible. Public health specimens for testing at the Virology Division must be sent in person to Room 910, 9<sup>th</sup> Floor, Public Health Laboratory Centre.
- (e) If delay in specimen transport is unavoidable, keep at 4°C for up to 72 hours except for:
  - i. specimens for HIV RNA and HCV RNA testing which must arrive at the laboratory within 6 hours of collection.
  - ii. specimens for *C. trachomatis* culture which must arrive at the laboratory within 24 hours of collection or otherwise should be kept at -70°C prior to specimen transport.

## **7 Average turnaround times (TATs)**

- (a) The following TATs serve only as a general reference. In case confirmatory tests are required, the TAT may be lengthened accordingly.
- (b) For urgent request, please contact medical staff for special arrangements.

| <b>Category</b>   | <b>Test</b>                  | <b>Average TAT<br/>(working days)</b> | <b>Frequency of test</b> |
|-------------------|------------------------------|---------------------------------------|--------------------------|
| Direct detection  | Electron microscopy          | 1-2 day                               | Daily                    |
|                   | Antigen detection            | 1-2 day                               | Daily                    |
|                   | RNA/DNA detection            | 2-3 days                              | Three times per week*    |
| Culture           | Cytomegalovirus              | 4 days                                | Daily                    |
|                   | <i>C. trachomatis</i>        | 4 days                                | Twice week               |
|                   | Other viral cultures         | 7-10 days                             | Daily                    |
| Serological tests | Viral titres                 | 2-3 days                              | Daily                    |
|                   | IgM testing                  | 1-2 day                               | Daily*                   |
|                   | Immunity testing             | 3-4 days                              | Once per week            |
|                   | Hepatitis markers            | 2-3 days                              | Daily*                   |
|                   | Human immunodeficiency virus | 2-3 days                              | Daily                    |

\*Selected non-urgent tests are performed less frequently. Please consult the laboratory for details.

## **8 Requests for additional tests**

- (a) Additional tests on specimens previously sent to the laboratory may be requested via telephone followed by written request via facsimile.
- (b) Such tests will be performed subjected to the following conditions:
- i. test(s) requested by a medical staff
  - ii. appropriate clinical indications
  - iii. sufficient amount of the appropriate sample is available in the laboratory
  - iv. test results are not adversely affected by specimen storage

**Table 1: Collection of specimens according to predominant clinical features**

- (a) Collect specimens using safety precautions and personal protective equipment in accordance with infection control guidelines of your institution.
- (b) Dispose of any potentially contaminated materials used for specimen collection in accordance with infection control guidelines of your institution and Code of Practice promulgated by the Environmental Protection Department.

| <b>Illness</b>     | <b>Specimens</b>                                 | <b>Test/specimen collection</b>  |
|--------------------|--|--|
| Respiratory        | Respiratory aspirates (nasopharyngeal, tracheal) | <b>Direct detection and culture:</b> Aspirate respiratory secretions into a sterile container and add “CMV T/M”, “T/M” or “Chlam T/M” for detection of CMV, other viruses or <i>C. trachomatis</i> respectively as required.                                 |
|                    | Respiratory swabs (throat, nasal)                | <b>Culture:</b> Vigorously swab mucous membrane, especially inflamed areas, with a cotton-tipped swab. Place into “T/M” and break off shaft.   |
|                    | Paired sera                                      | <b>Viral titre:</b> Collect 5 ml of acute and convalescent blood samples 10-14 days apart in a plain container without anticoagulants.   |
| Gastrointestinal   | Stool  | <b>Direct detection:</b> Collect unformed stool into a plain container without additives during diarrhoeal phase.  |
| Neurological       | CSF  | <b>Direct detection and culture:</b> Collect 1-2 ml during the acute phase of illness into a sterile plain container.<br><br><b>Viral titre:</b> Collect 0.5 ml during the second week of illness into a sterile plain container.                            |
|                    | Stool  | <b>Culture:</b> Collect 1-2 g (peanut-size) into a plain container.  |
|                    | Respiratory aspirates/<br>Throat swab            | <b>Culture:</b> Aspirate respiratory secretions into a sterile container and add “T/M”. To collect throat swab, depress tongue, vigorously swab both tonsillar fauces and posterior pharynx with a cotton-tipped swab, place into “T/M” and break off shaft. |
|                    | Paired sera                                      | <b>Viral titre:</b> See under “Respiratory illness”.   |
| Cardiac            | Stool  | <b>Culture:</b> See under “Neurological illness”.  |
|                    | Paired sera                                      | <b>Viral titre:</b> See under “Respiratory illness”.   |
| Maculopapular rash | Stool  | <b>Culture:</b> See under “Neurological illness”.  |
|                    | Respiratory aspirates/<br>Throat swab            | <b>Culture:</b> See under “Neurological illness”.  |
|                    | Paired sera                                      | <b>Viral titre:</b> See under “Respiratory illness”.   |

**Table 1: Collection of specimens according to predominant clinical features (Cont'd)**

| <b>Illness</b>        | <b>Specimens</b>  | <b>Test/specimen collection</b>   |
|-----------------------|---|---|
| Vesicular rash        | Vesicular fluid (from 5-6 lesions)  | <b>Direct detection:</b> Disinfect skin carefully without rupturing vesicles. Aspirate at least 0.1 ml fluid in a 1-ml syringe and seal to prevent drying.<br><b>Culture:</b> Collect fluid with cotton-tipped swab, place into "T/M" and break off shaft.  |
|                       | Basal cellular material from ruptured vesicles  | <b>Direct detection:</b> Using a scalpel blade, gently scrape basal cells, emulsify in a drop of saline in the well of a slide, allow to dry and fix in ethanol for 10 minutes.<br><b>Culture:</b> Use a cotton-tipped swab to collect lesion basal materials, place in "T/M" and break off shaft.  |
|                       | Stool   | <b>Culture:</b> See under "Neurological illness".   |
|                       | Paired sera   | <b>Viral titre:</b> See under "Respiratory illness".  |
| Conjunctivitis        | Eye swab / conjunctival scrapping   | <b>Direct detection (C. trachomatis):</b> Use a Dacron-tipped swab to collect cellular material and smear onto the well of a slide. Fix in methanol for 10 minutes.<br><b>Culture:</b> Collect cellular material with a cotton or Dacron-tipped swab for viral or <i>C. trachomatis</i> culture respectively and place in "T/M" or "Chlam T/M".   |
|                       | Paired sera   | <b>Viral titre:</b> See under "Respiratory illness".  |
| Hepatitis             | Single serum  | <b>Antigen/antibody detection:</b> Collect 5 ml of blood in a plain container without anticoagulants.   |
|                       | Paired sera   | <b>Viral titre:</b> See under "Respiratory illness".  |
| Genital               | Endocervical swab (female)/ urethral swab (male)  | <b>Direct detection (C. trachomatis):</b> Remove excess mucus with a sterile Dacron-tipped swab if necessary. Collect cells with a fresh Dacron swab and smear onto the well of a slide. Fix in methanol for 10 minutes.<br><b>Culture:</b> Gently swab the mucosa to collect cellular material using a cotton or Dacron-tipped swab and place in "T/M" or "Chlam T/M" for viral or <i>C. trachomatis</i> culture respectively. |
| Congenital (neonate)  | Urine   | <b>Culture:</b> Collect 2-3 ml into "CMV T/M" for CMV culture.  |
|                       | Single serum  | <b>Antibody detection:</b> Collect 1-2 ml of blood in a plain container without anticoagulants.   |
| Fever (non-specific)  | Respiratory aspirates/ Throat swab  | <b>Culture:</b> See under "Neurological illness".   |
|                       | Stool   | <b>Culture:</b> See under "Neurological illness".   |
|                       | Paired sera   | <b>Viral titre:</b> See under "Respiratory illness".  |
| Other specific agents | Please refer to Table 3 for tests available for acute and chronic infections and immunity screening of individual agents. |   |

**Table 2: Collection of public health specimens**

| Test   | Specimens                 | Collection/request form/transport   |
|--|---------------------------|---|
| Hepatitis A virus RNA detection                                      | Raw bivalve molluscs      | Collect sufficient sample for testing:-<br><b>Oyster, clam, mussel, scallop, razor shell:</b> One dozen shellfish per sample<br><b>Cockle, geoduck, whelk, abalone:</b> 4-6 shellfish per sample, depending on size of each shellfish<br>Place sample in double leak-proof plastic bags and stick sample label to the inner bag. The sample label should contain the sample number and name of food supplier to match the information on the request form.<br>Complete form FEHB33 in duplicate, filling in all required information and sign the request.<br>Keep the specimen at its initial temperature condition (frozen at <-20°C or at 4°C) during transport to the laboratory. |
| Norovirus RNA detection  | Raw oysters only          | As above  |
| <i>Orientia tsutsugamushi</i> / <i>Rickettsia</i> spp. DNA detection | Hard-bodied ticks / mites | Place specimen in sterile container clearly labelled with sample identification number and species information.<br>Complete laboratory request form DH2542 with the following information: Sample identification number, species of tick / mites, geographical site of tick / mite collection, epidemiological case number of patient.<br>Alcohol may be used as fixative, but not formalin.<br>Keep frozen at -20°C or at 4°C during transport.  |
| Japanese encephalitis virus  | Mosquito                  | Place specimen in sterile container clearly labelled with sample identification number and species information.<br>Complete laboratory request form DH2542 with the following information: Sample identification number, species of mosquito, geographical site of mosquito collection, epidemiological case number of patient.<br>Keep specimen with dry ice during transport and send sample to laboratory as soon as possible.   |

**Table 3: Tests available for viruses from clinical and public health specimens**

- (a) Some of the tests require prior arrangement with the laboratory and would be performed when clinically indicated.
- (b) Lack of compatible clinical information, inappropriate specimens or use of incorrect containers may result in delay in specimen processing or rejection of the request.

| <b>Virus</b>  | <b>Direct Detection</b>  | <b>Culture</b>  | <b>Antibody Detection<sup>1</sup></b>                 |
|---|--|-----------------|---|
| Adenovirus (non-enteric)                                | Ag <sup>2</sup>  | + <sup>3</sup>  | Viral titre   |
| Chikungunya virus                                       | RNA <sup>1</sup>   | +               | Viral titre, IgG, IgM                                 |
| Cytomegalovirus   | Ag <sup>2</sup>  | + <sup>4</sup>  | Viral titre, IgG, IgM                                 |
| Dengue virus  | RNA <sup>1</sup>   | –               | Viral titre, IgM                                      |
| Diarrhoea viruses <sup>5</sup> :                        |  |                 |   |
| - Adenovirus (enteric)                                  | EM   | –               | –   |
| - Astrovirus  | EM   | –               | –   |
| - Norovirus (previously Norwalk-like virus)             | EM, RNA <sup>5, 15, 16</sup>   | –               | –   |
| - Rotavirus   | EM, RNA <sup>5</sup> , EIA   | –               | –   |
| - Sapovirus (previously calicivirus/Sapporo-like virus) | EM   | –               | –   |
| Enterovirus   | RNA <sup>6</sup>   | + <sup>6</sup>  | Viral titre   |
| Epstein-Barr virus                                      | –  | –               | Heterophil IgM (Monospot), Viral titre, IgG, IgM, IgA |
| Hantavirus  | –  | –               | Viral titre, IgM                                      |
| Hepatitis A virus                                       | RNA <sup>17</sup>  | –               | IgG, IgM  |
| Hepatitis B virus                                       | Ag <sup>1</sup> , DNA – quantitative <sup>9</sup>                                      | –               | IgG, IgM  |
| Hepatitis C virus                                       | RNA – quantitative <sup>9</sup> / genotyping   | –               | IgG   |
| Hepatitis D virus                                       | –  | –               | IgG   |
| Hepatitis E virus                                       | –  | –               | IgG, IgM  |
| Herpes simplex virus                                    | EM <sup>7</sup> , Ag <sup>7</sup> , DNA <sup>8</sup>                                   | + <sup>7</sup>  | Viral titre   |
| Human immunodeficiency virus                            | Ag <sup>1</sup> , RNA-quantitative <sup>9</sup> , resistance genotyping <sup>9</sup> , | –               | IgG   |
| Human T-lymphotrophic virus type 1                      | –  | –               | IgG   |
| Influenza virus   | Ag <sup>2</sup> , RNA <sup>2</sup>   | + <sup>2</sup>  | Viral titre   |
| Japanese encephalitis virus                             | RNA <sup>18</sup>  | –               | Viral titre, IgM                                      |
| Measles virus   | Ag <sup>2</sup> , RNA <sup>10</sup>  | + <sup>10</sup> | Viral titre, IgM                                      |
| Mumps virus   | –  | + <sup>10</sup> | Viral titre, IgM                                      |
| Parainfluenza virus                                     | Ag <sup>2</sup> , RNA  | + <sup>2</sup>  | Viral titre   |
| Parvovirus  | –  | –               | IgG, IgM  |
| Polyomavirus  | EM <sup>11</sup>   | –               | –   |
| Rabies virus  | Ag <sup>12</sup> , RNA <sup>12</sup>   | + <sup>12</sup> | IgG   |
| Respiratory syncytial virus                             | Ag <sup>2</sup>  | + <sup>2</sup>  | Viral titre   |
| Rhinovirus  | RNA <sup>2</sup>   | + <sup>2</sup>  | –   |
| Rubella virus   | RNA <sup>13</sup>  | + <sup>14</sup> | Viral titre, IgG, IgM                                 |
| SARS coronavirus  | RNA <sup>3</sup>   | + <sup>3</sup>  | Viral titre   |
| Varicella zoster virus                                  | EM <sup>7</sup> , Ag <sup>7</sup>  | + <sup>7</sup>  | Viral titre, IgG                                      |

**Notes:**

+: Available

-: Not available

Ag: Antigen detection

EM: Electron microscopy

<sup>1</sup> Blood specimen (5 ml) in plain container without anticoagulants<sup>2</sup> Respiratory specimens<sup>3</sup> Respiratory and faecal specimens<sup>4</sup> Urine, saliva, respiratory, tissue and foetal specimens<sup>5</sup> Unformed diarrhoeal stool<sup>6</sup> Respiratory, faecal and CSF specimens<sup>7</sup> Please refer to “vesicular rash” illness in Table 1<sup>8</sup> CSF specimens<sup>9</sup> Blood specimen in EDTA container to arrive in laboratory within 6 hours of collection<sup>10</sup> Respiratory, urine and CSF specimens<sup>11</sup> Ultracentrifuged urine specimens<sup>12</sup> Please contact the laboratory for advice<sup>13</sup> Foetal specimens<sup>14</sup> Neonatal urine and respiratory, and foetal specimens<sup>15</sup> Rectal swab or vomitus<sup>16</sup> Raw oyster<sup>17</sup> Raw bivalve molluscs<sup>18</sup> Mosquito**Table 4: Tests available for other microbial agents from clinical specimens**

| Agents                        | Direct Detection | Culture        | Antibody Detection <sup>1</sup> |
|-------------------------------|------------------|----------------|---------------------------------|
| <i>Chlamydia trachomatis</i>  | Ag <sup>1</sup>  | + <sup>1</sup> | -                               |
| <i>Chlamydia</i> spp.         | DNA <sup>3</sup> | -              | Antibody titre                  |
| <i>Coxiella burnetti</i>      | DNA <sup>3</sup> | -              | Antibody titre                  |
| <i>Legionella pneumophila</i> | DNA <sup>3</sup> | -              | Antibody titre                  |
| <i>Mycoplasma pneumoniae</i>  | DNA <sup>3</sup> | -              | Antibody titre                  |
| <i>Orientia tsutsugamushi</i> | DNA <sup>2</sup> | -              | Antibody titre                  |
| Rickettsia:<br>Typhus group   | DNA <sup>2</sup> | -              | Antibody titre                  |
| Spotted fever group           |                  | -              | Antibody titre                  |
| <i>Toxoplasma gondii</i>      | DNA <sup>4</sup> | -              | Antibody titre, IgG, IgM, IgA   |

**Notes:** + : Available - : Not available Ag : Antigen detection<sup>1</sup> Please refer to “Respiratory”, “Conjunctivitis” and “Genital” illness in Table 1<sup>2</sup> Blood specimen (5 ml) in plain container without anticoagulants<sup>3</sup> Respiratory specimens<sup>4</sup> Body fluid

**Appendix 1: Request for HBV DNA testing**  
**Patient Information Sheet for HBV-DNA Assay**  
(Please send 6mL EDTA blood to laboratory within 6 hours of collection)

Collection date: \_\_\_\_\_

Collection time: \_\_\_\_\_

|                                      |
|--------------------------------------|
| Patient's Name: _____                |
| Patient's ID No: _____               |
| Hospital / Clinic: _____             |
| OR Please affix patient's label here |

**Indications for HBV-DNA Assay:** *(Please tick the appropriate box)*

- Pre-treatment baseline DNA level in CHB patient
  - Suspected treatment-resistance during anti-viral therapy
  - Confirmation of virological response during anti-viral therapy
  - Others *(please consult Hepatology / Infectious Disease Specialists)*
- \_\_\_\_\_

**Latest Laboratory Results:**

|        |                          |     |                          |     |             |
|--------|--------------------------|-----|--------------------------|-----|-------------|
| HBsAg: | <input type="checkbox"/> | pos | <input type="checkbox"/> | neg | Date: _____ |
| HBeAg: | <input type="checkbox"/> | pos | <input type="checkbox"/> | neg | Date: _____ |
| HBeAb: | <input type="checkbox"/> | pos | <input type="checkbox"/> | neg | Date: _____ |

ALT level: \_\_\_\_\_ Date: \_\_\_\_\_

**Patient's Treatment Status:**

Anti-viral Treatment given: *(Please tick the appropriate box)*

- No
- Yes

Lamivudine / Entecavir / Pegylated interferon / Adefovir / Other: \_\_\_\_\_

Treatment started on: \_\_\_\_\_

|   |
|---|
| <p>❖ <b>HBV-DNA request will be rejected if same test was ordered within 6 months</b></p> <p>❖ <b>Please fill in this information sheet and return with the laboratory request form</b></p> |
|---|

Doctor's Name and Code: \_\_\_\_\_

Hospital / Clinic: \_\_\_\_\_

Date of Request: \_\_\_\_\_

**Appendix 2: Request for HCV RNA test**

**Patient information sheet for HCV RNA test**

(Please complete this form to accompany the laboratory request form)  
(Please send 6mL EDTA blood to laboratory within 6 hours of collection)

Collection date: \_\_\_\_\_  
Collection time: \_\_\_\_\_ \*am/pm

Requested by Dr. \_\_\_\_\_

Patient's Name: \_\_\_\_\_ ID: \_\_\_\_\_

Hosp. / Clinic: \_\_\_\_\_

History (Predisposing factor, e.g. blood transfusion, IVDU, needle stick injury, post renal transplant etc.): \_\_\_\_\_

|                            |                      |       |
|----------------------------|----------------------|-------|
| <b>Anti-HCV serostatus</b> | *Anti-HCV: Pos / Neg | Date: |
|----------------------------|----------------------|-------|

|  |           |       |           |
|--|-----------|-------|-----------|
| <b>HCV genotyping previously checked</b> | *Yes / No | Date: | Genotype: |
|--|-----------|-------|-----------|

|                                    |                  |
|------------------------------------|------------------|
| <b>Liver Function Test Results</b> | Date:            |
| ALT / AST: _____                   | Bilirubin: _____ |

|   |
|---|
| <b>Antiviral Therapy</b>  |
| On treatment: *Yes / No.  |
| If yes, please specify: *Ribavirin / Peginterferon $\alpha$ 2a / Peginterferon $\alpha$ 2b / others |
| Treatment started on: _____   |

Purpose of quantitative HCV RNA test: \*Pre-treatment baseline / early virological response / Sustained virological response \*(end-of-treatment / 6 months of post-treatment)

Other treatment details: \_\_\_\_\_  
\_\_\_\_\_

\* circle as appropriate

**Please fill in this information sheet and return with the laboratory request form**

## **Appendix 3: Guide to Request for Novel Influenza Virus Testing**

### **I. Contact information**

For enquiries on laboratory testing:

General enquiries 2319 8247  
Medical Staff 2319 8252 / 2319 8253 / 2319 572 / 2319 8574

Address:

Virology Division  
9/F Public Health Laboratory Centre  
382 Nam Cheong Street, Shek Kip Mei, Kowloon

Facsimile: 2319 5989

Outside office hours:

Medical Control Officer 7116 3300 Call 9179

### **II. Indications for testing**

Specimens should be sent to the Virology Division for patients having the following clinical conditions with epidemiological link:

#### **Clinical conditions**

1. patient with:
  - i. clinical features of severe influenza infection or
  - ii. acute respiratory illness (fever with cough, sore throat, shortness of breath or difficulty in breathing) or
  - iii. severe pneumonia
2. patient died of unexplained acute respiratory illness

AND

#### **Epidemiological link**

1. patients having contact with a confirmed Influenza A H5N1 or novel influenza infected human case or animal or
2. patients having contact with poultry or wild birds or their remains or with an environment contaminated by their faeces, or patients having consumed raw or undercooked poultry products in countries or areas with documented human or avian influenza H5N1 infections or novel influenza virus infections or
3. persons having handled samples (animal or human) suspected of containing Influenza A H5N1 virus or a novel influenza virus in a laboratory or other settings.

### **III. Specimen collection**

1. Persons taking specimens from patients with suspected infection with novel influenza virus should take proper infection control precautions with appropriate personal protective equipment.
2. The following respiratory samples should be taken as soon as possible after onset of illness, before anti-viral treatment and placed in viral transport media

- i. Upper respiratory tract - posterior-pharyngeal (throat) swabs, naso-pharyngeal swabs, nasal swabs with nasal secretions (from the anterior turbinate area) or nasopharyngeal aspirates or swabs
  - ii. Lower respiratory tract - bronchoalveolar lavage or tracheal aspirate
  - iii. Other specimens:
    - a. Stool / rectal swab (especially if the patient has diarrhea) may be considered
    - b. Cerebrospinal fluid if meningitis or CNS involvement by the infecting virus is suspected and a spinal tap is to be performed for diagnostic/therapeutic purposes.
3. Paired sera for antibody testing should be taken during the acute and convalescent phase of illness.
- i. Acute clotted blood/serum should be collected as soon as possible, preferably within 7 days, after onset of illness.
  - ii. Convalescent clotted blood/serum should be collected at least 2 weeks after onset of illness.

#### **IV. Laboratory request form**

A laboratory request form DH2542 / DH2546 (or computer generated HA laboratory request form using electronic requesting system), together with the "Request for Novel Influenza Virus Testing" form (Appendix 3a), obtainable from the Virology Division, must be completed legibly in full and accompany each specimen and laboratory request form, in order to ensure expedient specimen processing.

#### **V. Specimen should be labelled, packaged and transported as with other virological specimens.**

**Appendix 3a: Request for novel influenza virus testing**  
(Please complete this form to accompany the laboratory request form)

Test requested by: \_\_\_\_\_ Dr. \_\_\_\_\_

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

Patient's name: \_\_\_\_\_ Patient ID No: \_\_\_\_\_

Clinical features (please circle and complete as appropriate):

Date of onset of illness \_\_\_\_\_

Fever \_\_\_\_\_ No/Yes - Temperature: \_\_\_\_\_ °C

Respiratory symptoms:

Cough \_\_\_\_\_ No/Yes

Sore throat \_\_\_\_\_ No/Yes

Shortness of breath \_\_\_\_\_ No/Yes

Difficulty in breathing \_\_\_\_\_ No/Yes

Other significant symptoms: \_\_\_\_\_

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

Exposure to infected poultry/human \_\_\_\_\_ No/Yes \_\_\_\_\_ Dates: \_\_\_\_\_

Contact with poultry or wild birds or their remains or contact with an environment contaminated by  
their faeces: \_\_\_\_\_ No/Yes \_\_\_\_\_ Place: \_\_\_\_\_ Dates: \_\_\_\_\_

Consumed raw or undercooked poultry products: \_\_\_\_\_ No/Yes

Relevant travel history with dates \_\_\_\_\_

Occupation \_\_\_\_\_

Investigation findings (please circle and complete as appropriate):

Chest x-ray: \_\_\_\_\_ Normal / Abnormal \_\_\_\_\_ Please specify changes: \_\_\_\_\_

WBC count: \_\_\_\_\_ Lymphocyte count: \_\_\_\_\_ Platelet count: \_\_\_\_\_

Rapid test for influenza A virus: \_\_\_\_\_ Negative/Positive

Other relevant information:

\_\_\_\_\_  
\_\_\_\_\_

**Appendix 4: Request for SARS coronavirus testing**  
(Please complete this form to accompany the laboratory request form)

Test requested by: Dr. \_\_\_\_\_

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

Patient's name: \_\_\_\_\_ Patient ID No: \_\_\_\_\_

Clinical features (please circle and complete as appropriate):

Date of onset of illness \_\_\_\_\_

Fever No/Yes - Temperature: \_\_\_\_\_ °C

Respiratory symptoms:

Cough No/Yes

Sore throat No/Yes

Shortness of breath No/Yes

Difficulty in breathing No/Yes

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

Relevant travel history with dates \_\_\_\_\_

Occupation \_\_\_\_\_

Investigation findings (please circle and complete as appropriate):

Chest x-ray: Normal / Abnormal Please specify changes: \_\_\_\_\_

WBC count: \_\_\_\_\_ Lymphocyte count: \_\_\_\_\_ Platelet count: \_\_\_\_\_

Rapid test for influenza A virus: Negative/Positive

Other relevant information:

\_\_\_\_\_  
\_\_\_\_\_